

IIBF & NISM Adda

Certificate Examination in

Risk in financial services

(IIBF & Other Exams)
(2020-2021)

Compiled by

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About Certificate Examination in Risk in Financial Services Rules & Syllabus 2020

Introduction :

The Certificate examination in Risk in Financial Services is offered in collaboration with Chartered Institute for Securities & Investment (CISI), London.

Objective :

The objective of the course is to enable bankers to gain expertise in the area of Risk Management in Financial Services.

Structure :

'Risk in Financial Services' is open to Members and Non-members. The examination has two parts-one covering Indian scenario and the other dealing with the international scenario. This certificate examination is offered in collaboration with Chartered Institute for Securities & Investment (CISI), London. First part of examination is conducted by IIBF and the second part is conducted by CISI. Candidates who complete both the parts are awarded a joint certificate.

Course has two levels :

Level - I :

a) Two hour examination with 40 to 60 hours of study, covering Indian scenario on

Risk Management (Indian Perspective)

b) On completion of the above examination, candidates have to undergo Training for 3 days at pre-announced centres.

Level - II :

Candidates who have passed the Level-I can apply for Level-II examination of CISI. i.e. Risk in Financial Services Two hour examination for 100 study hours. Dealing with the International scenario.

Institute will issue a certificate after completing Level-I of the course, which would include the online examination and training. In addition to this, candidates who complete Level-II will be awarded a joint certificate by the Institute and CISI.

Examinations :

Level - I examination will be held in online mode at half yearly intervals on the pre-announced dates. List of examination centres will be available on the website. (Institute will conduct examination in those centres where there are 20 or more candidates)

Level - II examinations will be held in online mode only at 8 centres throughout the year (excluding Saturdays / Sundays). Candidates will have to make it convenient to appear the Level - II examination at any one of the 8 centres.

Target group :

Employees of banks and financial institutions.

Eligibility :

1. Members and Non-Members of the Institute
2. Candidates must have passed the 12th standard examination in any discipline or its equivalent.

Exemption from Level-I Examination :

Members of IIBF who have passed 1) DTIRM examination or 2) CAIIB with elective subject 'Risk Management' or 3) CAIIB holders who have passed Certificate in Risk Management as separate Elective are eligible to take Level-II examination directly without passing Level-I examination. However they are required to register for the Level-I examination by paying the requisite fees plus applicable taxes to be eligible to apply for exemption.

Candidates who are eligible for exemption as per the above criteria are required to 1) Apply for the examination by paying the requisite fee plus applicable taxes and 2) Send immediately a separate written request for granting exemption along with a) Copy of the acknowledgement received while applying for examination and b) copy of the Result Advice / Final certificate of the above examination/s passed to Examination Corporate Office of the Institute so as to reach the same before the last date for applying for examination. Requests received for exemption after the last date for applying for the examination will not be considered for granting exemption.

Offices after the last date for applying for the examination will not be considered for granting exemption.

Subject of Examination (Level - I) :

Risk Management

PASSING CRITERIA:

Minimum marks for pass in the subject is 50 out of 100.

Examination / Particulars Examination Training Total

Training Fees : Sr.

No.	Fee	Fee**	Examination
+ Training Fee			
1.	Virtual training mode	Rs.6,000/-	Nil
			Rs.6,000/-
plus GST		plus GST	
2.	Physical classroom training mode	Rs.6,000/-	Rs.5,000/-
			Rs.11,000/-
at Mumbai, Delhi, Chennai and Kolkata centres	plus GST	plus GST	plus GST
3.	Physical classroom training mode	Rs.6,000/-	Rs.9,000/-
			Rs.15,000/-
at other centres	plus GST	plus GST	plus GST

Medium of Examination :

Examination will be conducted in English only

Pattern of Examination :

(i) Question Paper will contain approximately 100 objective type multiple choice questions for a total of 100 marks including questions based on case studies / case-lets. The Institute may however verified number of questions to be asked for a subject.

(ii) The examination will be held in Online Mode only

(iii) There will NOT be negative marking for wrong answers.

DURATION OF EXAMINATION:

The duration of the examination will be of 2 hours.

Syllabus

Paper - 1 : Risk Management

Module - A : An overview

a) Risk - definition, policies

- Risk Process-Risk Organization
- Key risks-Credit risk, market risk, operational risk, liquidity risk, legal risk, interest rate risk and currency risk
- b) Asset Liability Management
 - ALM Concept
 - ALM Concept
 - ALM Organization
 - ALCO techniques / tools
 - Simulation, Gap, Duration analysis, Linear and other statistical methods of control
- c) Risk Measurement & Control
 - Calculation
 - Risk exposure analysis
 - Risk management / mitigation policy
 - Risk immunization policy / strategy for fixing exposure limits
 - Risk management policy and procedure
 - Risk adjusted return on capital
- d) Risk management
 - Capital adequacy norms
 - Prudential norms
 - Exposure norms
 - Concept of Mid office
 - Forwards
 - Futures
 - Options
 - Strategies and Arbitrage opportunities
 - Regulatory prescriptions of risk management

Module - B : Credit Risk Management

- Introduction
- BASEL Norms
- Three pillars of BASEL Norms and Capital for Operational risk
- Frame work for risk management
- RBI guidelines on risk management
- Risk rating and risk pricing
- Methods for estimating capital requirements
- Credit risk - standardized approach
- Credit risk - advanced approach
- Credit rating / credit scoring and rating system design
- Credit Bureaus
- Stress test and sensitivity analysis
- Internal Capital Adequacy Assessment Process (ICAAP)

- Introduction to structured products

Module - C : Operational Risk

- Introduction, BASEL Norms

- RBI guidelines

- Likely forms of operational risk and causes for significant increase in operational risk

- Sound Principles of Operational Risk Management (SPOR)

- SPOR - organizational set up and key responsibilities of ORM

- SPOR - policy requirements and strategic approach for ORM

- SPOR identification, measurement, control / mitigation of operational risks

- Capital allocation for operational risk, methodology, qualifying criteria for banks for the adoption of the methods

- Computation of capital charge for operational risk

Module - D : Market Risk

- Introduction and definition

- Prescriptions of BASEL Norms

- Liquidity risk

- Interest rate risk

- Foreign exchange risk

- Price risk (Equity)

- Commodity risk

- Treatment of market risk under Basel

a) Standardized duration method

b) Internal measurement approach - VaR

Basel-III guidelines

- Risk Management Policy - ALCO structure and functions.

Rules / Syllabus for Level - II Examination (CISI, London)

As regards Paper 2 (Level - II) Examination the rules / syllabus, courseware, venue and other details will be provided directly by CISI, London to all the enrolled candidates for the Paper 2 examination, after passing the Level - I as stipulated earlier. The general information regarding rules / syllabus as provided by CISI is reproduced here which is subject to changes as per their rules / syllabus of CISI.

Subject of Examination (Level - II) :

Paper - 2 : Risk in Financial Services

Registration / Examination Fees :

(For Members of IIBF under the collaboration arrangement) 1st attempt	£110 (Including Registration fee)
2nd attempt	£60 (During the continuation of the syllabus)

Duration of Examination :

Paper 2 - Examination will be of 2 hour duration.

Periodicity of Examination:

The Examination is conducted throughout the year except Saturday and Sunday.

Passing criteria :

Passing marks for paper- 2 subject is 70%

Delivery :

The program is delivered through soft copy of study material in PDF format.

Syllabus for examination – Level - II Paper - 2 : Risk in Financial Services

1. Principles of Risk Management

2. International Risk Regulation

3. Operational Risk

4. Credit Risk

5. Market Risk

- 6. Investment Risk
- 7. Liquidity Risk
- 8. Corporate Governance and Risk Oversight
- 9. Model Risk
- 10. Enterprise Risk Management (ERM) -

(Supported by specially designed courseware which is supplied by e-copy to all enrolled candidates as part of the fee by CISI directly)

PROCEDURE FOR APPLYING FOR EXAMINATION (Level - II) :

IIBF will provide a list of candidates, who have passed the Level - I examination / granted exemption based on prior qualification and eligible to apply for Level - II examination to CISI periodically. CISI will inform those candidates directly the procedure / guidance for the registration for Level - II examination. Candidates can also contact CISI for guidance on the contact no. and e-mail provided on the trailing pages under course structure and delivery, if needed.

For further information / Registration (CISI)

RISK MANAGEMENT: AN OVERVIEW

Structure

- 1.1 Introduction
- 1.2 Risk Management
- 1.3 Categories of Risk
- 1.4 Steps in Risk Management
- 1.5 Integration of Risks leading to Enterprise-wise Risk Management System

1.1 INTRODUCTION

The business of banking today is synonymous with active risk management than it was ever before. The success and failure of a banking institution heavily depends on the strength of the risk management system in the current environment. This is true as the business of banking is risk taking in its traditional role of an intermediary, i.e. interposing between savers (depositor) on one hand and the borrower on the other hand, thereby accepting the risks of intermediation. With the rapid development of public capital markets worldwide, there has been a steady reduction in the dependence of borrowers on the banking system for funding their activities. This 'disintermediation' not only by the borrowers but also by the bank depositors directly investing their funds in capital market instruments, has caused a significant change in the business of banking. To arrest the fall in customer business and base owing to disintermediation, banks entered into a host of fee based services such as cash management, funds transfer etc., capital market activities such as merchant banking, public issue management, private placement of issues and advisory services to diversity from fund - based to fee-based activities. Another outcome of the disintermediation is the rapid growth in the size of investment portfolio of banks over a period of time at the cost of advances portfolio which can be attributed to various other reasons apart from disintermediation, thereby changing the complexion of banking risks. Over the period of time, the income from the businesses of lending, investments and fee based services have come down due to competition both from within and outside the industry. To counter this, the latest in the array of new products is the provision of specialized services by structuring products to meet the unique requirements of corporate customers and also to high networth individual clients for improving fee income. The scope of the business of structuring products has widened to a significant level with the introduction of derivative products in the markets. The net result of all the above developments is a metamorphic change in the risk and return profile compared to the past. This will continue in future with more and more of derivatives entering into the various segments of the market. While the complexities have increased tremendously, tools to manage the complexities have to be in place to manage the complexities.

What is Risk ?

Risk is the probability that the realized return would be different from the anticipated/expected return on investment.

Risk is a measure of likelihood of a bad financial outcome.

All other things being equal risk will be avoided.

All other things are however not equal and that a reduction in risk is accompanied by a reduction in expected return.

The uncertainties associated with risk elements impact the net cash flow of any business or investment. Under the impact of uncertainties, variations in net cash flow take place. This could be favourable or un-favourable. The un-favourable impact is 'RISK' of the business.



1.2 RISK MANAGEMENT

Meaning and Scope

Though the term risk has got different connotations from different angles, it can be defined as the potential that events, expected or unexpected may have an adverse impact on a bank's earnings or capital or both. Both the risks having high probability low impact and low probability high impact are covered under the definition. This working definition would be useful throughout the discussion. It is useful to recall at this stage that risk and expected return are positively related; higher the risk, higher the expected return and vice versa. The scope of risk management function in any organization is to ensure that systems and processes are set up in accordance with the risk management policy of the institution.

Objectives

The very basic objective of risk management system is to put in place and operate a systematic process to give a reasonable degree of assurance to the top management that the ultimate corporate goals that are vigorously pursued by it would be achieved in the most efficient manner. In this way, all the risks that come in the way of the institution achieving the goals it has set for itself would be managed properly by the risk management system. In the absence of such a system, no institution can exist in the long-run without fulfilling the objectives for which it was set up.

Risk management is the identification, evaluation, and prioritization of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimize, monitor, and control the probability or impact of unfortunate events[1] or to maximize the realization of opportunities.

Risks can come from various sources including uncertainty in financial markets, threats from project failures (at any phase in design, development, production, or sustainment life-cycles), legal liabilities, credit risk, accidents, natural causes and disasters, deliberate attack from an adversary, or events of uncertain or unpredictable root-cause. There are two types of events i.e. negative events can be classified as risks while positive events are classified as opportunities. Several risk management standards have been developed including the Project Management Institute, the National Institute of Standards and Technology, actuarial societies, and ISO standards.[2][3] Methods, definitions and goals vary widely according to whether the risk management method is in the context of project management, security, engineering, industrial processes, financial portfolios, actuarial assessments, or public health and safety.

Strategies to manage threats (uncertainties with negative consequences) typically include avoiding the threat, reducing the negative effect or probability of the threat, transferring all or part of the threat to another party, and even retaining some or all of the potential or actual consequences of a particular threat, and the opposites for opportunities (uncertain future states with benefits).

Certain aspects of many of the risk management standards have come under criticism for having no measurable improvement on risk; whereas the confidence in estimates and decisions seem to increase. For example, one study found that one in six IT projects were "black swans" with gigantic overruns (cost overruns averaged 200%, and schedule overruns 70%)

A widely used vocabulary for risk management is defined by ISO Guide 73:2009, "Risk management. Vocabulary."

In ideal risk management, a prioritization process is followed whereby the risks with the greatest loss (or impact) and the greatest probability of occurring are handled first, and risks with lower probability of occurrence and lower loss are handled in descending order. In practice the process of assessing overall risk can be difficult, and balancing resources used to mitigate between risks with a high probability of occurrence but lower loss versus a risk with high loss but lower probability of occurrence can often be mishandled.

Intangible risk management identifies a new type of a risk that has a 100% probability of occurring but is ignored by the organization due to a lack of identification ability. For example, when deficient knowledge is applied to a situation, a knowledge risk materializes. Relationship risk appears when ineffective collaboration occurs. Process-engagement risk may be an issue when ineffective operational procedures are applied. These risks directly reduce the productivity of knowledge workers, decrease cost-effectiveness, profitability, service, quality, reputation, brand value, and earnings quality. Intangible risk management allows risk management to create immediate value from the identification and reduction of risks that reduce productivity.

Risk management also faces difficulties in allocating resources. This is the idea of opportunity cost. Resources spent on risk management could have been spent on more profitable activities. Again, ideal risk management minimizes spending (or manpower or other resources) and also minimizes the negative effects of risks.

According to the definition to the risk, the risk is the possibility that an event will occur and adversely affect the achievement of an objective. Therefore, risk itself has the uncertainty. Risk management such as COSO ERM, can help managers have a good control for their risk. Each company may have different internal control components, which leads to different outcomes. For example, the framework for ERM components includes Internal Environment, Objective Setting, Event Identification, Risk Assessment, Risk Response, Control Activities, Information and Communication, and Monitoring

Method

For the most part, these methods consist of the following elements, performed, more or less, in the following order.

- identify, characterize threats

- assess the vulnerability of critical assets to specific threats

- determine the risk (i.e. the expected likelihood and consequences of specific types of attacks on specific assets)

- identify ways to reduce those risks

- prioritize risk reduction measures

Principles

The International Organization for Standardization (ISO) identifies the following principles of risk management

Risk management should:

- create value – resources expended to mitigate risk should be less than the consequence of inaction

- be an integral part of organizational processes

- be part of decision making process

- explicitly address uncertainty and assumptions

- be a systematic and structured process

- be based on the best available information

- be tailorable

- take human factors into account

- be transparent and inclusive

- be dynamic, iterative and responsive to change

- be capable of continual improvement and enhancement

- be continually or periodically re-assessed

Process

According to the standard ISO 31000 "Risk management – Principles and guidelines on implementation," the process of risk management consists of several steps as follows:

Establishing the context

This involves:

identification of risk in a selected domain of interest

planning the remainder of the process

mapping out the following:

the social scope of risk management

the identity and objectives of stakeholders

the basis upon which risks will be evaluated, constraints.

defining a framework for the activity and an agenda for identification

developing an analysis of risks involved in the process

mitigation or solution of risks using available technological, human and organizational resources

Identification

After establishing the context, the next step in the process of managing risk is to identify potential risks.

Risks are about events that, when triggered, cause problems or benefits. Hence, risk identification can start with the source of our problems and those of our competitors (benefit), or with the problem itself.

Source analysis – Risk sources may be internal or external to the system that is the target of risk management (use mitigation instead of management since by its own definition risk deals with factors of decision-making that cannot be managed).

Examples of risk sources are: stakeholders of a project, employees of a company or the weather over an airport.

Problem analysis[citation needed] – Risks are related to identified threats. For example: the threat of losing money, the threat of abuse of confidential information or the threat of human errors, accidents and casualties. The threats may exist with various entities, most important with shareholders, customers and legislative bodies such as the government.

When either source or problem is known, the events that a source may trigger or the events that can lead to a problem can be investigated. For example: stakeholders withdrawing during a project may endanger funding of the project; confidential information may be stolen by employees even within a closed network; lightning striking an aircraft during takeoff may make all people on board immediate casualties.

The chosen method of identifying risks may depend on culture, industry practice and compliance. The identification methods are formed by templates or the development of templates for identifying source, problem or event. Common risk identification methods are:

Objectives-based risk identification[citation needed] – Organizations and project teams have objectives. Any event that may endanger achieving an objective partly or completely is identified as risk.

Scenario-based risk identification – In scenario analysis different scenarios are created. The scenarios may be the alternative ways to achieve an objective, or an analysis of the interaction of forces in, for example, a market or battle. Any event that triggers an undesired scenario alternative is identified as risk – see Futures Studies for methodology used by Futurists.

Taxonomy-based risk identification – The taxonomy in taxonomy-based risk identification is a breakdown of possible risk sources. Based on the taxonomy and knowledge of best practices, a questionnaire is compiled. The answers to the questions reveal risks.[7]

Common-risk checking [8] – In several industries, lists with known risks are available. Each risk in the list can be checked for application to a particular situation.[9]

Risk charting[10] – This method combines the above approaches by listing resources at risk, threats to those resources, modifying factors which may increase or decrease the risk and consequences it is wished to avoid. Creating a matrix under these headings enables a variety of approaches. One can begin with resources and consider the threats they are exposed to and the consequences of each. Alternatively one can start with the threats and examine which resources they would affect, or one can begin with the consequences and determine which combination of threats and resources would be involved to bring them about.

Assessment

Main article: Risk assessment

Once risks have been identified, they must then be assessed as to their potential severity of impact (generally a negative impact, such as damage or loss) and to the probability of occurrence. These quantities can be either simple to measure, in the case of the value of a lost building, or impossible to know for sure in the case of an unlikely event, the probability of occurrence of which is unknown. Therefore, in the assessment process it is critical to make the best educated decisions in order to properly prioritize the implementation of the risk management plan.

Even a short-term positive improvement can have long-term negative impacts. Take the "turnpike" example. A highway is widened to allow more traffic. More traffic capacity leads to greater development in the areas surrounding the improved traffic capacity. Over time, traffic thereby increases to fill available capacity. Turnpikes thereby need to be expanded in a seemingly endless cycles. There are many other engineering examples where expanded capacity (to do any function) is soon filled by increased demand. Since expansion comes at a cost, the resulting growth could become unsustainable without forecasting and management.

The fundamental difficulty in risk assessment is determining the rate of occurrence since statistical information is not available on all kinds of past incidents and is particularly scanty in the case of catastrophic events, simply because of their infrequency. Furthermore, evaluating the severity of the consequences (impact) is often quite difficult for intangible assets. Asset valuation is another question that needs to be addressed. Thus, best educated opinions and available statistics are the primary sources of information. Nevertheless, risk assessment should produce such information for senior executives of the organization that the primary risks are easy to understand and that the risk management decisions may be prioritized within overall company goals. Thus, there have been several theories and attempts to quantify risks. Numerous different risk formulae exist, but perhaps the most widely accepted formula for risk quantification is: "Rate (or probability) of occurrence multiplied by the impact of the event equals risk magnitude." [vague]

Risk options

Risk mitigation measures are usually formulated according to one or more of the following major risk options, which are:

Design a new business process with adequate built-in risk control and containment measures from the start.

Periodically re-assess risks that are accepted in ongoing processes as a normal feature of business operations and modify mitigation measures.

Transfer risks to an external agency (e.g. an insurance company)

Avoid risks altogether (e.g. by closing down a particular high-risk business area)

Later research[11] has shown that the financial benefits of risk management are less dependent on the formula used but are more dependent on the frequency and how risk assessment is performed.

In business it is imperative to be able to present the findings of risk assessments in financial, market, or schedule terms. Robert Courtney Jr. (IBM, 1970) proposed a formula for presenting risks in financial terms. The Courtney formula was accepted as the official risk analysis method for the US governmental agencies. The formula proposes calculation of ALE (annualized loss expectancy) and compares the expected loss value to the security control implementation costs (cost-benefit analysis).

Potential risk treatments

Once risks have been identified and assessed, all techniques to manage the risk fall into one or more of these four major categories:[12]

Avoidance (eliminate, withdraw from or not become involved)

Reduction (optimize – mitigate)

Sharing (transfer – outsource or insure)

Retention (accept and budget)

Ideal use of these risk control strategies may not be possible. Some of them may involve trade-offs that are not acceptable to the organization or person making the risk management decisions. Another source, from the US Department of Defense (see link), Defense Acquisition University, calls these categories ACAT, for Avoid, Control, Accept, or Transfer. This use of the ACAT acronym is reminiscent of another ACAT (for Acquisition Category) used in US Defense industry procurements, in which Risk Management figures prominently in decision making and planning.

Risk avoidance

This includes not performing an activity that could carry risk. An example would be not buying a property or business in order to not take on the legal liability that comes with it. Another would be not flying in order not to take the risk that the airplane were to be hijacked. Avoidance may seem the answer to all risks, but avoiding risks also means losing out on the potential gain that accepting (retaining) the risk may have allowed. Not entering a business to avoid the risk of loss also avoids the possibility of earning profits. Increasing risk regulation in hospitals has led to avoidance of treating higher risk conditions, in favor of patients presenting with lower risk.

Risk reduction

Risk reduction or "optimization" involves reducing the severity of the loss or the likelihood of the loss from occurring. For example, sprinklers are designed to put out a fire to reduce the risk of loss by fire. This method may cause a greater loss by water damage and therefore may not be suitable. Halon fire suppression systems may mitigate that risk, but the cost may be prohibitive as a strategy.

Acknowledging that risks can be positive or negative, optimizing risks means finding a balance between negative risk and the benefit of the operation or activity; and between risk reduction and effort applied. By an offshore drilling contractor effectively applying Health, Safety and Environment (HSE) management in its organization, it can optimize risk to achieve levels of residual risk that are tolerable.

Modern software development methodologies reduce risk by developing and delivering software incrementally. Early methodologies suffered from the fact that they only delivered software in the final phase of development; any problems encountered in earlier phases meant costly rework and often jeopardized the whole project. By developing in iterations, software projects can limit effort wasted to a single iteration.

Outsourcing could be an example of risk reduction if the outsourcer can demonstrate higher capability at managing or reducing risks. For example, a company may outsource only its software development, the manufacturing of hard goods, or customer support needs to another company, while handling the business management itself. This way, the company can concentrate more on business development without having to worry as much about the manufacturing process, managing the development team, or finding a physical location for a call center.

Risk sharing

Briefly defined as "sharing with another party the burden of loss or the benefit of gain, from a risk, and the measures to reduce a risk."

The term of 'risk transfer' is often used in place of risk sharing in the mistaken belief that you can transfer a risk to a third party through insurance or outsourcing. In practice if the insurance company or contractor go bankrupt or end up in court, the original risk is likely to still revert to the first party. As such in the terminology of practitioners and scholars alike, the purchase of an insurance contract is often described as a "transfer of risk." However, technically speaking, the buyer of the contract generally retains legal responsibility for the losses "transferred", meaning that insurance may be described more accurately as a post-event compensatory mechanism. For example, a personal injuries insurance policy does not transfer the risk of a car accident to the insurance company. The risk still lies with the policy holder namely the person who has been in the accident. The insurance policy simply provides that if an accident (the event) occurs involving the policy holder then some compensation may be payable to the policy holder that is commensurate with the suffering/damage.

Some ways of managing risk fall into multiple categories. Risk retention pools are technically retaining the risk for the group, but spreading it over the whole group involves transfer among individual members of the group. This is different from traditional insurance, in that no premium is exchanged between members of the group up front, but instead losses are assessed to all members of the group.

Risk retention

Involves accepting the loss, or benefit of gain, from a risk when it occurs. True self-insurance falls in this category. Risk retention is a viable strategy for small risks where the cost of insuring against the risk would be greater over time than the total losses sustained. All risks that are not avoided or transferred are retained by default. This includes risks that are so large or catastrophic that either they cannot be insured against or the premiums would be infeasible. War is an example since most property and risks are not insured against war, so the loss attributed by war is retained by the insured. Also any amounts of potential loss (risk) over the amount insured is retained risk. This may also be acceptable if the chance of a very large loss is small or if the cost to insure for greater coverage amounts is so great that it would hinder the goals of the organization too much.

Risk management plan

Main article: Risk management plan

Select appropriate controls or countermeasures to mitigate each risk. Risk mitigation needs to be approved by the appropriate level of management. For instance, a risk concerning the image of the organization should have top management decision behind it whereas IT management would have the authority to decide on computer virus risks.

The risk management plan should propose applicable and effective security controls for managing the risks. For example, an observed high risk of computer viruses could be mitigated by acquiring and implementing antivirus software. A good risk management plan should contain a schedule for control implementation and responsible persons for those actions.

According to ISO/IEC 27001, the stage immediately after completion of the risk assessment phase consists of preparing a Risk Treatment Plan, which should document the decisions about how each of the identified risks should be handled. Mitigation of risks often means selection of security controls, which should be documented in a Statement of Applicability, which identifies which particular control objectives and controls from the standard have been selected, and why.

Implementation

Implementation follows all of the planned methods for mitigating the effect of the risks. Purchase insurance policies for the risks that it has been decided to transfer to an insurer, avoid all risks that can be avoided without sacrificing the entity's goals, reduce others, and retain the rest.

Review and evaluation of the plan

Initial risk management plans will never be perfect. Practice, experience, and actual loss results will necessitate changes in the plan and contribute information to allow possible different decisions to be made in dealing with the risks being faced.

Risk analysis results and management plans should be updated periodically. There are two primary reasons for this:

- to evaluate whether the previously selected security controls are still applicable and effective
- to evaluate the possible risk level changes in the business environment. For example, information risks are a good example of rapidly changing business environment.

Limitations

Prioritizing the risk management processes too highly could keep an organization from ever completing a project or even getting started. This is especially true if other work is suspended until the risk management process is considered complete.

It is also important to keep in mind the distinction between risk and uncertainty. Risk can be measured by $\text{impacts} \times \text{probability}$.

If risks are improperly assessed and prioritized, time can be wasted in dealing with risk of losses that are not likely to occur. Spending too much time assessing and managing unlikely risks can divert resources that could be used more profitably. Unlikely events do occur but if the risk is unlikely enough to occur it may be better to simply retain the risk and deal with the result if the loss does in fact occur.

Qualitative risk assessment is subjective and lacks consistency. The primary justification for a formal risk assessment process is legal and bureaucratic.

Areas

As applied to corporate finance, risk management is the technique for measuring, monitoring and controlling the financial or operational risk on a firm's balance sheet, a traditional measure is the value at risk (VaR), but there also other measures like profit at risk (PaR) or margin at risk. The Basel II framework breaks risks into market risk (price risk), credit risk and operational risk and also specifies methods for calculating capital requirements for each of these components.

In Information Technology, Risk management includes "Incident Handling", an action plan for dealing with intrusions, cyber-theft, denial of service, fire, floods, and other security-related events. According to the SANS Institute, it is a six step process: Preparation, Identification, Containment, Eradication, Recovery, and Lessons Learned.

Enterprise

In enterprise risk management, a risk is defined as a possible event or circumstance that can have negative influences on the enterprise in question. Its impact can be on the very existence, the resources (human and capital), the products and services, or the customers of the enterprise, as well as external impacts on society, markets, or the environment. In a financial institution, enterprise risk management is normally thought of as the combination of credit risk, interest rate risk or asset liability management, liquidity risk, market risk, and operational risk.

In the more general case, every probable risk can have a pre-formulated plan to deal with its possible consequences (to ensure contingency if the risk becomes a liability).

From the information above and the average cost per employee over time, or cost accrual ratio, a project manager can estimate:

the cost associated with the risk if it arises, estimated by multiplying employee costs per unit time by the estimated time lost (cost impact, C where $C = \text{cost accrual ratio} * S$)

.

the probable increase in time associated with a risk (schedule variance due to risk, R_s where $R_s = P * S$):

Sorting on this value puts the highest risks to the schedule first. This is intended to cause the greatest risks to the project to be attempted first so that risk is minimized as quickly as possible.

This is slightly misleading as schedule variances with a large P and small S and vice versa are not equivalent. (The risk of the RMS Titanic sinking vs. the passengers' meals being served at slightly the wrong time).

the probable increase in cost associated with a risk (cost variance due to risk, R_c where $R_c = P * C = P * \text{CAR} * S = P * S * \text{CAR}$)

sorting on this value puts the highest risks to the budget first.

see concerns about schedule variance as this is a function of it, as illustrated in the equation above.

Risk in a project or process can be due either to Special Cause Variation or Common Cause Variation and requires appropriate treatment. That is to re-iterate the concern about extremal cases not being equivalent in the list immediately above.

Enterprise Security

ESRM is a security program management approach that links security activities to an enterprise's mission and business goals through risk management methods. The security leader's role in ESRM is to manage risks of harm to enterprise assets in partnership with the business leaders whose assets are exposed to those risks. ESRM involves educating business leaders on the realistic impacts of identified risks, presenting potential strategies to mitigate those impacts, then enacting the option chosen by the business in line with accepted levels of business risk tolerance[17]

Medical device

For medical devices, risk management is a process for identifying, evaluating and mitigating risks associated with harm to people and damage to property or the environment. Risk management is an integral part of medical device design and development, production processes and evaluation of field experience, and is applicable to all types of medical devices. The evidence of its application is required by most regulatory bodies such as the US FDA. The management of risks for medical devices is described by the International Organization for Standardization (ISO) in ISO 14971:2007, Medical Devices—The application of risk management to medical devices, a product safety standard. The standard provides a process framework and associated requirements for management responsibilities, risk analysis and evaluation, risk controls and lifecycle risk management.

The European version of the risk management standard was updated in 2009 and again in 2012 to refer to the Medical Devices Directive (MDD) and Active Implantable Medical Device Directive (AIMDD) revision in 2007, as well as the In Vitro Medical Device Directive (IVDD). The requirements of EN 14971:2012 are nearly identical to ISO 14971:2007. The differences include three "(informative)" Z Annexes that refer to the new MDD, AIMDD, and IVDD. These annexes indicate content deviations that include the requirement for risks to be reduced as far as possible, and the requirement that risks be mitigated by design and not by labeling on the medical device (i.e., labeling can no longer be used to mitigate risk).

Typical risk analysis and evaluation techniques adopted by the medical device industry include hazard analysis, fault tree analysis (FTA), failure mode and effects analysis (FMEA), hazard and operability study (HAZOP), and risk traceability analysis for ensuring risk controls are implemented and effective (i.e. tracking risks identified to product requirements, design specifications, verification and validation results etc.). FTA analysis requires diagramming software. FMEA analysis can be done using a spreadsheet program. There are also integrated medical device risk management solutions.

Through a draft guidance, the FDA has introduced another method named "Safety Assurance Case" for medical device safety assurance analysis. The safety assurance case is structured argument reasoning about systems appropriate for scientists and engineers, supported by a body of evidence, that provides a compelling, comprehensible and valid case that a system is safe for a given application in a given environment. With the guidance, a safety assurance case is expected for safety critical devices (e.g. infusion devices) as part of the pre-market clearance submission, e.g. 510(k). In 2013,

the FDA introduced another draft guidance expecting medical device manufacturers to submit cybersecurity risk analysis information.

Project management

Main article: project risk management

Project risk management must be considered at the different phases of acquisition. In the beginning of a project, the advancement of technical developments, or threats presented by a competitor's projects, may cause a risk or threat assessment and subsequent evaluation of alternatives (see Analysis of Alternatives). Once a decision is made, and the project begun, more familiar project management applications can be used:

An example of the Risk Register for a project that includes 4 steps: Identify, Analyze, Plan Response, Monitor and Control.

Planning how risk will be managed in the particular project. Plans should include risk management tasks, responsibilities, activities and budget.

Assigning a risk officer – a team member other than a project manager who is responsible for foreseeing potential project problems. Typical characteristic of risk officer is a healthy skepticism.

Maintaining live project risk database. Each risk should have the following attributes: opening date, title, short description, probability and importance. Optionally a risk may have an assigned person responsible for its resolution and a date by which the risk must be resolved.

Creating anonymous risk reporting channel. Each team member should have the possibility to report risks that he/she foresees in the project.

Preparing mitigation plans for risks that are chosen to be mitigated. The purpose of the mitigation plan is to describe how this particular risk will be handled – what, when, by whom and how will it be done to avoid it or minimize consequences if it becomes a liability.

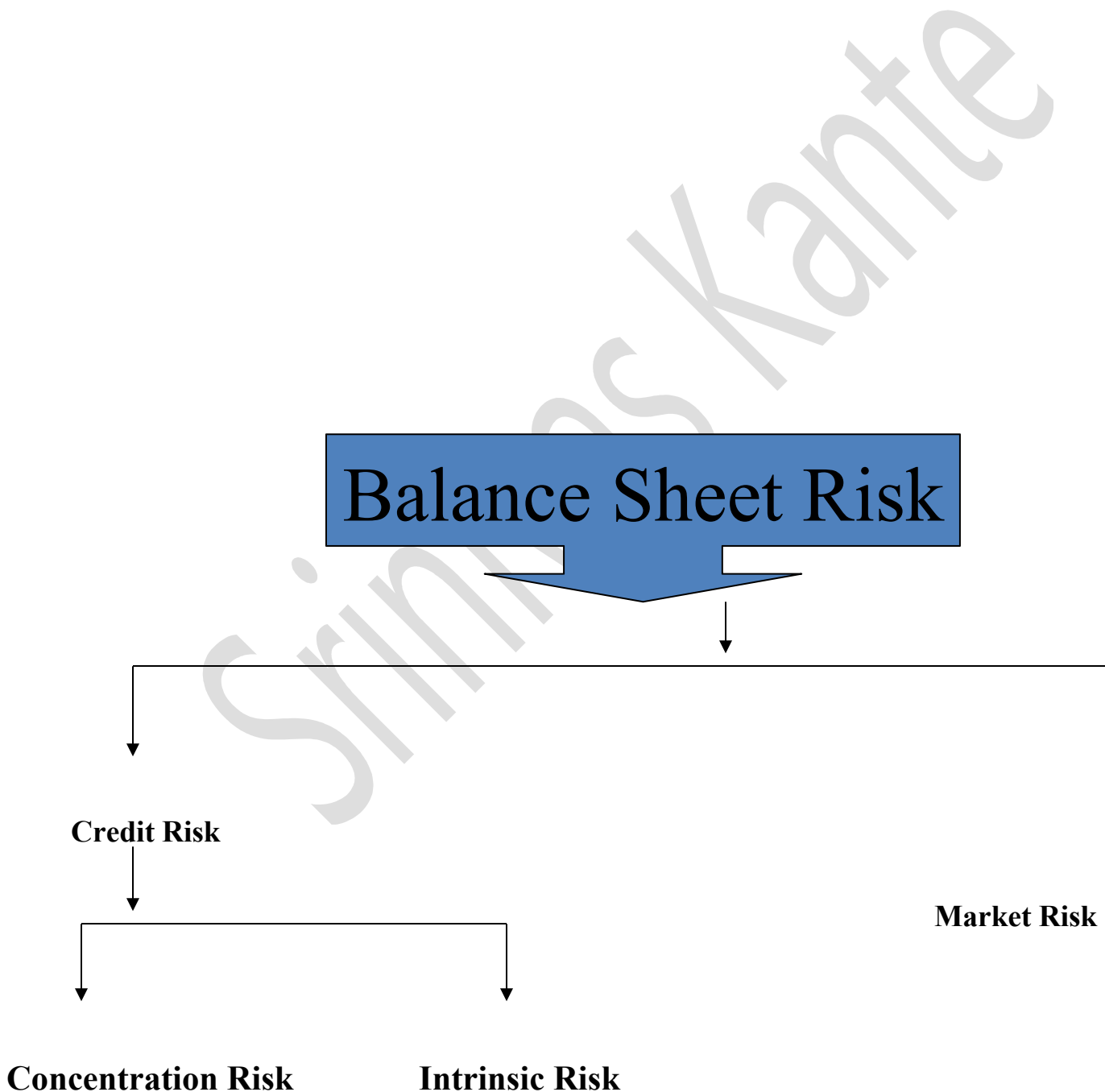
Summarizing planned and faced risks, effectiveness of mitigation activities, and effort spent for the risk management.

Anatomy of Bank Risk

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graph TD; A[Anatomy of Bank Risk] --> B[Non-Financial Risk]; A --> C[Financial Risk]
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Non-Financial Risk

Financial Risk



Interest Rate Risk

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graph TD; A[Interest Rate Risk] --> B[Price Risk]; A --> C[Reinvestment Risk]; A --> D[Gap Risk]; A --> E[Yield Curve Risk]; A --> F[Basis Risk];
```

Price Risk

Reinvestment Risk

Gap Risk

Yield Curve Risk

Basis Risk

Risk in Traditional Sense

Systematic Risks::

Affects all Industry/ All securities

Non-controllable

Non-diversifiable

Unsystematic Risks::

Affects specific Industry/ Specific Securities

Controllable

Diversifiable

Enterprise Wide Risk Management

Introduction:

Achievement of business and financial objectives is of paramount importance for a Bank or a Financial Services Organisation. The Top Managements of Banks and Financial Services Organisations are always under pressure to perform and to achieve their business targets. When periodical reviews are undertaken, related questions surface. Some such questions could be "What sort of roadblocks they can face on their way to achievement of their business goals? What are the risk-factors faced by the organisation? To what extent, can these risk-factors impact the achievement of the business objectives? How can these risk factors be mitigated? How to regularly control and monitor the risk-factors? " etc.

Enterprise-Wide Risk Management (EWRM) provides an answer to such questions. We can define EWRM as a continuous and structured process of identifying all external and internal risk-factors; assessing their impact on the achievement of the organisation's business and financial targets; prioritising the risk-factors; exploring alternatives for mitigating the risks; and controlling and monitoring such risks.

Thus, we may say that EWRM encompasses the entire gamut of the organisation's operations and is not limited to a single event or circumstance impacting the organisation's functioning. It is a dynamic process

involving people at all levels, covers every aspect of the organisation's resources and operations and takes a holistic picture of the entire organisation for the purpose of risk management.

Implementation of Enterprise Wide Risk Management:

EWRM involves listing the objectives of the organisation; identifying the risk-factors that could adversely impact the achievement of each of the objectives; assessing the impact of the risk-factors on the achievement of each of the objectives; finding alternatives for mitigating the risk-factors and take steps to control and monitor the risk-factors on a regular basis..

Let us illustrate the enterprise wide risk management by taking the example of a Bank which has an objective to achieve an increase of 25% in its market share of deposits in 2017-18. The Bank has identified one of the risk-factors that could have an adverse impact on its projected growth is shortage of a well-trained marketing team at its branches. The Top Management of the Bank realises that if it does not have a well-trained team in place, it would at best achieve a deposit growth of 10%, which is almost the same as the previous year's deposit growth. This shows that "untrained marketing team" is a major risk-factor. There could be other risk-factors too, like competition from other Banks, competition from mutual funds, reduction in interest rates and lack of brand awareness.

Now let us explore a few risk-mitigating options for "untrained marketing team".

The options could be:

- Train the existing marketing team
- Hire well-trained personnel from the market
- Use a mix of the two

For each of the above available choices, the Bank shall have to carry out a cost-benefit analysis before deciding on a particular course of action.

The implementation of EWRM therefore, involves the following steps:

1. Evaluation of the existing risk management systems involving
 - a) Review of the internal environment with a view to assess the risk philosophy and risk culture
 - b) Review of the process of setting objectives
 - c) Assessment of the existing mechanism of identifying risk-factors that can affect achievement of the desired objectives
 - d) Evaluation of the existing process of assessing risks
 - e) Assessment of the process of responding to identified risks
 - f) Evaluation of the adequacy of existing control processes
 - g) Assessment of the adequacy of existing management information system (MIS)
 - h) Review of the process of monitoring risks
2. Formulation of a road map for the implementation plan that seeks to bridge the gaps in risk management practices vis-à-vis EWRM.

Enterprise Risk Management for Banks:

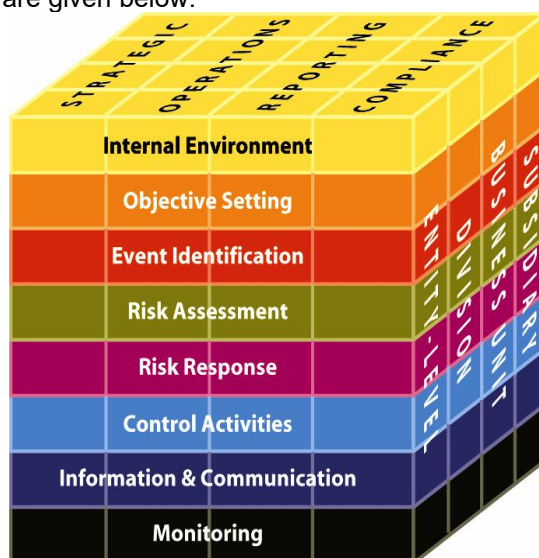
Risk management in the banking sector has been in the limelight especially after the recent turbulences that have impacted the effective functioning of the banking sector. The repercussions/impact of not managing the risks effectively in banks has also been recognised by the Governments all over the world and several regulations to control risks that arise in the banking business and operations were enacted as a result.

The risk function in the banks evolved over a period of time and reached a stage where the need was felt to have a common criterion to measure and quantify the risks faced by the banks so as have a comparative analysis of the banks. BASEL Norms have been introduced to align the risk management practices of various banks with the BASEL Norms over a period of time. The Basel norms are focused on the risks in Operational, Credit and Market areas which in turn have helped the banks to quantify the risks and standardize their risk management practices in the said areas. Of late, liquidity risk has also emerged as an important element in the whole risk management process.

However, for effective and comprehensive risk management, it is desirable to have a comprehensive risk management system which shall help the banks to identify, mitigate risks across enterprise in all the areas and at the same time rationalize and mature their risk management practices across the enterprise.

The above factors should lead to a scenario where the banks start looking beyond Regulatory compliance and Basel norms for an Enterprise-wide approach to cater to all risk requirements in more cost effective and efficient manner. It is most probably with this purpose in mind that the Reserve Bank of India has issued instructions to the banks to implement the recommendations of the Committee on Capacity Building constituted in July 2014 under the Chairmanship of former Executive Director, Shri G Gopalakrishna, with the objective of implementing non-legislative recommendations of the Financial Sector Legislative Reforms Commission. The Banks are required to identify specialised areas for certification of the staff manning key responsibilities which includes enterprise-wide risk.

Banks have identified and started adapting the Enterprise Risk Management Framework released by COSO (Committee of Sponsoring Organizations of the Treadway Commission) as a framework to drive their initiatives in risk management beyond Basel norms and regulatory compliances. The COSO ERM framework has all the components that could help the banks to stand a chance to derive business value while meeting compliance requirements. The ERM Framework is structured around eight key components and four key objectives of business viz. strategic, operations, reporting and compliance. The components of the ERM Framework are given below:



COSO's Enterprise Risk Management – Integrated Framework

Enterprise Risk Management enables the organizations to pragmatically deal with uncertainty and associated risk and opportunity thus enhancing the brand value and profitability. Enterprise risk management helps in identifying and selecting among alternative risk responses – risk avoidance, reduction, transfer, and acceptance. It helps to ensure effective reporting and compliance with laws and regulations, and avoid damage to the entity's reputation and associated consequences.

To summarize, Enterprise Risk Management helps an entity get to where it wants to go and avoid pitfalls and surprises along the way. An organization has to understand the challenges, various risk domains and risk areas relevant to the business and the different kinds of ERM activities which need to be carried out to successfully implement the ERM framework.

Risk and Capital	Risk is possible unfavorable impact on net cash flow in future due to uncertainty of happening or non-happening of events. Capital is a cushion or shock absorber required to absorb potential losses in future. Higher the Risks, high will be the requirement of Capital and there will be rise in RAROC (Risk Adjusted Return on Capital).
Types of Risks	Risk is anticipated at Transaction level as well as at Portfolio level. <u>Transaction Level</u> Credit Risk, Market Risk and Operational Risk are transaction level risk and are managed at Unit level. <u>Portfolio Level</u> Liquidity Risk and Interest Rate Risk are also transaction level risks but are managed at Portfolio level.

Risk Measurement

Based on Sensitivity

It is change in Market Value due to 1% change in interest rates. The interest rate gap is sensitivity of the interest rate margin of Banking book. Duration is sensitivity of Investment portfolio or Trading book.

Based on Volatility:

It is common statistical measure of dispersion around the average of any random variable such as earnings, Mark to market values, losses due to default etc.

Statistically Volatility is Standard deviation of Value of Variables

Calculation

Example 1 : We have to find volatility of Given Stock price over a given period. Volatility may be weekly or monthly. Suppose we want to calculate weekly volatility. We will note down Stock price of nos. of weeks.

Let Mean Price = 123.62 and

Variance (sum of Squared deviation from mean) / Number of options = 82.70 (given) (extracted from weekly Stock prices). Volatility is nothing else but Standard Deviation.

Volatility i.e. sd = $\sqrt{\text{Variance}} = \sqrt{82.70} = 9.09$

Volatility over Time Horizon T = Daily Volatility X $\sqrt{T}$

Example 2

Daily Volatility = 1.5%

Monthly Volatility = $1.5 \times \sqrt{30} = 1.5 \times 5.48 = 8.22$

Volatility will be more if Time horizon is more.

Downside Potential

It captures only possible losses ignoring profits and risk calculation is done keeping in view two components:

1. Potential losses
2. Probability of Occurrence.

The measure is more relied upon by banks/FIs/RBI. VaR (Value at Risk is a downside Risk Measure.)

Risk Pricing	Risk Premium is added in the interest rate because of the following: Necessary Capital is to be maintained as per regulatory requirements.																		
	- Capital is raised with cost. For example there are 100 loan accounts with Level 2 Risk. It means there can be average loss of 2% on such type of loan accounts: Risk Premium of 2% will be added in Rate of Interest. Pricing includes the following: - Cost of Deploying funds - Operating Expenses - Loss Probabilities - Capital Charge																		
Risk Mitigation	Credit Risk can be mitigated by accepting Collaterals, 3rd party guarantees, Diversification of Advances and Credit Derivatives. Interest rate Risk can be reduced by Derivatives of Interest Rate Swaps. Forex Risk can be reduced by entering into Forward Contracts and Futures etc. Diversification of Advances <table><tr><td>Business A</td><td>Year1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>Total</td><td>Mean</td><td>sd</td></tr><tr><td>(Cash flow)</td><td>10</td><td>3</td><td>4</td><td>8</td><td>11</td><td>36</td><td>7.20</td><td>3.56</td></tr></table> Risk = sd/mean = 3.56/7.20 = .49 i.e. 49% If we make advances to different types of business with different Risk percentage, the overall risk will be reduced through diversification of Portfolio.	Business A	Year1	2	3	4	5	Total	Mean	sd	(Cash flow)	10	3	4	8	11	36	7.20	3.56
Business A	Year1	2	3	4	5	Total	Mean	sd											
(Cash flow)	10	3	4	8	11	36	7.20	3.56											
Banking Book, Trading Book and Off Balance Sheet Items	Banking Book It includes all advances, deposits and borrowings which arise from Commercial and Retail Banking. These are Held till maturity and Accrual system of accounting is applied. The Risks involved are: Liquidity Risk, Interest Rate Risk, Credit Default Risk, and Operational Risk. Trading Book It includes Assets which are traded in market. - These are not held till maturity. - The positions are liquidated from time to time. - These are Mark- to-market i.e. Difference between market price and book value is taken as profit. - Trading Book comprises of Equities, Foreign Exchange Holdings and Commodities etc. - These also include Derivatives The Risks involved are Market Risks. However Credit Risks and Liquidity Risks can also be there. Off Balance Sheet Exposures The Off Balance sheet exposures are Contingent Liabilities.																		

Guarantees, LC and other obligations. It includes Derivatives also. These may form part of Trading Book or Banking Book after they become Fund based exposure.

Types of Risks

BI. Liquidity Risk

It is inability to obtain funds at reasonable rates for meeting Cash flow obligations. Liquidity Risk is of following types:

Funding Risk: It is risk of unanticipated withdrawals and non-renewal of FDs which are raw material for Fund based facilities.

Time Risk: It is risk of non-receipt of expected inflows from loans in time due to high rate NPAs which will create liquidity crisis.

Call Risk: It is risk of crystallization of contingent liabilities.

BJ. Interest Rate Risk

Risk of loss due to adverse movement of interest rates. Interest rate risk is of following types:

Gap or Mismatch Risk: The risk of Gap between maturities of Assets and Liabilities.

Sometimes, Long term loans are funded by short term deposits. After maturity of deposits, these liabilities are re-priced and Gap of Interest rates between Assets and Liabilities may become narrowed thereby reduction of profits.

Basis Risks: Change of Interest rates on Assets and Liabilities may change indifferent magnitudes thus creating variation in Net Interest Income.

Yield Curve Risk: Yield is Internal Rate of Return on Securities. Higher Interest Rate scenario will reduce Yield and thereby reduction in the value of assets. Adverse movement of yield will certainly affect NII (Net Interest Income).

Embedded Option Risk : Adverse movement of Interest Rate may result into pre-payment of CC/DL and TL. It may also result into pre-mature withdrawal of TDs/RDs. This will also result into reduced NII. This is called Embedded Risk.

Re-investment Risk: It is uncertainty with regard to interest rate at which future cash flows could be re-invested.

BK. Market Risk

Market Risk is Risk of Reduction in Mark-to-Market value of Trading portfolio i.e. equities, commodities and currencies etc. due to adverse market sense. Market Risk comprises of:

Price Risk occurs when assets are sold before maturity. Bond prices and Yield are inversely related.

IRR affects the price of the instruments.

Price of Other commodities like Gold etc., is also affected by the market trends.

Forex Risks are also Market Risks.

Liquidity Risk or Settlement Risk is also present in the market.

BL. Credit Risk or Default Risk

Credit Risk is the risk of default by a borrower to meet commitment as per agreed terms and conditions. There are two types of credit Risks:

Counter party Risk: This includes non-performance by the borrower due to his refusal or inability.

Country Risk : When non-performance of the borrower arises due to constraints or restrictions imposed by a country.

BM. Operational Risk

Operation Risk is the risk of loss due to inadequate or Failed Internal procedures,

	people and the system. The external factors like dacoity, floods, fire etc. may also cause operational loss. It includes Frauds Risk, Communication Risk, Documentation Risk, Regulatory Risk, Compliance Risk and legal risks but excludes strategic /reputation risks. Two of these risks are frequently occurred. Transaction Risk: Risk arising from fraud, failed business processes and inability to maintain Business Continuity. Compliance Risk: Failure to comply with applicable laws, regulations, Code of Conduct may attract penalties and compensation. Other Risks are: 4. <u>Strategic Risk</u>: Adverse Business Decisions, Lack of Responsiveness to business changes and no strategy to achieve business goals. 5. <u>Reputation Risk</u>: Negative public opinions, Decline in Customer base and litigations etc. 6. <u>Systemic Risks</u>: Single bank failure may cause collapse of whole Banking System and result into large scale failure of banks. In 1974, closure of HERSTATT Bank in Germany posed a threat for the entire Banking system												
BASEL-I (back-ground)	Bank for International Settlements (BIS) is situated at Basel (name of the city in Switzerland). Moved by collapse of HERSTATT bank, BCBS – Basel Committee on Banking Supervision consisting of 13 members of G10 met at Basel and released guidelines on Capital Adequacy in July 1988. These guidelines were implemented in India by RBI w.e.f. 1.4.1992 on the recommendations of Narsimham Committee. The basic objective was to strengthen soundness and stability of Banking system in India in order to win confidence of investors, to create healthy environment and meet international standards. BCBS meets 4 times in a year. Presently, there are 27 members. BCBS does not possess any formal supervisory authority.												
1996 Amendment	• Allowed banks to use Internal Risk Rating Model. • Computation of VaR daily using 99th percentile. • Use of back-testing • Allowing banks to issue short term subordinate debts with lock-in clause.												
Calculation of CRAR (Capital to Risk Weighted Asset Ratio)	Basel – I requires measurement of Capital Adequacy in respect of Credit risks and Market Risks only as per the following method: Capital funds (Tier I & Tier II) $\frac{\text{Capital funds (Tier I \& Tier II)}}{\text{Credit Risk Weighted Assets + Market RWAs + Operational RWAs}} \times 100$ Minimum requirement of CRAR is as under: <table border="1"> <tr> <td>As per BASEL-II recommendations</td><td>8%</td></tr> <tr> <td>As per RBI guidelines</td><td>9%</td></tr> <tr> <td>Banks undertaking Insurance business</td><td>10%</td></tr> <tr> <td>New Private Sector Banks</td><td>10%</td></tr> <tr> <td>Local Area banks</td><td>15%</td></tr> <tr> <td>For dividend declaration by the banks (during previous 2 years and current year)</td><td>9%</td></tr> </table>	As per BASEL-II recommendations	8%	As per RBI guidelines	9%	Banks undertaking Insurance business	10%	New Private Sector Banks	10%	Local Area banks	15%	For dividend declaration by the banks (during previous 2 years and current year)	9%
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For dividend declaration by the banks (during previous 2 years and current year)	9%												

Tier I & Tier II

Tier –I Capital

Capital

Tier –I Capital includes

- Equity capital & Statutory reserves,
- Other disclosed free reserves,
- Capital Reserve representing surplus out of sale proceeds of assets,
- Investment fluctuation reserve without ceiling,
- Innovative perpetual Debt instruments (Max. 15% of Tier I capital)
- Perpetual non-cumulative Preference shares (Less Intangible assets & Losses)

(Sum total of Innovative Debt Instruments and Preference shares as stated above should not exceed 40% of Tier I capital. Rest amount will be treated as Tier II capital.)

Tier –II Capital

It includes:

- Redeemable Cumulative Preference shares,
- Redeemable non-cumulative Preference shares
- Revaluation reserves at a discount of 55%,
- General Provisions & Loss reserves up to 1.25 % of RWAs,
- Hybrid debts (say bonds) & Subordinate debts

(Long term Unsecured loans) limited to 50% of Tier –I Capital.

Tier – II capital should not be more than 50% of Total Capital.

Tier – III Capital

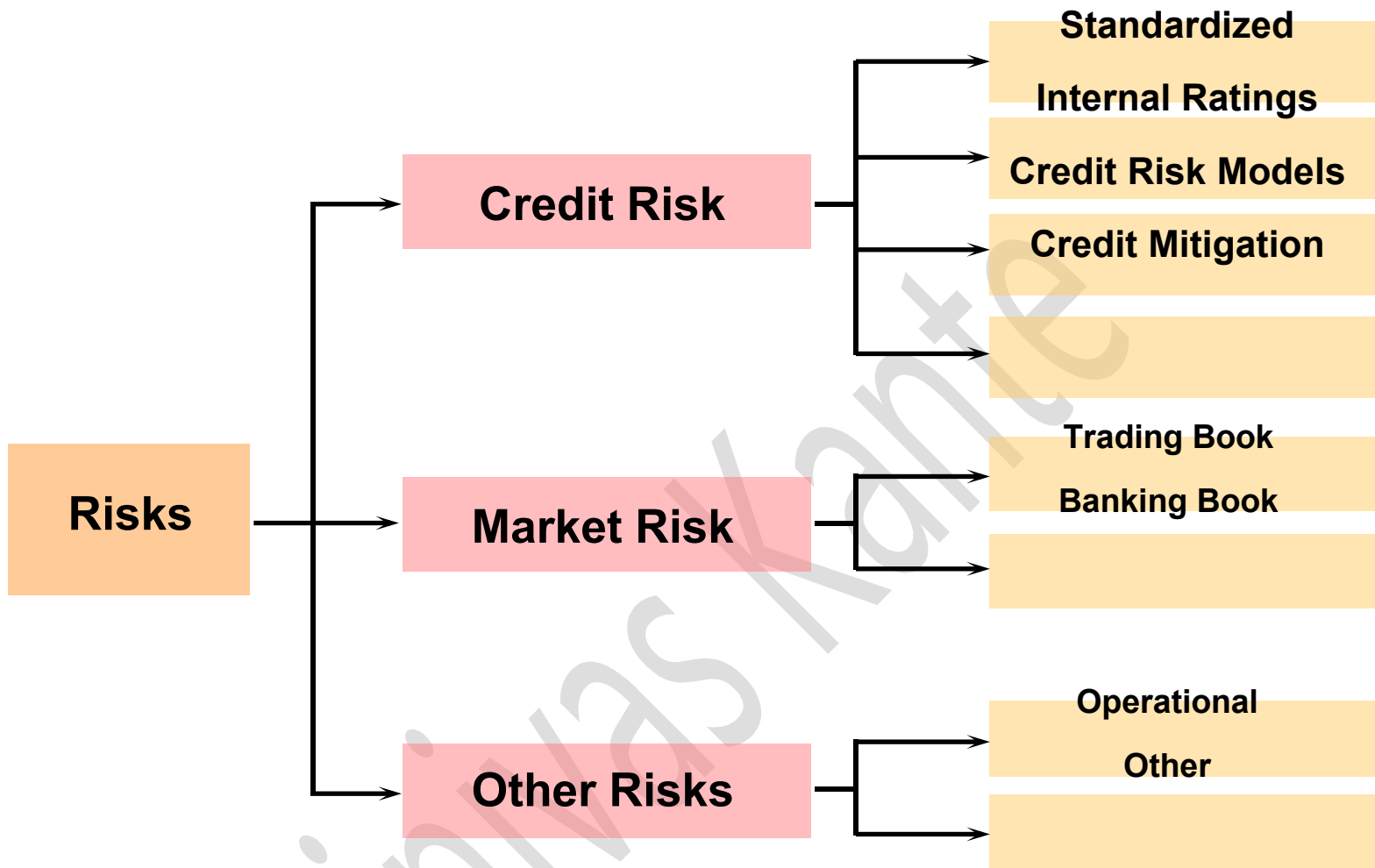
Banks may at the discretion of the National Authority, employ 3rd tier of Capital consisting of short term subordinate debts for the sole purpose of meeting a proportion of capital requirements for market risks. Tier III capital will be limited to 250% of bank's Tier –I Capital (Minimum of 28.5%) that is required to support market risks.

Capital adequacy in RRBs	The committee on financial sector assessment has suggested introducing CRAR in RRBs also in a phased manner.		
Two ways to improve CRAR	1. By raising more capital. Raising Tier I capital will dilute the equity stake of existing investors including Govt. Raising Tier II Capital is definitely a costly affair and it will affect our profits. 2. Reduction of risk weighted assets by implementing Risk mitigation Policy.		
Risk on Assets	Weights	Cash and Bank Balance	0%
	different	Advances against NSC/KVC/FDs/LIC	0%
		Govt. guaranteed Advances	0%
		Central Govt. Guarantees	0%
		State Govt. Guarantees	20%
		Govt. approved securities	2.5%
		Balance with other scheduled banks having CRR at least 9%	20%

	Other banks having CRR from 6% to <9%	50%
	Secured loan to staff	20%
	Other Staff loans -not covered by retirement dues	75%
	Loans upto 1.00 lac against Gold/Silver	50%
	Mortgage based securitization of assets	77.5%
	Consumer Credit / Credit Cards/Shares loan	125%
	Claims secured by NBFC-non-deposit taking (other than AFCs)	100%
	Venture Capital	150%
	Commercial Real Estates	100%
	Education Loans	75%
	Other loans (Agriculture, Exports)	100%
<u>H</u> <u>L</u>	<u>Revised LTV</u>	<u>Revised Risk Weight</u>
up to 20 lac	Allowed up to 90%	50%
20-75 lac	Allowed up to 80%	50%
Above 75 lac	Allowed up to 75%	75%
CRE-RH	NA	75%
CRE	NA	100%
Restructured Housing Loans		Risk weight as prescribed above + 25%
BASEL II	The Committee on Banking Regulations and Supervisory Practices released revised version in the year 2004. These guidelines have been got implemented by RBI in all the banks of India. Parallel run was started from 1.4.2006. In banks having overseas presence and foreign banks (except RRBs and local area banks. Complete switchover has taken place w.e.f. 31.3.2008. In banks with no foreign branch, switchover took place w.e.f. 31.3.2009.	
Distinction between Basel I and Basel II	Basel – I measures credit risks and market risks only whereas Basel II measures 3 types of risks i.e. Credit Risk, Operational Risk and Market Risk. Risk weights are allocated on the basis of rating of the borrower i.e. AAA, AA, A, BBB, BB and B etc. Basel –II also recognized CRM such as Derivatives, Collaterals etc.	
Three Pillars of BASEL-II	Pillar –I	Minimum Capital Requirement
	Pillar – II	Supervisory Review Process
	Pillar –III	Market Discipline
Pillar –I Minimum Capital Requirement	CRAR will be calculated by adopting same method as discussed above under Basel – I with the only difference that Denominator will be arrived at by adding 3 types of risks i.e. Credit Risks, Market Risks and Operational Risks.	

Minimum Capital Requirement

Pillar One



1.3 CATEGORIES OF RISK

Banking risks can be broadly categorized as under:

- a) Credit Risk
- b) Interest Rate Risk
- c) Market Risk
- d) Liquidity Risk
- e) Operational Risk

a) Credit Risk: Credit risk is the oldest risk among the various types of risks in the financial system, especially in banks and financial institutions due to the process of intermediation. Managing credit risk has formed the core of the expertise of these institutions. While the risk is well known, growth in the markets, disintermediation, and introduction of a number of innovative products and practices has changed the way. Credit risk is measured and managed in today's environment. Studies carried out on bank failures in the U.S. show that credit risk alone has accounted for 71% of large bank failures in the period from 1980 to 2004 as well as recent in 2008. Simon Hills of the British Bankers Association defines credit risk "is the risk to a bank's earnings or capital base arising from a borrower's failure to meet the terms of any contractual or other agreement it has with the bank. Credit risk arises from all activities where success depends on counterparty, issuer or borrower performance". Credit risk enters the books of a bank the moment the funds are lent, deployed, invested or committed in any form to counterparty whether the transaction is on or off the balance sheet.

b) Interest Rate Risk: Interest Rate Risk (IRR) arises as a result of change in interest rates on rate earning assets and rate paying liabilities of a bank. The scope of IRR management is to cover the measurement, control and management of IRR in the banking book. With the deregulation of interest rates, the volatility of the interest rates has risen considerably. This has transformed the business of banking forever in our country from a mere volume driven business to a business of carefully planning and choosing assets and liabilities to be entered into to achieve targets of profitability. There are two basic approaches to IRR. They are: a) Earnings Approach, and a) Economic Value Approach.

c) Market Risk: Traditionally, credit risk management was the primary challenge for banks. With progressive deregulation, market risk arising from adverse changes in market variables, such as interest rate, foreign exchange rate, equity price and commodity price has become relatively more important. Even a small change in market variables causes substantial changes in income and economic value of banks.

Market risk takes the form of: a) Liquidity Risk, b) Interest Rate Risk, c) Foreign Exchange Rate (Forex) Risk, d) Commodity Price Risk, and e) Equity Price Risk

d) Liquidity Risk: Liquidity risk is defined as the possibility that the bank would not be able to meet the commitments in the form of cash outflows with the available cash inflows. This risk arises as a result of inadequacy of cash available and near cash item including drawing rights to meet current and potential liabilities. Liquidity risk is categorized into two types; a) Trading Liquidity Risk ; and b) Funding Liquidity Risk.

Trading liquidity risk arises as a result of illiquidity of securities in the trading portfolio of the bank. Funding liquidity risk arises as a result of the cash flow mismatch and is an outcome of difference in balance sheet strategies pursued by different institutions in the same industry. It is perfectly possible for a few banks to have excess funding liquidity while other banks may suffer shortage of liquidity.

e) Operational Risk: Operational risk is emerging as one of the important risks financial institutions worldwide are concerned with. Unlike other categories of risks, such as credit and market risks, the definition and scope of operational risk is not fully clear. A number of diverse professions such as internal control and audit, statistical quality control and quality assurance, facilities management and contingency planning, etc., have approached the subject of operational risk thereby bringing in different perspectives to the concept. While studies carried out on bank failures in the U.S. show that operational risk has accounted for an insignificant proportion of large bank failures so far, it is widely acknowledged that most of the new, unknown risks are under the category of operational risk. According to the Basel Committee, Operational

risk is defined as “the risk of loss resulting from inadequate or failed processes, people and systems or external events. This definition includes legal risk, but excludes strategic and reputation risk” (The New Basel Capital Accord, Consultative Document released in April 2003). There can be different classifications depending on the purpose.

1.4 STEPS IN RISK MANAGEMENT

1) Risk Identification: It is crucial that all the risks have to be identified first. The methodology normally followed is the risk matrix approach which appears as under:

Risk Matrix (Indicative)					
Products	Credit Risk	Interest Rate	Market Risk	Liquidity	Operational
Loans & Advances	YES	Risk YES	NO	Risk YES	Risk YES
Investments	YES	YES	YES	YES	YES
Cash Management & Payment services	NO	NO	NO	NO	YES
Deposits	NO	YES	NO	YES	YES

The matrix above has been prepared for main products. The matrix can be detailed to go down to individual product level risks for better identification of risks present.

2) Risk Measurement: This step is the most crucial of all. Having identified the risks, tools for measurement of each one of the risks need to be put in place to measure each one of the risks in a numerical form. The most challenging task is the selection of an appropriate tool or methodology for quantification of risks. The measures of quantification range from simple to highly complex. What is important is to use an appropriate quantification method or tool suitable for the bank

3) Risk Control and Monitoring: Risk control and monitoring deal with setting up of limits to each one of the risks and monitoring them to ensure that the actual exposure to each one of the risks defined is within the limits prescribed in the risk management policy. Any violation of limits needs to be thoroughly investigated to ascertain the reasons for violation and to avoid such violations in future.

The traditional control based risk management ends with step 3 above. The modern risk management which strives to align risk management with overall corporate objectives and strategies to achieve the objectives takes two more additional steps in the form of capital allocation and risk adjusted performance measurement as explained in the following section.

From Risk Management to Value Management

The subject of finance suggests that the ultimate objective of any commercially oriented enterprise is ‘shareholder wealth maximisation’. This means that all the decisions should be towards maximizing the market value of equity shares traded in the market in the long-term. This approach of targeting and attaining performance has been widely accepted as the measure of performance at corporate level in India.

Accounting measures of performance evaluation such as Net Profit margin, Return on Assets, Return on Equity, Earnings per Share etc. are at best useless as they are only return measures. They do not consider the actual risk taken to earn the return earned. Hence, the accounting measures fail to qualify as true measures of performance. The measures of shareholder wealth maximization, broadly called as SWM measures consider both the return and risk in its framework and are superior to the accounting measures.

The following description explains the relationship between the expected return, actual return and addition to shareholder wealth:

AR > ER: Addition to existing wealth of shareholders

AR < ER: Decrease of existing wealth of shareholders

AR = ER: Maintenance of existing wealth of shareholders

Where

AR = Actual Rate of Return on Shareholders’ Capital ER

= Expected Rate of Return on Shareholders’ Capital

As it can be seen, wealth maximization takes place only when the actual return is higher than the expected return. Actual return for this purpose is not an accounting measure. It is arrived at from the accounting returns after making a number of adjustments to the accounting number. The term 'expected return' denotes the rate of return expected by the shareholders for the level of risk that they are exposed to by investing in the shares of a corporate. There are a number of approaches to estimating the expected return such as Capital Asset Pricing Model (CAPM), Arbitrage Pricing etc. There has been a gradual shift from accounting based measures to SWM measures in many industries. Banking industry too is not an exception to this. The most popular SWM measure in the banking industry is Risk Adjusted Return on Capital (RAROC) and its variants. RAROC has in numerator the return earned and capital allocated in its denominator. Given the importance of SWM measures, the traditional control oriented risk management system (as described above in steps 1 to 3) should pave the way to value based risk management system, which have SWM based performance measures at their core. In order to achieve this, the following two more steps need to be added to the existing steps in risk management:

4) Capital Allocation: Under this step, activities of a bank would be broken down to various major businesses, such as retail banking, corporate banking, government business, proprietary trading etc. as each one of these businesses have become highly focused and require specialization to manage them, unlike in the past when the entire banking business was viewed as a single business requiring little or no specialization at all. Each one can be viewed as a Strategic Business Unit (SBU) with targets of return performance. Each one of the SBUs is allocated a portion of the bank's equity capital. The allocation of capital is based on the contribution of each SBU to various risks of the bank. Higher the contribution of an SBU to the risk of the bank, higher will be the capital allocated

5) Risk-adjusted Performance Measurement: Having allocated capital to each SBU commensurate with its contribution to the overall risk of the bank, a target return on the capital allocated needs to be set. If the SBU is able to earn a return higher than the target, then it is adding value to the bank, if the return earned is lower than the target set, then the value gets reduced. The value is maintained if the actual return is equal to the target set. In this process of capital allocation and setting a target return to be achieved, the true performance of each one of the SBUs can be brought out. The most important data required for the top management of a bank is the disaggregated data at SBU level for initiatives such as restructuring etc. What is arrived at by most of the banks religiously is the bank level accounting performance measures. Even if SWM measures are brought out at bank level, they are not useful at all unless individual performances of SBUs are known, as cross -subsidization of one or more businesses by the others are quite possible without revealing the real performance at SBU level. The SBU level performance can be further drilled down to products, customers, accounts and transactions to enable customer profitability analysis.

The above approach, apart from clarifying the true measure of performance both at bank level and at individual SBU level, enables perfect alignment of objectives between the SBUs on one hand and the bank on the other as similar measures of performance are used throughout the bank.

1.5 REQUIREMENTS FOR AN EFFECTIVE RISK MANAGEMENT SYSTEM

The Basle committee has set out the requirements for an effective risk management system as under:

- Well informed Board of Directors and Oversight of Board,
- Capable Management,
- Adequate Risk Management Policies and Processes,
- High quality MIS for Risk Management, and
- Appropriate Staffing of the Risk Management Function.

The job of the Board is to establish bank's strategic direction and define risk tolerances for various types of risk. The risk management policies and standards need to be approved by the Board. The senior management of the bank is responsible for implementation, integrity and maintenance of the risk management system. ****

Credit Risk

~~Credit Risk is the risk of default by a borrower to meet commitment as per agreed terms and conditions. In terms of extant guidelines contained in BASEL-II, there are three approaches to measure Credit Risk given as under:~~

- 55. Standardized approach
- 56. IRB (Internal Rating Based) Foundation approach
- 57. IRB (Internal Rating Based) Advanced approach

1. Standardized Approach

RBI has directed all banks to adopt Standardized approach in respect of Credit Risks. Under standardized approach, risk rating will be done by credit agencies. Following Agencies are approved for external rating:

(AI) CARE 2. FITCH India (New name – India Rating.) 3. CRISIL 4. ICRA

5. Brickwork

(BI) SMERA (For SME units) and 7. Onicara (also for SME units) Risk weights prescribed by RBI are as under:

Rated Corporate Rating

Risk Percentage

AAA	20%
AA	30%
A	50%
BBB	100%
BB & below	150%
Education Loans	75%
Retail portfolio and SME portfolio	75%
Housing loans secured by mortgage	50 to 75%
Commercial Real Estates	100%
Unrated Exposure	100%

2. IRBA – Internal rating Based Approach

At present all advances of Rs. 5.00 crore and above are being rated from external agencies in our bank.

IRBA

IRBA is based on bank's internal assessment. It has two variants (Foundation and advanced). Bank will do its own assessment of risk rating and requirement of Capital will be calculated on

- (i) Probability of default (PD)- It measures the likelihood that borrower will default.
- (ii) Loss given default (LD) – It measures proportion of exposure that will be lost in case of default
- (iii) Exposure of default (ED) – It measures the facility that is likely to be drawn in the event of default.
- (iv) Effective maturity. (M) – It measures the remaining economic maturity of Exposure.

Bank has developed its own rating module system to rate the undertaking internally. The internal rating is being used for the following purposes:

- 4. Credit decisions

5. Determination of Powers
6. Price fixing

Credit Risk Management Department (CRMD) is responsible for implementing the Risk Identification and Risk mitigate strategies.

Risk Identification

Credit risk has two components:

- 31** Default risk
 - 32** Credit Spread Risk or Downgrade risk
-
- 3.** Systemic risk
 - 4.** Concentration risk – due to non- diversification

Rating Migration

Rating migration is change in the rating of a borrower over a period of time when rated on the same standard or model.

Rating Migration of loan accounts based on internal rating of HSBC between 31.3.11 & 31.3.12 is as under:

Last Rating	Nos. of Accounts	Present Rating						
		AAA	AA+	AA	A+	A	BBB	C
AAA	50	35	8	2	2	1	1	1

Last Rating	Nos. of Accounts	Present Rating						
		AAA	AA+	AA	A+	BBB	C	Default
AA+	50	5	30	7	5	1	1	1

Last Rating	Nos. of Accounts	Present Rating						
		A+	A	BBB	C			Default
A	100	10	80	6	2			2

Last Rating	Nos. of Accounts	Present Rating						
		A+	BBB	C				Default
BBB	200	10	120	30				40

Last Rating	Nos. of Accounts	Present Rating						

		BBB	C				Default
C	30	5	20				5

- 1 %age of AAA rated borrowers remained in the same rating: $35/50 = 70\%$
- 1 At the end of observation period, number of AAA rated borrowers remained at 40
- 1 %age migration of borrowers from A to default category –2%
- 1 %age migration of borrowers from BBB to default category $-40/200 \times 100 = 20\%$.
- 1 Which rating module the regulator will advise to rigorously follow up ---BBB (maximum default)
- 1 Number of Default borrowers at the end of period: $1+2+40+5 = 48$

Altman's Z Model of Scoring

Altman's Z score makes forecast about financial health of the company within 12 months. This model combines following 5 ratios to predict the financial position:

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here $X_1 = \text{Working Capital} / \text{Total Assets Ratio}$

$X_2 = \text{Retained earnings} / \text{Total Assets Ratio}$

$X_3 = \text{Earnings before Interest and Tax} / \text{Total Assets Ratio (ROCE)}$

$X_4 = \text{Market Value of Equity} / \text{Long Term Liabilities Ratio (Debt Equity)}$

$X_5 = \text{Sales} / \text{Total Assets ratio}$

Higher the value of Z, lower will be default risk.

JP Morgan's Model of Scoring

JP Morgan developed a portfolio model —Credit MetricsII for evaluating Credit Risks. The volatility is computing by tracking probability that borrower may migrate from one rating to another

Example -1

XYZ bank has provided the following figures in respect of advances:

Rating	AAA	AA	A	BBB	BB	B	CCC
3 year	.04%	.15%	.30%	1.10%	6%	25%	40%
5 year	.10%	.40%	.60%	2%	10%	35%	45%

Other Information is as under:

Base Rate of the bank = 11% for AAA category

Load factor = 1% for AA, 2% for A, 3% for BBB and 4% for BB accounts.

Load factor for additional maturity over 3 years = 0.5%

Bank has given loan of Rs. 400 lac to A rated Company for 5 years, out of which 2 year period has already lapsed and there has been no default. Present outstanding is 300 lac.

EAD (Exposure at Default) = 100% and

LGD (Loss Given Default) = 50%

Find the expected loss on this account?

Solution:

It will be solved as under:

EAD X Probability of default X LGD =

300,00,000 X .30% X 50% = **Rs. 45000 Ans.**

Example -2

PLR bank has provided the following figures in respect of advances:

Rating	AAA	AA	A	BBB	BB	B	CCC
3 year	.05%	.20%	.40%	1%	5%	20%	50%
5 year	.8%	.30%	.70%	1.8%	8%	40%	60%

Bank has given loan to A category borrower with repayment schedule of 4 years out of which 1 year has lapsed and there has been no default. O/s 400 lac, EAD 100% and LGD is 50%. Find Expected loss on this account.

Solution:

Expected Loss = EAD*PD*LGD

2 400*100%*.4%*50%

=**80000 -----Ans**

How to Calculate RWAs and Capital Charge in respect of Credit risk

1st Step : Calculate Fund Based and Non Fund Based Adjusted Exposure

2nd Step : Deduct Allowable Reduction after applying haircuts

3rd Step : Apply Risk Weights as per Ratings

4th Step : Calculate Risk Weighted Assets

5th Step : Calculate Capital Charge

1st Step: Calculate Fund Based and Non Fund Based Exposure:

Example:

Fund Based Exposure (Amount in '000)			
Nature of loan	Limit	Outstanding	Undrawn portion
CC	200	100	100

Bills Purchased	60	30	30
Packing Credit	40	30	10
Term Loan	200	40	160
Total		200	

Out of Undrawn portion of TL, 60 is to drawn in a year and balance beyond 1 year.

Adjusted Exposure:

100% Outstanding(Unrated)	= 200
20% of Undrawn CC, BP & PC (140*20/100)	= 28
20% of Undrawn TL (1 yr) (60*20/100)	= 12
50% of Undrawn TL (>1Yr) (100*50/100)	= 50
Total Adjusted Exposure FB limits	290

Non Fund Based Exposure (Amount in _000)

Type of NBF	Exposure	CCF	Adjusted Exposure
Financial Guarantees	90	100%	90
Acceptances	80	100%	80
Standby LC	50	100%	50
Clean LC	50	100%	50
Unconditional Take out finance	100	100%	100
Performance Guarantee	80	50%	40
Bid Bonds	20	50%	10
Conditional Take out finance	50	50%	25
Documentary LC	40	20%	8
Total Adjusted Exposure FB limits		=	453

Total Adjusted Exposure = 290000+453000 = 7,43,000

2nd Step: Allowable Reduction after adjusting CRMs (**Credit Risk Mitigates**)

Reduction from adjusted exposure is made on account of following eligible financial collaterals:

Eligible Financial Collaterals.

- 4) Deposits being maintained by a borrower under lien.
- 5) Cash (including CDs or FDs), Gold, Govt Securities, KVP, NSC, LIC Policy, Debt Securities, Mutual Funds'
- 6) **Equity and convertible bonds are no more eligible CRMs.**

Formula for Deposits under lien: $C \cdot (1 - H_{fx}) \cdot M_f$

(C=Amount of Deposit; $H_{fx} = 0$ (if same currency), $H_{fx} = 0.08$ (if diff currency) M_f = Maturity factor).

Formula for Approved Financial collaterals: $C \cdot (1 - H_c - H_{fx}) \cdot M_f - E \cdot H_e$

Haircuts(H_e –Haircut for Exposure & H_c –Haircut for Collateral)

Haircut refers to the adjustments made to the amount of exposures to the counter party and also the value of collateral received to take account of possible future fluctuations in the value of either, on account of market movements. Standardized Supervisory Haircuts for collateral /Exposure have been prescribed by RBI and given in the said circular.

Capital Requirement for collateralized transaction

$$E^* = \max \{ 0, [E \times (1+H_e) - C \times (1-H_c - H_{fx})] \}$$

E^* - exposure value after risk mitigation

E – Current value of exposure for which coll. Qualifies

C = current value of collateral received

H_{fx} = Haircut appropriate for currency mismatch between collateral and exposure.

E^* will be multiplied by the risk weight of the counter party to obtain RWA amount.

Illustrations clarifying CRM

In the case of exposure of Rs 100 (denominated in USD) having a maturity of 6 years to a (b) rated (rating by external credit rating agency) corporate borrower secured by collateral of Rs 100 by way of A+ rated corporate bond with a maturity of 6 years, the exposure amount after the applicable haircut @ 12%, will be Rs 112 and the volatility adjusted collateral value would be Rs 80, (after applying haircut @ 12% as per issue rating and 8% for currency mismatch) for the purpose of arriving at the value of risk weighted asset & calculating charge on capital.

There is an exposure of Rs 100 to an unrated Corporate (having no rating from any external agency) having a maturity of 3 years, which is secured by Govt. Securities outside the main index having a market value of Rs 100. The haircut for exposure as well as collateral will be 25%. There is no currency mismatch in this case. The volatility adjusted exposure and collateral after application of haircuts works out to Rs 125 and Rs 75 respectively. Therefore, the net exposure for calculating RWA works out to Rs 50.

There is a demand loan of Rs 100 secured by bank's own deposit of Rs 125. The haircuts for exposure and collateral would be zero. There is no maturity mismatch. Adjusted exposure and collateral after application of haircuts would be Rs 100 and Rs 125 respectively. Net exposure for the purpose of RWA would be zero

Other Examples

No. 1:

- (a) Exposure----- 100 lac with tenure 3 years
- (b) Eligible Collateral in A+ Debt Security -----30 lac with Residual maturity 2 years
- (c) Hair cut on Collateral is 6%
- (d) Table of Maturity factor shows hair cut as 0.25 for remaining maturity of 2 years/3 years

Calculate Value of Exposure after Risk Mitigation?

Solution:

Value of Exposure after Risk Mitigation =

Current Value of Exposure – Value of adjusted collateral for Hair cut and maturity mismatch

Value of Adjusted Collateral for Hair cut = $C \times (1-H_c) = 30(1-6\%) = 30 \times 94\% = 28.20$

Value of Adjusted Collateral for Hair cut and Maturity Mismatch = $C^* \frac{(t-0.25)}{(T-0.25)}$

$$= 28.20 \times (2-.25)/(3-.25) = 17.95$$

(Where t = Remaining maturity of Collateral T= Tenure of loan)

Value of Exposure after Risk Mitigation = $100 - 17.95 = 82.05$ lac.

No. 2

An exposure of Rs. 100 lac is backed by lien on FD of 30 lac. There is no mismatch of maturity.

Solution:

Hair Cut for CRM i.e. FDR is zero.

Hence Value of Exposure after Risk Mitigation is $100 \text{ lac} - 30 \text{ lac} = 70 \text{ lac}$.

Computation of CRAR

In a bank ; Tier 1 Capital = 1000 crore

Tier II Capital = 1200 crore

RWAs for Credit Risk = 10000 crore

Capital Charge for Market Risk = 500 crore

Capital Charge for Op Risk = 300 crore

Find Tier I CRAR and Total CRAR.

Solution:

RWAs for Credit Risk = 10000 crore

RWAs for Market Risk = $500 / .09 = 5556$ crore

RWAs for Op Risk = $300 / .09 = 3333$ crore

Total RWS = $10000 + 5556 + 3333 = 18889$ crore

Tier I Capital = 1000 crore

Tier II Capital can be up to maximum 1000

crore Total Capital = 2000 crore

Tier I CRAR = Eligible Tier I Capital / Total RWAs = $1000 / 18889 = 5.29\%$

Total CRAR = Eligible Total Capital / Total RWAs = $2000 / 18889 = 10.59\%$

We may conclude that Tier I Capital is less than the required level.

Credit Risk Mitigates

It is a process through which credit Risk is reduced or transferred to counter party.

CRM techniques are adopted at Transaction level as well as at Portfolio level as under:

At Transaction level:

- 1) Obtaining Cash Collaterals
- 2) Obtaining guarantees
1. Securitization
2. Collateral Loan Obligations and Credit Linked Notes
3. Credit Derivatives

What is LRM?

It is Loan Review Mechanism used to evaluate quality of loans and bring improvement in credit administration.

1. Securitization

It is process/transactions in which financial securities are issued against cash flow generated from pool of assets. Cash flow arising from receipt of Interest and Principal of loans are used to pay interest and repayment of securities. **SPV (Special Purpose Vehicle)** is created for the said purpose. Originating bank transfers assets to SPV and it issues financial securities which are called **PTC (Pass Through Certificates)**.

4. Collateral Loan Obligations (CLO) / Collateralized Debt Obligation (CDO)

It is also a form of securitization. Through CLO, bank removes assets from Balance Sheet and issues tradable securities. They become free from Regulatory Capital.

Collateralized loan obligations (CLOs) are a form of [securitization](#) where payments from multiple middle sized and large [business loans](#) are pooled together and passed on to different classes of owners in various classes.. A CLO is a type of [collateralized debt obligation](#).

It allows banks more often to immediately sell loans to external investor/lenders so as to facilitate the lending of money to business clients and earn fees with little to no risk to themselves.

3. Credit Derivatives

It is managing risks without affecting portfolio size. Risk is transferred without transfer of assets from the Balance Sheet through OTC bilateral contract. These are Off Balance Sheet Financial Instruments. Credit Insurance and LC are similar to Credit derivatives. Under a Credit Derivative **PB (Protection buyer)** enters into an agreement with **PS (Protection seller)** for transfer of risks at notional value by making of Premium payments. In case of delinquencies, default, Foreclosure, prepayments, PS compensates PB for the losses. Settlement can be Physical or Cash. Under physical settlement, asset is transferred whereas under Cash settlement, only loss is compensated.

Credit Derivatives are generally OTC instruments. ISDA (International Swaps and Derivatives Association) has come out with documentation evidencing such transaction. Credit Derivatives are:

1. Credit Default Swaps
2. Total Return Swaps
3. Credit Link Notes

a) Credit Default Swaps

It is a transaction in which PB pays a premium to PS in return of protection against credit event experienced on reference obligation. i.e. insolvency, default etc.

b) Total Return Swaps

In Total Return Swap, PB swaps with PS, total return on an asset by making payment of premium. It covers both credit risk and market risk.

c) Credit Linked Notes

A **credit linked note (CLN)** is a form of funded [credit derivative](#). It is structured as a [security](#) with an embedded [credit default swap](#) allowing the issuer to transfer a specific credit risk to credit investors. The issuer is not obligated to repay the debt if a specified event occurs. This eliminates a third-party insurance provider.

1. It is issued by a special purpose company or [trust](#), designed to offer investors [par value](#) at maturity unless the referenced entity [defaults](#). In the case of default, the investors receive a recovery rate.

2. The trust will also have entered into a default swap with a dealer. In case of default, the trust will pay the dealer par minus the recovery rate, in exchange for an annual fee which is passed on to the investors in the form of a higher yield on their note.
3. The purpose of the arrangement is to pass the risk of specific default onto investors willing to bear that risk in return for the higher yield it makes available. The CLNs themselves are typically backed by very highly-rated collateral, such as U.S.Treasury securities.

CLO differs from CLN (Credit link notes) in the following manner.

3. CLO provide credit Exposure to diverse pool of credit where CLN relates to single credit.
4. CLO result in transfer of ownership whereas CLN do not provide such transfer.
5. CLO may enjoy higher credit rating than that of originating bank.

SPV – Special Purpose Vehicle

It is fund created by Securitization Companies to acquire/purchase non-performing assets. The Fund manages the assets for the purpose of realization or holds them as investments till maturity. SPV issues consideration of transfer price to the Originator bank in the form of cash, debentures, bonds as mutually agreed.

SPV is created by SCRC (Securitization and Reconstruction Companies). These companies raise resources from QIBs (Qualified Institutional Buyers). Security Receipt is issued to QIBs by SCRC in lieu of amount contributed by them.

CHAPTER 2 ASSET LIABILITY MANAGEMENT

Structure

2.1 Introduction

2.2 Nature of ALM Risks and its organisation

2.3 Balance Sheet Structure: Implications for ALM

2.4 Liquidity Risk- Measurement & Management

2.1 INTRODUCTION

As indicated in the previous chapter on risk management, risks can have an impact on either the accounting earnings which are periodically reported and or Value of equity which is relatively a new dimension. The Asset Liability Management (ALM) function involves planning, directing, and controlling the flow, level, mix and rates on the bank assets and liabilities. The ALM responsibilities are fully aligned to the overall objectives at the bank level. There was no need for an elaborate ALM function till the interest rates were guided by the regulator and the business of banking was purely volume driven. Deregulation of interest rates, interest rate volatility and increasing competition in the financial market place has made the ALM function a significantly important function in today's environment.

Categorisation of Bank Balance Sheet

At this juncture, it is important to understand how the assets & liabilities in the balance sheet of a bank are classified into Banking Book and Trading Book. The following are the points distinguishing one from the other:

Held-till-maturity vs. Short-term holding period

The intention of the bank in case of banking books is to hold the assets and liabilities till maturity whereas in case of trading book the holding period is extremely short and may vary between a few hours (or minutes in some cases) to a maximum of 90 days (as per the RBI's stipulation of holding period).

Accrual Income vs. Price Change

The assets & liabilities in the banking book accrue income and expenses respectively over time. The target variable in case of the banking book is the net accrual income. In case of the trading book, price appreciation (or depreciation) due to fluctuation in market price is the main target variable as the holding period is very short.

Historical cost vs. Mark-to-market Value

The assets & liabilities in the banking book are valued at historical cost. Change in the values of assets and liabilities are not recognized in the P&L account. The norm in case of trading book is periodic valuation (mark-to-market) and reflection of the market value of the assets and liabilities in the balance sheet. Any appreciation or depreciation with reference to the value prior to valuation would pass through the P&L account as profit or loss.

Examples:

Banking Book includes; Deposits, Borrowings, Loans and Advances

Trading Book comprises of securities such as bonds and equity, various currency positions and commodity positions specifically identified by the bank as part of the trading book. Derivative contracts which are used as a hedge for the trading book or forming part of proprietary trading position would also be part of trading book

Scope of ALM

ALM is a part of overall risk management of a bank which addresses the following risks:

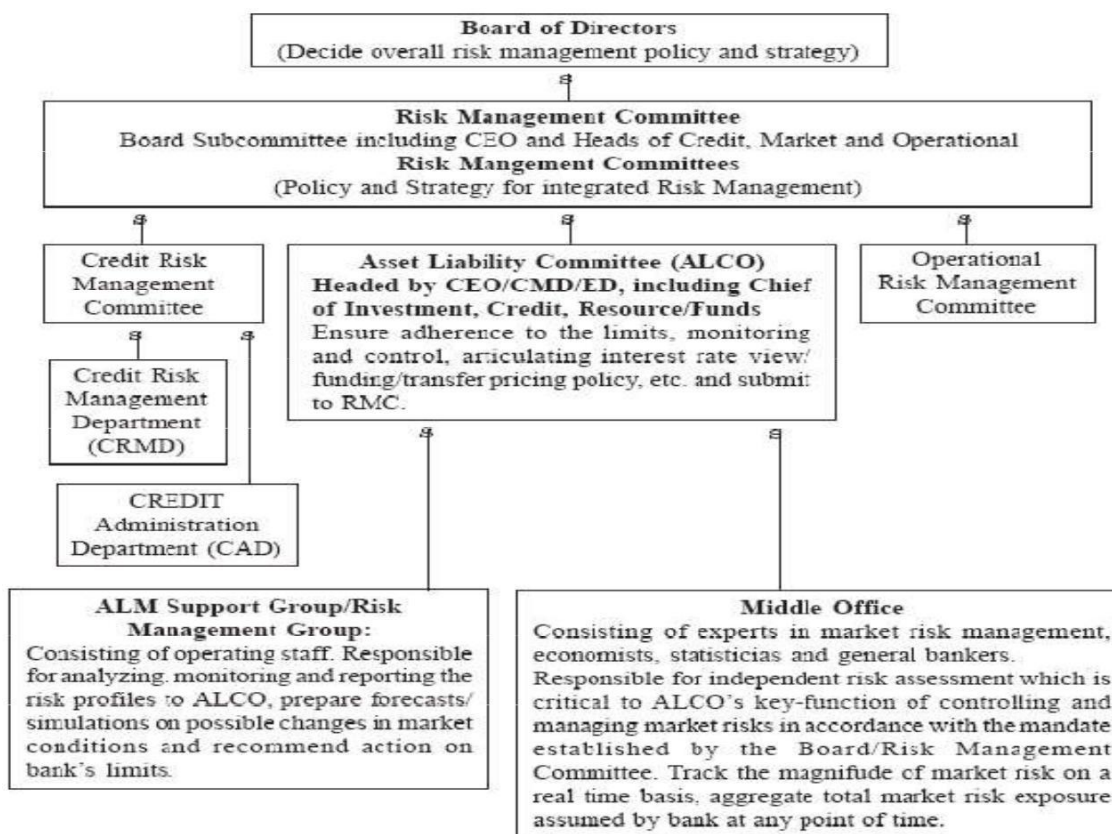
- Liquidity Risk: Risk arising out of unexpected fluctuation in cash flows from the assets and liabilities – both in banking and trading books.
- Interest Rate Risk: Risk arising out of fluctuations in the interest rates on assets and liabilities in the banking book.
- Market Risk: Risk of price fluctuations due to market factors causing changes in the value of the trading portfolio.

2.2 NATURE OF ALM RISKS AND ITS ORGANISATION

The nature of risks addressed by ALM is the ones which need to be and are centralized at the bank treasury level for efficient management. In other words, interest rate and liquidity risks may be created by branches of a bank in the process of their intermediation between depositors and borrowers, but these risks need to be pooled at the highest level and managed. This is because these risks arising at a branch is not relevant as they need to be offset by exactly opposite positions in some other branch of the same bank. Hence, what is significant to be managed is the net position arising at the bank treasury level rather than individual positions arising at a number of branches. In other words, branch heads do not have anything to with the management of interest rate and liquidity risks at their own level. Their job at present is restricted to providing accurate and timely data for the assessment of the risks which are centralized. By its very nature, as the trading portfolio is managed at the treasury level, no further centralization is warranted.

Like in many countries, the RBI has entrusted the job of ALM in each bank to the Asset -Liability Committee (ALCO) to be set up in each bank. ALCO, consisting of senior executives of a bank, is the apex decision making unit responsible for managing all the three risks that come under the purview of ALM in an integrated manner. As per RBI requirements, the ALCO is required to meet periodically to assess the bank's position in terms of the risks and provide strategic guidance to achieve the overall targets and objectives set. With the above introduction, the concentration of the following section is on the three risks that the ALCO is supposed to address. The typical organizational structure for Risk Management with specific reference to ALM defined by the RBI is as under:

Figure 15.1: Typical Organisational Structure for Risk Management



Source: Guidance Note on Market Risk Management, Reserve Bank of India, October 2002, Page. 8

2.3 BALANCE SHEET STRUCTURE: IMPLICATIONS FOR ALM

As the entire subject of ALM is about balance sheet and its management, it is useful at this stage to understand the typical structure of an Indian commercial bank in terms of both rate earning assets and rate paying liability products. Other assets and liabilities, which are not very significant, are

excluded.

Balance Sheet Structure: Assets

a. Advances

- A significant portion linked to Prime Lending Rate (PLR) in the form of CC/OD, Demand loan & term loans
- PLR linked loans – Absence of reset dates (future dates on which the rates would be reset is unknown)
- Pattern of repayment based on behavioural studies
- Unavailed portion of CC/OD – Uncertainty of utilisation
- Borrower Option to prepay in case of Fixed Rate Term loans

b. Investments

- Major portion Fixed Rate
- Medium to long duration portfolio
- Illiquidity of a significant portion of the portfolio – no or very low flexibility for reshuffling

(altering the structure)

Balance Sheet Structure: Liabilities

a. Deposits – Savings and Current

- Non-maturity – No date of maturity
- High volatility of balances in case of current account
- Customer Option to freely introduce or withdraw money at any time
- Administered interest rates unrelated to market interest rates

b. Term Deposits: Cumulative, Non-Cumulative and Recurring

- Overwhelming majority in Fixed Rates
- Customer Option (put option valuable when interest rates go above the contractual fixed rate)
- The reinvestment risk in case of cumulative deposits
- Uncertain installment payments in case of recurring deposits
- Floating Rate (a recent development)

c. Borrowings

- Fixed or Floating Rate
- Various tenor
- Usually no options, hence no uncertainty about the term

It can be understood from the above structure that a significant portion of liabilities in the form of term deposits have a fixed-rate meaning that the rates would remain unchanged till the maturity or till the deposit remains with the bank. 'Borrowings' which is a smaller portfolio in the liabilities are at market related rates.

A significant portion of loans and advances portfolio is linked to PLR, which is a floating rate. The meaning of floating rate here is an asset or liability rate linked to a reference or index such as the Treasury bill rate, Government of India security yield, bank rate, money market rate, etc., are the rates reset at predetermined frequencies with reference to the reference rate. The problem that the PLR of banks suffer from is the uncertainty caused by the absence of any predetermined reset dates for the loans and advances linked to PLR. This implies that whenever PLR changes, the rate on the loans & advances would change instantly without any time lag. Contrast this with a hypothetical asset linked to a reference rate, say treasury bill rate with a 3-month reset, we know very clearly that the rate once set for the asset can change only after 3 months and not before that. An overwhelming majority of the investment portfolio is in the form of fixed-rate Government and other securities.

Having discussed the balance sheet structure which determines the exposure of a bank to ALM risks, the risks can be taken up for a detailed discussion.

CHAPTER 3

LIQUIDITY RISK MANAGEMENT

Introduction:

Liquidity Planning is an important facet of risk management framework in banks. Liquidity is the ability to efficiently accommodate deposit and other liability decreases, as well as, fund loan portfolio growth and the possible funding of off-balance sheet claims. A bank has adequate liquidity when sufficient funds can be raised, either by increasing liabilities or converting assets, promptly and at a reasonable cost. It encompasses the potential sale of liquid assets and borrowings from money, capital and forex markets. Thus, liquidity should be considered as a defence mechanism from losses on fire sale of assets.

The liquidity risk of banks arises from funding of long-term assets by short-term liabilities, thereby making the liabilities subject to rollover or refinancing risk.

Liquidity is a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at reasonable cost and without incurring unacceptable losses. Liquidity risk is the inability of a bank to meet such obligations as they become due, without adversely affecting the bank's financial condition. Effective liquidity risk management helps ensure a bank's ability to meet its obligations as they fall due and reduces the probability of an adverse situation developing. This assumes significance on account of the fact that liquidity crisis, even at a single institution, can have systemic implications..

To put it in plain vanilla terms, liquidity is having enough cash to meet the current needs and liquidity risk is the current and prospective risk to a bank's earnings and equity arising out its inability to meet the obligations when they become due. Thus, effective liquidity risk management is the management of liquidity by raising sufficient funds either by increasing liabilities or by converting assets promptly and at a reasonable cost. It has now become imperative for banks to have an adequate liquidity risk management process commensurate with its size, complexity and liquidity risk profile as one size does not fit all.

Liquidity problems arise on account of the mismatches in the timing of inflows and outflows. Per se, the liabilities being the sources of funds are inflows while the assets being application of funds are outflows. However, in the context of Liquidity Risk Management, we need to look at this issue from the point of maturing liabilities and maturing assets; a maturing liability is an outflow while a maturing asset is an inflow. The need for Liquidity Risk Management arises on account of the mismatches in maturing assets and maturing liabilities.

Mismatching, as we all know, is an inherent feature of banking. It's said and said very well too, that the crux of banking is managing mismatches. If banks were to have perfectly matched portfolios they would neither make money nor need treasury managers to run their business. Anyone can manage banks.

1. Liquidity Risk Management - Need & Importance:

A bank is said to be solvent if its net worth is not negative. To put it differently, a bank is solvent if the total realizable value of its assets is more than its outside liabilities (i.e. other than its equity/owned funds). As such, at any point in time, a bank could be (i) both solvent and liquid or (ii) liquid but not solvent or (iii) solvent but not liquid or (iv) neither solvent nor liquid. The need to stay both solvent and liquid therefore, makes effective liquidity management crucial for increasing the profitability as also the long-term viability/solvency of a bank. This also highlights the importance of the need of having the best Liquid Risk Management practices in place in Banks.

We can very well imagine what could happen to a bank if a depositor wanting to withdraw his deposit is told to do so later or the next day in view of non-availability of cash. The consequences could be severe and may even sound the death knell of the bank. Any bank, however, strong it may be, would not be able to survive if all the depositors queue up demanding their money back.

A Liquidity problem in a bank could be the first symptom of financial trouble brewing and shall need to be assessed and addressed on an enterprise-wide basis quickly and effectively, as such problems can not only cause significant disruptions on either side of a bank's balance sheet but can also transcend individual banks to cause systemic disruptions. Banks play a significant role as liquidity providers in the financial system and to play it effectively they need to have sound liquidity risk management systems in place. With greater opening up of the world economies and easier cross border flows of funds, the repercussions of liquidity disturbances in one financial system could cause ripples in others. The recent

sub-prime crisis in the US and its impact on others, stands ample testimony to this reality. Liquidity Risk Management, thus, is of critical importance not only to bankers but to the regulators as well. Some Key Considerations in LRM include

- (i) Availability of liquid assets,
- (ii) Extent of volatility of the deposits,
- (iii) Degree of reliance on volatile sources of funding,
- (iv) Level of diversification of funding sources,
- (v) Historical trend of stability of deposits,
- (vi) Quality of maturing assets,
- (vii) Market reputation,
- (viii) Availability of undrawn standbys,
- (ix) Impact of off balance sheet exposures on the balance sheet, and
- (x) Contingency plans.

Some of the issues that need to be kept in view while managing liquidity include

- (i) The extent of operational liquidity, reserve liquidity and contingency liquidity that are required
- (ii) The impact of changes in the market or economic condition on the liquidity needs
- (iii) The availability, accessibility and cost of liquidity
- (iv) The existence of early warning systems to facilitate prompt action prior to surfacing of the problem and
- (v) The efficacy of the processes in place to ensure successful execution of the solutions in times of need.

2. Potential Liquidity Risk Drivers:

The internal and external factors in banks that may potentially lead to liquidity risk problems in Banks are as under:

Internal Banking Factors	External Banking Factors
High off-balance sheet exposures.	Very sensitive financial markets depositors.
The banks rely heavily on the short-term corporate deposits.	External and internal economic shocks.
A gap in the maturity dates of assets and liabilities.	Low/slow economic performances.
The banks' rapid asset expansions exceed the available funds on the liability side	Decreasing depositors' trust on the banking sector.
Concentration of deposits in the short term Tenor	Non-economic factors
Less allocation in the liquid government instruments.	Sudden and massive liquidity withdrawals from depositors.
Fewer placements of funds in long-term deposits.	Unplanned termination of government deposits.

3. Types of Liquidity Risk:

Banks face the following types of liquidity risk:

- (i) **Funding Liquidity Risk**– the risk that a bank will not be able to meet efficiently the expected and unexpected current and future cash flows and collateral needs without affecting either its daily operations or its financial condition.
- (ii) **Market Liquidity Risk** – the risk that a bank cannot easily offset or eliminate a position at the prevailing market price because of inadequate market depth or market disruption.

4. Principles for Sound Liquidity Risk Management:

After the global financial crisis, in recognition of the need for banks to improve their liquidity risk management, the Basel Committee on Banking Supervision (BCBS) published "*Principles for Sound Liquidity Risk Management and Supervision*" in September 2008. The broad principles for sound liquidity risk management by banks as envisaged by BCBS are as under:

Fundamental principle for the management and supervision of liquidity risk	
Principle 1	A bank is responsible for the sound management of liquidity risk. A bank should establish a robust liquidity risk management framework that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources. Supervisors should assess the adequacy of both a bank's liquidity risk management framework and its liquidity position and should take prompt action if a bank is deficient in either area in order to protect depositors and to limit potential damage to the financial system.
Governance of liquidity risk management	
Principle 2	A bank should clearly articulate a liquidity risk tolerance that is appropriate for its business strategy and its role in the financial system.
Principle 3	Senior management should develop a strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the bank maintains sufficient liquidity. Senior management should continuously review information on the bank's liquidity developments and report to the board of directors on a regular basis. A bank's board of directors should review and approve the strategy, policies and practices related to the management of liquidity at least annually and ensure that senior management manages liquidity risk effectively.
Principle 4	A bank should incorporate liquidity costs, benefits and risks in the internal pricing, performance measurement and new product approval process for all significant business activities (both on- and off-balance sheet), thereby aligning the risk-taking incentives of individual business lines with the liquidity risk exposures their activities create for the bank as a whole.
Measurement and management of liquidity risk	
Principle 5	A bank should have a sound process for identifying, measuring, monitoring and controlling liquidity risk. This process should include a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off-balance sheet items over an appropriate set of time horizons.
Principle 6	A bank should actively monitor and control liquidity risk exposures and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to the transferability of liquidity.
Principle 7	A bank should establish a funding strategy that provides effective diversification in the sources and tenor of funding. It should maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers to promote effective diversification of funding sources. A bank should regularly gauge its capacity to raise funds quickly from each source. It should identify the main factors that affect its ability to raise funds and monitor those factors closely to ensure that estimates of fund raising capacity remain valid.
Principle 8	A bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems.
Principle 9	A bank should actively manage its collateral positions, differentiating between encumbered and unencumbered assets. A bank should monitor the legal entity and physical location where collateral is held and how it may be mobilised in a timely manner.
Principle 10	A bank should conduct stress tests on a regular basis for a variety of short-term and protracted institution-specific and market-wide stress scenarios (individually and in combination) to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with a bank's established liquidity risk tolerance. A bank should use stress test outcomes to adjust its liquidity risk management strategies, policies, and positions and to develop effective contingency plans.
Principle 11	A bank should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust.
Principle 12	A bank should maintain a cushion of unencumbered, high quality liquid assets to be

	held as insurance against a range of liquidity stress scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding.
Public disclosure	
Principle 13	A bank should publicly disclose information on a regular basis that enables market participants to make an informed judgment about the soundness of its liquidity risk management framework and liquidity position.

Thus, a sound liquidity risk management system would envisage that:

- i) A bank should establish a robust liquidity risk management framework.
- ii) The Board of Directors (BoD) of a bank should be responsible for sound management of liquidity risk and should clearly articulate a liquidity risk tolerance appropriate for its business strategy and its role in the financial system.
- iii) The BoD should develop strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and ensure that the bank maintains sufficient liquidity. The BoD should review the strategy, policies and practices at least annually.
- iv) Top management/ALCO should continuously review information on bank's liquidity developments and report to the BoD on a regular basis.
- v) A bank should have a sound process for identifying, measuring, monitoring and controlling liquidity risk, including a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off-balance sheet items over an appropriate time horizon.
- vi) A bank's liquidity management process should be sufficient to meet its funding needs and cover both expected and unexpected deviations from normal operations.
- vii) A bank should incorporate liquidity costs, benefits and risks in internal pricing, performance measurement and new product approval process for all significant business activities.
- viii) A bank should actively monitor and manage liquidity risk exposure and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to transferability of liquidity.
- ix) A bank should establish a funding strategy that provides effective diversification in the source and tenor of funding, and maintain ongoing presence in its chosen funding markets and counterparties, and address inhibiting factors in this regard.
- x) Senior management should ensure that market access is being actively managed, monitored, and tested by the appropriate staff.
- xi) A bank should identify alternate sources of funding that strengthen its capacity to withstand a variety of severe bank specific and market-wide liquidity shocks.
- xii) A bank should actively manage its intra-day liquidity positions and risks.
- xiii) A bank should actively manage its collateral positions.
- xiv) A bank should conduct stress tests on a regular basis for short-term and protracted institution-specific and market-wide stress scenarios and use stress test outcomes to adjust its liquidity risk management strategies, policies and position and develop effective contingency plans.
- xv) Senior management of banks should monitor for potential liquidity stress events by using early warning indicators and event triggers. Early warning signals may include, but are not limited to, negative publicity concerning an asset class owned by the bank, increased potential for deterioration in the bank's financial condition, widening debt or credit default swap spreads, and increased concerns over the funding of off-balance sheet items.
- xvi) To mitigate the potential for reputation contagion, a bank should have a system of effective communication with counterparties, credit rating agencies, and other stakeholders when liquidity problems arise.
- xvii) A bank should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should delineate policies to manage a range of stress environments, establish clear lines of responsibility, and articulate clear implementation and escalation procedures.
- xviii) A bank should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress scenarios.
- xix) A bank should publicly disclose its liquidity information on a regular basis that enables market participants to make an informed judgment about the soundness of its liquidity risk management framework and liquidity position.

5. Governance of Liquidity Risk Management:

The Reserve Bank had issued guidelines on Asset Liability Management (ALM) system, covering inter alia liquidity risk management system, in February 1999 and October 2007. Successful implementation of any risk management process has to emanate from the top management in the bank with the demonstration of its strong commitment to integrate basic operations and strategic decision making with risk management. Ideally, the organisational set up for liquidity risk management should be as under:

A. The Board of Directors (BoD):

The BoD should have the overall responsibility for management of liquidity risk. The Board should decide the strategy, policies and procedures of the bank to manage liquidity risk in accordance with the liquidity risk tolerance/limits as detailed in paragraph 14. The risk tolerance should be clearly understood at all levels of management. The Board should also ensure that it understands the nature of the liquidity risk of the bank including liquidity risk profile of all branches, subsidiaries and associates (both domestic and overseas), periodically reviews information necessary to maintain this understanding, establishes executive-level lines of authority and responsibility for managing the bank's liquidity risk, enforces management's duties to identify, measure, monitor, and manage liquidity risk and formulates/reviews the contingent funding plan.

B. The Risk Management Committee:

The Risk Management Committee, which reports to the Board, consisting of Chief Executive Officer (CEO)/Chairman and Managing Director (CMD) and heads of credit, market and operational risk management committee should be responsible for evaluating the overall risks faced by the bank including liquidity risk. The potential interaction of liquidity risk with other risks should also be included in the risks addressed by the risk management committee.

C. The Asset-Liability Management Committee (ALCO):

The Asset-Liability Management Committee (ALCO) consisting of the bank's top management should be responsible for ensuring adherence to the risk tolerance/limits set by the Board as well as implementing the liquidity risk management strategy of the bank in line with bank's decided risk management objectives and risk tolerance.

D. The Asset Liability Management (ALM) Support Group:

The ALM Support Group consisting of operating staff should be responsible for analysing, monitoring and reporting the liquidity risk profile to the ALCO. The group should also prepare forecasts (simulations) showing the effect of various possible changes in market conditions on the bank's liquidity position and recommend action needed to be taken to maintain the liquidity position/adhere to bank's internal limits.

6. Liquidity Risk Management Policy, Strategies and Practices:

The first step towards liquidity management is to put in place an effective liquidity risk management policy, which inter alia, should spell out the liquidity risk tolerance, funding strategies, prudential limits, system for measuring, assessing and reporting / reviewing liquidity, framework for stress testing, liquidity planning under alternative scenarios/formal contingent funding plan, nature and frequency of management reporting, periodical review of assumptions used in liquidity projection, etc. The policy should also address liquidity separately for individual currencies, legal entities like subsidiaries, joint ventures and associates, and business lines, when appropriate and material, and should place limits on transfer of liquidity keeping in view the regulatory, legal and operational constraints.

The BoD or its delegated committee of board members should oversee the establishment and approval of policies, strategies and procedures to manage liquidity risk, and review them at least annually.

6.1 Liquidity Risk Tolerance:

Banks should have an explicit liquidity risk tolerance set by the Board of Directors. The risk tolerance should define the level of liquidity risk that the bank is willing to assume, and should reflect the bank's financial condition and funding capacity. The tolerance should ensure that the bank manages its liquidity in normal times in such a way that it is able to withstand a prolonged period of, both institution specific and market wide stress events. The risk tolerance articulation by a bank should be explicit, comprehensive and appropriate as per its complexity, business mix, liquidity risk profile and systemic significance. They may also be subject to sensitivity analysis. The risk tolerance could be specified by way of fixing the tolerance levels for various maturities under flow approach depending upon the bank's liquidity risk profile as also for various ratios under stock approach. Risk tolerance may also be expressed in terms of minimum survival horizons (without Central Bank or Government intervention) under a range

of severe but plausible stress scenarios, chosen to reflect the particular vulnerabilities of the bank. The key assumptions may be subject to a periodic review by the Board.

6.2 Strategy for Managing Liquidity Risk:

The strategy for managing liquidity risk should be appropriate for the nature, scale and complexity of a bank's activities. In formulating the strategy, banks/banking groups should take into consideration its legal structures, key business lines, the breadth and diversity of markets, products, jurisdictions in which they operate and home and host country regulatory requirements, etc. Strategies should identify primary sources of funding for meeting daily operating cash outflows, as well as expected and unexpected cash flow fluctuations.

7. Management of Liquidity Risk:

A bank should have a sound process for identifying, measuring, monitoring and mitigating liquidity risk as enumerated below:

8.1 Identification:

A bank should define and identify the liquidity risk to which it is exposed for each major on and off-balance sheet position, including the effect of embedded options and other contingent exposures that may affect the bank's sources and uses of funds and for all currencies in which a bank is active.

8.2 Measurement of Liquidity Risk:

There are two simple ways of measuring liquidity; one is the stock approach and the other, flow approach. The stock approach is the first step in evaluating liquidity. Under this method, certain ratios, like liquid assets to short term total liabilities, purchased funds to total assets, core deposits to total assets, loan to deposit ratio, etc. are calculated and compared to the benchmarks that a bank has set for itself. While the stock approach helps up in looking at liquidity from one angle, it does not reveal the intrinsic liquidity profile of a bank.

The flow approach, on the other hand, forecasts liquidity at different points of time. It looks at the liquidity requirements of today, tomorrow, the day thereafter, in the next seven to 14 days and so on. The maturity ladder, thus, constructed helps in tracking the cash flow mismatches over a series of specified time periods. The liquidity controls, apart from being fixed maturity-bucket wise, should also encompass maximum cumulative mismatches across the various time bands.

8. Ratios in respect of Liquidity Risk Management:

Certain critical ratios in respect of liquidity risk management and their significance for banks are given below. Banks may monitor these ratios by putting in place an internally defined limit approved by the Board for these ratios. The industry averages for these ratios are given for information of banks. They may fix their own limits, based on their liquidity risk management capabilities, experience and profile. The stock ratios are meant for monitoring the liquidity risk at the solo bank level. Banks may also apply these ratios for monitoring liquidity risk in major currencies, viz. US Dollar, Pound Sterling, Euro and Japanese Yen at the solo bank level.

Sl. No.	Ratio	Significance	Industry Average (in %)
1.	(Volatile liabilities – Temporary Assets) / (Earning Assets – Temporary Assets)	Measures the extent to which volatile money supports bank's basic earning assets. Since the numerator represents short-term, interest sensitive funds, a high and positive number implies some risk of illiquidity.	40
2.	Core deposits/Total Assets	Measures the extent to which assets are funded through stable deposit base.	50
3.	(Loans + mandatory SLR + mandatory CRR + Fixed Assets)/Total Assets	Loans including mandatory cash reserves and statutory liquidity investments are least liquid and hence a high ratio signifies the degree of 'illiquidity' embedded in the balance sheet.	80

4.	(Loans + mandatory SLR + mandatory CRR + Fixed Assets) / Core Deposits	Measure the extent to which illiquid assets are financed out of core deposits.	150
5.	Temporary Assets/Total Assets	Measures the extent of available liquid assets. A higher ratio could impinge on the asset utilisation of banking system in terms of opportunity cost of holding liquidity.	40
6.	Temporary Assets/ Volatile Liabilities	Measures the cover of liquid investments relative to volatile liabilities. A ratio of less than 1 indicates the possibility of a liquidity problem.	60
7.	Volatile Liabilities/Total Assets	Measures the extent to which volatile liabilities fund the balance sheet.	60

Volatile Liabilities: (Deposits + borrowings and bills payable up to 1 year). Letters of credit – full outstanding. Component-wise CCF of other contingent credit and commitments. Swap funds (buy/ sell) up to one year. Current deposits (CA) and Savings deposits (SA) i.e. (CASA) deposits reported by the banks as payable within one year (as reported in structural liquidity statement) are included under volatile liabilities. Borrowings include from RBI, call, other institutions and refinance.

Temporary assets = Cash + Excess CRR balances with RBI + Balances with banks + Bills purchased/discounted up to 1 year + Investments up to one year + Swap funds (sell/ buy) up to one year.

Earning Assets = Total assets – (Fixed assets + Balances in current accounts with other banks + Other assets excluding leasing + Intangible assets)

Core deposits = All deposits (including CASA) above 1 year (as reported in structural liquidity statement)+ net worth

The above stock ratios are only illustrative and banks could also use other measures / ratios. For example to identify unstable liabilities and liquid asset coverage ratios banks may include ratios of wholesale funding to total liabilities, potentially volatile retail (e.g. high cost or out of market) deposits to total deposits, and other liability dependency measures, such as short term borrowings

9. Stress Testing:

Stress testing should form an integral part of the overall governance and liquidity risk management culture in banks. A bank should conduct stress tests on a regular basis for a variety of short term and protracted bank specific and market wide stress scenarios (individually and in combination). In designing liquidity stress scenarios, the nature of the bank's business, activities and vulnerabilities should be taken into consideration so that the scenarios incorporate the major funding and market liquidity risks to which the bank is exposed. These include risks associated with its business activities, products (including complex financial instruments and off-balance sheet items) and funding sources. The defined scenarios should allow the bank to evaluate the potential adverse impact these factors can have on its liquidity position. While historical events may serve as a guide, a bank's judgment also plays an important role in the design of stress tests.

Stress tests outcomes should be used to identify and quantify sources of potential liquidity strain and to analyse possible impacts on the bank's cash flows, liquidity position, profitability and solvency. The results of stress tests should be discussed thoroughly by ALCO. Remedial or mitigating actions should be identified and taken to limit the bank's exposures, to build up a liquidity cushion and to adjust the liquidity profile to fit the risk tolerance. The results should also play a key role in shaping the bank's contingent funding planning and in determining the strategy and tactics to deal with events of liquidity stress.

The stress test results and the action taken should be documented by banks and made available to the Reserve Bank / Inspecting Officers as and when required. If the stress test results indicate any vulnerability, these should be reported to the Board and a plan of action charted out immediately. The Department of Banking Supervision, Central Office, Reserve Bank of India should also be kept informed immediately in such cases.

10. Contingency Funding Plan:

A bank should formulate a contingency funding plan (CFP) for responding to severe disruptions which might affect the bank's ability to fund some or all of its activities in a timely manner and at a reasonable cost. CFPs should prepare the bank to manage a range of scenarios of severe liquidity stress that include both bank specific and market-wide stress and should be commensurate with a bank's complexity, risk profile, scope of operations. *Contingency plans should contain details of available / potential contingency funding sources and the amount / estimated amount which can be drawn from these sources, clear escalation / prioritisation procedures detailing when and how each of the actions can and should be activated and the lead time needed to tap additional funds from each of the contingency sources.*

Contingency plans must be tested regularly to ensure their effectiveness and operational feasibility and should be reviewed by the Board at least on an annual basis.

11. Overseas Operations of the Indian Banks' Branches and Subsidiaries and Branches of Foreign banks in India:

A bank's liquidity policy and procedures should also provide detailed procedures and guidelines for their overseas branches/subsidiaries to manage their operational liquidity on an ongoing basis. Similarly, foreign banks operating in India should also be self reliant with respect to liquidity maintenance and management.

12. BROAD NORMS IN RESPECT OF LIQUIDITY MANAGEMENT:

Some of the broad norms in respect of liquidity management are as follows:

- i. Banks should not normally assume voluntary risk exposures extending beyond a period of ten years.
- ii. Banks should endeavour to broaden their base of long- term resources and funding capabilities consistent with their long term assets and commitments.
- iii. The limits on maturity mismatches shall be established within the following tolerance levels: (a) long term resources should not fall below 70% of long term assets; and (b) long and medium term resources together should not fall below 80% of the long and medium term assets. These controls should be undertaken currency-wise, and in respect of all such currencies which individually constitute 10% or more of a bank's consolidated overseas balance sheet. Netting of inter-currency positions and maturity gaps is not allowed. For the purpose of these limits, short term, medium term and long term are defined as under:

Short-term:	those maturing within 6 months
Medium-term:	those maturing in 6 months and longer but within 3 years
Long-term:	those maturing in 3 years and longer

1. The monitoring system should be centralised in the International Division (ID) of the bank for controlling the mismatch in asset-liability structure of the overseas sector on a consolidated basis, currency-wise. The ID of each bank may review the structural maturity mismatch position at quarterly intervals and submit the review/s to the top management of the bank.

13. Liquidity Across Currencies

Banks should have a measurement, monitoring and control system for liquidity positions in the major currencies in which they are active. For assessing the liquidity mismatch in foreign currencies, as far as domestic operations are concerned, banks are required to prepare Maturity and Position (MAP) statements according to the extant instructions. A bank should also undertake separate analysis of its strategy for each major currency individually by taking into account the outcome of stress testing.

14. Management Information System (MIS)

A bank should have a reliable MIS designed to provide timely and forward-looking information on the liquidity position of the bank and the Group to the Board and ALCO, both under normal and stress

situations. The MIS should cover liquidity positions in all currencies in which the bank conducts its business – both on a subsidiary / branch basis (in all countries in which the bank is active) and on an aggregate group basis. It should capture all sources of liquidity risk, including contingent risks and those arising from new activities, and have the ability to furnish more granular and time sensitive information during stress events.

Liquidity risk reports should provide sufficient detail to enable management to assess the sensitivity of the bank to changes in market conditions, its own financial performance, and other important risk factors. It may include cash flow projections, cash flow gaps, asset and funding concentrations, critical assumptions used in cash flow projections, funding availability, compliance to various regulatory and internal limits on liquidity risk management, results of stress tests, key early warning or risk indicators, status of contingent funding sources, or collateral usage, etc.

15. Reporting to the Reserve Bank of India

Banks are required to submit the liquidity return, as per the prescribed format to the Chief General Manager-in-Charge, Department of Banking Supervision, Reserve Bank of India, Central Office, World Trade Centre, Mumbai.

16. Internal Controls

A bank should have appropriate internal controls, systems and procedures to ensure adherence to liquidity risk management policies and procedure as also adequacy of liquidity risk management functioning.

Management should ensure that an independent party regularly reviews and evaluates the various components of the bank's liquidity risk management process. These reviews should assess the extent to which the bank's liquidity risk management complies with the regulatory/supervisory instructions as well as its own policy. The independent review process should report key issues requiring immediate attention, including instances of non compliance to various guidance/limits for prompt corrective action consistent with the Board approved policy.

Basel III Framework on Liquidity Standards – Liquidity Coverage Ratio (LCR), Liquidity Risk Monitoring Tools and LCR Disclosure Standards

Liquidity Coverage Ratio

1. Introduction:

With the objective of promoting a more resilient banking sector, the 'Basel III International framework for liquidity risk measurement, standards and monitoring' was issued in December 2010. The Basel Committee prescribed two minimum standards viz. Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) for funding liquidity to achieve two separate but complementary objectives.

While the LCR promotes short-term resilience of banks to potential liquidity disruptions by ensuring that they have sufficient high quality liquid assets (HQLAs) to survive an acute stress scenario lasting for 30 days, the NSFR promotes resilience over longer-term time horizons by requiring banks to fund their activities with more stable sources of funding on an ongoing basis. In addition, a set of five monitoring tools to be used for monitoring the liquidity risk exposures of banks was also prescribed in the said document.

2. Objective:

The LCR standard aims to ensure that a bank maintains an adequate level of unencumbered HQLAs that can be converted into cash to meet its liquidity needs for a 30 calendar day time horizon under a significantly severe liquidity stress scenario specified by supervisors. At a minimum, the stock of liquid

assets should enable the bank to survive until day 30 of the stress scenario, by which time it is assumed that appropriate corrective actions can be taken.

3.Scope:

To start with, the LCR and monitoring tools would be applicable for Indian banks at whole bank level only i.e. on a stand-alone basis including overseas operations through branches. However, banks should endeavour to move over to meeting the standard at consolidated level also. For foreign banks operating as branches in India, the framework would be applicable on stand- alone basis (i.e. for Indian operations only).

4. Definition of LCR:

$$\frac{\text{Stock of high quality liquid assets (HQLAs)}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

The LCR requirement is binding on banks from January 1, 2015. However, to provide a transition time for banks, Reserve Bank of India has permitted a gradual increase in the ratio starting with a minimum 60% for the calendar year 2015 as per the time-line given below:

	January 1 2015	January 1 2016	January 1 2017	January 1 2018	January 1 2019
Minimum LCR	60%	70%	80%	90%	100%

Banks should, however, strive to achieve a higher ratio than the minimum prescribed above as an effort towards better liquidity risk management.

With effect from January 1, 2019, i.e. after the phase-in arrangements are complete, the LCR should be minimum 100% (i.e. the stock of HQLA should at least equal total net cash outflows) on an ongoing basis because the stock of unencumbered HQLA is intended to serve as a defence against the potential onset of liquidity stress. During a period of financial stress, however, banks may use their stock of HQLA, and thereby falling below 100%. Banks shall be required to immediately report to RBI (Department of Banking Operations and Development as also Department of Banking Supervision) such use of stock of HQLA along with reasons for such usage and corrective steps initiated to rectify the situation.

The stress scenario specified by the BCBS entails a combined idiosyncratic and market-wide shock that would result in:

- a) the run-off of a proportion of retail deposits;
- b) a partial loss of unsecured wholesale funding capacity;
- c) a partial loss of secured, short-term financing with certain collateral and counterparties;
- d) additional contractual outflows that would arise from a downgrade in the bank's public credit rating by up to three notches, including collateral posting requirements;
- e) increases in market volatilities that impact the quality of collateral or potential future exposure of derivative positions and thus require larger collateral haircuts or additional collateral, or lead to other liquidity needs;
- f) unscheduled draws on committed but unused credit and liquidity facilities that the bank has provided to its clients; and
- g) the potential need for the bank to buy back debt or honour non-contractual obligations in the interest of mitigating reputational risk.

5 High Quality Liquid Assets:

5.1 Liquid assets comprise of high quality assets that can be readily sold or used as collateral to obtain funds in a range of stress scenarios. They should be unencumbered i.e. without legal, regulatory or operational impediments. Assets are considered to be high quality liquid assets, if they can be easily and immediately converted into cash at little or no loss of value. The liquidity of an asset depends on the underlying stress scenario, the volume to be monetized and the timeframe considered. Nevertheless, there are certain assets that are more likely to generate funds without incurring large discounts due to fire-sales even in times of stress.

5.2 While the fundamental characteristics of these assets include low credit and market risk; ease and certainty of valuation; low correlation with risky assets and listing on a developed and recognized exchange market, the market related characteristics include active and sizeable market; presence of committed market makers; low market concentration and flight to quality (tendencies to move into these types of assets in a systemic crisis).

5.3 There are two categories of assets which can be included in the stock of HQLAs, viz. Level 1 and Level 2 assets. Level 2 assets are sub-divided into Level 2A and Level 2B assets on the basis of their

price-volatility. Assets to be included in each category are those that the bank is holding on the first day of the stress period.

6. Calculation of LCR:

As stated in the definition of LCR, it is a ratio of two factors, viz, the Stock of HQLA and the Net Cash Outflows over the next 30 calendar days. Therefore, computation of LCR of a bank will require calculations of the numerator and denominator of the ratio, as detailed in the RBI Circular.

7. Liquidity Risk Monitoring Tools:

7.1 In addition to the two liquidity standards, the Basel III framework also prescribes five monitoring tools / metrics for better monitoring a bank's liquidity position. These metrics along with their objective and the prescribed returns are as under:

(a) Contractual Maturity Mismatch

The contractual maturity mismatch profile identifies the gaps between the contractual inflows and outflows of liquidity for defined time bands. These maturity gaps indicate how much liquidity a bank would potentially need to raise in each of these time bands if all outflows occurred at the earliest possible date. This metric provides insight into the extent to which the bank relies on maturity transformation under its current contracts.

(b) Concentration of Funding

This metric is meant to identify those sources of funding that are of such significance, the withdrawal of which could trigger liquidity problems. The metric thus encourages the diversification of funding sources recommended in the Basel Committee's Sound Principles. This metrics aims to address the funding concentration of banks by monitoring their funding from each significant counterparty, each significant product / instrument and each significant currency.

(c) Available Unencumbered Assets

This metric provides supervisors with data on the quantity and key characteristics of banks' available unencumbered assets. These assets have the potential to be used as collateral to raise additional secured funding in secondary markets and / or are eligible at central banks.

(d) LCR by Significant Currency

While the LCR standard is required to be met in one single currency, in order to better capture potential currency mismatches, the LCR in each significant currency needs to be monitored.

(e) Market-related Monitoring Tools

This includes high frequency market data that can serve as early warning indicators in monitoring potential liquidity difficulties at banks.

8. Basel III Liquidity Returns:

S. No.	Name of the Basel III Liquidity Return (BLR)	Frequency of submission	Time period by which required to be reported
1.	Statement on Liquidity Coverage Ratio (LCR)-BLR-1	Monthly	within 15 days
2.	Statement of Funding Concentration - BLR-	Monthly	within 15 days
3.	Statement of Available Unencumbered Assets - BLR-3	Quarterly	within a month
4.	LCR by Significant Currency - BLR-4	Monthly	within a month
5.	Statement on Other Information on Liquidity - BLR-5	Monthly	within 15 days

9. LCR Disclosure Standards:

9.1 Banks are required to disclose information on their LCR in their annual financial statements under Notes to Accounts, starting with the financial year ending March 31, 2015, for which the LCR related information needs to be furnished only for the quarter ending March 31, 2015. However, in subsequent annual financial statements, the disclosure should cover all the four quarters of the relevant financial year.

10. Net Stable Funding Ratio (NSFR):

10.1 This ratio aims at promoting medium to long term structure funding of assets and activities of the Banks. BCBS aims to trial this ratio from 2012 and makes it mandatory in January 2018.

RBI released its Draft guidelines on NSFR on May 28, 2015. The objective of NSFR is to ensure that banks maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. A sustainable funding structure is intended to reduce the probability of erosion of a bank's liquidity position due to disruptions in its regular sources of funding that would increase the risk of its failure and potentially lead to broader systemic stress. The NSFR limits overreliance on short-term wholesale funding, encourages better assessment of funding risk across all on- and off-balance sheet items, and promotes funding stability. The Reserve Bank proposes to make NSFR applicable to banks in India from January 1, 2018. (Source RBI).

10.2 Definition of the Standard Net Stable Funding Ratio:

$(\text{Available Stable Funding (ASF)}) / (\text{Required Stable Funding (RSF)}) \times 100 = \text{Should be 100\% or above.}$

I. TYPES:

The liquidity risk in banks manifest in different dimensions:

- i) Funding Risk need to replace net outflows due to unanticipated withdrawal/non-renewal of deposits (wholesale and retail);
- ii) Time Risk need to compensate for non-receipt of expected inflows of funds, i.e. performing assets turning into non-performing assets; and
- iii) Call Risk due to crystallisation of contingent liabilities and unable to undertake profitable business opportunities when desirable.

II. Liquidity Management

The first step towards liquidity management is to put in place an effective liquidity management policy, which, inter alia, should spell out the funding strategies, liquidity planning under alternative scenarios, prudential limits, liquidity reporting /reviewing, etc.

Following steps are necessary for managing liquidity risk in banks:

1. Developing a structure for managing liquidity risk.
2. Setting tolerance level and limit for liquidity risk.
3. Measuring and managing liquidity risk.

1. Developing a structure for managing liquidity risk:

Sound liquidity risk management involves setting a strategy for the bank ensuring effective board and senior management oversight as well as operating under a sound process for measuring, monitoring and controlling liquidity risk. Virtually every financial transaction or commitment has implications for a bank's liquidity. Moreover, the transformation of illiquid into more liquid ones is a key activity of banks. Thus, a bank's liquidity policies and liquidity management approach should form key elements of bank's general business strategy. Understanding the context of liquidity management involves examining a banks managerial approach to funding and liquidity operations and its liquidity planning under alternative scenarios.

The liquidity strategy should set out the general approach the bank will have to liquidity including various quantitative and qualitative targets. The strategy should also address the bank's goal of protecting financial strategy and the ability to withstand stressful events in the market place. It should enunciate specific policies on particular aspects of liquidity management like composition of assets and liabilities, maintenance of cumulative gaps over certain period and approach to managing liquidity in different currencies and from one country to another. Further, the strategy of managing liquidity risk should be communicated through out the organization. All business units within the bank that conduct activities having an impact on liquidity should be fully aware of the liquidity strategy and operate under the approved policies and procedures. The Board should monitor the performance and liquidity risk profile of the bank and periodically review information that is timely and sufficiently detailed to allow them to understand and asses the liquidity risk facing the bank's key portfolios and the bank as a whole. Bank should have a liquidity management structure in place to execute effectively the liquidity

strategy, policies and procedures. The responsibility of managing the overall liquidity of the bank should be placed with a specific identified

group within the bank. This might be in the form of an Asset Liability Committee comprised of senior management, the treasury function or a risk management department.

Treatment of Foreign Currencies

For banks with an international presence, the treatment of assets and liabilities in multiple currencies adds a layer of complexity to liquidity management for two reasons. First, banks are often less well known to liability holders in foreign currency markets. In the event of market concerns, these liability holders may not be able to distinguish rumours from fact as well or as quickly as domestic currency customers.

Second, in the event of a disturbance, a bank may not always be able to mobilize domestic liquidity to meet foreign currency funding requirements.

Hence, when a bank conducts its business in multiple currencies, its management must make two key decisions.

The first decision concerns management structure. A bank with funding requirements in foreign currencies will generally use one of three approaches.

- It may completely centralize liquidity management (the head office managing liquidity for the whole bank in every currency)
- Alternatively, it may decentralize by assigning operating divisions responsibility for their own liquidity, but subject to limits imposed by the head office or frequent, routine reporting to the head office. For example, a non- European bank might assign its European operations in all currencies,

As a third Approach, a bank may assign responsibility for liquidity in the home currency and for overall coordination to the home office, and responsibility for the bank's global liquidity in each major foreign currency to the management of the foreign office in the country in the country issuing that currency. For example, the treasurer in the Tokyo office of a non- Japanese bank could be responsible for the bank's global liquidity needs in yen. All of these approaches, however, provide head office management with the opportunity to monitor and control worldwide liquidity

2. Setting tolerance level and limit for liquidity risk:

Bank's management should set limit to ensure liquidity and these limits should be reviewed by supervisors. Alternatively supervisors may set the limits. Limits could be set on the following:

1. The cumulative cash flow mismatches (i.e. the cumulative net funding requirement as a percentage of total liabilities) over particular periods – Next day, next week, next fortnight, next month, next year. These mismatches should be calculated by taking a conservative view of marketability of liquid assets, with a discount to cover price volatility and any drop in price in the event of a forced sale, and should include likely outflows as a result of draw-down of commitments, etc.
2. Liquid assets as a percentage of short- term liabilities. The assets included in this category should be those which are highly liquid, i.e. only those which are judged to be having a ready market even in periods of stress.
3. A limit on loan to deposit ratio.
4. A limit loan to capital ratio.
5. A general limit on the relationship between anticipated funding needs and available sources for meeting those needs.
6. Primary sources for meeting those needs.
7. Flexible limits on the percentage reliance on a particular liability category. (e.g. certificate of deposits should not account for more than certain per cent total Liabilities)
8. Limits on the dependence on individual customers or market segments for funds in liquidity position calculation.
9. Flexible limits on the minimum/ maximum average maturity of different categories of liabilities.
10. Minimum liquidity provision to be maintained to sustain operations.

An example of an setting tolerance level for a bank:

1. To manage the mismatch levels so as to avert wide liquidity gaps- The residual maturity profile of assets and liabilities will be such that mismatch level for time bucket of 1-14 days and 15-28 days remains around 20% of cash outflows in each time bucket.
2. To manage liquidity and remain solvent by maintaining short-term cumulative gap up to one year (short-term liabilities-short-term) at 15% of total out flow of funds.

Banks should analyse the likely impact of different stress scenarios on their liquidity Position and set their limits accordingly. Limits should be appropriate to the size complexity and financial condition of the bank. Management should define the specific procedures and approval necessary for exceptions to policies and limits.

3. Measuring and Managing Liquidity Risk:-

Liquidity measurement is quite a difficult task and can be measured through a.

Stock approach

b. Flow (cash) approach.

a. Stock Approach:- Stock approach is based on the level of assets and liabilities as well as Off balance sheet exposures on particular date. The key ratios, adopted across the banking system are:

- i) Ratio of Core deposit to total assets:- More the ratio better it is because core deposits are treated to be the stable source of liquidity.
- ii) Net loans to total deposit ratio:- It reflects the ratio of loans to public deposits or core deposits. Loan is treated to be less liquid assets and therefore lower the ratio better is the case.
- iii) Ratio of time deposit to total deposits:- Time deposit provide stable level of liquidity and negligible volatility. Therefore, higher the ratio always better.
- iv) Ratio of volatile liabilities to total assets:- Volatile liabilities like market borrowings are to be assessed and compared with the total assets. Higher portion of volatile assets will cause higher problems of liquidity. Therefore, lower ratio is desirable.
- v) Ratio of Short term liabilities to liquid assets:- Short term liabilities are required to be redeemed at the earliest. Therefore, they will require ready liquid assets to meet the liability. It is expected to be lower in the interest of liquidity.
- vi) Ratio of liquid assets to total assets:- Higher level of liquid assets in total assets will ensure better liquidity. Therefore higher the ratio is better.
- vii) Ratio of market liabilities to total assets:- Market liabilities may include money market borrowings , inter bank liabilities repayable within a short period.

b. Flow Approach:- While the liquidity ratios are the ideal indicator of liquidity of banks operating in developed financial markets, the ratios do not reveal the intrinsic liquidity profile of Indian banks which are operating generally in an illiquid market. Experiences show that assets commonly considered as liquid like Government securities, other money market instruments, etc. have limited liquidity as the market and players are unidirectional. Thus, analysis of liquidity involves tracking of cash flow mismatches.

For measuring and managing net funding requirements, the use of

a. maturity ladder and calculation of cumulative surplus or deficit of funds at selected maturity dates is recommended as a standard tool.

The format prescribed by RBI in this regard under ALM System should be adopted for measuring cash flow mismatches at different time bands. The cash flows should be placed in different time bands based on future behaviour of assets, liabilities and off-balance sheet items. In other words, banks should have to analyse the behavioural maturity profile of various components of on/ off-balance sheet items on the basis of assumptions and trend analysis supported by time series analysis. Banks should also undertake variance analysis, at least, once in six months to validate the assumptions. The assumptions should be fine-tuned over a period which facilitate near reality predictions about future behaviour of on/off-balance sheet items. Apart from the above cash flows, banks should also track the impact of prepayments of loans, premature closure of deposits and

exercise of options built in certain instruments which offer put/call options after specified times. Thus, cash outflows can be ranked by the date on which liabilities fall due, the earliest date a liability holder could exercise an early repayment option or the earliest date contingencies could be crystallised. The difference between cash inflows and outflows in each time period, the excess or deficit of funds, becomes a starting point for a measure of a bank's future liquidity surplus or deficit, at a series of points of time.

b.1 Liquidity Gap Analysis or Maturity Ladder

Liquidity gap report/maturity ladder which is useful for measuring short-term liquidity risk is prepared by placing assets and liabilities into various time buckets on the basis of timing of cash inflows from the assets and the timing of cash outflows from the liabilities. The cash flows from assets and liabilities include both principal and interest cash flows. For the purpose of regulatory reporting of liquidity mismatches, the RBI has prescribed a liquidity gap report. The following Table is the summary of a real-life liquidity gap report of a commercial bank which would be used for our discussion this point onwards.

Particulars	1-14D	2-28D	29-3M	3-6M	6-12M	1-3 Y	3-5 Y	Over 5Y	Total
Term deposits	851	613	1835	1858	2372	6601	3729	1172	19030
A. Total Outflows	3414	849	2806	3099	2799	18798	4092	4903	40758
B. Total Inflows	3440	752	2105	2636	2630	8036	4481	16501	
Net Gap (B -A)	26	-96	-702	-462	-170	-10761	389	11598	-177
Cumulative Gap	26	-70	-772	-1234	-1404	- 12165	-11776	-177	

As reflected in the gap summary, total outflows (A) denotes expected cash outflows from liabilities including term deposits, and the total inflows (B) denotes expected cash inflows from assets as on a particular reporting date. The net gap (C) is the difference between outflows and inflows, i.e., (B)-(A). The net gap figure reflects the net liquidity mismatch, i.e., either the excess of cash outflows over inflows or the excess of cash inflows over outflows for each time bucket. It can be seen from the summary report above that while the bank has a little surplus liquidity in the shortest bucket (1 - 14 days), the other buckets up to 1 - 3 years show significant shortage of liquidity. The cumulative gap which is a successive summation of net gaps in each bucket can be used to ascertain the mismatch for a period longer than reflected in the short-term buckets. If the bank intends to ascertain its liquidity position for the next three month period, then from the summary above, it can be said that there would be shortage of liquidity to the extent of Rs. 772 crores which is the cumulative gap upto the 3-month bucket.

b.2 Managing market access

The banks should also consider putting in place certain prudential limits to avoid liquidity crisis:

- 1) Cap on inter-bank borrowings, especially call borrowings;
- 2) Purchased funds vis-à-vis liquid assets;
- 3) Core deposits vis-à-vis Core Assets i.e. Cash Reserve Ratio, Liquidity Reserve Ratio and Loans;
- 4) Duration of liabilities and investment portfolio;
- 5) Maximum Cumulative Outflows. Banks should fix cumulative mismatches across all time bands;
- 6) Commitment Ratio – track the total commitments given to corporates/banks and other financial institutions to limit the off-balance sheet exposure;
7. Swapped Funds Ratio, i.e. extent of Indian Rupees raised out of foreign currency sources.

Banks should also evolve a system for monitoring high value deposits (other than inter-bank deposits) say Rs.1 crore or more to track the volatile liabilities. Further the cash flows arising out of contingent liabilities in normal situation and the scope for an increase in cash flows during periods of stress should also be estimated. It is quite possible that market crisis can trigger substantial increase in the amount of draw downs from cash credit/overdraft accounts, contingent liabilities like

letters of credit, etc.

The liquidity profile of the banks could be analysed on a static basis, wherein the assets and liabilities and off-balance sheet items are pegged on a particular day and the behavioural pattern and the sensitivity of these items to changes in market interest rates and environment are duly accounted for. The banks can also estimate the liquidity profile on a dynamic way by giving due importance to:

- 1) Seasonal pattern of deposits/loans;
- 2) Potential liquidity needs for meeting new loan demands, unavailed credit limits, loan policy, potential deposit losses, investment obligations, statutory obligations, etc.

b.3 Alternative Scenarios

The liquidity profile of banks depends on the market conditions, which influence the cash flow behaviour. Thus, banks should evaluate liquidity profile under different conditions, viz. normal situation, bank specific crisis and market crisis scenario. The banks should establish benchmark for normal situation, cash flow profile of on / off balance sheet items and manages net funding requirements.

Estimating liquidity under bank specific crisis should provide a worst- case benchmark. It should be assumed that the purchased funds could not be easily rolled over; some of the core deposits could be prematurely closed; a substantial share of assets have turned into non-performing and thus become totally illiquid. These developments would lead to rating down grades and high cost of liquidity. The banks should evolve contingency plans to overcome such situations.

The market crisis scenario analyses cases of extreme tightening of liquidity conditions arising out of monetary policy stance of Reserve Bank, general perception about risk profile of the banking system, severe market disruptions, failure of one or more of major players in the market, financial crisis, contagion, etc. Under this scenario, the rollover of high value customer deposits and purchased funds could extremely be difficult besides flight of volatile deposits / liabilities. The banks could also sell their investment with huge discounts, entailing severe capital loss.

III. Assumptions and issues in determine cash flows:

While the concept of liquidity gap is extremely simple to understand and use, there are a few issues which need to be addressed to be able to use the gap approach.

The issues are:

1) Non-maturity Items in the Balance Sheet: A sizeable portion of deposits of the Indian banking industry is in the form of current and savings deposits which do not have any specific maturity. Similarly, advances in the form of cash credit & over draft do not have any specific maturity. These items can result in a cash flow at any time. Absence of specific maturity dates in case of these 'non-maturity' items makes it difficult to place them in a definite bucket on the basis of cash flows. As prescribed by the RBI, as these items do not have contractual maturity, their behavioural maturity need to be ascertained on the basis of statistical analysis for placing them in appropriate buckets. In the absence of such analysis, the approach suggested by the RBI for non-maturity deposits may be used as an alternative

2) Renewal Assumptions in Case of Maturing Term Deposits: Though the term deposits are expected to result in cash out flow on maturity, it has been observed that a sizeable chunk of the maturing term deposits are actually renewed in the same branch. Such renewals prevent the outflow of cash thereby reducing the net gap. While the renewal behaviour is positive, it is difficult to predict perfectly the percentage of maturing deposits renewed period after period as the depositor behaviour may vary from time to time depending on a number of

factors. If a certain percent of renewal of deposits, say 60% is assumed for the preparation of the gap reports and the actual renewal is only say 40% for a period, this would create an unexpected deficit of liquidity which is serious given the nature of banking business which is heavily dependent upon public confidence. The public confidence in a bank is the function of its ability to meet all its commitments to the depositors. Surplus of liquidity would be the result when the actual renewal is higher than the expected renewal of deposits. While surplus is viewed favorably from the point of view of the bank's ability to meet the cash out flows, expected return may suffer as deploying unexpected surplus may diminish expected return.

3) Assumptions Relating to Unavailed Portion of Cash Credit, Overdraft: A sizeable portion of the

advances portfolio of the Indian banking industry is in the form of cash credit, overdraft etc. In case of CC/OD etc., a limit is sanctioned for each borrower and the right to borrow upto the limit is vested with the borrower. While this has given a lot of flexibility to the borrowers to utilize the limit sanctioned to the extent it is required for meeting business commitments, banks pay a price in the form of uncertainty of timing of utilization by the borrowers of the unutilized limits as they may be utilized at any time without prior notice. As a result of the uncertainty, banks can neither keep the unutilized portion idle as returns may suffer, nor can deploy it in other assets as the requirement may arise at any time unexpectedly. This problem of banks has been exacerbated by the behavior of a few large corporate who maintain an unutilized limit and borrow from the money or capital market as the rate would be cheaper than the lending rate of banks. These corporate return to the unutilized portion when the market turns tight or the market as a source of borrowing by corporate dry up. The assumptions relating to unavailed portion need to be thoroughly validated on the basis of behavioral analysis and experience of the bank over a period of time for proper handling of the same.

4) Assumptions Relating to off-balance Sheet Items: Guarantees provided in favour of customers by banks in various forms, Letters of Credit etc. are off-balance sheet in nature as the nature of liabilities are contingent upon events. For example a financial or performance guarantee is a non-funded commitment till the time it is invoked by the party in whose favour the guarantee was issued by the bank. Analysis of the timing and magnitude of crystallization of a non-funded commitment into a funded commitment is extremely important to assess the impact of such crystallization on the liquidity position of the bank.

5) Embedded Options: As indicated earlier, a number of asset and liability products offered by banks to customers have options embedded in them. The simplest example is the fixed rate term deposit in the deposits portfolio. The term deposit holder has the right but not an obligation to prematurely terminate the term deposit at any time during the currency of the deposit. This behavior of the depositors increases whenever interest rate applicable for the deposit goes up in the market and the new rate happens to be higher than original rate contracted at the time of opening of the deposit. This leads to flight of deposits from a bank to its competitor causing an impact on the liquidity position of the bank. This option of the term deposit holder is the put option. Similarly, the term loan borrowers may exercise their call option to prepay the loan fully or partially when interest rates go down as they would be in a position to get the advantage of lower rates elsewhere. It is important to understand here that the customer exercising options either on the liability side or the asset side need not necessarily have an impact on the existing liquidity position when the liability or asset is rebooked with the same institution at new rates. To continue with our term deposit holder example, if the deposit is prematurely withdrawn and taken out, then it would have an impact on liquidity. But if the deposit is withdrawn prematurely but rebooked in the same bank at a higher rate, then there is impact on liquidity. A careful analysis of the embedded options and their impact on the liquidity position need to be analyzed as they display appreciable variations in terms of geographic region, the socio-economic profile of the customer, remaining life of the asset or liability, size of the asset or liability, the extent of change in the market interest rates, etc.

6) Static Nature of the Gap Report: The time taken to compile the report determines whether it is useful for decision making or not. If time taken is fairly long, then the first few buckets of information would be useless as the period for which the gaps are calculated would have simply elapsed. Even if the time delay is considerably reduced, the dynamic nature of the business of banking in which a lot of assets and liabilities are contracted on an ongoing basis would make the figures less relevant in the light of new business, changing behaviour of customers, etc. These call for the consideration of new business in the form of expected assets and liabilities in future and the behavioural pattern of customers to take into account the dynamic nature of the balance sheet. Unless the dynamic nature of positions and behavioural analysis as indicated in the previous points are incorporated into the analysis of gaps, preparation of a meaningful liquidity report would not be possible.

b.4 Contingency Plan

Banks should prepare Contingency Plans to measure their ability to withstand bank-specific or market crisis scenario. The blue-print for asset sales, market access, capacity to restructure the maturity and composition of assets and liabilities should be clearly documented and alternative

options of funding in the event of bank's failure to raise liquidity from existing source/s could be clearly articulated. Liquidity from the Reserve Bank, arising out of its refinance window and interim liquidity adjustment facility or as lender of last resort should not be reckoned for contingency plans. Availability of back-up liquidity support in the form of committed lines of credit, reciprocal arrangements, liquidity support from other external sources, liquidity of assets, etc. should also be clearly established.

Basel III Framework on Liquidity Standards, Liquidity Coverage Ratio (LCR), Liquidity Risk Monitoring Tools and LCR Disclosure Standards

In 'First Bi-monthly Monetary Policy Statement, 2014-15' announced on April 1, 2014, RBI proposed to issue guidelines relating to Basel III LCR and Liquidity Risk Monitoring tools by end-May 2014, as the liquidity coverage ratio (LCR) stipulated by the Basel Committee becomes a standard with effect from January 1, 2015. Accordingly, the final guidelines on the LCR, Liquidity Risk Monitoring Tools and LCR Disclosure Standards are pronounced by RBI. The LCR will be introduced in a phased manner starting with a minimum requirement of 60% from January 1, 2015 and reaching minimum 100% on January 1, 2019.

Two minimum standards viz. Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) for funding liquidity were prescribed by the Basel Committee for achieving two separate but complementary objectives.

The LCR promotes short -term resilience of banks to potential liquidity disruptions by ensuring that they have sufficient high quality liquid assets (HQLAs) to survive an acute stress scenario lasting for 30 days. The NSFR promotes resilience over longer -term time horizons by requiring banks to fund their activities with more stable sources of funding on an ongoing basis. In addition, a set of five monitoring tools to be used for monitoring the liquidity risk exposures of banks was also prescribed in the said document.

Definition of LCR

Stock of high quality liquid assets (HQLAs) _____ $\geq$ 100%
Total net cash outflows over the next 30 calendar days

The LCR requirement would be binding on banks from January 1, 2015; with a view to provide a transition time for banks, the requirement would be minimum 60% for the calendar year 2015 i.e. with effect from January 1, 2015, and rise in equal steps to reach the minimum required level of 100% on January 1, 2019, as per the time-line given below:

	Jan'1 2015	Jan'1 2016	Jan'1 2017	Jan'1 2018	Jan'1 2019
Minimum LCR	60%	70%	80%	90%	100%

High Quality Liquid Assets:

Liquid assets comprise of high quality assets that can be readily sold or used as collateral to obtain funds in a range of stress scenarios. They should be unencumbered i.e. without legal, regulatory or operational impediments. Assets are considered to be high quality liquid assets if they can be easily and immediately converted into cash at little or no loss of value.

There are two categories of assets which can be included in the stock of HQLAs, viz. Level 1 and Level 2 assets. Level 2 assets are sub-divided into Level 2A and Level 2B assets on the basis of their price-volatility.

Level 1 assets of banks would comprise of the following and these assets can be included in the stock of liquid assets without any limit as also without applying any haircut:

- i. Cash including cash reserves in excess of required CRR.
- ii. Government securities in excess of the minimum SLR requirement.
- iii. Within the mandatory SLR requirement, Government securities to the extent allowed by RBI under Marginal Standing Facility (MSF).
- iv. Marketable securities issued or guaranteed by foreign sovereigns satisfying all the following conditions:
 - (a) assigned a 0% risk weight under the Basel II standardized approach for credit risk;

- (c) Traded in large, deep and active repo or cash markets characterised by a low level of concentration; and proven record as a reliable source of liquidity in the markets (repo or sale) even during stressed market conditions.
- (d) not issued by a bank/financial institution/NBFC or any of its affiliated entities.

Level 2 assets (comprising Level 2A assets and Level 2B assets) can be included in the stock of liquid assets, subject to the requirement that they comprise no more than 40% of the overall stock of HQLAs after haircuts have been applied. The portfolio of Level 2 assets held by the bank should be well diversified in terms of type of assets, type of issuers and specific counterparty or issuer. Level 2A and Level 2B assets would comprise of the following:

- (e) Level 2A Assets: A minimum 15% haircut should be applied to the current market value of each Level 2A asset held in the stock. Level 2A assets are limited to the following:
 - i. Marketable securities representing claims on or claims guaranteed by sovereigns, Public Sector Entities (PSEs) or multilateral development banks that are assigned a 20% risk weight under the Basel II Standardised Approach for credit risk and provided that they are not issued by a bank/financial institution/NBFC or any of its affiliated entities.
 - ii. Corporate bonds, not issued by a bank/financial institution/NBFC or any of its affiliated entities, which have been rated AA- or above by an Eligible Credit Rating Agency.
 - ii. Commercial Papers not issued by a bank/PD/financial institution or any of its affiliated entities, which have a short-term rating equivalent to the long-term rating of AA- or above by an Eligible Credit Rating Agency
- (f) Level 2B Assets : A minimum 50% haircut should be applied to the current market value of each Level 2B asset held in the stock. Further, Level 2B assets should comprise no more than 15% of the total stock of HQLA. They must also be included within the overall Level 2 assets. Level 2B assets are limited to the following:
 - i. Marketable securities representing claims on or claims guaranteed by sovereigns having risk weights higher than 20% but not higher than 50%, i.e., they should have a credit rating not lower than BBB- as per our Master Circular on 'Basel III – Capital Regulations'.
 - ii. Common Equity Shares which satisfy all of the following conditions:
 - a) not issued by a bank/financial institution/NBFC or any of its affiliated entities; b)

included in NSE CNX Nifty index and/or S&P BSE Sensex index.

Calculation of Total net cash outflows: The total net cash outflows is defined as the total expected cash outflows minus total expected cash inflows for the subsequent 30 calendar days. Total expected cash outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in up to an aggregate cap of 75% of total expected cash outflows. In other words, Total net cash outflows over the next 30 days = Outflows - Min (inflows; 75% of outflows). The various items of assets (inflow) and liabilities (outflow) along with their respective run-off rates and the inflow rates are specified in the format of Basel III Liquidity Return-1 (BLR-1) of this Framework.

The formula for the calculation of the stock of HQLA is as follows:

Stock of HQLA = Level 1 + Level 2A + Level 2B – Adjustment for 15% cap – Adjustment for 40% cap
Where:

Adjustment for 15% cap = Max [{Level 2B – 15/85*(Adjusted Level 1 + Adjusted Level 2A)}, {Level 2B – 15/60*Adjusted Level 1}, 0]

Adjustment for 40% cap = Max {(Adjusted Level 2A + Level 2B – Adjustment for 15% cap – 2/3*Adjusted Level 1 assets), 0}

Liquidity Risk Monitoring Tools

In addition to the two liquidity standards, the Basel III framework also prescribes five monitoring

tools / metrics for better monitoring a bank's liquidity position. While some of these monitoring tools/metrics have been in use by banks in the past in the form of various regulatory returns on their liquidity position, certain additional returns under Basel III Liquidity Framework have been prescribed. These metrics along with their objective and the prescribed returns are detailed below:

- a. Contractual Maturity Mismatch
- b. Concentration of Funding
- c. Available Unencumbered Assets
- d. LCR by Significant Currency
- e. Market-related Monitoring Tools

Basel III Liquidity Returns:

The Bank is required to file the following returns to RBI as per the frequency mentioned:

Name of the Basel III Liquidity Return (BLR)	Frequency of submission	Time period by which required to be reported
BLR		
Statement of Funding Concentration - BLR	Monthly	within 15 days
Statement of Available Unencumbered Assets - BLR-3	Quarterly	within a month
LCR by Significant Currency - BLR-4	Monthly	within 15 days
Statement on Other Information on Liquidity - BLR-5	Monthly	within 15 days

LCR Disclosure Standards

Banks are required to disclose information on their LCR in their annual financial statements under Notes to Accounts, starting with the financial year ending March 31, 2015, for which the LCR related information needs to be furnished only for the quarter ending March 31, 2015.

Operational Risk

Operational Risk is the risk of loss resulting from

1. Inadequate or failed internal processes, people and system.
2. External events such as dacoity, burglary, fire etc.

It includes legal risks but excludes strategic /reputation risks.

Identification

2. Actual Loss Data Base
3. RBIA reports
4. Risk Control & Self Assessment Survey
5. Key Risk indicators
6. Scenario analysis
4. Prevent
5. Reduce
6. Transfer
7. Carry/Accept

Operational Risk – Measurement	Three approaches have been defined to measure Operational Risk at the branches/offices of the bank: 1. Basic Indicator approach 2. Standardized approach 3. AMA i.e. Advanced measurement approach
Basic Indicator Approach	15% of Average positive gross annual income of previous 3 years will be requirement of capital. To start with banks will have to adopt this approach and huge capital is required to be maintained.
The Standardized approach – β factor	All banking activities are to be divided in 8 business lines. 1) Corporate finance 2) Trading & Sales 3) Retail Banking 4) Commercial Banking 5) Asset Management 6) Retail brokerage 7) Agency service 8) Payment settlement Within each business line, Capital requirement will be calculated as under: By multiplying the average gross income generated by a business over previous 3 years by a factor β ranging from 12 % to 18 % depending upon industry-wise relationships as under: Retail Banking, Retail Brokerage and Asset Management -----12% Commercial Banking and Agency Services----- 15% Corporate, Trading and Payment Settlement----- 18%
Advanced Measurement approach	Capital requirement is calculated by the actual risk measurement system devised by bank's own internal Operational Risk Measurement methods using quantitative and qualitative criteria. Our bank has started measuring actual losses and estimating future losses by introducing statement of Operational Risk Loss data w.e.f. 1.4.2005. Minimum 5 year data is required for a bank to switch over to AMA.

How to calculate RWAs for Operational Risk?

$$\text{RWAs for Operational Risk} = \frac{\text{Capital Charge}}{.09\%} \quad (\text{If required CAR is } 9\%)$$

Operational Risk Events	Cause based • People oriented – losses due to negligence, incompetence, lack of awareness etc. • Process oriented – losses due to business volume, less staff, organization complexity, lack of supervision etc. • Technology oriented – failure of system etc. • External causes: Floods, natural disasters etc. Effect Based • Claim cases in court settled against the bank. • Penalties due to non-compliance • Tax penalties • Write off • Delayed interest Event Based • Internal and External Frauds • Dacoity, Burglary etc. • Damage to assets • Business disruption. • Employment practices and workplace safety.
Operational Risk - Scenario Analysis	It is a term used in measurement of Operational Risk on the basis of scenario estimates. Banks use scenario analysis based on expert opinion in conjunction with external data to evaluate its exposure to high severity events. In addition, scenario analysis is used to assess impact of deviations from correlation assumptions in the bank's Operational Risk measurement framework to evaluate potential losses arising from operational risk loss events.
Operational Risk Mitigation	Insurance cover, if available can reduce the operational risk only when AMA is adopted for estimating capital requirements. The recognition of insurance mitigation is limited to 20% of total Operational Risk Capital Charge calculated under AMA. ORMC (Operational Risk Management Committee) under ORMD (Operational Risk Management Division) is formed at bank level to record, report and prevent Operational Risks at Branch level.
Practical Example –AMA approach	Under AMA approach, Estimated level of Operational Risk is calculated on the basis of: 1. Estimated probability of occurrence 2. Estimated potential financial impact 3. Estimated impact of internal control. Estimated Probability of Occurrence : This is based on historical frequency of occurrence and estimated likelihood of future occurrence. Probability is mapped on scale of 5 as under: Negligible risk -----1

Low risk-----2
 Medium Risk-----3
 High Risk--- ----4
 Very High Risk----5

For Calculation, following formula is used:

Estimated level of Operational Risk = {Estimated probability of occurrence x Estimated potential financial impact x Estimated impact of internal control} ^0.5

^0.5 implies Under root of whole

Example:

Probability of occurrence = 2
 Probability of Financial impact = 4
 Impact of Financial control = 50%

Solution

$[2 \times 4 \times (1-0.5)]^{0.5} = \sqrt{4} = 2$ **(Low) Ans.**

In case financial impact is 20%

Solution would be:

$[2 \times 4 \times (1-0.2)]^{0.5} = \sqrt{6.40} = 1.6$ **(Low) Ans.**

Example for calculation of Capital Charge for operational Risk

Balance sheet figures of ABC bank are as under:

	1st year (Rs. in crores)	2 nd Year (Rs. I
Net Profits	120	150
Provisions	240	290
Staff expenses	280	320
Other operating expenses	160	240
Other Income	320	460

Calculate Capital Charge for Operational Risk and RWAs

Capital Charge for Operational Risk is calculated as under:

Gross Income *15/100

Gross Income = Net Profit + Provisions + Staff expenses + Other operating expenses

1st year = 120+240+280+160= 800 crore

2nd Year = 150+290+320+240=1000 crore

Average Gross Income = (800+1000)/2 = **900 crore**

Capital for operational Risk = 900*15/100 = **135 crore**

Risk Weighted Assets for Operational Risk =

135/.08 = **1687.50 Crore (as per BASEL norms)**

Or 135/.09 = 1500 crore (as per RBI norms)

CHAPTER 4 MARKET RISK

- 3) Introduction
- 4) Market risk management
- 5) Tools for Measurement of Market risk
- 6) Stress Testing

1 Introduction:-

Market Risk arises as a result of volatility in price of assets (and liabilities) due to changes in:

- Interest Rates
- Currency Prices
- Commodity Prices, and
- Equity Prices
-

Price risk of the assets in the trading book is the prime decision point in market risk management. Of the above, the most significant exposure is to the interest rates in the form of a sizeable portfolio of Government and other securities. Hence the major concentration would be on interest rates.

Market Risk

It is simply risk of losses on Balance sheet and Off Balance sheet items basically in investments due to movement in market prices.

It is risk of adverse deviation of **mark to Market** value of trading portfolio during the period. Any decline in the market value will result into loss.

Market Risk involves the following:

- 1 Risk Identification
- 2 Risk Measurement
- 3 Risk monitoring and control
- 4 Risk mitigation.

ALCO: Assets Liability Management Committee meets at frequent intervals and takes decisions in respect of Product pricing, Maturity profiles and mix of incremental assets and profiles, Interest rate, Funding policy, Transfer pricing and Balance Sheet Management.

Market Risk measurement

Measurement of Market Risk is based on:

4. Sensitivity
5. Downside potential

Sensitivity Measurement

Change in market rate of interest has inverse relation with Value of Bonds. Higher interest rates lower the value of bond whereas decline in interest rate would result into higher bond value. Also More liquidity in the market results into enhanced demand of securities and it will lead to higher price of market instrument. There are two methods of assessment of Market risk: 1. Basis Point Value 2. Duration method

1. Basis Point Value

This is change in value of security due to 1 basis point change in Market Yield. Higher the BPV higher will be the risk.

Example

Face Value of Bond = 100/- Bond maturity = 5 years

Coupon Rate = 6%

Market price of Rs. 92/- gives yield of 8%

With fall in yield from 8% to 7.95%, market price rises to Rs. 92.10

Difference in Market price = 0.10

Difference Yield = 0.05%

BPV = Diff in Market price/Difference in Yield

$BPV = 0.10/0.05 = 2$ paisa per Rs. 100 i.e. 2 basis points per Rs. 100/-

If Face value of the Bond is 1.00 crore, BPV of the bond is Rs. 2000/-

Now, if the yield on Bond declines by 8 bps, then it will result into profit of Rs. 16000/- (8x2000). BPV declines as maturity reaches. It will become zero on the date of maturity.

\$ Duration Approach

Duration is the time that a bond holder must wait till nos. of years (Duration) to receive Present Value of the bond.

e.g. 5 year bond with Face Value of Rs. 100 @ 6% having McCauley Duration 3.7 years. It means Total Cash Flow of Rs. 130 to be received in 5 years would be discounted with Present Value which will be equivalent as amount received in 3.7 years. The Duration of the Bond is 3.7 Years.

Formula of Calculation of McCauley Duration = $\frac{\sum PV \cdot T}{\sum PV}$

Modified Duration = $\frac{\text{Duration}}{1 + \text{Yield}}$

Approximate % change in price = Modified Duration X Change in Yield

Example

A bond with remaining maturity of 5 years is presently yielding 6%. Its modified duration is 5 years. What will be the McCauley Duration.

Modified Duration = Duration / 1 + YTM

Duration = Modified Duration x (1 + YTM)

5 x 1.06 = **5.30 Ans.**

\$ Downside Potential

It captures only possible losses ignoring profit potentials. It integrates sensitivity and volatility with adverse affect of Uncertainty.

This is most reliable measure of Risk for Banks as well as Regulators. VaR is the method to calculate downside potential.

Value at Risk (VaR)

It means how much can we expect to lose? What is the potential loss?

Let VaR = x. It means we can lose up to maximum of x value over the next period say week (time horizon). Confidence level of 99% is taken into consideration.

Example

A bank having 1 day VaR of Rs. 10 crore with 99% confidence level. It means that there is only one chance in 100 that daily loss will be more than 10 crore under normal conditions.

VaR in days in 1 year based on 250 working days = $\frac{1 \times 250}{100} = 2.5$ days per year.

Back Testing

It is a process where model based VaR is compared with Actual performance. It tells us whether results fall within pre-specified confidence bonds as predicted by VaR models.

Stress Testing

It seeks to determine possible change in Market Value of portfolio that could arise due to non-normal movement in one or more market parameters (such as interest rate, liquidity,

inflation, Exchange rate and Stock price etc.). Four test are applied:

- \$ Simple sensitivity test;
If Risk factor is exchange rate, shocks may be exchange rate $\pm 2\%$, 4%, 6% etc.
- \$ Scenario test
It is leading stress testing technique. The scenario analysis specifies the shocks if possible events occur. It assesses potential consequences for a firm of an extreme. It is based on historical event or hypothetical event.
- \$ Maximum loss
The approach assesses the risks of portfolio by identifying most potential combination of moves of market risks
- \$ Extreme value theory
The theory is based on behavior of tails (i.e. very high and very low potential values) of probable distributions.

Risk Management and Control

Market risk is controlled by implementing the business policies and setting of market risk limits or controlling through economic measures with the objective of attaining higher RAROC. Risk is managed by the following:

3. Limits and Triggers
4. Risk Monitoring
5. Models of Analyses.

Calculation of Capital Charge of Market Risk

The Basel Committee has two approaches for calculation of Capital Charge on Market Risk as under:

4. Standardized approach
5. Internal Risk Management approach

Under Standardized approach, there are two methods: Maturity method and duration method. RBI has decided to adopt **Standardization duration** method to arrive at capital charge on the basis of investment rating as under:

<u>Investment rating</u>	<u>Capital Required</u>
AAA to AA A+ to BBB	0%
Residual term to maturity	
Up to 6 M	.28%
Up to 24M	1.14%
More than 24 M	1.80%
Unrated	9.00%
Rated BB and Below	13.5%

How to Calculate RWAs, if Capital Charge is given:

$$\text{RWAs for Market Risk} = \frac{\text{Capital Charge}}{.09\%} \quad (\text{If required CAR is } 9\%)$$

Other Risks and Capital Requirement	Other Risks like Liquidity Risks, Interest Rate Risk, Strategic Risk, Reputational Risks and Systemic Risks are not taken care of while calculating Capital Adequacy in banks.

Pillar – II Supervisory Review Process (SRP)	SRP has two issues: 1. To ensure that bank is having adequate capital. 2. To encourage banks to use better techniques to mitigate risks. SRP concentrates on 3 main areas: • Risks not fully captured under Pillar -1 i.e. Interest Rate Risks, Credit concentration Risks, Liquidity Risk, Settlement Risks, Reputational Risks and Strategic Risks. • Risks not at all taken care of in Pillar -1. • External Factors. This pillar ensures that the banks have adequate capital. This process also ensures that the bank managements develop Internal risk capital assessment process and set capital targets commensurate with bank's risk profile and capital environment. Central Bank also ensures through supervisory measures that each bank maintains required CRAR and components of capital i.e. Tier –I & Tier –II are in accordance with BASEL-II norms. RBIA and other internal inspection processes are the important tools of bank's supervisory techniques. Every Bank will prepare ICAAP (Internal Capital Adequacy Assessment Plan) on solo basis which will comprise of functions of measuring and identifying Risks, Maintaining appropriate level of Capital and Developing suitable Risk mitigation techniques.
Pillar – III Market Discipline	Market discipline is complete disclosure and transparency in the balance sheet and all the financial statements of the bank. The disclosure is required in respect of the following: • Capital structure. • Components of Tier –I and Tier –II Capital • Bank's approach to assess capital adequacy • Assessment of Credit Risks, Market Risk and Operational Risk. • Credit Aspects like Asset Classification, Net NPA ratios, Movement of NPAs and Provisioning. <u>Frequency of Disclosure</u> • Banks with Capital funds of Rs. 100 crore or more will make interim Disclosures on Quantitative aspects on standalone basis on their respective websites. • Larger banks with Capital Funds of Rs. 500 crore or more will disclose Tier-I capital , Total Capital, CAR on Quarterly basis on website.

Risk Weight on NPAs

a) Risk weight on NPAs net of specific provision will be calculated as under:

When provision is less than 20% of NPA o/s ---- 150%

When provision is at least 20% of NPA o/s ---- 100%

When provision is at least 50% of NPA o/s ---- 50%

Category	Provision Rate	Criteria	Risk Weight
Substandard (Secured)	15%	Provision is less than 20%	150%
Substandard (Unsecured)	25%	Provision is at-least 20%	100%
Doubtful (D1) (Secured)	25%	Provision is at-least 20%	100%
Doubtful (D1) (Un-Secured)	100%	Provision is at-least 50%	50%
Doubtful (D2) (Secured)	40%	Provision is at-least 20%	100%
Doubtful (D3) (Secured)	100%	Provision is at-least 50%	50%
Doubtful (D2) (Un-Secured)	100%	Provision is at-least 50%	50%

Off-balance sheet items

Off-balance sheet items have been bifurcated as follows:

(iii) Non-market related off-balance sheet items

(iv) Market related off-balance sheet items

There is two-step process for the purpose of calculating risk weighted assets in respect of off-balance sheet items:

BI. The notional amount of the transaction is converted into a credit equivalent factor by multiplying the amount by the specified Credit Conversion Factor (CCF)

The resulting credit equivalent amount is then multiplied by the risk weight applicable to the counter party or to the purpose for which the bank has extended finance or the type of asset whichever is higher.

Where the off-balance sheet item is secured by eligible collateral or guarantee, the credit risk mitigation guidelines will be applied.

Non-market related off-balance sheet items:

Off balance sheet items like direct credit substitutes, trade and performance related contingent items and commitments with certain draw downs are classified under Non-market related off-balance sheet items. The credit equivalent amount is determined by multiplying the contracted amount of that particular transaction by the relevant CCF.

Non-market related off-balance sheet items also include undrawn or partially undrawn fund based and non-fund based facilities, which are not unconditionally cancellable. The amount of undrawn commitment is to be included in calculating the off-

balance sheet items. Non-market related exposure is the maximum unused portion of the commitment that could be drawn during the remaining period of maturity. In case of term loan with respect to large project to be drawn in stages, undrawn portion shall be calculated with respect of the running stage only.

RBI guidelines on CCF (Credit Conversion Factor)

Direct Credit Substitutes	CCF
General Guarantees (including Standby LCs), Acceptances	100%
Transaction related contingent items (Performance bonds, Bid bonds, Warranties, Indemnities, Standby LC relating to particular transaction)	50%
Short Term LC (Documentary) for Issuing bank as well as confirming bank	20%

Capital Charge on Un-availed limit

Capital Charge on Undrawn limits is calculated as under:

- φ) 20% on Undrawn CC limit
- γ) 20% on Undrawn TL limit (which is to be drawn in a year)
- η) 50% on Undrawn TL limit (which is to be drawn beyond a year)

Example

In the case of a cash credit facility for Rs.100 lakh (which is not unconditionally cancelable) where the availed portion is Rs. 60 lakh, the un-availed portion of Rs.40 lakh will attract a Credit Conversion Factor (CCF) of 20% (since the cash credit facility is subject to review / renewal normally once a year). The credit equivalent amount of Rs.8 lakh (20% of Rs.40 lakh) will be assigned the appropriate risk weight as applicable to the counterparty / rating to arrive at the risk weighted asset for the unavailed portion. The availed portion (Rs.60 lakh) will attract a risk weight as applicable to the counterparty / rating.

In compliance of the new guidelines banks have advised all the branches for:

- k) Insertion of Limit Cancellation Clause in loan documents
- l) Levying of Commitment Charges

Time frame for application of different approaches		Application to RBI by	Approval by RBI by
	IRB approach for Credit Risk	01.04.2012	31.3.2014
	AMA approach for Operational Risk	01.04.2012	31.3.2014
	Internal Model approach for Market Risk	01.04.2010	31.3.2011

VaR (Value at Risk)	Value at Risk is how much can we expect to lose? What is potential loss? We can lose maximum up to VaR (value at Risk) over a given time at a given confidence level. Calculation of VaR Market Factor Sensitivity X Daily Volatility X Probability at given confidence level Suppose impact of 1% change of interest rate (Price) = 6000/- Daily Volatility = 3% : Confidence level is 99% Probability of occurrence at 99% confidence level is 2.326 Defeasance period = 1 day VaR = 6000x3x2.326 = 41874/-															
Duration and Modified Duration	Duration is the time that Bondholder must wait for a number of years (duration) to receive Present Value of Cash Inflows i.e. period in which PV of Cash Inflows equals Actual Cash outflows.. <u>Formula of calculating Duration (Macaulay's Duration)</u> $\sum (PV \times T) / \sum PV$ <u>For example:</u> 5 years bond of Rs. 100 @ 6% gives Duration of 3.7 years. It means Total Cash flow of Rs. 130/- would be equivalent to receiving Rs. 130/- at the end of 3.7 years. Modified Duration = Duration / 1 + Yield															
CREDIT RISK How to find Risk Weighted Assets?	Fixed Assets : 500 Crore Govt. Securities : 5000 crore <u>Standard Assets</u> Retail ---3000 crore HL -----2000 crore Other loans---10000 cr <u>Sub-Standard Assets</u> Secured ----500 crore Unsecured -----150 crore <u>Doubtful (DAI)</u> -----800 crore Solution: Retail-----3000*75/100 = 2250 crore HL-----2000*50/100=1000 crore Other loans-----10000*100/100 = 10000 crore Gsec-----5000*0/100=0 SS Secured-----500*150/100=750 crore SS Unsecured -----150*100/100=150 crore Doubtful D1 -----800*100/100=800 crore Total RWAs = 2250+1000+10000+750+150+800 = 14950 crore															
OPERATIONAL RISK How to find Risk Weighted Assets?	<table><tr><td></td><td>1st year</td><td>2nd year</td></tr><tr><td>Net Profit</td><td>120 crore</td><td>150 crore</td></tr><tr><td>Provisions</td><td>240 crore</td><td>290 crore</td></tr><tr><td>Staff Expenses</td><td>280 crore</td><td>320 crore</td></tr><tr><td>Other Oper.</td><td>160 crore</td><td>240 crore</td></tr></table>		1st year	2 nd year	Net Profit	120 crore	150 crore	Provisions	240 crore	290 crore	Staff Expenses	280 crore	320 crore	Other Oper.	160 crore	240 crore
	1st year	2 nd year														
Net Profit	120 crore	150 crore														
Provisions	240 crore	290 crore														
Staff Expenses	280 crore	320 crore														
Other Oper.	160 crore	240 crore														

Minimum Capital Required and Capital to Support Market Risks	In the above example: $CAR = 1410/14000 \times 100 = 10.07\%$ Minimum Capital Required to support Credit and Operational Risks = $10000 \times 9/100 = 900$ crore Minimum Tier –I Capital Required to support Credit and Operational Risks = $900 \times 50 = 450$ crore Minimum Tier –II Capital Required to support Credit and Operational Risks = $900 - 450 = 450$ crore Amount of Tier –I Capital to support Market Risks = $800 - 450 = 350$ crore Amount of Tier –II Capital to support Market Risks = $610 - 450 = 160$ crore

Volatility with time horizon & Bond Value

Ex.1

If daily volatility of a Security is 2%, how much will be monthly volatility?

Solution

Monthly volatility = Daily Volatility * $\sqrt{30} = 2 \times \sqrt{30} = 2 \times 5.477 = 10.95\%$

AnsEx.2

If per annum volatility is 30% and nos. of trading days per annum be 250, how much will be daily volatility?

Solution

Annual Volatility = Daily Volatility * $\sqrt{250} = \text{Daily Volatility} \times 15.81$

$30 = \text{Daily Volatility} \times 15.81$

Daily volatility = $30/15.81 = 1.90\%$ Ans.

Ex.3

If 1 day VaR of a portfolio is Rs. 50000/- with 97% confidence level. In a period of 1 year of 300 trading days, how many times the loss on the portfolio may exceed Rs. 50000/-.

Solution

97% confidence level means loss may exceed the given level (50000) on 3 days out of 100.

If out of 100 days loss exceeds the given level on days = 3

Then out of 300 days, loss exceeds the given level = $3/100 \times 300 = 9$ days. Ans.

Ex.4

A 5 year 5% Bond has a BPV of Rs. 50/-, how much the bond will gain or lose due to increase in the yield of bond by 2 bps

Solution

Increase in yield will affect the bond adversely and the bond will lose.

Since BPV of the bond is Rs. 50/-. Increase in yield by 2 bps will result into loss of value of Bond by $50 \times 2 = 100$.

Ex.5

1 day VaR of a portfolio is Rs. 50000/- with 90% confidence level. In a period of 1 year (250 days) how many times the loss on the portfolio may exceed Rs. 50000/-

Ans. 90% confidence level means on 10 days out of 100, the loss will be more than Rs. 50000/-.

Out of 250 days, loss will be more than 50000/- on **25 days Ans.** It means, out of 250 days, loss will not exceed on 225 days.

2 MARKET RISK MANAGEMENT

Management of market risk should be the major concern of top management of banks. The Boards should clearly articulate market risk management policies, procedures, prudential risk limits, review mechanisms and reporting and auditing systems. The policies should address the bank's exposure on

a consolidated basis and clearly articulate the risk measurement systems that capture all material sources of market risk and assess the effects on the bank. The operating prudential limits and the accountability of the line management should also be clearly defined. The Asset- Liability Management Committee (ALCO) should function as the top operational unit for managing the balance sheet within the performance/risk parameters laid down by the Board. The banks should also set up an independent Middle Office to track the magnitude of market risk on a real time basis. The Middle Office should comprise of experts in market risk management, economists, statisticians and general bankers and may be functionally placed directly under the ALCO. The Middle Office should also be separated from Treasury Department and should not be involved in the day to day management of Treasury. The Middle Office should apprise the top management / ALCO / Treasury about adherence to prudential / risk parameters and also aggregate the total market risk exposures assumed by the bank at any point of time.

3 Tools for Measurement of Market Risk

Measures for market risk are broadly categorized as under:

- a. Factor Sensitivity Measures
- b. Volatility Based Measures

a. Factor Sensitivity Measures: Factor sensitivity measures assess the impact of change in the major factors (which determine the market value of the positions) on the market value of the portfolio. The most prominent factor sensitivity measure is the modified duration. Modified duration is the direct measure of sensitivity in value of a security or a portfolio of bonds for a change in interest rates. The modified duration concept rests on a number of assumptions which are unrealistic in today's environment. Though a number of refinements to the original concept have been suggested to make it applicable in the current environment, a number of issues remain unattended. Important among them are the relevance of the tool in an environment of non -parallel shifts in the yield curve and adequacy of the concept for bonds embedded options in the form of calls, puts, caps, floors etc. The most significant application of the factor sensitivity measures is to use them for setting limits at portfolio level. For example, a bank may set the maximum modified duration of its bond portfolio as (say) 7. This means that the price sensitivity that the bank is willing to accept in case of the bond portfolio is maximum 7% of the value of the portfolio for 1% change in the interest rates. Any loss higher than 7% would not be tolerated by the bank.

b. Volatility Based Measures: While factor sensitivity measures are still very popular in our

country and are practiced widely, in the recent past, volatility based measure popularly known as Value-at-Risk (VAR). The greatest advantage of VAR is its uniformity in measuring trading risk across various positions such as interest rates, currency, equity and commodity, which is the weakest thing as far as factor sensitivity measures are concerned. As a result of this uniformity of measurement, it is possible to aggregate risk across completely different positions, compare and contrast among various positions to assess the relative riskiness and so on. Apart from this, VAR has revolutionized the risk communication from trading desk to top management as the measure is extremely simple to understand unlike the factor sensitivity measures which make sense only to the respective trading and risk management community that uses them. It is important to recognize here that unless the risk reports are understood and acted upon by the top management, there would always be a possibility of a misalignment between what is perceived as acceptable risk by the top management and others who are in operating lines. An example of VAR is as under:

Type of the portfolio: GOI Bond Trading Portfolio

Market Value: Rs. 200 crores

VAR = Rs. 5 crores

Confidence Level used for VAR computation: 99%

Holding Period used for VAR computation (days): 1

The above information can be interpreted easily with a little knowledge of probability.

The exact interpretation of VAR of Rs. 5 crores for a Rs.200 crore GOI Bond portfolio is: the maximum loss that the bank will suffer on a single trading day (as holding period used is 1 day) would not exceed Rs.5 crores on 99% of the trading days (as the confidence level used for VAR computation is 99%). Only on 1% of the trading days, the loss would exceed the VAR of Rs. 5 crores. If we assume 100 trading days in a period, the above interpretation means that 99 trading days out of 100 days would have losses less than Rs. 5 crores. Only on 1 day out of 100 days, the losses would exceed the VAR number computed. Please note that the concept of VAR concentrates on only the possible losses.

We can calculate estimated daily volatility of security as follows :

1. If the volatility per annum is 25% and the number of trading days per annum is 252, find the volatility per day.

- a. 1.58% b. 15.8% c. 158% d. 0.10

$$A = 25 \times \frac{1}{\sqrt{252}}$$

$$A = 1.58\%$$

2. Daily volatility of a security is 1%. What is its 16 days volatility approximately?

- a. 3% b. 10% c. 1% d. 4%

Solutions:

Wherein trading days has not been given then we have to assume it as 260 days in a year. Accordingly, 16 days volatility = 'X'

Daily volatility = 1% or 0.01

So formula will be :

$$0.01 = X \sqrt{16}$$

$$0.01 = X \times 4$$

$$0.01/4 = X$$

$$\text{OR } X = 0.0025$$

$$\text{i.e } X = 0.25\%$$

There are at least three broad methods to computing VAR:

4. Historical Simulation: The approach relies heavily on past data of prices to estimate VAR. The basic assumption of the method is that the past trends and volatilities in prices would repeat in future also. This method does not require the use of any statistical distribution and tools, hence it is non-parametric.

5. Analytical or Variance Covariance VAR: This is the most accepted and practiced method at present popularized by the investment bank J.P.Morgan in the 90s. This approach is parametric as it assumes the prices to follow normal distribution and uses statistical concepts such as standard deviation, correlation, covariance etc. for the estimation of VAR.

6. Monte Carlo VAR: The term montecarlo denotes a popular approach to simulating random numbers based on a specified statistical distribution. This approach does not make any assumption of distributional properties of asset prices but involves empirical estimation of the statistical distribution from the prices which is then used to simulate the prices leading to the estimation of VAR.

Increasingly it has been found out that the VAR as a method for market risk measurement is suitable for only normal market environment. Stress testing should be used to complement the computed VAR to assess the performance of the portfolio in an environment of abnormal market movements which remain outside the standard VAR models as of date. This is attempted to be accomplished by modeling extreme price movements using Extreme Value Theory and other similar approaches.

5. Stress Testing :- "Stress testing" has been adopted as a generic term describing various techniques used by banks to gauge their potential vulnerability to exceptional, but plausible, events. Stress testing addresses the large moves in key market variables of that kind that lie beyond day to day risk monitoring but that could potentially occur. The process of stress testing, therefore, involves first identifying these potential movements, including which market variables to stress, how much to stress them by, and what time frame to run the stress analysis over.

Once these market movements and underlying assumptions are decided upon, shocks are applied to the portfolio. Revaluing the portfolios allows one to see what the effect of a particular market movement has on the value of the portfolio and the overall Profit and Loss.

Stress test reports can be constructed that summarise the effects of different shocks of different magnitudes. Normally, then there is some kind of reporting procedure and follow up with traders and management to determine whether any action need to be taken in response.

Stress testing and value-at-risk Stress tests supplement value-at-risk (VaR). VaR is thought to be a critical tool for tracking the riskiness of a firm's portfolio on a day-to-day level, and for assessing the risk-adjusted performance of individual business units. However, VaR has been found to be of limited use in measuring firms' exposures to extreme market events. This is because, by definition, such events occur too rarely to be captured by empirically driven statistical models. Furthermore, observed correlation patterns between various financial prices (and thus the correlations that would be estimated using data from ordinary times) tend to change when the price movements themselves are large. Stress tests offer a way of measuring and monitoring the portfolio consequences of extreme price movements of this type.

Stress Testing Techniques: Stress testing covers many different techniques. The four discussed here are listed in the Table below along with the information typically referred to as the "result" of that type of a stress test.

Stress Testing Techniques

Technique	What is the "stress test result"

Simple Sensitivity Test	Change in portfolio value for one or more shocks to a single risk factor
Scenario Analysis (hypothetical or historical)	Change in portfolio value if the scenario were to
Maximum loss	Sum of individual trading units' worst-case scenarios
Extreme value theory	Probability distribution of extreme losses

A simple sensitivity test isolates the short-term impact on a portfolio's value of a series of predefined moves in a particular market risk factor. For example, if the risk factor were an exchange rate, the shocks might be exchange rate changes of +/- 2 percent, 4 percent, 6 percent and 10 percent.

A scenario analysis specifies the shocks that might plausibly affect a number of market risk factors simultaneously if an extreme, but possible, event occurs. It seeks to assess the potential consequences for a firm of an extreme, but possible, state of the world. A scenario analysis can be based on an historical event or a hypothetical event. Historical scenarios employ shocks that occurred in specific historical episodes. Hypothetical scenarios use a structure of shocks thought to be plausible in some foreseeable, but unlikely circumstances for which there is no exact parallel in recent history. Scenario analysis is currently the leading stress testing technique.

A maximum loss approach assesses the riskiness of a business unit's portfolio by identifying the most potentially damaging combination of moves of market risk factors. Interviewed risk managers who use such "maximum loss" approaches find the output of such exercises to be instructive but they tend not to rely on the results of such exercises in the setting of exposure limits in any systematic manner, an implicit recognition of the arbitrary character of the combination of shocks captured by such a measure.

Extreme value theory (EVT) is a means to better capture the risk of loss in extreme, but possible, circumstances. EVT is the statistical theory on the behaviour of the "tails" (i.e., the very high and low potential values) of probability distributions. Because it focuses only on the tail of a probability distribution, the method can be more flexible. For example, it can accommodate skewed and fat-tailed distributions. A problem with the extreme value approach is adapting it to a situation where many risk factors drive the underlying return distribution. Moreover, the usually unstated assumption that extreme events are not correlated through time is questionable. Despite these drawbacks, EVT is notable for being the only stress test technique that attempts to attach a probability to stress test results.

What Makes a good Stress Test:- A good stress test should be relevant to the current position

- consider changes in all relevant market rates
- examine potential regime shifts (whether the current risk parameters will hold or break down)
- spur discussion
- consider market illiquidity, and
- consider the interplay of market and credit risk
-

How should risk managers use stress tests:

Stress tests produce information summarising the firm's exposure to extreme, but possible, circumstances. The role of risk managers in the bank should be assembling and summarising information to enable senior management to understand the strategic relationship between the firm's risk-taking (such as the extent and character of financial leverage employed) and risk

appetite. Typically, the results of a small number of stress scenarios should be computed on a regular basis and monitored over time.

Some of the specific ways stress tests are used to influence decision-making are to:

- manage funding risk
- provide a check on modelling assumptions
- set limits for traders
- determine capital charges on trading desks' positions
-

Manage funding risk: Senior managers use stress tests to help them make decisions regarding funding risk. Managers have come to accept the need to manage risk exposures in anticipation of unfavourable circumstances. The significance of such information will vary according to a bank's exposure to funding or liquidity risk.

Provide a check on modelling assumptions: Scenario analysis is also used to highlight the role of particular correlation and volatility assumptions in the construction of banks' portfolios of market risk exposures. In this case, scenario analysis can be thought of as a means through which banks check on the portfolio's sensitivity to assumptions about the extent of effective portfolio diversification.

Set limits for traders: Stress tests are also used to set limits. Simple sensitivity tests may be used to put hard limits on bank's market risk exposures.

Determine capital charges on trading desks' positions: Banks may also initiate capital charges based on hypothetical losses under certain stress scenarios. The capital charges are deducted from each business unit's bonus pool. This procedure may be designed to provide each business unit with an economic incentive to reduce the risk of extreme losses.

Limitations of Stress Tests:- Stress testing can appear to be a straightforward technique. In practice, however, stress tests are often neither transparent nor straightforward. They are based on a large number of practitioner choices as to what risk factors to stress, how to combine factors stressed, what range of values to consider, and what time frame to analyse. Even after such choices are made, a risk manager is faced with the considerable tasks of sifting through results and identifying what implications, if any, the stress test results might have for how the firm should manage its risk-taking activities. A well-understood limitation of stress testing is that there are no probabilities attached to the outcomes. Stress tests help answer the question "How much could be lost?" The lack of probability measures exacerbates the issue of transparency and the seeming arbitrariness of stress test design. Systems incompatibilities across business units make frequent stress testing costly for some firms, reflecting the limited role that stress testing had played in influencing the firm's prior investments in information technology.

CHAPTER 5

CREDIT RISK MANAGEMENT

- 4.1 Definition and Scope of Credit Risk
- 4.2 Organisational Structure
- 4.3 Significance Of Credit Risk:- Measurement And Management
- 4.4 Risk Identification
- 4.5 Approaches To Credit Risk Measurement: Intrinsic Risk
- 4.6 Approaches For Portfolio Concentration Risk
- 4.7 Tools of Credit Risk Management
- 4.8 Credit Risk Mitigation

4.1 DEFINITION AND SCOPE OF CREDIT RISK

Simon Hills (2004) of the British Bankers Association defines credit risk “is the risk to a bank’s earnings or capital base arising from a borrower’s failure to meet the terms of any contractual or other agreement it has with the bank. Credit risk arises from all activities where success depends on counterparty, issuer or borrower performance”. Credit risk enters the books of a bank the moment the funds are lent, deployed, invested or committed in any form to counterparty whether the transaction is on or off the balance sheet.

It can be understood from the above that credit risk arises from a whole lot of banking activities apart from traditional lending activity such as trading in different markets, investment of funds, provision of portfolio management services, providing different type of guarantees and opening of letters of credit in favour of customers etc. For example, even though guarantee is viewed as a non-fund based product, the moment a guarantee is given, the bank is exposed to the possibility of the non-funded commitment turning into a funded position when the guarantee is invoked by the entity in whose favour the guarantee was issued by the bank. This means that credit risk runs across different functions performed by a bank and has to be viewed as such.

The nature, nomenclature and the quantum of credit risk may vary depending on a number of factors. The internal organization of credit risk management should recognize this for effective credit risk management.

4.2 Organisational Structure

Sound organizational structure is sine qua non for successful implementation of an effective credit risk management system. The organizational structure for credit risk management should have the following basic features:

The Board of Directors should have the overall responsibility for management of risks. The Board should decide the risk management policy of the bank and set limits for liquidity, interest rate, foreign exchange and equity price risks. The Risk Management Committee will be a Board level Sub committee including CEO and heads of Credit, Market and Operational Risk Management Committees. It will devise the policy and strategy for integrated risk management containing various risk exposures of the bank including the credit risk. For this purpose, this Committee should effectively coordinate between the Credit Risk Management Committee (CRMC), the Asset Liability Management Committee and other risk committees of the bank, if any. It is imperative that the independence of this Committee is preserved. The Board should, therefore, ensure that this is not compromised at any cost. In the event of the Board not accepting any recommendation of this Committee, systems should be put in place to spell out the rationale for such an action and should be properly documented. This document should be made available to the internal and external auditors for their scrutiny and comments. The credit risk strategy and policies adopted by the committee should be effectively communicated throughout the organisation.

4.2.1 Each bank may, depending on the size of the organization or loan/investment book, constitute a high level Credit Risk Management Committee (CRMC). The Committee should be headed by the Chairman/CEO/ED, and should comprise of heads of Credit Department, Treasury, Credit Risk Management Department (CRMD) and the Chief Economist. The functions of the Credit Risk Management Committee should be as under:

- a. Be responsible for the implementation of the credit risk policy/strategy approved by the Board.

- b. Monitor credit risk on a bank wide basis and ensure compliance with limits approved by the Board.
- c. Recommend to the Board, for its approval, clear policies on standards for presentation of credit proposals, financial covenants, rating standards and benchmarks,
- d. Decide delegation of credit approving powers, prudential limits on large credit exposures, standards for loan collateral, portfolio management, loan review mechanism, risk concentrations, risk monitoring and evaluation, pricing of loans, provisioning, regulatory/legal compliance, etc.

4.2.2 Concurrently, each bank should also set up Credit Risk Management Department (CRMD), independent of the Credit Administration Department. The CRMD should:

- a. Measure, control and manage credit risk on a bank-wide basis within the limits set by the Board/ CRMC
- b. Enforce compliance with the risk parameters and prudential limits set by the Board/ CRMC.
- c. Lay down risk assessment systems, develop MIS, monitor quality of loan/investment portfolio, identify problems, correct deficiencies and undertake loan review/audit. Large banks could consider separate set up for loan review/audit.
- d. Be accountable for protecting the quality of the entire loan/ investment portfolio.

The Department should undertake portfolio evaluations and conduct comprehensive studies on the environment to test the resilience of the loan portfolio.

4.3 SIGNIFICANCE OF CREDIT RISK:- MEASUREMENT AND MANAGEMENT

The surge in interest in credit risk is due to the following :

Increase in Bankruptcies: Compared to the past, bankruptcies have increased. As a result of this, the permanent, accurate credit risk analysis practices have become more important than in the past.

Deregulation: Innovation stimulated by deregulation has led to new entrants into the markets to provide services. The credit risk assessment of the new entrants is very much essential for the well functioning of the market.

Disintermediation: As large institutions with strong credit quality are less dependent on bank funds, banks are left to serve institutions with weaker credit quality. The disintermediation has led to fall in the overall credit quality of the lending book, increasing the importance of credit risk measurement and management.

Shrinking Margins on Loans: Trends in international markets reveal that the interest margins or spreads, i.e. the difference between interest income and interest expenses has been falling. Apart from other factors, the increasing competition in the market is cited as the major reason for this.

Growth of off-Balance Sheet Risks: The phenomenal expansion of the Over-the-Counter (OTC) derivative products which carry counterparty risk unlike the exchange traded derivatives has increased the exposure of a number of banks to such products.

Volatility in the Value of Collateral: It has been observed that predicting the market value of collateral held against loan is very difficult. This may lead to a situation where the value of collateral may fall below the value of loan granted against it. Falling value of the collateral had been the cause for banking crises in well developed countries such as US, Europe and Japan.

Advances in Finance Theory and Computer Technology: These advances have paved the way for banks to test very sophisticated credit risk models that would not have been possible in the absence of finance theory and computer technology.

Risk-based Capital Regulations: Apart from the above, the development of risk-based capital requirements pronounced by the Basle Committee has been one of the important drivers of credit risk initiatives. This is more so with the Basle Accord –II which recognizes the differences in credit quality in the form of ratings and availability of collateral unlike the previous accord which is in force till date

4.4 RISK IDENTIFICATION:-

Credit Risk and Default

Credit Risk is the risk of loss to the Bank in the event of Default.

Default arises due to counterparty's inability and/or unwillingness to meet commitments in relation to lending.

Credit risk is the potential loss that a bank borrower or counter party will fail to meet its obligation in accordance with the agreed terms.

TYPES OF THE CREDIT RISK

A) Transaction risk	B) Portfolio risk
a) Grade risk	a) concentration risk
b) default risk	b) intrinsic risk

1) non payment

2) delayed payment

Credit risk may be in the following forms:

- * In case of the direct lending
- * In case of the guarantees and the letter of the credit *
- In case of the treasury operations
- * In case of the securities trading businesses
- * In case of the cross border exposure

Traditionally credit risk has 2 components

- a) Solvency aspects of the credit risk-the risk borrower is unable to pay
- b) Liquidity aspects of the risk-the risk that arise due to the delay in the repayment by the borrower

leading to the cash flow problems for the leader

Credit risk can be segmented into two major segments viz. Systematic or intrinsic and portfolio (or concentration) credit risks. The focus of the intrinsic risk is measurement of risk at individual loan level. This is carried out at lending unit level. Portfolio credit risk arises as a result of concentration of the portfolio to a particular sector, geographic area, industry, type of facility, type of borrowers, similar rating, etc. Concentration risk is managed at the bank level as it is more relevant at that level.

4.5 APPROACHES TO CREDIT RISK MEASUREMENT: INTRINSIC RISK

There are three basic approaches to credit risk measurement at individual loan intrinsic level that are used for various types of loans such as commercial loans, project and infrastructure finance, consumer and retail loans. They are:

- Expert Systems,
- Credit Rating, and
- Credit Scoring.
-

Expert Systems: In an expert system, the decision to lend is taken by the lending officer who is expected to possess expert knowledge of assessing the credit worthiness of the customer. Accordingly the success or failure very much depends on the expertise, judgment and the ability to consider relevant factors in the decision to lend. One of the most common expert systems is the five "Cs" of credit. The five 'C' are as under :

- a. Character: Measure of reputation of the firm, its willingness to repay and the repayment history.
- b. Capital: The adequacy of equity capital of the owners so that the owner's interest remains in the business. Higher the equity capital better the creditworthiness.
- c. Capacity: The ability to repay is measured by the expected volatility in the sources of funds intended to be used by the borrower for the repayment of loan along with interest. Higher the volatility of this source, higher the risk and vice versa.
- d. Collateral: Availability of collateral is important for mitigating credit risk. Higher the value of the collateral, lower would be the risk and vice versa.
- e. Cycle or (economic) Conditions: The state of the business cycle is an important element in

determining credit risk exposure. Some industries are highly dependent on the economic condition

while the others are less dependent or independent. Higher the dependence, higher the risk as during recessionary period of the economy, the cyclic industries would suffer and vice versa. Industries such as FMCG, pharmaceuticals, etc. are less dependent on economic cycles than industries such as consumer durable, steel, etc. The expert view on the above would finally influence the decision to lend or not.

Although many banks still use expert systems as part of their credit decision process, these systems face two main problems :

- a. Consistency: There may not be a consistent approach followed for different types of borrowers and industries. Thereby the system would be person dependent
- b. Subjectivity: As weights applied to different factors are subjective, comparability across time may not be possible.

Credit Rating: Credit Rating is the most popular method at present among banks. Rating is the process by which an alphabetic or numerical rating is assigned to a credit facility extended by a bank to a borrower based on a detailed analysis of his character and matching it with the characteristics of facility that is extended to him. The rating carried out by a bank is very much similar to the credit rating carried out by external rating agencies such as CRISIL, ICRA, etc. The only difference is that while the rating by the external agency is available in the public domain for any one to use, the internal ratings carried out by a bank is confidential and is used for specific purpose only. Moreover, the internal ratings of banks are usually finer than the ratings of rating agencies. This is to facilitate better distinction between credit qualities and pricing of loan in an accurate manner.

Credit Scoring: A major disadvantage of a rating model is the subjectivity of weight to be applied to different segments in the rating exercise. This drawback can be avoided in a scoring model which is based on rigorous statistical techniques. This approach combines a number of ratios into a single numerical score which is used to determine the credit quality or default. The basic assumption of the method is that combination of a number of ratios explains the success (no default) or failure (default) of a facility extended to a borrower. Starting with the historical data with known outcome of success or failure, a set of ratios that differentiate the successful cases from the failed ones along with the weights to be applied for each ratio is arrived at by multiple discriminant analysis. The most popular among the models is the one by Altman's (1968) Z-score model, which is a classificatory model for corporate borrowers. Based on a matched sample (by year, size and industry) of failed and solvent firms, and using linear discriminant analysis, the best fitting scoring model for commercial loans took the following form:

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6X_4 + 0.999X_5$$

Where

Z = Altman's Z score of a commercial loan

X₁ = working capital/total assets ratio

X₂ = retained earnings/total assets ratio

X₃ = earnings before interest and taxes/total assets ratio

X₄ = market value of equity/book value of total liabilities

X₅ = Sales/total assets ratio

As indicated, each one of the ratios in the equation is weighted by weight empirically arrived at on the basis of past experience with similar type of loans.

4.6 APPROACHES FOR PORTFOLIO CONCENTRATION RISK

The credit risk analysis described above is based on the notion that each loan should be made against some norm. Concentration risk was generally addressed by limiting the size of exposures to individual borrowers. Such an approach has proved inadequate to the task of limiting credit risk as supposedly distinct borrowers in particular sectors have experienced similar problems at the same time. For example: real estate, energy and shipping and loans to developing countries in the 80s and 90s of the U.S banks which led to huge losses despite religiously following a limit on exposure to individual borrowers. On a loan by loan basis these areas offer better opportunities than are available elsewhere.

4.7 Tools of Credit Risk Management.

The instruments and tools, through which credit risk management is carried out, are detailed below:

d) Exposure Ceilings: Prudential Limit is linked to Capital Funds – say 15% for individual borrower entity, 40% for a group with additional 10% for infrastructure projects undertaken by the group, Threshold limit is fixed at a level lower than Prudential Exposure; Substantial Exposure, which is the sum total of the exposures beyond threshold limit should not exceed 600% to 800% of the Capital Funds of the bank (i.e. six to eight times).

e) Review/Renewal: Multi-tier Credit Approving Authority, constitution wise delegation of powers, Higher delegated powers for better-rated customers; discriminatory time schedule for review/renewal, Hurdle rates and Bench marks for fresh exposures and periodicity for renewal based on risk rating, etc are formulated.

f) Risk Rating Model: Set up comprehensive risk scoring system on a six to nine point scale. Clearly define rating thresholds and review the ratings periodically preferably at half yearly intervals. Rating migration is to be mapped to estimate the expected loss.

g) Risk based scientific pricing: Link loan pricing to expected loss. High-risk category borrowers are to be priced high. Build historical data on default losses. Allocate capital to absorb the unexpected loss. Adopt the RAROC framework.

h) Portfolio Management The need for credit portfolio management emanates from the necessity to optimize the benefits associated with diversification and to reduce the potential adverse impact of concentration of exposures to a particular borrower, sector or industry. Stipulate quantitative ceiling on aggregate exposure on specific rating categories, distribution of borrowers in various industry, business group and conduct rapid portfolio reviews. The existing framework of tracking the non-performing loans around the balance sheet date does not signal the quality of the entire loan book. There should be a proper & regular on-going system for identification of credit weaknesses well in advance. Initiate steps to preserve the desired portfolio quality and integrate portfolio reviews with credit decision-making process.

i) Loan Review Mechanism This should be done independent of credit operations. It is also referred as Credit Audit covering review of sanction process, compliance status, review of risk rating, pick up of warning signals and recommendation of corrective action with the objective of improving credit quality. It should target all loans above certain cut-off limit ensuring that at least 30% to 40% of the portfolio is subjected to LRM in a year so as to ensure that all major credit risks embedded in the balance sheet have been tracked. This is done to bring about qualitative improvement in credit administration. Identify loans with credit weakness. Determine adequacy of loan loss provisions. Ensure adherence to lending policies and procedures. The focus of the credit audit needs to be broadened from account level to overall portfolio level. Regular, proper & prompt reporting to Top Management should be ensured. Credit Audit is conducted on site, i.e. at the branch that has appraised the advance and where the main operative limits are made available. However, it is not required to visit borrowers factory/office premises.

4.8 Credit Risk Mitigation

CRM is an essential part of credit risk management. This refers to the process through which credit risk is reduced or it is transferred to a counter party. Strategies for risk reduction at transaction level differ from that at portfolio level.

At transaction level banks use a number of techniques to mitigate the credit risk to which they are exposed. They are more traditional techniques e.g exposures collateralized by first priority claims, either in whole or in part, with cash or securities, or an exposure guaranteed by a third party.

At portfolio level, asset securitisation, credit derivatives etc., are used to mitigate risks in the portfolio.

A. Securitisation Transaction

Meaning :One of the most prominent developments in international finance in recent decades and the one that is likely to assume even greater importance in future, is securitisation. Securitisation is the process of pooling and repackaging of homogenous illiquid financial assets into marketable securities that can be sold to investors. The process leads to the creation of financial instruments that represent ownership interest in, or are secured by a segregated income producing asset or

pool of assets. The pool of assets collateralises securities. These assets are generally secured by personal or real property (e.g. automobiles, real estate, or equipment loans), but in some cases are unsecured (e.g. credit card debt, consumer loans).

There are four steps in a securitisation: (i) SPV is created to hold title to assets underlying securities; (ii) the originator or holder of assets sells the assets (existing or future) to the SPV; (iii) the SPV, with the help of an investment banker, issues securities which are distributed to investors; and (iv) the SPV pays the originator for the assets with the proceeds from the sale of securities.

A securitisation transaction generally involves some or all of the following parties: (i) the initial owner of the asset (the originator or sponsor) who has a loan agreement with the borrowers (obligors); (ii) the issuer of debt instruments who also is the SPV. The structure keeps the SPV away from bankruptcy of the originator, technically called 'bankruptcy remote'; (iii) the investment bankers who assist in structuring the transaction and who underwrite or place the securities for a fee; (iv) the rating agencies, who assess credit quality of certain types of instruments and assign a credit rating; (v) the credit enhancer, possibly a bank, surety company, or insurer, who provides credit support through a letter of credit, guarantee, or other assurance; (vi) the servicer, usually the originator, who collects payments due on the underlying assets and, after retaining a servicing fee, pays them over to the security holders; (vii) the trustee, who deals with issuer, credit enhancer and servicer on behalf of the security holders; (viii) the legal counsel, who participates in the structuring of the transaction¹; and (ix) the swap counterparty who provides interest rate / currency swap, if needed.

B Credit derivatives:

Credit derivatives are privately negotiated bilateral contracts that allow users to manage their exposure to credit risk. For example, a bank concerned that one of its customers may not be able to repay a loan can protect itself against loss by transferring the credit risk to another party while keeping the loan on its books. This mechanism can be used for any debt instrument or a basket of instruments for which an objective default price can be determined. In this process, buyers and sellers of the credit risk can achieve various objectives, including reduction of risk concentrations in their portfolios, and access to a portfolio without actually making the loans. Credit derivatives offer a flexible way of managing credit risk and provide opportunities to enhance yields by purchasing credit synthetically.

Example:- Consider Bank A that has lent to the steel industry. Suppose this bank wants to reduce its credit risk. Bank B wants to lend to the steel industry but cannot do so because of locational disadvantage. So, Bank A and Bank B enter into an agreement.

The agreement is that if, say, Steel Company X defaults on its loan payments, Bank B will pay Bank A the defaulted amount. If not, Bank B will not pay any money. For providing this facility, Bank B will receive a premium from Bank A. This simple agreement is one of the many credit derivatives available in the international market.

Notice that the agreement works like a term assurance contract. You pay a yearly premium to the life insurance company. If you die, the insurance company pays a death benefit. If not, your premiums are not refundable. Credit derivatives are also useful in diversifying loan portfolio. In the above example, by selling (writing) a credit protection, Bank B has taken exposure to the steel

sector. How? It will receive premiums just as it receives interest on loans. Bank B will also be exposed to losses if the steel company defaults.

I. Credit default swap

The credit default swap or CDS has become the cornerstone product of the credit derivatives market. This product represents over thirty percent of the credit derivatives market.

A credit default swap, in its simplest form (the unfunded single name credit default swap) is a bilateral contract between a protection buyer and a protection seller. The credit default swap will reference the creditworthiness of a third party called a reference entity (i.e borrower of any bank): this will usually be a corporate or sovereign. The credit default swap will relate to the specified debt obligations of the reference entity: perhaps its bonds and loans, which fulfill certain pre-agreed characteristics.

The protection buyer will pay a periodic fee to the protection seller in return for a contingent payment by the seller upon a credit event affecting the obligations of the reference entity specified in the transaction.

The relevant credit events specified in a transaction will usually be selected from amongst the following:

- the bankruptcy of the reference entity;
- its failure to pay in relation to a covered obligation;
- it defaulting on an obligation or that obligation being accelerated;
- it agreeing to restructure a covered obligation or a repudiation or moratorium being declared over any covered obligation.

If any of these events occur and the protection buyer serves a credit event notice on the protection seller detailing the credit event as well as (usually) providing some publicly available information validating this claim, then the transaction will settle.

The seller of the credit default swap is said to sell protection. The seller collects the periodic fee and profits if the credit of the reference entity remains stable or improves while the swap is outstanding. Selling protection has a similar credit risk position to owning a bond or loan, or "going long risk."

Example:-

As shown in Exhibit 2.1, Bank B (herein after Investor B), the buyer of protection, pays Bank S (herein after Investor S), the seller of protection, a periodic fee (usually on the 20th of March, June, September, and December) for a specified time frame. To calculate this fee on an annualized basis, the two parties multiply the notional amount of the swap, or the amount of risk being exchanged, by the market price of the credit default swap (the market price of a CDS is also called the spread or fixed rate). CDS market prices are quoted in basis points (bp) paid annually, and are a measure of the reference entity's credit risk (the higher the spread the greater the credit risk).

Exhibit 2.1: Single name credit default swaps



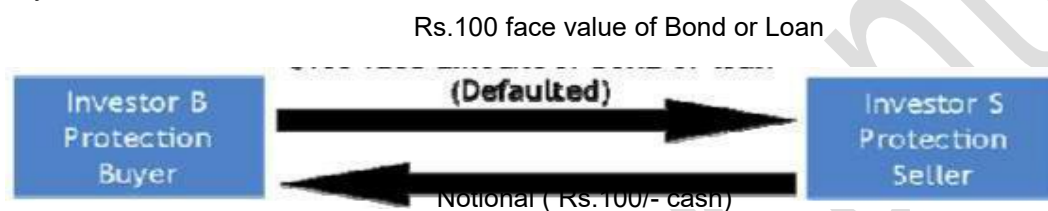
If credit event happened then:

Settlement following credit events :- Physical settlement:-

Following a credit event, the buyer of protection delivers to the seller of protection defaulted bonds and/or loans with a face amount equal to the notional amount of the credit default swap contract. The seller of protection (long risk) then delivers the notional amount on the CDS contract in cash to the buyer of protection. Note that the buyer of protection pays the accrued spread from the last coupon payment date up to the day of the credit event, then the coupon payments stop. The buyer can deliver any bond issued by the reference entity meeting certain criteria that is pari passu, or of the same level of seniority, as the specific bond referenced in the contract. Thus the protection buyer has a “cheapest to deliver option,” as she can deliver the lowest price bond to settle the contract. This type of settlement is known as “physical settlement”. See Exhibit 2.2

Generally, the legal framework of a CDS – that is, the documentation evidencing the transaction – is based on a confirmation document and legal definitions set forth by the International Swaps and Derivatives Association, Inc. (ISDA).

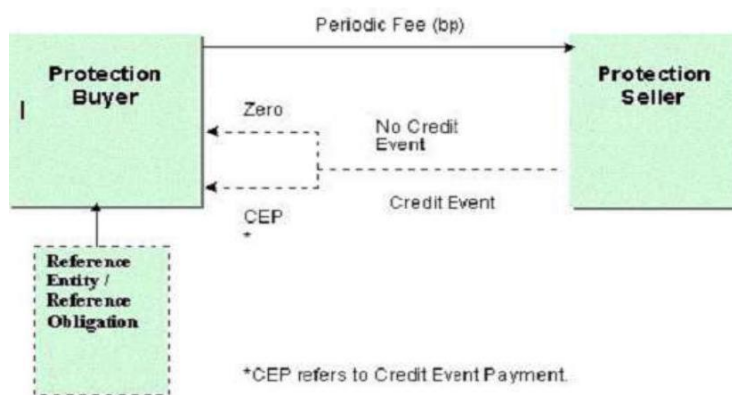
Exhibit 2.2: If the Reference Entity has a credit event, the CDS Buyer delivers a bond or loan issued by the reference entity to the Seller. The Seller then delivers the Notional value of the CDS contract to the Buyer.



Cash settlement:

A CDS may specify that on occurrence of a credit event the protection seller shall pay difference between the nominal value of the reference obligation and its market value at the time of credit event. This type of settlement is known as “cash settlement”. This type of settlement is also known as payment of par less recovery. A calculation agent plays an important role in the process of settlement.

Figure 2 : Cash Settled Credit Default Swaps



II Total return swap

A total return swap (also known as Total Rate of Return Swap) is a contract between two counterparties whereby they swap periodic payments for the period of the contract. Typically, one party receives the total return (interest payments plus any capital gains or losses for the payment period) from a specified reference asset, while the other receives a specified fixed or floating cash flow that is not related to the creditworthiness of the reference asset, as with a vanilla Interest rate

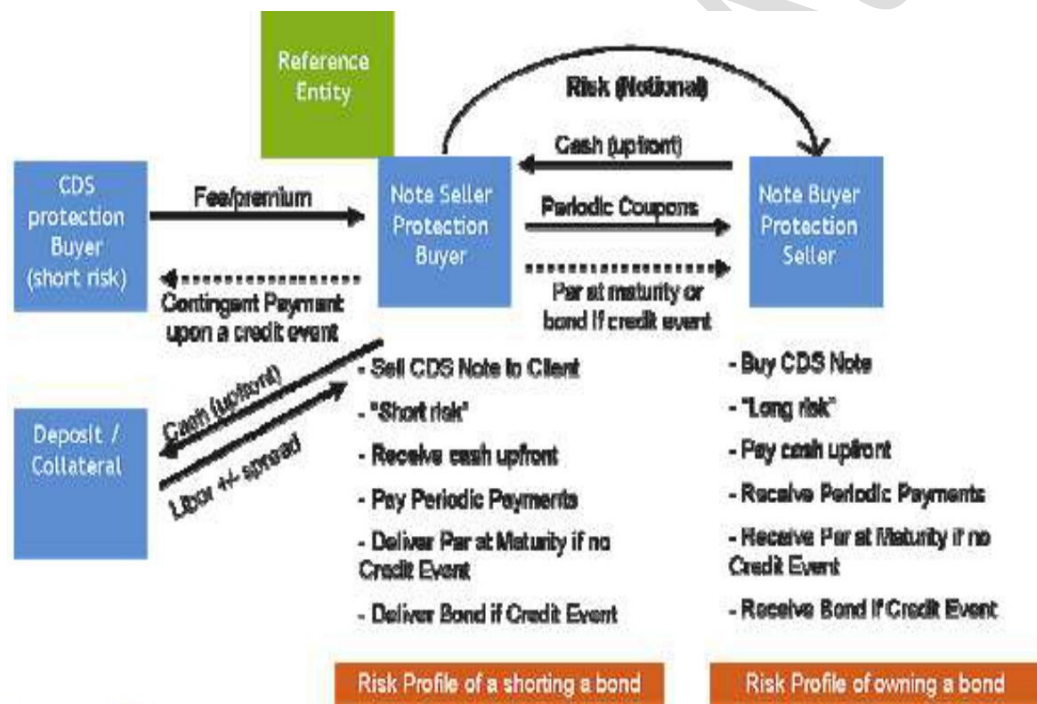
asset, index or basket of assets.
The TRS is simply a

III Credit linked notes

buying and selling credit-

inception.

Credit-Linked Notes at glance:-



CHAPTER 5 OPERATIONAL RISK

- 5.1 Introduction
- 5.2 Definition
- 5.3 Significance of operational risk
- 5.4 Objectives of operational risk
- 5.5 Developing appropriate environment
- 5.6 Methodologies for measurement of operational risk

5.1 INTRODUCTION

Operational risk is emerging as one of the important risks financial institutions worldwide are concerned with. Unlike other categories of risks, such as credit and market risks, the definition and scope of operational risk is not fully clear. A number of diverse professions such as internal control and audit, statistical quality control and quality assurance, facilities management and contingency planning, etc., have approached the subject of operational risk thereby bringing in different perspectives to the concept. While studies carried out on bank failures in the U.S. show that operational risk has accounted for an insignificant proportion of large bank failures so far, it is widely acknowledged that most of the new, unknown risks are under the category of operational risk. This necessitates the need for an understanding of the operational risks in financial services in general and banking in particular.

5.2 DEFINITION OF OPERATIONAL RISK

According to the Basel Committee, Operational risk is defined as “the risk of loss resulting from inadequate or failed processes, people and systems or external events. This definition includes legal risk, but excludes strategic and reputational risk” (The New Basel Capital Accord, Consultative Document released in April 2003. Bankers Trust (now a part of Deutsche Bank) asked a very simple question way back in 1992 to understand the nature of operational risk: what risks were not being addressed by market and credit risk models and functions? Answering the question led the bank to identify risks associated with the bank’s exposures as under:

Primary operational risk/exposure classes are:

A. Cause based

Relationship Risks

Non-proprietary losses caused to a firm and generated through the relationship or contact that a firm has with its clients, shareholders, third parties or regulators (e.g. accommodations/reimbursements to clients, settlements or penalties paid, etc).

People/Human Capital Risks

The risk of loss caused intentionally or unintentionally by an employee (i.e. an employee error, employee misdeed, etc.) or involving employees, such as in the area of employment disputes, intellectual capital, etc.

Technology and Processing Risks

The risk of loss caused by a piracy, theft, failure, breakdown or other disruption in technology, data or information; also includes technology that fails to meet the intended business needs.

Physical Risks

The risk of loss through damage of bank-owned properties or loss to physical property or assets for which the firm is responsible.

B. Effect based

1. Legal Liability
2. Regulatory, compliance and taxation penalties
3. Loss or damage to assets
4. Restitution

5. Write downs

C. Event Based

1. Internal Fraud
2. External Fraud
3. Employment practices and workplace safety
4. Clients, products and business practices.
5. Execution, delivery and process management.

5.3 SIGNIFICANCE OF OPERATIONAL RISK

There are number of reasons why operational risks need to be managed properly:

- a. Increasing Complexity of Activities: The complexity of activities have grown over increasing the probability of errors, intentional or otherwise. This is especially true as the activities of banks in the financial markets have grown considerably, exposing them to operational risks apart from other risks.
- b. Adoption of Technology: While the adoption of technology helps in reducing ac number of errors committed by human beings, technology absorption has created a number of new risks which need to be managed. If not managed properly, the losses could be very large and may threaten the existence of the institution.
- c. Regulatory Requirement: As discussed elsewhere, the old capital accord concentrated only on credit risk. The new capital accord, apart from fine-tuning capital requirements for credit risk, proposed for the first time a minimum capital to be maintained for operational risks
- d. New Products and Services: To effectively compete in the market place, many new products and services are offered in the banking industry. The recent entry of a number of banks into the business of insurance, either as agents or otherwise is a recent example. The introduction of new products comes with its own risks which may or may not be detected. With a view to gain market share, the time taken to introduce new products in the market is considerably shortened in some cases leading to improper assessment of operational risks. Risks arising out of change in the features of existing products to make it more attractive to customers also fall in the same category.
- e. Capital Allocation and Performance Management: As indicated in a previous unit, each one of the risks needs allocation of capital commensurate with the quantum of risks. The return on allocated capital is the performance to be evaluated against benchmarks to performance measurement and management. Operational risks are very much a part of the various types of risks included in arriving at performance at business unit level. With growing activism of the shareholders to realize their expected return and the highly competitive market for capital, capital allocation and performance management are important steps at various levels.

5.4 OBJECTIVES OF OPERATIONAL RISK MANAGEMENT

Operational Risk is managed with the following objectives:

- i. To ensure that the Board of Directors and top management are suitably informed in the form of reports to undertake appropriate monitoring of operational risks and set controls for them on an ongoing basis.
- ii. To ensure that there is a system of operational risk management to identify measure and control operational risks as laid out in the operational risk policy.
- iii. To make sure that operational risks, like other risks are considered at all stages in decision making. This would enable proper pricing of products offered to customers.
- iv. To generate a broader understanding of operational risk issues at all levels.
- v. To put in place an effective system to demonstrate to the regulators the adequacy of the system for the operational risks.

5.5 DEVELOPING AN APPROPRIATE RISK MANAGEMENT ENVIRONMENT

Failure to understand and manage operational risk, which is present in virtually all bank transactions and activities, may greatly increase the likelihood that some risks will go unrecognised and uncontrolled. Both the board and senior management are responsible for creating an organisational culture that places high priority on effective operational risk management and

adherence to sound operating controls. Operational risk management is most effective where a bank's culture emphasises high standards of ethical behaviour at all levels of the bank. The board and senior management should promote an organisational culture which establishes through both actions and words the expectations of integrity for all employees in conducting the business of the bank.

Principle 1: The board of directors⁴ should be aware of the major aspects of the bank's operational risks as a distinct risk category that should be managed, and it should approve and periodically review the bank's operational risk management framework.

The framework should provide a firm-wide definition of operational risk and lay down the principles of how operational risk is to be identified, assessed, monitored, and controlled/mitigated.

Principle 2: The board of directors should ensure that the bank's operational risk management framework is subject to effective and comprehensive internal audit by operationally independent, appropriately trained and competent staff. The internal audit function should not be directly responsible for operational risk management.

Principle 3: Senior management should have responsibility for implementing the operational risk management framework approved by the board of directors. The framework should be consistently implemented throughout the whole banking organisation, and all levels of staff should understand their responsibilities with respect to operational risk management. Senior management should also have responsibility for developing policies, processes and procedures for managing operational risk in all of the bank's material products, activities, processes and systems.

Risk Management: Identification, Assessment, Monitoring, and Mitigation/Control

Principle 4: Banks should identify and assess the operational risk inherent in all material products, activities, processes and systems. Banks should also ensure that before new products, activities, processes and systems are introduced or undertaken, the operational risk inherent in them is subject to adequate assessment procedures.

Principle 5: Banks should implement a process to regularly monitor operational risk profiles and material exposures to losses. There should be regular reporting of pertinent information to senior management and the board of directors that supports the proactive management of operational risk.

Principle 6: Banks should have policies, processes and procedures to control and/or mitigate material operational risks. Banks should periodically review their risk limitation and control strategies and should adjust their operational risk profile accordingly using appropriate strategies, in light of their overall risk appetite and profile.

Principle 7: Banks should have in place contingency and business continuity plans to ensure their ability to operate on an ongoing basis and limit losses in the event of severe business disruption.

5.6 METHODOLOGIES FOR MEASUREMENT OF OPERATIONAL RISKS

The Basle committee has outlined three methodologies for measurement of operational risks. They are:

- a. The Basic Indicator Approach,
- b. The Standardized Approach, and
- c. The Advanced Measurement Approaches.

a. The Basic Indicator Approach

A fixed percentage (denoted alpha) of average annual gross income over the previous three years is the capital required to be maintained by banks under this approach. It is expressed as:

$$KBIA = GI \times \alpha$$

Where

KBIA = The Capital charge under the Basic Indicator Approach

GI = Average annual Gross Income over the previous three years*

a = 15% which is set by the Committee, relating the industry wide level of required capital to the industry wide level of the indicator.

Gross income for the purpose of the above approach is defined as net interest income plus net non-interest income. It is intended that this measure should:

Gross income = Net profit (+) Provisions & Contingencies (+) operating expenses (Schedule 16) {(OR) Net interest income plus net non-interest income}

(-) profit on sale of HTM investments

(-) income from insurance

(-) extraordinary / irregular item of income

(+) loss on sale of HTM investments

*Figures for any year in which annual gross income is negative or zero should be excluded from both the numerator and denominator when calculating the average.

Illustration:

From the following information calculate operational risk of Xis Bank Ltd for 31.03.2014.

	1	2	Rs. in lakhs 3
Net Profit	2511.00	2860.00	3240.00
Reserves created for contingency	28.20	36.25	41.50
Provisions on NPA	85.00	112.00	78.00
Provisions on standard assets	12.00	16.00	28.00
Profit on sale of Trading	28.00	54.00	67.00
Loss on sale of HTM investments	-14.50	0	0
Profit on sale of HTM Investments	0	21.00	34.00
Operation Expenses	3455.00	3968.00	4294.00

Answer: Ascertain the Gross income on yearly basis for these 3 years:

	Rs. in lakhs		
	31.03.11	31.03.12	31.03.13
Net Profit	2511.00	2860.00	3240.00
Add:			
Reserves created for contingency	28.20	36.25	41.50
Provisions on NPA	85.00	112.00	78.00
Provisions on standard assets	12.00	16.00	28.00
Operation Expenses	3455.00	3968.00	4294.00
Loss on sale of HTM investments	14.50	0	0
Total	6105.70	6992.25	7681.50
Less:			
Profit on sale of HTM Investments	0	21.00	34.00
Gross Income	6105.70	6971.25	7647.50
No adjustment required for Profit on sale of Trading investments			

Total Gross Income for 3 years = 6105.70 + 6971.25 + 7647.50 = 20,724.45

GI = Average annual Gross Income over the previous three years

= $\frac{20724.45}{3}$ = 6908.15 lakhs

Operational Risk

KBIA= GI × a = 6908.15 × 15% = 1036.22 lakhs

b. The Standardized Approach

Under this approach, activities of the banks are divided into eight business lines:

1. Corporate Finance,
2. Trading and Sales,
3. Retail Banking,
4. Commercial Banking,
5. Payment and Settlement,
6. Agency Services,
7. Asset Management, and
8. Retail Brokerage.

Within each business line, gross income is a broad indicator that serves as a proxy for the scale of business operations and thus the likely scale of operational risk exposure within each of these business lines. The capital charge for each business line is calculated by multiplying gross income by a factor (denoted beta) assigned to that business line. Beta serves as a proxy for the industry-wide relationship between the operational risk loss experience for a given business line and the aggregate level of gross income for that business line. It is to be appreciated that the gross income is measured for each business line, not for the whole institution as in the case of basic indicator approach.

The total capital required for operational risk then, is the simple summation of the capital required across each of the eight business lines. This is expressed as under:

$$K = \sum_{i=1}^8 (GI_i \times b_i)$$

Where: TSA1-8 = 1-8

KTSA = the capital charge under the Standardised Approach

GI1-8 = the average annual level of Gross Income over the past three years, as defined above in the Basic Indicator Approach, for each of the eight business lines

b1-8 = a fixed percentage, set by the Committee, relating the level of required capital to the level of the gross income for each of the eight business lines.

The values of the betas are detailed below:

Corporate finance (b	18%
Trading & Sales (b) 1	18%
Retail Banking (b)2	12%
Commercial Banking3 (b)	15%
Payment & settlement (b4)	18%
Agency services (b) 5	15%
Asset management6 (b)	12%
Retail Brokerage (b8) 7	12%

Supplementary Business Line Mapping Guidelines

There are a variety of valid approaches that banks can use to map their activities to the eight business lines, provided the approach used meets the business line mapping principles.

The following is an example of one possible approach that could be used by a bank to map its gross income:

4. Gross income for retail banking consists of net interest income on loans and advances to retail customers and SMEs treated as retail, plus fees related to traditional retail activities, net income from swaps and derivatives held to hedge the retail banking book, and income on purchased retail receivables. To calculate net interest income for retail banking, a bank takes the interest earned on its loans and advances to retail customers less the weighted average cost of funding of the loans (from whatever source).

5. Similarly, gross income for commercial banking consists of the net interest income on loans and advances to corporate (plus SMEs treated as corporate), interbank and sovereign customers and income on purchased corporate receivables, plus fees related to traditional commercial banking

activities including commitments, guarantees, bills of exchange, net income (e.g. from coupons and dividends) on securities held in the banking book, and profits/losses on swaps and derivatives held to hedge the commercial banking book. Again, the calculation of net interest income is based on interest earned on loans and advances to corporate, interbank and sovereign customers less the weighted average cost of funding for these loans (from whatever source).

6. For trading and sales, gross income consists of profits/losses on instruments held for trading purposes (i.e. in the mark-to-market book), net of funding cost, plus fees from wholesale broking.

7. For the other five business lines, gross income consists primarily of the net fees/commissions earned in each of these businesses. Payment and settlement consists of fees to cover provision of payment/settlement facilities for wholesale counterparties. Asset management is management of assets on behalf of others.

Illustration:

From the following information calculate operational risk of Xis Bank Ltd by standardized approach

for 31.03.2014.

	Rs. in lakhs		
	1	2	3
Interest received 1	255.10	320.18	387.90
Weighted average cost of funding	192.14	268.70	310.22
Non interest income	22.00	18.00	27.00
Interest received 3	458.90	520.11	670.90
Net income from derivatives	0	0	27.80
Fees & commission	32.20	44.78	69.34
Weighted average cost of funding	356.00	427.45	578.16
Net interest income 4	78.24	126.10	156.08
BG/LC Fees & commission	56.78	92.24	103.12
Net income on securities held in the banking book	109.12	98.70	124.56
Weighted average cost of funding	348.24	448.12	512.30

Answer: Ascertain the Gross income on yearly basis for these 3 years for each line of business:

	Rs. in lakhs		
	31.03.12	31.03.12	31.03.13
Interest received 1	255.10	320.18	387.90
Add: Non interest income	22.00	18.00	27.00
Total	277.10	338.18	414.90
Less: Weighted average cost of funding	192.14	268.70	310.22
Gross income from corporate finance	84.96	69.48	104.68
Interest received 3	458.90	520.11	670.90
Add: Net income from derivatives	0	0	27.80
Fees & commission	32.20	44.78	69.34
Total	491.10	564.89	768.04
Less: Weighted average cost of funding	356.00	427.45	578.16
Gross income from retail banking	135.10	137.44	189.88
4			

Net interest income	78.24	126.10	156.08
Add: BG/LC Fees & commission	56.78	92.24	103.12
bookNet income on securities held in the banking	109.12	98.70	124.56
Gross income from commercial banking	244.14	317.04	383.76
We will not deduct Weighted average cost of funding as here Net Interest income is given i.e the same is already deducted and hence no need to deduct it again.			

Total Gross Income for 3 years for each line of business will be :

	31.03.11	31.03.12	31.03.13	Total	Avg. Income
Gross income from retail banking	135.10	137.44	189.88	462.42	154.14
Gross income from commercial banking	244.14	317.04	383.76	944.94	314.98

Operational Risk now will be: Taking it on the basis of average income of last 3 years :

$$KTSA = S(GI \times b)$$

	Amount	Beta factor	Operational Risk
Gross income from corporate finance	86.37	18%	15.54
Gross income from retail banking	154.14	12%	18.49
Gross income from commercial banking	314.98	15%	47.25
			81.28

C. Advanced Measurement Approaches (AMA)

A number of approaches which are internally developed by banks using the quantitative and qualitative criteria for the measurement of operational risks are categorized under AMA. While banks are free to internally develop systems for the measurement of operational risks under AMA, only after obtaining the approval of the local supervisor, the internal models can be put to use. Very few banks in India would really be in a position to even think of AMA at present as it involves the creation of database of losses and its drivers business line-wise. The internal model developed must be able to measure variety of operational risks. It is important that the model developed must be able to reflect both the dimensions of operational risks, i.e., the probability of loss and the severity of loss. While high probability – low impact losses such as human errors, minor frauds, etc., are not very severe and the institution must be in a position to absorb the losses in the normal course of business, the low probability – high impact losses such as break-down of well laid out internal control systems owing to connivance leading to unauthorized dealings in securities and consequent large losses can threaten the very existence of the institution.

The approaches that banks are currently developing fall under three broad categories. These are the Internal Measurement Approaches (IMA), Loss Distribution Approaches (LDA), and Scorecard Approaches.

Assets & Liability management

Asset Liability Management (ALM) can be defined as a mechanism to address the risk faced by a bank due to a mismatch between assets and liabilities either due to liquidity or changes in interest rates. Liquidity is an institution's ability to meet its liabilities either by borrowing or converting assets. Apart from liquidity, a bank may also have a mismatch due to changes in interest rates as banks typically tend to borrow short term (fixed or floating) and lend long term (fixed or floating). A comprehensive ALM policy framework focuses on bank profitability and long-term viability by targeting the net interest margin (NIM) ratio and Net Economic Value (NEV), subject to balance sheet constraints. Significant among these constraints are maintaining credit quality, meeting liquidity needs and obtaining sufficient capital.

An insightful view of ALM is that it simply combines portfolio management techniques (that is, asset, liability and spread management) into a coordinated process. Thus, the central theme of ALM is the coordinated – and not piecemeal – management of a bank's entire balance sheet.

Although ALM is not a relatively new planning tool, it has evolved from the simple idea of maturity-matching of assets and liabilities across various time horizons into a framework that includes sophisticated concepts such as duration matching, variable-rate pricing, and the use of static and dynamic simulation.

Measuring Risk

The function of ALM is not just protection from risk. The safety achieved through ALM also opens up opportunities for enhancing net worth. Interest rate risk (IRR) largely poses a problem to a bank's net interest income and hence profitability. Changes in interest rates can significantly alter a bank's net interest income (NII), depending on the extent of mismatch between the asset and liability interest rate reset times. Changes in interest rates also affect the market value of a bank's equity. Methods of managing IRR first require a bank to specify goals for either the book value or the market value of NII. In the former case, the focus will be on the current value of NII and in the latter, the focus will be on the market value of equity. In either case, though, the bank has to measure the risk exposure and formulate strategies to minimise or mitigate risk.

The immediate focus of ALM is interest-rate risk and return as measured by a bank's net interest margin.

$$\text{NIM} = (\text{Interest income} - \text{Interest expense}) / \text{Earning assets}$$

A bank's NIM, in turn, is a function of the interest-rate sensitivity, volume, and mix of its earning assets and liabilities. That is, $\text{NIM} = f(\text{Rate, Volume, Mix})$

Sources of interest rate risk

The primary forms of interest rate risk include repricing risk, yield curve risk, basis risk and optionality.

Effects of interest rate risk

Changes in interest rates can have adverse effects both on a bank's earnings and its economic value.

The earnings perspective:

From the earnings perspective, the focus of analyses is the impact of changes in interest rates on accrual or reported earnings. Variation in earnings (NII) is an important focal point for IRR analysis because reduced interest earnings will threaten the financial performance of an institution.

Economic value perspective:

Variation in market interest rates can also affect the economic value of a bank's assets, liabilities, and Off Balance Sheet (OBS) positions. Since the economic value perspective considers the potential impact of interest rate changes on the present

value of all future cash flows, it provides a more comprehensive view of the potential long-term effects of changes in interest rates than is offered by the earnings perspective.

Interest rate sensitivity and GAP management

This model measures the direction and extent of asset-liability mismatch through a funding or maturity GAP (or, simply, GAP). Assets and liabilities are grouped in this method into time buckets according to maturity or the time until the

An insightful view of ALM is that it simply combines portfolio management techniques into a coordinated process.

SI.

No.

Type of GAP Change in Interest Rates (Δr)

Change in Net Interest

Income (ΔNII)

1 RSA = RSLs Increase No change

2 RSA = RSLs Decrease No change

3 RSAs $\geq$ RSLs Increase NII increases

4 RSAs $\geq$ RSLs Decrease NII decreases

5 RSAs $\leq$ RSLs Increase NII decreases

6 RSAs $\leq$ RSLs Decrease NII increases

first possible resetting of interest rates. For each time bucket the GAP equals the difference between the interest rate sensitive assets (RSAs) and the interest rate sensitive liabilities (RSLs). In symbols:

$GAP = RSAs - RSLs$

When interest rates change, the bank's NII changes based on the following interrelationships:

$\Delta NII = (RSAs - RSLs) \times \Delta r$

$\Delta NII = GAP \times \Delta r$

A zero GAP will be the best choice either if the bank is unable to speculate interest rates accurately or if its capacity to absorb risk is close to zero. With a zero GAP, the bank is fully protected against both increases and decreases in interest rates as its NII will not change in both cases.

As a tool for managing IRR, GAP management suffers from three limitations:

- Financial institutions in the normal course are incapable of out-predicting the markets, hence maintain the zero GAP.
- It assumes that banks can flexibly adjust assets and liabilities to attain the desired GAP.
- It focuses only on the current interest sensitivity of the assets and liabilities, and ignores the effect of interest rate movements on the value of bank assets and liabilities.

Cumulative GAP model

In this model, the sum of the periodic GAPs is equal to the cumulative GAP measured by the maturity GAP model. While the periodic GAP model corrects many of the deficiencies of the GAP model, it does not explicitly account for the influence of multiple market rates on the interest income.

Duration GAP model (DAGAP)

Duration is defined as the average life of a financial instrument. It also provides an approximate measure of market value interest elasticity. Duration analysis begins by computing the individual duration of each asset and liability and weighting the individual durations by the percentage of the asset or liability in the balance sheet to obtain the combined asset and liability duration.

$DUR_{gap} = DUR_{assets} - KLI_{liabilities}$

Where, $KLI_{liabilities}$ = Percentage of assets funded by liabilities

DGAP directly indicates the effect of interest rate changes on the net worth of the institution. The funding GAP technique matches cash flows by structuring the short-term maturity buckets. On the other hand, the DGAP hedges against IRR

by structuring the portfolios of assets and liabilities to change equally in value whenever the interest rate changes. If DGAP is close to zero, the market value of the bank's equity will not change and, accordingly, become immunised to any changes in interest rates.

DGAP analysis improves upon the maturity and cumulative GAP models by taking into account the timing and market value of cash flows rather than the horizon maturity. It gives a single index measure of interest rate risk exposure.

The application of duration analysis requires extensive data on the specific characteristics and current market pricing schedules of financial instruments. However, for institutions which have a high proportion of assets and liabilities with embedded options, sensitivity analysis conducted using duration as the sole measure of price elasticity is likely to lead to erroneous results due to the existence of convexity in such instruments. Apart from this, duration analysis makes an assumption of parallel shifts in the yield curve, which is not always true. To take care of this, a high degree of analytical approach to yield curve dynamics is required. However, immunisation through duration eliminates the possibility of unexpected gains or losses when there is a parallel shift in the yield curve. In other words, it is a hedging or risk-minimisation strategy; not a profit-maximisation strategy.

Simulation analysis

Simulations serve to construct the risk-return profile of the banking portfolio.

Scenario analysis addresses the issue of uncertainty associated with the future direction of interest rates by allowing the analysis of isolated attributes with the use of 'what if' simulations. However, it is debatable if simulation analysis, with its attendant controls and ratification methods, can effectively capture the dynamics of yield curve evolution and interest rate sensitivity of key financial variables.

Managing Interest Rate Risk

Depending upon the risk propensity of an institution, risk can be controlled using a variety of techniques that can be classified into direct and synthetic methods. The direct method of restructuring the balance sheet relies on changing the contractual characteristics of assets and liabilities to achieve a particular duration or maturity GAP. On the other hand, the synthetic method relies on the use of instruments such as interest rate swaps, futures, options and customised agreements to alter the balance sheet risk exposure. Since direct restructuring may not always be possible, the availability of synthetic methods adds a certain degree of flexibility to the asset-liability GAP management process. In addition, the process of securitisation and financial engineering can also be used to create assets with wide investor appeal in order to adjust asset-liability GAPs.

Using interest rate swaps to hedge interest rate risk

Interest rate swaps (IRS) represent a contractual agreement between a financial institution and a counterparty to exchange cash flows at periodic intervals, based on a notional amount. The purpose of an interest rate swap is to hedge interest rate

risk. By arranging for another party to assume its interest payments, a bank can put in place such a hedge. Financial institutions can use such swaps to synthetically convert floating rate liabilities to fixed rate liabilities. The arbitrage potential associated with different comparative financing advantages (spreads) enables both parties to benefit through lower borrowing costs.

In case of a falling interest rate scenario, prepayment will increase with an attendant shortening of the asset's average life. The financial institution may have to continue exchanging swap cash flows for a period longer than the average life of the asset. In order to protect such situations, options on swaps or 'swaptions' may be used. Call options on swaps allow the financial institution to call the swap, while put options on swaps allow the institution to activate or put the swap after a specific period.

Using financial futures to hedge interest rate risk

A futures contract is an agreement between a buyer and seller to exchange a fixed quantity of a financial asset at an agreed price on a specified date. Interest rate futures (IRF) can be used to control the risk associated with the asset/liability GAP either at the macro-level or at the micro-level. A macro-hedge is used to protect the entire balance sheet, whereas a micro-hedge is applied to individual assets or transactions. A buyer, holding a long position, would purchase a futures contract when interest rates are expected to fall. The seller of a futures contract, on the other hand, would take a short position in anticipation of rising rates. The protection provided by financial futures is symmetric in that losses (or gains) in the value of the cash position are offset by gains (or losses) in the value of the futures position. Forward contracts are also available to hedge against exchange rate risk.

Futures contracts are not without their own risks. Among the most important is basis risk, especially prevalent in cross hedging. Financial institutions must also pay close attention to the hedging ratio, and managements must be careful to follow regulatory and accounting rules governing the use of futures contracts.

Using options to hedge interest rate risk

Options can be used to create a myriad risk-return profiles using two essential ingredients: calls and puts. Call option strategies are profitable in bullish interest rate scenarios. With respect to the ALM process, options can be used for reducing risk and enhancing yield. Put options can be used to provide insurance against price declines, with limited risk if the opposite occurs. Similarly, call options can be used to enhance profits if the market rallies, with the maximum loss restricted to the upfront premium.

Customised interest rate agreements

'Customised interest rate agreements' is the general term used to classify instruments such as interest rate caps and floors. In return for the protection against rising liability costs, the cap buyer pays a premium to the cap seller. The pay-off profile of the cap buyer is asymmetric in nature, in that if interest rates do not rise, the maximum loss is restricted to the cap premium. Since the cap buyer gains

when interest rates rise, the purchase of a cap is comparable to buying a strip of put options. Similarly, in return for the protection against falling asset returns, the floor buyer pays a premium to the seller of the floor. The pay-off profile of the floor buyer is also asymmetric in nature since the maximum loss is restricted to the floor premium. As interest rates fall, the pay-off to the buyer of the floor increases in proportion to the fall in rates. In this respect, the purchase of a floor is comparable to the purchase of a strip of call options.

By buying an interest rate cap and selling an interest rate floor to offset the cap premium, financial institutions can also limit the cost of liabilities to a band of interest rate constraints. This strategy, known as an interest rate 'collar,' has the effect of capping liability costs in rising rate scenarios.

The role of securitisation in ALM

By using securitisation, financial institutions can create securities suitable for resale in capital markets from assets which otherwise would have been held to maturity. In addition to providing an alternative route for asset/liability restructuring, securitisation may also be viewed as a form of direct financing in which savers are directly lending to borrowers. Securitisation also provides the additional advantage of cleansing the balance sheet of complex and highly illiquid assets as long as the transformations required to enhance marketability are available on a cost-effective basis. Securitisation transfers risks such as interest rate risk, credit risk (unless the loans are securitised with full or partial recourse to the originator) and pre-payment risk to the ultimate investors of the securitised assets.

Besides increasing the liquidity and diversification of the loans portfolio, securitisation allows a financial institution to recapture some part of the profits of lending and permits reduction in the cost of intermediation.

Conclusion

As the landscape of the financial services industry becomes increasingly competitive,

with rising costs of intermediation due to higher capital requirements and deposit insurance, financial institutions face a loss of spread income. In order to enhance the loss in profitability due to such developments, financial institutions may be forced to deliberately mismatch asset/liability maturities in order to generate higher spreads.

ALM is a systematic approach that attempts to provide a degree of protection to the risk arising out of the asset/liability mismatch. ALM consists of a framework to define, measure, monitor, modify and manage liquidity and interest rate risk. It is not always possible for financial institutions to restructure the asset and liability mix directly to manage asset/liability GAPs. Hence, off-balance sheet strategies such as interest rate swaps, options, futures, caps, floors, forward rate agreements, swaptions, and so on, can be used to create synthetic hedges to manage asset/liability GAPs.

Basel III & its implications

Introduction:

John Kenneth Galbraith, famous Harvard economist and the US ambassador to India during J.F. Kennedy's administration wrote:

‘All financial crises are the result of debt that, in one fashion or another, has become dangerously out of scale’.

This was clearly demonstrated in the financial crisis which took place in the US in 2008. Aggressive lending characterized by sub-prime housing loans and excessive leverage in major banks and financial institutions led to the most serious financial challenge since the Great Depression of 1930s. The Sub Prime Crisis had reportedly led to a total write off of 1.18 trillion dollars. One has to understand the causes of the financial crisis and take appropriate measures to avoid its recurrence. In order to withstand such a shock in future, the Basel Committee on Banking Supervision (BCBS) has announced on September 13, 2010, new capital rules as agreed by the global regulators. The new requirement, known as Basel III, demands a substantial strengthening of existing capital requirements. This involves higher global minimum capital standards for banks.

As cited above, Basel III reforms are the response of BCBS to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spill over from the financial sector to the real economy. During the Pittsburgh Summit in September 2009, the G20 leaders committed to strengthen the regulatory system for banks and other financial firms and also act together to raise capital standards, to implement strong international compensation standards aimed at ending practices that lead to excessive risk-taking, to improve the over-the-counter derivatives market and to create more powerful tools to hold large global firms to account for the risks they take. For all these reforms, the leaders set for themselves strict and precise timetables. Consequently, the BCBS released comprehensive reform package entitled “*Basel III: A global regulatory framework*

formore resilient banks and banking systems” (known as Basel III capital regulations) inDecember 2010. (Source: RBI)

Basel III reforms strengthen the bank-level i.e. micro prudential regulation, with the intention to raise the resilience of individual banking institutions in periods of stress. Besides, the reforms have a macro prudential focus also, addressing system wide risks, which can build up across the banking sector, as well as the pro-cyclical amplification of these risks over time. These new global regulatory and supervisory standards mainly

seek to raise the quality and level of capital to ensure banks are better able to absorb losses on both a going concern and a gone concern basis, increase the risk coverage of the capital framework, introduce leverage ratio to serve as a backstop to the risk-based capital measure, raise the standards for the supervisory review process (Pillar 2) and public disclosures (Pillar 3) etc. The macro prudential aspects of Basel III are largely enshrined in the capital buffers. Both the buffers i.e. the capital conservation buffer and the countercyclical buffer are intended to protect the banking sector from periods of excess credit growth. (Source: RBI)

Reserve Bank issued Guidelines based on the Basel III reforms on capital regulation on May 2, 2012, to the extent applicable to banks operating in India. Banks have started implementing the guidelines from April 1, 2013 in India in a phased manner. Banks are advised by RBI to report the CRAR as per Basel II and Basel III simultaneously in all their disclosures to the stakeholders. The Basel III guidelines are expected to be fully implemented by March 31, 2019.

3. Comparison between the Basel Guidelines:

Basel I	Basel II	Basel III
- Basel Committee on Banking Supervision (BCBS) had come out with these guidelines in the year July, 1988 as a solution to mitigate the Herstatt Risk that took place in the year 1974 due to collapse of the German Bank. - By definition, recognized only the Credit risk as the potential risk for the failure of the Banks. - Subsequently, BCBS came out with Market Risk paper in the year 1996 a set of rules to strengthen the treasury operations of the banks. This was necessitated out of	- BCBS came out with these guidelines in the year June 2004 to overcome the inadequate risk measurement approach of Basel I arising out of the changed banking scenario more due to technology adoption. - Besides, credit & market risks, recognized the following additional risk: - Operational Risk. - The Credit risk of Basel I was completely revamped and Basel II adopted a risk-based approach. Also introduced risk mitigation techniques	- BCBS came out with this Consultative Paper on 13th September 2010 as a fall out of Sub-Prime Crisis of US, which later on became a contagion effect and resulted into a global crisis. - As stated above, Basel III calls only for additional capital for the Banks to withstand the global shocks such as Sub-prime crisis in the future.

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Basel I	Basel II	Basel III
Nick Leeson Fraud, due to which the world saw the collapse of Barings Bank Ltd.	as Basel I did not recognize the role of credit risk mitigants, such as credit derivatives, securitizations, collaterals and guarantees in reducing the credit risk.	

- **Why Basel III?**

- According to BCBS, the Basel III guidelines aim to improve the banking sectors' ability to absorb shocks arising from financial and economic stress.
- In short the objectives of Basel III are:
 - Strengthening of resilience of the banking sector against future shocks.
 - Supplementing the current recovery process.
 - Reducing the risk spillover effect of a financial crisis to the real economy.
- The new Basel III requirement demands bank's to hold top quality capital totaling 7% of the risk weighted assets.
- The sigh of relief for the Banks is that the guidelines have given long lead-time and graded approach for the banks to bring/raise the capital.
- The tier 1 capital ratio would require banks to hold 7% common equity including 2.50% of Capital Conservation Buffer.

- **Capital Conservation Buffer (CCB):**

3. The CCB is designed to ensure that banks build up capital buffers during normal times (i.e. outside periods of stress) which can be drawn down as losses are incurred during a stressed period. The requirement is based on simple capital conservation rules designed to avoid breaches of minimum capital requirements.
- F Banks have been given time until 2019 and in case banks do not comply with the guidelines, and then they may not be allowed to declare/pay dividends to the shareholders. The drawdown table of CCB as given by RBI is given below:

Minimum capital conservation standards for individual bank

Common Equity Tier 1 Ratio after including the current periods retained earnings	Minimum Capital Conservation Ratios (expressed as a percentage of earnings)
5.5% - 6.125%	100%
>6.125% - 6.75%	80%

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>6.75% - 7.375%	60%
>7.375% - 8.0%	40%
>8.0%	0%

3. For example, a bank with a Common Equity Tier 1 capital ratio in the range of 6.125% to 6.75% is required to conserve 80% of its earnings in the subsequent financial year (i.e. payout no more than 20% in terms of dividends, share buybacks and discretionary bonus payments is allowed) – Source RBI.
4. The Tier 1 Capital should be in the nature of **Going-Concern Capital**, i.e., Capital which can absorb losses without triggering bankruptcy of the Bank. The components of Tier 1 Capital is:
 - Common Equity Tier 1, which would broadly consist of
 - Common shares (paid-up equity capital)
 - Share Premium.
 - Statutory Reserves.
 - Capital Reserves representing surplus arising out of sale process of assets.
 - Other disclosed reserves if any.
 - Balance in Profit & Loss account at the end of previous financial year.

Banks can also reckon the profits in current financial year for CRAR calculation on a quarterly basis provided the incremental provisions made for NPAs at the end of the four quarters of the previous financial year have not deviated more than 25% from average of the four quarters.

Revaluation reserves at a discount of 55% (This item was originally part of Tier II capital. RBI has brought the same under Tier I vide Circular of March 1, 2016).

Foreign currency translation reserve arising due to translation of financial statements of their foreign operations in terms of Accounting Standard (AS) 11 at a discount of 25%.

Deferred Tax Assets (DTAs) which related to timing differences (other than related to accumulated losses) can be recognized upto 10% of CET1. The DTA recognized portion + significant investments in the common shares of unconsolidated financial entities (i.e, banking, financial and insurance) taken together should not exceed 15% of the CET1.

Banks instead of recognizing as part of CET1 upto 10% can net the same with associated Deferred Tax Liabilities (DTLs) subject to approval of tax authorities. In case, a Bank has either not recognized part of DTA as CET1 or netted the same with associated DTL, then that portion of DTA would be risk weighted at 250%.

Accumulated losses and any other intangible assets if any such as goodwill have to be deducted.

Additional Tier 1 Capital, which would broadly consist of

Perpetual Non-Cumulative Preference Shares (PNCPS).

Stock Surplus arising out of issue of instruments included in AT1.

Debt instruments such as Innovative Perpetual Debt Instruments (IPDI) and any other instruments as permitted by the Supervisor.

6. The Tier 2 Capital should be in the nature of **Gone-Concern Capital**, i.e., capital which would absorb losses only in a situation of liquidation of the Bank. The components of Tier 2 capital are:

General Provisions and Loss Reserves such as Provision on Standard Assets, Floating Provisions, Incremental Provisions in respect of Unhedged foreign currency exposures, provision held for Country exposures, Investment Reserve Account, excess provision which arise on account of sale of NPAs. However, these provisions put together should not exceed 1.25% of total credit risk-weighted assets under Standardized Approach.

6. Debt Instruments issued by the Banks.

- o Preference Share Capital instruments such as Perpetual Cumulative Preference Shares (PCPS), Redeemable Non-Cumulative Preference Shares (RNCPS), Redeemable Cumulative Preference shares (RCPS) issued by the Banks.

7. Premium receipt on account of issued above debt instruments.

8. By virtue of the above, Banks have to raise equity capital to replace hybrids and other instruments such as Perpetual Bonds that will not qualify as Core Capital or Common Equity Capital under the new rules.

10. RBI has given the full picture of the Basel III in a tabulated form as given below, once the full implementation of Basel III takes place.

Regulatory Capital		As % to RWAs
(i)	Minimum Common Equity Tier 1 Ratio	5.5
(ii)	Capital Conservation Buffer (comprised of Common Equity)	2.5
(iii)	Minimum Common Equity Tier 1 Ratio plus Capital Conservation Buffer [(i)+(ii)]	8.0
(iv)	Additional Tier 1 Capital	1.5
(v)	Minimum Tier 1 Capital Ratio [(i) +(iv)]	7.0
(vi)	Tier 2 Capital	2.0
(vii)	Minimum Total Capital Ratio (MTC) [(v)+(vi)]	9.0
(viii)	Minimum Total Capital Ratio plus Capital Conservation Buffer [(vii)+(ii)]	11.5

(Source: RBI)

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11. Counter-cyclical buffer/provision:

- The above provision guidelines are based on the model followed by Spanish banks that fared better during the recent financial crisis by adhering to this provision approach.
- For example, in the second half of 2008, in India, the Banks shied away from lending (credit crunch) triggered by the psychological effect of global financial crisis, which led to negative effect of our economy and caused major downturn in the Sensex (From 20,900 as of February, 2008, the Sensex came down to 8,300 in March 2009). The sectors most affected were Realty, Automotive, Textile and IT.
- Further a downturn in the economy generally leads to deterioration of asset quality of the Banks, which causes increase in the NPA levels of the Banks. To overcome this only, RBI had come out with special dispensation of restructuring of the loans for the sectors, which suffered due to macroeconomic fundamental, which is outside the control of the borrowers.
- Higher NPA leads to creation of increased provision by banks. To avoid this, Banks would slow down their lending. In fact, the higher provisioning for NPA has led to several PSBs showing loss in their financials for the Quarter ended December, 2015. Such a situation would further tighten the credit, which would lead to deteriorating borrowers' financial position, thus making the general economy still worse.
- At the peak of the business cycle (boom), the borrowers' performances would be good and the Banks' NPA would also be low. Most of the corporates make profit in their business.
- In the boom time, the Banks tend to reduce the provisions because of lower NPAs, ease credit terms and expand their loan book. The economy is pushed into the fast economic growth (leads to high GDP growth).
- The easy credit approach during the boom period results in poor loan selection (example of Sub-Prime crisis), leading to higher NPAs when the cycle turns into recession.
- The result is that the Banks' actions tend to further amplify the cycle (boom leading to more boom and recession leading to further recession).
 - The alternative for this is recommended in the form of countercyclical provisioning approach under which, banks build their reserves during good times when their earnings are high and the accumulated reserves can be used during the economic slow down.
- One more argument in favor of this provision is that:

During the boom, the loans made are generally poorer in quality requiring more provision.

The loans made during recession are of superior quality as banks are very careful and hence need lesser provision.

7. The creation of Capital Conservation Reserve provision is more forward looking based on expected loss method (EL) rather than the current incurred loss

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provisioning model. These concepts would come very handy, when banks adopt IndAS by March, 2018 as proposed by the Ministry of Corporate Affairs, Government of India.

4. **Leverage Ratio:**

5. Besides the above, BCBS has also introduced one more ratio called 'Leverage Ratio'.

An underlying cause of the global financial crisis was the build-up of excessive on- and off-balance sheet leverage in the banking system. In many cases, banks built up excessive leverage while apparently maintaining strong risk-based capital ratios. During most severe part of the crisis, the banking sector was forced by the market to reduce its leverage in a manner that amplified downward pressure on asset prices. This deleveraging process exacerbated the feedback loop between losses, falling bank capital and contraction in credit availability. Therefore, under Basel III, a simple, transparent, non-risk based leverage ratio has been introduced. The leverage ratio is calibrated to act as a credible supplementary measure to the risk based capital requirements and is intended to achieve the following objectives:

Act as a Check on the build-up of leverage in the banking sector to avoid destabilising and deleveraging processes which can damage the broader financial system and the economy;

Reinforce the risk-based requirements with a simple, non-risk based "backstop" measure.

6. The Basel III leverage ratio is defined as the capital measure (the numerator) divided by the exposure measure (the denominator), with this ratio expressed as a percentage.

$$\text{Leverage Ratio} = \frac{\text{Capital Measure}}{\text{Exposure Measure}}$$

2. The BCBS will use the revised framework for testing a minimum Tier 1 leverage ratio of 3% during the parallel run period up to January 1, 2017. The BCBS will continue to track the impact of using either Common Equity Tier 1 (CET1) or total regulatory capital as the capital measure for the leverage ratio. The final calibration, and any further adjustments to the definition, will be completed by 2017, with a view to migrating to a Pillar 1 treatment on January 1, 2018. Currently, Indian banking system is operating at a leverage ratio of more than 4.5%. The final minimum leverage ratio will be stipulated by RBI taking into consideration the final rules prescribed by the BCBS by end-2017. In the meantime, these guidelines will serve as the basis for parallel run by banks and also for the purpose of disclosures as outlined by RBI. During this period, Reserve Bank will monitor individual banks against an indicative leverage ratio of 4.5% to curb the build-up of excessive on and off-balance sheet leverage in the banking system. (Source: RBI).

- 1 **Liquidity Risk:** BCBS had observed that one of the factors for the recent financialcrises were due to inaccurate and ineffective management of liquidity risk. To overcome this, BCBS had come out with two ratios – Liquidity Coverage Ratio and Net Stable Funding Ratio (NSFR).

- **The Liquidity Coverage Ratio (LCR):**This ratio ensures enough liquid assets to survive an acute stress scenario lasting for 30 days.
 - The objective of the LCR is to promote the short-term resilience of the liquidityrisk profile of the banks. This is done by ensuring that banks have an adequate stock of unencumbered high-quality assets (HQLA) that can be converted easily and immediately in private markets into cash to meet their liquidity needs for a 30 calendar day liquidity stress scenario. (Source BIS).
- This ratio is introduced from 1st January 2015, after an observation periodbeginning in 2011.
- The LCR would be binding on banks from January 1, 2015; with a view to providea transition time for banks, the LCR requirement would be minimum 60% for the calendar year 2015, i.e. with effect from January 1, 2015 and rise in equal steps to reach 100% on January 1, 2019, as per the time-line given below by RBI.

	January 1 2015	January 1 2016	January 1 2017	January 1 2018	January 1 2019
Minimum LCR	60%	70%	80%	90%	100%

- 2 . The formula for arriving at LCR is given below:



$$\text{LCR} = \left(\frac{\text{Stock of HQLA}}{\text{Total Net Cash Outflows over the next 30 calendar days}} \right) \times 100.$$



It should be minimum 100% or above 100% subject to timelines given by RBI as above.

- AI . RBI vide its circular of February, 2016 also relaxed the maintenance of HQLA by the Banks. Presently, the assets allowed as the Level 1 High Quality Liquid Assets (HQLAs) for the purpose of computing the LCR of banks, *inter alia*, include Government securities in excess of the minimum SLR requirement, and within the mandatory SLR requirement, Government securities to the extent allowed by RBI, under Marginal Standing Facility (MSF) [presently 2 per cent of the bank's NDTL] and under Facility to Avail Liquidity for Liquidity Coverage Ratio (FALLCR) [presently 5 per cent of the bank's NDTL]. RBI has, in addition to the above-mentioned assets, permitted banks to reckon government securities held by them up to another 3 per cent of their NDTL under FALLCR within the mandatory SLR requirement as level 1 HQLA for the purpose of computing their LCR. Hence the total carve-out from SLR available to banks would be 10 per cent of their NDTL. (Source: RBI)

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2 . **The Net Stable Funding Ratio (NSFR):** This ratio aims at promoting medium to long term structure funding of assets and activities of the Banks. BCBS aims to trial this ratio from 2012 and makes it mandatory in January 2018.

BN . RBI released its Draft guidelines on NSFR on May 28, 2015. The objective of NSFR is to ensure that banks maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. A sustainable funding structure is intended to reduce the probability of erosion of a bank's liquidity position due to disruptions in its regular sources of funding that would increase the risk of its failure and potentially lead to broader systemic stress. The NSFR limits overreliance on short-term wholesale funding, encourages better assessment of funding risk across all on- and off-balance sheet items, and promotes funding stability. The Reserve Bank proposes to make NSFR applicable to banks in India from January 1, 2018. (Source RBI).

7 . Definition of the Standard Net Stable Funding Ratio =

$$\frac{\text{Available Stable Funding (ASF)}}{\text{Required Stable Funding (RSF)}} \times 100 = \text{Should be 100\% or above.}$$

RBI's Strategic Debt Restructuring (SDR)

RBI has given powers and a tool to the Banks vide its Circular of June 2015 to try and clean up their balance sheets through SDR. SDR allows banks to convert their debt or loans into equity holding in a defaulting company, change management if needed and also find a suitable buyer for the company or its assets so that the Bank can recover its dues. As per the reports published in newspapers, Banks have already used the SDR effectively and converted debt into equity in several cases.

To go back to history, Corporate Debt Restructuring (CDR) was introduced in our country in 2001 based on the systems that was prevalent in countries such as UK, Thailand, South Korea etc. CDR allows a distressed company to restructure with debt of more than Rs. 10 crores with two or more lenders. To carry out CDR, consent of lenders representing 75% or more in value and 60% or more by number is required.

When compared to CDR, SDR is a more powerful tool as the lenders can effect change in the management. Hence, the borrowers also have taken the SDR exercise more carefully than the routine CDR exercise. RBI also gives lot of importance to SDR exercise and the RBI, Governor has observed in a meeting held in November, 2014, 'The sanctity of the debt contract has been continuously eroded in India in recent years, not by small borrower but by the large borrower. And this has to change if we are to get banks to finance the enormous infrastructure needs and industrial growth that this country aims to attain'.

The only problem that the Banks may face is the challenge in finding a new buyer or strategic investor who can buy the majority of equity from the Banks and take over the company within the 18 months, a time period allowed to the Banks by RBI. The idea behind RBI encouraging the change of management is that the new management may bring better technology, governance on the table so that the unit can overcome its problem.

With a view to ensuring more stake of promoters in reviving stressed accounts and provide banks with enhanced capabilities to initiate change of ownership in accounts which fail to achieve the projected viability milestones, banks may, at their discretion, undertake a '**Strategic Debt Restructuring (SDR)**' by converting loan dues to equity shares, which will have the following features:

- i. At the time of initial restructuring, the Joint Lending Forum (JLF), created by the lenders must incorporate, in the terms and conditions attached to the restructured loan/s agreed with the borrower, an option to convert the entire loan (including unpaid interest), or part thereof, into shares in the company in the event the borrower is not able to achieve the viability milestones and/or adhere to 'critical conditions' as stipulated in the restructuring package. This should be supported by necessary

approvals/authorisations (including special resolution by the shareholders) from the borrower company, as required under extant laws/regulations, to enable the lenders to exercise the said option effectively.

2. Provisions of the SDR would also be applicable to the accounts which have been restructured before the date of RBI circular provided that the necessary enabling clauses, are included in the agreement between the banks and borrower;

3. The decision on invoking the SDR by converting the whole or part of the loan into equity shares should be taken by the JLF as early as possible but within 30 days from the review of the account. Such decision should be well documented and approved by the majority of the JLF members (minimum of 75% of creditors by value and 60% of creditors by number);

4. In order to achieve the change in ownership, the lenders under the JLF should collectively become the majority shareholder by conversion of their dues from the borrower into equity. However, the conversion by JLF lenders of their outstanding debt (principal as well as unpaid interest) into equity instruments shall be subject to the member banks' respective total holdings in shares of the company conforming to the statutory limit in terms of Section 19(2) of Banking Regulation Act, 1949;

5. Post the conversion, all lenders under the JLF must collectively hold 51% or more of the equity shares issued by the company;

6. The share price for such conversion of debt into equity will be determined as per the method given prescribed by RBI;

7. Henceforth, banks should include necessary covenants in all loan agreements, including restructuring, supported by necessary approvals/authorisations (including special resolution by the shareholders) from the borrower company, as required under extant laws/regulations, to enable invocation of SDR in applicable cases;

8. The JLF must approve the SDR conversion package within 90 days from the date of deciding to undertake SDR;

9. The conversion of debt into equity as approved under the SDR should be completed within a period of 90 days from the date of approval of the SDR package by the JLF;

10. The invocation of SDR will not be treated as restructuring for the purpose of asset classification and provisioning norms;

11. On completion of conversion of debt to equity as approved under SDR, the existing asset classification of the account, as on the reference date will continue for a period of 18 months from the reference date. Thereafter, the asset classification will be as per the extant IRAC norms;

58. JLF should closely monitor the performance of the company and consider appointing suitable professional management to run the affairs of the company;

59. JLF and lenders should divest their holdings in the equity of the company as soon as possible. On divestment of banks' holding in favour of a 'new promoter', the asset classification of the account may be upgraded to 'Standard'. However, the quantum of provision held by the bank against the said account as on the date of divestment, which shall not be less than what was held as at the 'reference date', shall not be reversed. At the time of divestment of their holdings to a 'new promoter', banks may refinance the existing debt of the company considering the changed risk profile of the company without treating the exercise as 'restructuring' subject to banks making provision for any diminution in fair value of the existing debt on account of the refinance. Banks may reverse the provision held against the said account only when all the outstanding loan/facilities in the account perform satisfactorily during the 'specified period' (as defined in the extant norms on restructuring of advances), i.e. principal and interest on all facilities in the account are serviced as per terms of payment during that period. In case, however, satisfactory performance during the specified period is not evidenced, the asset classification of the restructured account would be governed by the extant IRAC norms as per the repayment schedule that existed as on the reference date. However, in cases where the bank exits the account completely, i.e. no longer has any exposure to the borrower, the provision may be reversed/absorbed as on the date of exit;

60. The asset classification benefit provided at the above paragraph is subject to the following conditions:

a. The 'new promoter' should not be a person/entity/subsidiary/associate etc. (domestic as well as overseas), from the existing promoter/promoter group.

b. The new promoters should have acquired at least 51 per cent of the paid up equity capital of the borrower company. If the new promoter is a non-resident, and in sectors where the ceiling on foreign investment is less than 51 per cent, the new promoter should own at least 26 per cent of the paid up equity capital.

(AJ) The conversion price of the equity shall be determined as per the guidelines given below:

(i) Conversion of outstanding debt (principal as well as unpaid interest) into equity instruments should be at a 'Fair Value' which will not exceed the lowest of the following, subject to the floor of 'Face Value' (restriction under section 53 of the Companies Act, 2013):

a) Market value (for listed companies): Average of the closing prices of the instrument on a recognized stock exchange during the ten trading days preceding the 'reference date'.

b) Break-up value: Book value per share to be calculated from the company's latest audited balance sheet (without considering 'revaluation reserves', if any) adjusted for cash flows and financials post the earlier restructuring; the balance sheet should not be

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more than a year old. In case the latest balance sheet is not available this break-up value shall be Re.1.

(BJ) The above pricing formula under Strategic Debt Restructuring Scheme has been exempted from the Securities and Exchange Board of India (SEBI) (Issue of Capital and Disclosure Requirements) Regulations, 2009. Banks should adhere to all the prescribed conditions by SEBI in this regard.

(BK) In addition to conversion of debt into equity under SDR, banks may also convert their debt into equity at the time of restructuring of credit facilities under the extant restructuring guidelines.

(BL) Acquisition of shares due to such conversion will be exempted from regulatory ceilings/restrictions on Capital Market Exposures, investment in Para-Banking activities and intra-group exposure subject to reporting to RBI.

Central Repository of Information on Large Credits (CRILC)

RBI has set up a Central Repository of Information on Large Credits (CRILC) to collect, store, and disseminate credit data to lenders. Accordingly, Department of Banking Supervision (DBS) has advised vide circular of February 13, 2014 on 'Central Repository of Information on Large Credits (CRILC) – Revision in Reporting' that banks will be required to report credit information, including classification of an account as SMA to CRILC on all their borrowers having aggregate fund-based and non-fund based exposure of Rs.50 million and above with them (Rs. 5 crores). However, Crop loans are exempted from such reporting, but, banks should continue to report their other agriculture loans in terms of the above instruction. Banks need not report their interbank exposures to CRILC including exposures to NABARD, SIDBI, EXIM Bank and NHB.

As per RBI norms, before a loan account turns into a NPA, banks are required to identify incipient stress in the account by creating stress sub-categories under the Special Mention Account category as given below:

SMA Sub-Categories	Basis for classification
SMA-0	Principal or interest payment not overdue for more than 30 days but account showing signs of incipient stress)
SMA-1	Principal or interest payment overdue between 31 – 60 days
SMA-2	Principal or interest payment overdue between 61 – 90 days

In cases where banks fail to report SMA (Special Mention Accounts) status of the accounts to CRILC or resort to methods with the intent to conceal the actual status of the accounts or evergreen the account, banks will be subjected to accelerated provisioning for these accounts and/or other supervisory actions as deemed appropriate

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by RBI. The current provisioning requirement and the revised accelerated provisioning in respect of such non performing accounts are as under:

Asset Classification	Period as NPA	Current Provisioning (%)	Revised accelerated Provisioning (%)
Sub-standard (secured)	Upto 6 months	15	No change
	6 months to 1 year	15	25
Sub-standard (unsecured abiiinitio)	Upto 6 months	25 (other than infrastructure loans)	25
		20 (Infrastructure loans)	
	6 months to One year	25 (other than infrastructure loans)	40
		20 (Infrastructure loans)	
Doubtful I	2 nd year	25 (secured portion)	40 (secured portion)
		100 (unsecured portion)	100 (unsecured portion)
Doubtful II	3 rd & 4 th year	40 (secured portion)	100 (for both secured and unsecured portion)
		100 (unsecured portion)	
Doubtful III	5 th year onwards	100	100

Base Rate System

Till the late 1980s, the interest rate structure in India was largely administered in nature by RBI and was characterized by numerous rate prescriptions for different activities. On account of the complexities under the administered rate structure, efforts were made since 1990 by RBI to rationalize the interest rate structure so as to ensure price discovery and transparency in the loan pricing system. The freeing up of lending rates of scheduled commercial banks for credit limits of over Rs.2 lacs along with the introduction of Prime Lending Rate (PLR) system in October 1994 was a major step in this direction aimed at ensuring competitive loan pricing. Initially, PLR acted as a floor rate for credit above Rs. 2 lacs.

To bring in transparency, RBI directed banks to declare maximum spread over PLR for all advances other than consumer credit. Banks were allowed prescribing separate PLRs and spreads over PLRs, both for loan and cash credit component. With regard to term loans of 3 years and above, the banks were given the freedom to announce separate Prime Term Lending Rates (PTLRs) in 1997.

In 2001, RBI relaxed the requirement of PLR being the floor rate for loans above Rs.2 lakhs and allowed Banks to offer loans at below PLR to exporters and other creditworthy borrowers with objective policy approved by the Banks' Boards in a transparent manner. Banks were allowed to charge fixed/floating rate on their lending for credit limit of over Rs.2 lakh. However, there was large divergence among banks in their PLRs and spread over PLRs. It failed to reflect the credit market conditions in the country. Therefore, Benchmark PLR system (BPLR) came into being and tenor-linked PLRs got discontinued.

The system of BPLR introduced in 2003 was expected to serve as a benchmark rate for banks' pricing of their loan products so as to ensure that it truly reflected the actual cost. In course of time, competition forced the Banks to price a significant portion of their loans out of alignment with BPLRs and thereby undermining the role of BPLR as a reference rate. The worrying factor was that most of the banks started lending at Sub-BPLR rates ignoring the risk sensitivity of the borrowers and also quoted 'competition' as the main reason for going below the BPLR. Hence, RBI opined that the BPLR system had fallen short of its original objective of bringing transparency to lending rates.

In April 2004, the then RBI Governor, Sri Y.V. Reddy had asked industry body IBA to come up with a transparent calculation of the BPLR. In October 2005, RBI again stated that the BPLR system might be reviewed as there is public perception that there is

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under-pricing of credit for corporates, while there could be over-pricing of lending to agriculture and SME (cross subsidization).

Over time, sub-BPLR lending had become a rule rather than an exception as about two-thirds of bank lending took place at rates below the BPLR. Further Banks have been reluctant to adjust their BPLRs in response to policy changes. Mainly, it lacked the downward stickiness. To explain further, there was a general complaint from the borrowers that lenders are quick to raise their BPLR when the regulator raises the signaling rates (repo, reverse repo, CRR & SLR), but lag behind considerably when the regulator drop these rates. The BPLR system has, therefore, become an inadequate tool to evaluate monetary transmissions.

To overcome the above hiccups, RBI set up a Working Group headed by its Executive Director Shri Deepak Mohanty in the month of June 2009 to review the current system of loan pricing by the Banks popularly known as BPLR and also to improve the transmission of monetary signals to interest rates in the economy. The Group came out with its report on 20th October 2009. In April 2010, after a series of circulars, discussions and consultative process, the RBI announced its decision to implement the base rate from 1 July 2010. Banks were not allowed to lend below this rate. Under this new rule, banks were free to use any method to calculate their base rates (the RBI did provide an 'illustrative' formula), provided the RBI found it consistent. Banks were also directed to announce their base rates on their websites, in keeping with the objective of making lending rates more transparent.

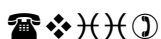
Banking major, State Bank of India first announced its Base Rate on 29th June, 2010 by fixing the same at 7.50% per annum. Soon, all other banks announced their base rates. Most public sector banks kept their rates at 8%. As per RBI norms, the following inputs have to be factored while arriving at the Base Rate:



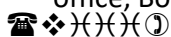
Cost of deposits/borrowings.



Negative Carry on CRR & SLR –This arises as RBI is not paying any interest on the portion of CRR kept with it. Also, the investments that Banks make in Government Bonds having SLR status carries less rate of interest when compared to the deposit rate at which Banks accept deposits from the public.



Unallocable overhead cost such as maintaining administrative office, Board expenses, and common advertisements about the Bank etc.



Average Return on Network (Profit element) as decided by the Bank's Board.

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The cost of deposits has the highest weight in calculating the Base Rate. For arriving at the Cost of deposits/funds in Base Rate working, Banks can choose any benchmark for a specific tenor that may be disclosed transparently. For example, SBI took cost of its 6 month deposit into account while initially calculating its Base Rate. To the Base Rate, borrower-specific charges, product specific operating costs and premium on account of credit risks and tenure would be added for arriving at the borrower specific lending rate. The Base Rate would set the floor for interest rates on all types of loans. There would be exceptions as permitted by RBI (given below):

7. Loans covered by schemes specially formulated by Government of India wherein banks have to charge interest rate as per the scheme.
8. Working Capital Term Loan, Funded Interest Term Loan etc granted as part of the rectification / restructuring package.
9. Loans granted under various refinance schemes formulated by Government of India or any Government Undertakings wherein banks charge interest at the rates prescribed under the schemes.
10. Advances to banks' depositors against their own deposits.
11. Advances to banks' own employees including retired employees.
12. Advances granted to the Chief Executive Officer / Whole Time Directors.
13. Loans linked to a market determined external benchmarks such as LIBOR, MIBOR etc.

RBI had stipulated that the banks should declare their Base Rate and made it effective from July, 1, 2010. However, all the existing loans, including home loans and other retail loans, would continue to be at the current rate. Only the new loans taken on or after July 1, 2010 would be linked to Base Rate. All the existing loans when they come for renewal, borrowers are given a choice either to go with Base Rate or with BPLR.

In the first year of operation of Base Rate, RBI had permitted banks a window of six months till December 2010 during which they can revisit the methodology. This flexibility was subsequently extended by RBI upto June 2011. Banks were allowed to use whatever benchmark they felt was best suited to arrive at the rate, provided, the Bank used the same consistently. However, RBI had asserted that:

- 33 The methodology needed to be transparent.
- 34 Banks are required to review the Base Rate at least once in a quarter with the approval of the Board or the Asset Liability Management Committees (ALCOs) as per the bank's practice.

Once the methodology for arriving at the Base Rate has been finalized by the Banks, they cannot change the same for first five years. In case a Bank desires to review its Base Rate methodology after five years from the date of its finalization, the Bank has to approach RBI for permission in this regard. However, RBI has recently (January 19, 2016) changed this norm. With a view to providing banks greater operational flexibility, RBI has permitted bank to review the Base Rate methodology after three years from the date of its finalization, instead the earlier periodicity of five years. Accordingly, Banks can change their Base Rate methodology after completion of prescribed period with the approval of their Board / ALCO.

Again in the methodology, Banks were following different methods. RBI wanted to streamline this procedure also. Hence, RBI took feedback from the Banks and other stakeholders. Thereafter, it has come out with its fresh guidelines in this regard (December 17, 2015). RBI has instructed all the Banks that for all the rupee loans sanctioned and credit limits renewed w.e.f. April 1, 2016 would be priced with reference to the Marginal Cost of Funds based Lending Rate (MCLR). Hence, from April, 2016, MCLR would act as Internal Benchmark for the lending rates. The component of MCLR is almost same when compared to the previous instructions and the same is given below:

5. Marginal Cost of Funds.
6. Negative carry on account of CRR.
7. Operating Costs.
8. Tenor premium.

Marginal Cost of funds = $92\% \times \text{Marginal cost of borrowings} + 8\% \times \text{Return on network}$

Negative Carry on CRR arises due to return on CRR balances being nil. This will be calculated as $\text{Required CRR} \times (\text{marginal cost}) / (1 - \text{CRR})$. The marginal cost of funds, as calculated above, will be used for arriving at negative carry on CRR.

Operating Costs associated with providing the loan product including cost of raising funds will be included under this head. It should be ensured that the costs of providing those services which are separately recovered by way of service charges do not form part of this component.

Tenor premium arise from loan commitments with longer tenor. The change in tenor premium should not be borrower specific or loan class specific. In other words, the tenor premium will be uniform for all types of loans for a given residual tenor.

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Since MCLR will be a tenor linked benchmark, banks shall arrive at the MCLR of a particular maturity by adding the corresponding tenor premium to the sum of Marginal cost of funds, Negative carry on account of CRR and Operating costs.

Accordingly, RBI has permitted banks to publish the internal benchmark for the following maturities:

- 1 Overnight MCLR.
- 1 One-month MCLR.
- 1 3 month MCLR.
- 1 6 month MCLR.
- 1 One year MCLR.
- 1 In addition to the above, Banks are given the option of publishing MCLR of any other longer maturity.

Further, RBI has advised the Banks that they should have Board approved policy delineating the components of spread charged to a customer. Existing customers are given the option to move to the MCLR linked loan at mutually acceptable terms.

Loan to Value Ratio

The loan-to-value ratio (LTV Ratio) is a lending [risk assessment](#) ratio that Banks and [Financial institutions](#) arrive at before sanctioning Housing or Home Loans. Typically, assessments with high LTV ratios are generally seen as higher risk and, therefore, if the [mortgage](#) is accepted, the loan would generally be charged with high interest when compared to another loan proposal with lesser LTV ratio.

The formula for calculating LTV ratio is:

Loan to Value Ratio = (Loan amount sanctioned/Appraised value of the property) x 100.

For example, Mr. X needs to borrow Rs. 60 lakhs to purchase a flat worth Rs. 80 lakhs. The LTV ratio would work out to 75% (60/80 x 100). In fact, the Sub-Prime crisis that took place in 2007-08 and the Japanese Housing Bubble that occurred from 1986 to

1991 have emanated out of Lenders not giving the due importance that was required for maintaining this ratio.

Realizing the value of LTV ratio, RBI has also come out with its norms on this ratio. As per RBI guidelines, lending to individuals meant for acquiring residential property which are fully secured by mortgages on the residential property that is or would be occupied by the borrower, or that is rented, would be risk weighted as per norms stipulated by RBI. Based on RBI guidelines, every bank should have a Board mandated Valuation Policy. RBI has also given its formula for arriving at this ratio.

LTV ratio should be computed as a percentage with total outstanding in the account (viz. "principal + accrued interest + other charges pertaining to the loan" without any netting) in the numerator and the realisable value of the residential property mortgaged to the bank in the denominator.

RBI has, in the month of October, 2015 rationalized this ratio for individual housing loans as given below, for **loans sanctioned upto June 6, 2017.**

Category of Loan	LTV ratio (%)	Risk Weight (%)
Upto Rs. 30 lakhs	Equal to and less than 80%	35
	More than 80% and equal to and less than 90%	50
Above Rs. 30 lakhs and upto Rs. 75 lakhs	Equal to and less than 75%	35
	More than 75% and equal to and less than 80%	50
Above Rs. 75 lakhs	Equal to and less than 75%	75

RBI, in its second bi-monthly monetary policy statement 2017-18, revised the LTV ratio, Risk Weight and Standard Asset Provisioning rates, as under, **for loans sanctioned on or after June 7, 2017:**

Category of Loan	LTV ratio (%)	Risk Weight (%)	Standard Asset Provision (%)
Upto Rs. 30 lakhs	Equal to and less than 80%	35	0.25
	More than 80% and	50	

	equal to and less than 90%		
Above Rs. 30 lakhs and upto Rs. 75 lakhs	Equal to and less than 80%	35	
Above Rs. 75 lakhs	Equal to and less than 75%	50	

RISK MANAGEMENT-INFORMATION SECURITY

1. INTRODUCTION:

Banks deal with public money and therefore, trust is the most important pillar of the banking business. While trust may be considered synonymous with banking, security is also considered equally important. The concept and perception of security in banking has, over a period of time, changed drastically, in tandem with changes in the way banking business is conducted. Now a days, banks maintain their assets more in digitized rather than physical form, carry out their transactions over technology enabled platforms/applications and communicate through electronic modes. The banking business does not face any growth impediments because of physical, geographical or product/knowledge-related boundaries as technology has come to their aid. There are newer products and channels of delivery. Networked environment has enabled delivery of banking services at the doorstep of the customer. Anywhere, anytime banking with core banking and newer delivery channels viz., ATM, online banking, mobile banking etc. have provided convenience of banking to the customer and more and more people are now relying upon the convenience and ease of use of Internet banking services in their business as well as daily life. But, this has also resulted in enhanced customer expectations about efficient delivery of services with the highest level of security. Growth of business, customer satisfaction and retention of customers' loyalty, therefore, depend on the highest quality of service coupled with the state of the art security features.

Information and the knowledge based on it have increasingly become recognized as 'information assets', which are vital enablers of business operations. It is therefore, absolutely crucial for any organisation to provide adequate levels of protection to these assets. Reliable information is even more critical for banks, as banks are purveyors of money in physical and digital form and hence information security is a vital area of concern.

Robust information is at the heart of risk management processes in a bank. Inadequate data quality is likely to induce errors in decision making. Data quality requires building processes, procedures and disciplines for managing information and ensuring its integrity, accuracy, completeness and timeliness. The fundamental attributes supporting data quality include accuracy, integrity, consistency, completeness, validity, timeliness, accessibility, usability and auditability. The data quality provided by various applications depends on the quality and integrity of the data upon which that information is built. Entities that treat information as a critical organizational asset are in a better position to manage it proactively. Information security not only deals with information in various channels like spoken, written, printed, electronic or any other medium but also information handling in terms of creation, viewing, transportation, storage or destruction. This is in contrast to IT security which is mainly concerned with security of information within the boundaries of the network infrastructure technology domain. From an information security perspective, the nature and type of compromise is not as material as the fact that security has been breached. It is therefore, imperative for Bank Managements to establish an effective information security risk governance framework as a part of the overall Corporate Governance Framework so that the Banks develop and maintain a comprehensive information security programme.

2. BASIC PRINCIPLES OF INFORMATION SECURITY:

The basic principles of information security are as under:

- a) **Confidentiality:** Confidentiality is the term used to prevent the disclosure of information to unauthorized individuals or systems. For example, a credit card transaction on the Internet requires the credit card number to be transmitted from the buyer to the merchant and from the merchant to a transaction processing network. The system attempts to enforce confidentiality by encrypting the card number during transmission, by limiting the places where it might appear (in databases, log files, backups, printed receipts, and so on), and by restricting access to the places where it is stored. If an unauthorized party obtains the card number in any way, a breach of confidentiality has occurred.

Breaches of confidentiality take many forms like Hacking, Phishing, Vishing, Email-spoofing, SMS spoofing, and sending malicious code through email or Bot Networks, as discussed earlier.

- b) **Integrity:** In information security, integrity means that data cannot be modified without authorization. This is not the same thing as referential integrity in databases. Integrity is violated when an employee accidentally or with malicious intent deletes important data files, when he/she is able to modify his own salary in a payroll database, when an employee uses programmes and deducts small amounts of money from all customer accounts and adds it to his/her own account (also called salami technique), when an unauthorized user vandalizes a web site, and so on. On a larger scale, if an automated process is not written and tested correctly, bulk updates to a database could alter data in an incorrect way, leaving the integrity of the data compromised. Information security professionals are tasked with finding ways to implement controls that prevent errors of integrity.
- c) **Availability:** For any information system to serve its purpose, the information must be Available when it is needed. This means that the computing systems used to store and process the information, the security controls used to protect it, and the communication channels used to access it must be functioning correctly. High availability systems aim to remain available at all times, preventing service disruptions due to power outages, hardware failures, and system upgrades. Ensuring availability also involves preventing denial-of-service (DoS) and distributed denial-of service (DDoS) attacks.
- d) **Authenticity:** In computing, e-business and information security it is necessary to ensure that the data, transactions, communications or documents (electronic or physical) are genuine. It is also important for authenticity to validate that both parties involved are who they claim they are.
- e) **Non-repudiation:** In law, non-repudiation implies one's intention to fulfill one's obligations under a contract / transaction. It also implies that a party to a transaction cannot deny having received or having sent an electronic record. Electronic commerce uses technology such as digital signatures and encryption to establish authenticity and non-repudiation. In addition to the above, there are other security-related concepts and principles when designing a security policy and deploying a security solution. They include identification, authorization, accountability, and auditing.
- f) **Identification:** Identification is the process by which a subject professes an identity and accountability is initiated. A subject must provide an identity to a system to start the process of authentication, authorization and accountability. Providing an identity can be typing in a username, swiping a smart card, waving a proximity device, speaking a phrase, or positioning face, hand, or finger for a camera or scanning device. Proving a process ID number also represents the identification process. Without an identity, a system has no way to correlate an authentication factor with the subject.
- g) **Authorization:** Once a subject is authenticated, access must be authorized. The process of authorization ensures that the requested activity or access to an object is possible given the rights and privileges assigned to the authenticated identity. In most cases, the system evaluates an access control matrix that compares the subject, the object, and the intended activity. If the specific action is allowed, the subject is authorized. Else, the subject is not authorized.
- h) **Accountability and auditability:** An organization's security policy can be properly enforced only if accountability is maintained, i.e., security can be maintained only if subjects are held accountable for their actions. Effective accountability relies upon the capability to prove a subject's identity and track their activities. Accountability is established by linking a human to the activities of an online identity through the identification. Thus, human accountability is ultimately dependent on the strength of the authentication process. Without a reasonably strong authentication process, there is doubt that the correct human associated with a specific user account was the actual entity controlling that user account when an undesired action took place.

3. INFORMATION SECURITY GOVERNANCE:

Information security governance consists of the leadership, organizational structures and processes that protect information and mitigation of growing information security threats like the ones detailed above.

Critical outcomes of information security governance include:

- Alignment of information security with business strategy to support organizational objectives
- Management and mitigation of risks and reduction of potential impacts on information resources to an acceptable level
- Management of performance of information security by measuring, monitoring and reporting information security governance metrics to ensure that organizational objectives are achieved

- Optimisation of information security investments in support of organizational objectives

It is important to consider the organisational necessity and benefits of information security governance. They include increased predictability and the reduction of uncertainty in business operations, a level of assurance that critical decisions are not based on faulty information, enabling efficient and effective risk management, protection from the increasing potential for legal liability, process improvement, reduced losses from security-related events and prevention of catastrophic consequences and improved reputation in the market and among customers.

A comprehensive security programme needs to include the following main activities:

- Development and ongoing maintenance of security policies
- Assignment of roles, responsibilities and accountability for information security
- Development/maintenance of a security and control framework that consists of standards, measures, practices and procedures
- Classification and assignment of ownership of information assets
- Periodic risk assessments and ensuring adequate, effective and tested controls for people, processes and technology to enhance information security
- Ensuring security is integral to all organizational processes
- Processes to monitor security incidents
- Effective identity and access management processes
- Generation of meaningful metrics of security performance
- Information security related awareness sessions to users/officials including senior officials and board members

4. ORGANIZATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES:

(A) BOARDS OF DIRECTORS/SENIOR MANAGEMENT:

The Board of Directors is ultimately responsible for information security. Senior Management is responsible for understanding risks to the bank to ensure that they are adequately addressed from a governance perspective. To do so effectively requires managing risks, including information security risks, by integrating information security governance in the effectiveness of information security governance is dependent on the involvement of the Board/senior management in approving policy and appropriate monitoring of the information security function.

The major role of top management involves implementing the Board approved information security policy, establishing necessary organizational processes for information security and providing necessary resources for successful information security. It is essential that senior management establish an expectation for strong cyber security and communicate this to their officials down the line. It is also essential that the senior organizational leadership establish a structure for implementation of an information security programme to enable a consistent and effective information security programme implementation apart from ensuring the accountability of individuals for their performance as it relates to cyber security.

Given that today's banking is largely dependent on IT systems and since most of the internal processing requirements of banks are electronic, it is essential that adequate security systems are fully integrated into the IT systems of banks. It would be optimal to classify these based on the risk analysis of the various systems in each bank and specific risk mitigation strategies need to be in place.

(B) INFORMATION SECURITY TEAM/FUNCTION:

Banks should form a separate information security function/group to focus exclusively on information security management. There should be segregation of the duties of the Security Officer/Group dealing exclusively with information systems security and the Information Technology Division which actually implements the computer systems. The organization of the information security function should be commensurate with the nature and size of activities of a bank including a variety of e-banking systems and delivery channels of a bank. The information security function should be adequately resourced in terms of the number of staff, level of skills and tools or techniques like risk assessment, security architecture, vulnerability assessment, forensic assessment, etc. While the information security group/function itself and information security governance related structures should not be outsourced, specific operational components relating to information security can be outsourced, if required resources are not available within a bank. However, the ultimate control and responsibility rests with the bank.

(C) INFORMATION SECURITY COMMITTEE:

Since information security affects all aspects of an organization, in order to consider information security from a bank-wide perspective a steering committee of executives should be formed with formal terms of reference. The Chief Information Security Officer would be the member secretary of the Committee. The committee may include, among others, the Chief Executive Officer (CEO) or designee, chief financial officer (CFO), business unit executives, Chief Information Officer (CIO)/ IT Head, Heads of human resources, legal, risk management, audit, operations and public relations.

A steering committee serves as an effective communication channel for management's aims and directions and provides an ongoing basis for ensuring alignment of the security programme with organizational objectives. It is also instrumental in achieving behaviour change toward a culture that promotes good security practices and compliance with policies.

Major responsibilities of the Information Security Committee, inter-alia, include:

- Developing and facilitating the implementation of information security policies, standards and procedures to ensure that all identified risks are managed within a bank's risk appetite
- Approving and monitoring major information security projects and the status of information security plans and budgets, establishing priorities, approving standards and procedures
- Supporting the development and implementation of a bank-wide information security management programme
- Reviewing the position of security incidents and various information security assessments and monitoring activities across the bank
- Reviewing the status of security awareness programmes
- Assessing new developments or issues relating to information security
- Reporting to the Board of Directors on information security activities

Minutes of the Steering Committee meetings should be maintained to document the committee's activities and decisions and a review on information security needs to be escalated to the Board on a quarterly basis.

(D) CHIEF INFORMATION SECURITY OFFICER (CISO):

A sufficiently senior level official, of the rank of GM/DGM/AGM, should be designated as Chief Information Security Officer, responsible for articulating and enforcing the policies that banks use to protect their information assets apart from coordinating the security related issues / implementation within the organization as well as relevant external agencies. The CISO needs to report directly to the Head of Risk Management and should not have a direct reporting relationship with the CIO. However, the CISO may have a working relationship with the CIO to develop the required rapport to understand the IT infrastructure and operations, to build effective security in IT across the bank, in tune with business requirements and objectives.

5. CRITICAL COMPONENTS OF INFORMATION SECURITY:

1) Policies and procedures:

Banks need to frame Board approved information security policy supported with relevant standards, guidelines and procedures need to be framed and appropriate measures/practices need to be identified and implemented keeping in view the business needs.

2) Risk Assessment:

Risk assessment is the core competence of information security management and must include, for each asset within its scope, identification of the threat/vulnerability combinations that have a likelihood of impacting the confidentiality, availability or integrity of that asset - from a business, compliance or contractual perspective.

3) Inventory and information/data classification:

Effective control requires a detailed inventory of information assets. Such a list is the first step in classifying the assets and determining the level of protection to be provided to each asset.

By assigning classes or levels of sensitivity and criticality to information resources and establishing specific security rules/requirements for each class, it is possible to define the level of access controls that should be applied to each information asset.

4) Defining roles and responsibilities:

All defined and documented responsibilities and accountabilities must be established and communicated to all relevant personnel and management. Some of the major ones include:

- a) Information owner
- b) Application owner
- c) User manager
- d) Security Administrator
- e) End user

5) Access Control:

An effective process for access to information assets is one of the critical requirements of information security. Internal sabotage, clandestine espionage or furtive attacks by trusted employees, contractors and vendors are among the most serious potential risks that a bank faces. Current and past employees, contractors, vendors and those who have an intimate knowledge of the inner workings of the bank's systems, operations and internal controls have a significant advantage over external attackers. A successful attack could jeopardise customer confidence in a bank's internal control systems and processes. Hence, access to information assets needs to be authorised by a bank only where a valid business need exists and only for the specific time period that the access is required.

6) Information security and information asset life-cycle:

Information security needs to be considered at all stages of an information asset's life-cycle like planning, design, acquisition and implementation, maintenance and disposal. Banks need to apply systematic project management oriented techniques to manage material changes during these stages and to ensure that information security requirements have been adequately addressed.

7) Personnel security:

Application owners grant legitimate users access to systems that are necessary to perform their duties and security personnel enforce the access rights in accordance with institution standards. Because of their internal access levels and intimate knowledge of financial institution processes, authorized users pose a potential threat to systems and data. Employees, contractors, or third-party employees can also exploit their legitimate computer access for malicious or fraudulent reasons. Further, the degree of internal access granted to some users can increase the risk of accidental damage or loss of information and systems. Risk exposures from internal users include altering data, deleting production and back-up data, disrupting/destroying systems, misusing systems for personal gain or to damage the institution, holding data hostage and stealing strategic or customer data for espionage or fraud schemes. It is, therefore, important to have a process to verify job application information for all new employees and additional background and credit checks based on the sensitivity of a particular job or access level.

8) Physical security:

The confidentiality, integrity, and availability of information can be impaired through physical access and damage or destruction to physical components. As such, it is important to mitigate the physical security risks through zone-oriented implementations and by having proper risk assessment and environmental controls.

9) User Training and Awareness:

It is acknowledged that the human link is the weakest link in the information security chain. Hence, there is a vital need for an initial and ongoing training and information security awareness programme. The programme may be periodically updated keeping in view changes in information security, threats/vulnerabilities and/or the bank's information security framework. There needs to be a mechanism to track the effectiveness of training programmes through an assessment/testing process designed on testing the understanding of the relevant information security policies, not only initially but also on a periodic basis. At any point of time, a bank needs to maintain an updated status on user training and awareness relating to information security and the matter needs to be an important agenda item during Information Security Committee meetings.

10) Incident management:

Incident management is defined as the process of developing and maintaining the capability to manage incidents within a bank so that exposure is contained and recovery achieved within a specified time objective. Incidents can include the misuse of computing assets, information disclosure or events that threaten the continuance of business processes. An effective incident management framework for preventing, detecting, analyzing and responding to information security incidents is therefore, required to be implemented.

11) Application Control and Security:

Financial institutions have different types of applications like the core banking system, delivery channels like ATMs, internet banking, mobile banking, phone banking, network operating systems, databases,

enterprise resource management (ERP) systems, customer relationship management (CRM) systems, etc., all used for different business purposes. Then these institutions have partners, contractors, consultants, employees and temporary employees. Users usually access several different types of systems throughout their daily tasks, which makes controlling access and providing the necessary level of protection on different data types difficult and full of obstacles. This complexity may result in unforeseen and unidentified holes in the protection of the entire infrastructure including overlapping and contradictory controls, and policy and regulatory noncompliance. Banks, therefore, need to implement proper application control and risk mitigation measures.

12) Migration controls:

A documented Migration Policy indicating the requirement of roadmap/ migration plan / methodology for data migration (which includes verification of completeness, consistency and integrity of the migration activity and pre and post migration activities along with responsibilities and timelines for completion of same) is required to be put in place to take care of data integrity, completeness, confidentiality, consistency and continuity.

13) Implementation of new technologies:

Banks need to carry out due diligence with regard to new technologies since they can potentially introduce additional risk exposures. A bank needs to authorise the large scale use and deployment in production environment of technologies that have matured to a state where there is a generally agreed set of industry-accepted controls and robust diligence and testing has been carried out to ascertain the security issues of the technology or where compensating controls are sufficient to prevent significant impact and to comply with the institution's risk appetite and regulatory expectations. A formal product approval process incorporating, inter-alia, security related aspects and fulfilment of relevant legal and regulatory prescriptions should also be in place for all new business products introduced by the bank.

14) Encryption:

There are two types of encryption – Symmetric and Asymmetric.

Symmetric encryption is the use of the same key and algorithm by the creator and reader of a file or message.

Asymmetric encryption lessens the risk of key exposure by using two mathematically related keys, the private key and the public key. When one key is used to encrypt, only the other key can decrypt. Therefore, only one key (the private key) is required to be kept secret.

Typical areas or situations requiring deployment of cryptographic techniques, given the risks involved, include transmission and storage of critical and/or sensitive data/information in an 'un-trusted' environment or where a higher degree of security is required, generation of customer PINs which are typically used for card transactions and online services, detection of any unauthorised alteration of data/information and verification of the authenticity of transactions or data/information. Since security is primarily based on the encryption keys, effective key management is crucial.

15) Data security:

Banks need to define and implement procedures to ensure the integrity and consistency of all data stored in electronic form, such as databases, data warehouses and data archives.

16) Vulnerability Assessment:

Banks need to scan for vulnerabilities and address discovered flaws proactively to avoid a significant likelihood of having their computer systems compromised because any significant delays in finding or fixing software with critical vulnerabilities provides ample opportunity for persistent attackers to break through, gaining control over the vulnerable machines and getting access to the sensitive data they contain.

17) Establishing on-going security monitoring processes:

A bank needs to have robust monitoring processes in place to identify events and unusual activity patterns that could impact on the security of IT assets. The strength of the monitoring controls needs to be proportionate to the criticality of an IT asset. Alerts would need to be investigated in a timely manner, with an appropriate response determined.

18) Security measures against Malware:

Malicious software is an integral and a dangerous aspect of internet based threats which target end-users and organizations through modes like web browsing, email attachments, mobile devices, and other vectors. Malicious code may tamper with a system's contents, and capture sensitive data. It can also

spread to other systems. Modern malware aims to avoid signature-based and behavioral detection, and may disable anti-virus tools running on the targeted system. Anti-virus and anti-spyware software, collectively referred to as anti-malware tools, help defend against these threats by attempting to detect malware and block their execution. Banks should, therefore, have proper preventive and detective/corrective controls at the host, network, and user levels to protect against malicious codes by using layered combinations of technology, policies and procedures and training.

19) Patch Management:

A documented standards / procedures for patch management needs to be in place to address technical system and software vulnerabilities quickly and effectively in order to reduce the likelihood of a serious business impact arising.

20) Change Management:

Banks need to establish a change management process covering all types of change. For example, upgrades and modifications to application and software, modifications to business information, emergency 'fixes', and changes to the computers/networks that support the application.

21) Audit trails:

Banks need to ensure that audit trails exist for IT assets satisfying the banks business requirements including regulatory and legal requirements, facilitating audit, serving as forensic evidence when required and assisting in dispute resolution.

22) Information security reporting and metrics:

Banks need to have security monitoring arrangements to provide key decision-makers and Senior Management/Board of Directors with an informed view of aspects like the effectiveness and efficiency of information security arrangements, areas where improvement is required, information and systems that are subject to an unacceptable level of risk, performance against quantitative, objective targets, actions required to help minimize risk (e.g., reviewing the organization's risk appetite, understanding the information security threat environment and encouraging business and system owners to remedy unacceptable risks).

23) Information security and Critical service providers/vendors:

Banks use third-party service providers in a variety of different capacities like an Internet service provider (ISP), application or managed service provider (ASP/MSP) or business service provider (BSP). Management should evaluate the role that the third party performs in relation to the IT environment, related controls and control objectives and institute effective third-party controls to enhance the ability of the bank to achieve its control objectives.

24) Network Security:

Protection against growing cyber threats requires multiple layers of defenses, known as defense in depth. As every organization is different, this strategy should therefore be based on a balance between protection, capability, cost, performance, and operational considerations. Some of the important network protection devices are

- a) Firewalls,
- b) Intrusion Detection Systems
- c) Network Intrusion Prevention Systems
- d) Quarantine
- e) DNS Placement

25) Remote Access:

Banks may sometimes provide employees, vendors, and others with access to the institution's network and computing resources through external connections. Those connections are typically established through modems, the internet, or private communications lines. Remote access to a bank's provides an attacker with the opportunity to manipulate and subvert the bank's systems from outside the physical security perimeter. The management should establish policies restricting remote access and be aware of all remote-access devices attached to their systems. These devices should be strictly controlled.

26) Distributed Denial of service attacks(DDoS/DoS):

Banks providing internet banking should be responsive to unusual network traffic conditions/system performance and sudden surge in system resource utilization which could be an indication of a DDoS attack. Consequently, the success of any pre-emptive and reactive actions depends on the deployment of appropriate tools to effectively detect, monitor and analyze anomalies in networks and systems. Banks

should, therefore, install and configure network security devices appropriately for reasonable preventive/detective capability.

27) Implementation of ISO 27001 Information Security Management System:

Commercial banks should implement Information Security Management System (ISMS) best practices for their critical functions/processes with the best known ISMS as described in ISO/IEC 27001 and ISO/IEC 27002 and related standards published jointly by ISO and IEC.

28) Wireless Security:

Wireless network includes all wireless data communication devices like personal computers, cellular phones, PDAs, etc. connected to a bank's internal networks. Wireless networks security is a challenge since the wireless data communication devices do not have well-defined perimeters or well-defined access points and unauthorized monitoring and denial of service attacks can be performed without a physical wire connection. Further, unauthorized devices can potentially connect to the network, perform man-in-the-middle attacks, or connect to other wireless devices. To mitigate those risks, wireless networks rely on extensive use of encryption to authenticate users and devices and to shield communications. The banks using a wireless network should, therefore, carefully evaluate the risks involved and implement appropriate additional controls.

29) Business Continuity Considerations:

Events that trigger the implementation of a business continuity plan may have significant security implications. Depending on the event, some or all of the elements of the security environment may change. Different tradeoffs may exist between availability, integrity, confidentiality, and accountability, with a different appetite for risk on the part of management. It is, therefore, imperative that the business continuity plans are reviewed as an integral part of the security process.

30) Information security assurance:

a) Penetration Testing:

Penetration testing is defined as a formalized set of procedures designed to bypass the security controls of a system or organization for the purpose of testing that system's or organization's resistance to such an attack. Penetration testing is performed to uncover the security weaknesses of a system and to determine the ways in which the system can be compromised by a potential attacker.

b) Audits

Auditing compares current practices against a set of policies/standards/guidelines formulated by the institution, regulator including any legal requirements. Bank management is responsible for demonstrating that the standards it adopts are appropriate for the institution. Audits should not only look into technical aspects but also the information security governance process.

c) Assessment

An assessment is a study to locate security vulnerabilities and identify corrective actions. An assessment differs from an audit by not having a set of standards to test against. It differs from a penetration test by providing the tester with full access to the systems being tested. Assessments may be focused on the security process or the information system. They may also focus on different aspects of the information system, such as one or more hosts or networks.

A bank should manage the information security risk management framework on an ongoing basis as a security programme following project management approach, addressing the control gaps in a systematic way.

31) General information regarding delivery channels:

Provision of various electronic banking channels like ATM/debit cards/internet banking/phone banking should be issued only at the option of the customers based on specific written or authenticated electronic requisition along with a positive acknowledgement of the terms and conditions from the customer. A customer should not be forced to opt for services in this regard. Banks should provide clear information to their customers about the risks and benefits of using e-banking delivery services to enable customers to decide on choosing such services. When new operating features or functions, particularly those relating to security, integrity and authentication, are being introduced, the bank should ensure that customers have sufficient instruction and information to be able to properly utilize them. Banks should sensitize customers on the need to protect their PINs, security tokens, personal details and other confidential data to raise security awareness levels. Banks need to ensure suitable security measures for their web applications and take reasonable mitigating measures against various web security risks.

6. EMERGING TECHNOLOGIES AND INFORMATION SECURITY:

The security concerns in respect of the technologies like virtualisation and cloud computing which have been emerging increasingly of late also need to be considered by Banks.

(a) Virtualization

Of late, the trend in the data center has been towards decentralization, also known as horizontal scaling because centralized servers were seen as too expensive to purchase and maintain. However, decentralization's application sandboxes have a high annual maintenance cost and lower efficiency. Virtualization is a modified solution between centralized and decentralized deployments. Instead of purchasing and maintaining an entire computer for one application, each application is given its own operating system, and all those operating systems reside on a single piece of hardware. This provides the benefits of decentralization, like security and stability, while making the most of a machine's resources.

Challenges of Virtualization

- a. Compatibility and support
- b. Licensing
- c. Staff training
- d. Reliability

(b) Cloud Computing

Cloud computing refers to computing environment owned by a company which is shared with client companies through web-based service over Internet which hosts all the programs to run everything from e-mail to word processing to complex data analysis programs. Service may include software, platform or infrastructure. At the backend, cloud computing can make use of virtualization and grid computing. In grid computing, networked computers are able to access and use the resources of every other computer on the network.

Cloud Computing Concerns

The biggest concerns about cloud computing are security and privacy.

7. IMPLEMENTATION OF RECOMMENDATIONS OF THE WORKING GROUP ON INFORMATION SECURITY, ELECTRONIC BANKING, TECHNOLOGY RISK MANAGEMENT AND CYBER FRAUDS:

The Banking Industry has been conscious of the challenges to Security and appreciable efforts are being made by all the stakeholders in the context, viz. Governments, Regulators, banks and technology providers. In this regard, the Reserve Bank of India issued Guidelines on Information security, Electronic Banking, Technology risk management and cyber frauds in 2011, which were based on the report submitted by the working group constituted by RBI under the Chairmanship of Shri. G. Gopalakrishna, Executive Director, RBI.

The guidelines are not "one-size-fits-all" and the implementation of these recommendations need to be risk based and commensurate with the nature and scope of activities engaged by banks, the technology environment prevalent in the bank and the support rendered by technology to the business processes. Banks with extensive leverage of technology to support business processes were required to implement all the stipulations outlined in the circular. Banks were also required to conduct a formal gap analysis between their current status and stipulations as laid out in the guidelines and put in place a time-bound action plan to address the gap and comply with the guidelines.

The guidelines are fundamentally expected to enhance safety, security, efficiency in banking processes leading to benefits for banks and their customers. The measures suggested for implementation are not static. Banks need to pro-actively create/fine-tune/modify their policies, procedures and technologies based on new developments and emerging concerns.

8. CONCLUSION:

In the IT enabled banking environment, information security is of paramount importance because it involves tremendous risk that can result in huge business and financial losses which can also assume international dimensions. As it is often said, in a chain, it is the weakest link that is the most vulnerable. Therefore, it is not only important to *ab initio* take care of the information security risks but we also need to make sure that the information security risk management process adopted by us is continuously benchmarked against the international standards. There has to be a paradigm shift in the perception about security in banking and the top management's response to the same. It is important for banks to

realize that they have a vital role and responsibility to ensure that appropriate risk management measures are in place to avoid frauds, losses and business disruption.

It may be noted that the real challenge in this environment goes beyond merely providing additional technology solutions and increasingly complex security layers, and translates into providing secured banking while balancing the same against customer convenience requirements, which puts the regulators and security implementers on the horns of a dilemma. For a Bank, while the challenges to information security are stiff and are increasing by the day, being alive to threats is of the highest importance. This also involves resources - human and monetary, attitude and aptitude and a continuous monitoring and review of the information security management processes.

Important points

Risk Management

Risk and Capital

Risk is possible unfavorable impact on net cash flow in future due to uncertainty of happening or non-happening of events. Capital is a cushion or shock absorber required to absorb potential losses in future. Higher the Risks, high will be the requirement of Capital and there will be rise in RAROC (Risk Adjusted Return on Capital).

Types of Risks

Risk is anticipated at Transaction level as well as at Portfolio level.

Transaction Level

Credit Risk, Market Risk and Operational Risk are transaction level risk and are managed at Unit level.

Portfolio Level

Liquidity Risk and Interest Rate Risk are also transaction level risks but are managed at Portfolio level.

Risk Measurement

Based on Sensitivity

It is change in Market Value due to 1% change in interest rates. The interest rate gap is sensitivity of the interest rate margin of Banking book. Duration is sensitivity of Investment portfolio or Trading book.

Based on Volatility:

It is common statistical measure of dispersion around the average of any random variable such as earnings, Market to market values, losses due to default etc.

Statistically Volatility is Standard deviation of Value of Variables

Calculation

Example 1 : We have to find volatility of Given Stock price over a given period. Volatility may be weekly or monthly. Suppose we want to calculate weekly volatility. We will note down Stock price of nos. of weeks.

Mean Price = 123.62 and

Variance (sum of Squared deviation from mean) is 82.70

(extracted from weekly Stock prices) Volatility i.e. sd =

$\sqrt{\text{Variance}} = \sqrt{82.70} = 9.09$

Volatility over Time Horizon T = Daily Volatility $\times \sqrt{T}$

Example 2

Daily Volatility = 1.5%

Monthly Volatility = $1.5 \times \sqrt{30} = 1.5 \times 5.48 = 8.22$

Volatility will be more if Time horizon is more.

Downside Potential

It captures only possible losses ignoring profits and risk calculation is done keeping in view two components:

7. Potential losses
8. Probability of Occurrence.

The measure is more relied upon by banks/FIs/RBI. VaR (Value at Risk is a downside Risk Measure.)

Risk Pricing Risk Premium is added in the interest rate because of the following:

6. Necessary Capital is to be maintained as per regulatory requirements.
7. Capital is raised with cost.

For example there are 100 loan accounts with Level 2 Risk. It means there can be average loss of 2% on such type of loan accounts: Risk Premium of 2% will be added in Rate of Interest.

Pricing includes the following:

- j) Cost of Deploying funds
- k) Operating Expenses
- l) Loss Probabilities
- m) Capital Charge

Risk Mitigation

Credit Risk can be mitigated by accepting Collaterals, 3rd party guarantees, Diversification of Advances and Credit Derivatives.

Interest rate Risk can be reduced by Derivatives of Interest Rate Swaps.

Forex Risk can be reduced by entering into Forward Contracts and Futures etc.

If we make advances to different types of business with different Risk percentage, the overall risk will be reduced through diversification of Portfolio.

Banking Book, Trading Book and Off Balance Sheet Items

Banking Book

It includes all advances, deposits and borrowings which arise from Commercial and Retail Banking. These are Held till maturity and Accrual system of accounting is applied. The Risks involved are: Liquidity Risk, Interest Rate Risk, Credit Default Risk, Market Risk and Operational Risk.

Trading Book

It includes Assets which are traded in market.

6. These are not held till maturity.
7. The positions are liquidated from time to time.
8. These are Mark- to-market i.e. Difference between market price and book value is taken as profit.
9. Trading Book comprises of Equities, Foreign Exchange Holdings and Commodities etc.
10. These also include Derivatives

The Risks involved are Market Risks. However Credit Risks and Liquidity Risks can also be there.

Off Balance Sheet Exposures

The Off Balance sheet exposures are Contingent Liabilities, Guarantees, LC and other obligations. It includes Derivatives also. These may form part of Trading Book or Banking Book after they become Fund based exposure.

Types of Risks

1. Liquidity Risk

It is inability to obtain funds at reasonable rates for meeting Cash flow obligations. Liquidity Risk is of following types:

Funding Risk: It is risk of unanticipated withdrawals and non-renewal of FDs which are rawmaterial for Fund based facilities.

Time Risk: It is risk of non-receipt of expected inflows from loans in time due to high rateNPAs which will create liquidity crisis.

Call Risk: It is risk of crystallization of contingent liabilities.

2. Interest Rate Risk

Risk of loss due to adverse movement of interest rates. Interest rate risk is of following types:

Gap or Mismatch Risk: The risk of Gap between maturities of Assets and Liabilities. Sometimes, Long term loans are funded by short term deposits. After maturity of deposits, these liabilities are get repriced and Gap of Interest rates between Assets and Liabilities may become narrowed thereby reduction of profits.

Basis Risks: Change of Interest rates on Assets and Liabilities may change in different magnitudes thus creating variation in Net Interest Income.

Yield Curve Risk: Yield is Internal Rate of Return on Securities. Higher Interest Rate scenario will reduce Yield and thereby reduction in the value of assets. Adverse movement of yield will certainly affect NII (Net Interest Income).

Embedded Option Risk : Adverse movement of Interest Rate may result into pre-payment of CC/DL and TL. It may also result into pre-mature withdrawal of TDs/RDs. This will also result into reduced NII. This is called Embedded Risk.

Re-investment Risk: It is uncertainty with regard to interest rate at which future cash flows could be reinvested.

3. Market Risk

Market Risk is Risk of Reduction in Mark-to-Market value of Trading portfolio i.e. equities, commodities and currencies etc. due to adverse market sensex. Market Risk comprises of:

8. Price Risk occurs when assets are sold before maturity. Bond prices and Yield are inversely related.
9. IRR affects the price of the instruments.
10. Price of Other commodities like Gold etc., is also affected by the market trends.
11. Forex Risks are also Market Risks.
12. Liquidity Risk or Settlement Risk is also present in the market.

4. Credit Risk or Default Risk

Credit Risk is the risk of default by a borrower to meet commitment as per agreed terms and conditions. There are two types of credit Risks:

Counter party Risk: This includes non-performance by the borrower due to his refusal or inability.

Country Risk : When non-performance of the borrower arises due to constraints or restrictions imposed by a country.

5. Operational Risk

Operation Risk is the risk of loss due to inadequate or Failed Internal procedures, people and the system. The external factors like dacoity, floods, fire etc. may also cause operational loss. It

includes Frauds Risk, Communication Risk, Documentation Risk, Regulatory Risk, Compliance Risk and legal risks but excludes strategic /reputation risks.

Two of these risks are frequently occurred.

Transaction Risk: Risk arising from fraud, failed business processes and inability to maintain Business Continuity.

Compliance Risk: Failure to comply with applicable laws, regulations, Code of Conduct may attract penalties and compensation.

Other Risks are:

3. Strategic Risk: Adverse Business Decisions, Lack of Responsiveness to business changes and no strategy to achieve business goals.

4. Reputation Risk ; Negative public opinions, Decline in Customer base and litigations etc.

5. Systemic Risks ; Single bank failure may cause collapse of whole Banking System and result into large scale failure of banks.

In 1974, closure of HERSTATT Bank in Germany posed a threat for the entire Banking system

BASEL-I

Bank for International Settlements (BIS) is situated at Basel (name of the city in Switzerland). Moved by collapse of HERSTATT bank, BCBS – Basel Committee on Banking Supervision consisting of 13 members of G10 met at Basel and released guidelines on Capital Adequacy in July 1988. These guidelines were implemented in India by RBI w.e.f. 1.4.1992 on the recommendations of Narsimham Committee. The basic objective was to strengthen soundness and stability of Banking system in India in order to win confidence of investors, to create healthy environment and meet international standards.

BCBS meets 4 times in a year. Presently, there are 27 members.

BCBS does not possess any formal supervisory authority.

1996 Amendment

7. Allowed banks to use Internal Risk Rating Model.
8. Computation of VaR daily using 99th percentile.
9. Use of back-testing
10. Allowing banks to issue short term subordinate debts with lock-in clause.

Calculation of CRAR (Capital to Risk Weighted Asset Ratio)

Basel – I requires measurement of Capital Adequacy in respect of **Credit risks and Market Risks** only as per the following method:

Capital funds (Tier I & Tier II) / (Credit Risk Weighted Assets + Market RWAs + Operational RWAs) X 100

Minimum requirement of CRAR is as under:

As per BASEL-II recommendations 8%

As per RBI guidelines 9%

Banks undertaking Insurance business 10%

New Private Sector Banks 10%

Local Area banks 15%

For dividend declaration by the banks (during previous 2 years and current year) 9%

Tier I & Tier II Capital

Tier –I Capital

Tier –I Capital includes:

8. Paid up capital, Statutory reserves, Other disclosed free reserves, Capital Reserve representing surplus out of sale proceeds of assets.
9. Investment fluctuation reserve without ceiling.
10. Innovative perpetual Debt instruments (Max. 15% of Tier I capital)
11. Perpetual non-cumulative Preference shares

Less Intangible assets & Losses.

5 Sum total of Innovative Perpetual Instruments and Preference shares as stated above should not exceed 40% of Tier I capital. Rest amount will be treated as Tier II capital.

Tier –II Capital

It includes:

6. Redeemable Cumulative Preference shares, Redeemable non-cumulative Preference shares & Perpetual cumulative Preference shares,
7. Revaluation reserves at a discount of 55%,
8. General Provisions & Loss reserves up to 1.25 % of RWAs
9. Hybrid debts (say bonds) & Subordinate debts (Long term Unsecured loans) limited to 50% of Tier –I Capital.

Tier – III Capital

Banks may at the discretion of the National Authority, employ 3rd tier of Capital consisting of short term subordinate debts for the sole purpose of meeting a proportion of capital requirements for market risks. Tier III capital will be limited to 250% of bank's Tier –I Capital (Minimum of 28.5%) that is required to support market risks.

Tier – II capital should not be more than 50% of Total Capital.

Capital adequacy in RRBs

The committee on financial sector assessment has suggested introducing CRAR in RRBs also in a phased manner.

Two ways to improve CRAR

\$ By raising more capital. Raising Tier I capital will dilute the equity stake of existing investors including Govt. Raising Tier II Capital is definitely a costly affair and it will affect our profits.

\$ Reduction of risk weighted assets by implementing Risk mitigation Policy.

Risk Weights on different Assets

Cash and Bank Balance 0%
Advances against NSC/KVC/FDs/LIC 0%
Govt. guaranteed Advances 0%
Central Govt. Guarantees 0%
State Govt. Guarantees 20%
Govt. approved securities 2.5%
Balance with other scheduled banks having CRR at least 9% 20%
Other banks having CRR at least 9% 100%
Secured loan to staff 20%
Other Staff loans -not covered by retirement dues 75%
Loans upto 1.00 lac against Gold/Silver 50%
Residential Housing Loans O/S above 30 lac 75%
Residential Housing loans O/S upto 30 lac 50%
Residential property if LTV ratio is above 75% 100%
Residential Housing Loans O/S above 75 lac 125%
Mortgage based securitization of assets 77.5%
Consumer Credit / Credit Cards/Shares loan 125%
Claims secured by NBFC-non-deposit taking (other than AFCs) 100%
Venture Capital 150%
Commercial Real Estates 100%
Education Loans (Basel –II -75%) 100%
Other loans (Agriculture, Exports) 100%

Indian Banks having overseas presence and Foreign banks will be on parallel run (Basel -I) and Basel-II for 3 years commencing from 31.3.2010 up to 31.3.2013. These banks will ensure that : **Basel-II minimum capital requirement** continues to be higher than **80% of Basel-I** minimum capital requirement for credit Risk and Market Risk.”

Further, Tier –I CRAR should be at-least 6% up to 31.3.2010 and **8% up to 31.3.2011**

BASEL II

The Committee on Banking Regulations and Supervisory Practices released revised version in the year 2004. These guidelines have been got implemented by RBI in all the banks of India. Parallel run was started from 1.4.2006. In banks having overseas presence and foreign banks (except RRBs and local area banks). **Complete switchover has taken place w.e.f. 31.3.2008.** In banks with no foreign branch, switchover will take place w.e.f. 31.3.2009.

Distinction between Basel I and Basel II

Basel – I measures credit risks and market risks only whereas Basel II measures 3 types of risks i.e. **Credit Risk, Operational Risk and Market Risk.** Risk weights are allocated on the basis of rating of the borrower i.e. AAA, AA, A, BBB, BB and B etc. Basel –II also recognized CRM such as Derivatives, Collaterals etc.

Three Pillars of BASEL-II

Pillar –I Minimum Capital Requirement

Pillar – II Supervisory Review Process

Pillar –III Market Discipline

Pillar - I – Minimum Capital Requirement

CRAR will be calculated by adopting same method as discussed above under Basel – I with the only difference that Denominator will be arrived at by adding 3 types of risks i.e. Credit Risks, Market Risks and Operational Risks.

Credit Risk

Credit Risk is the risk of default by a borrower to meet commitment as per agreed terms and conditions. In terms of extant guidelines contained in BASEL-II, there are three approaches to measure Credit Risk given as under:

\$ Standardized approach

\$ IRB (Internal Rating Based) Foundation approach

\$ IRB (Internal Rating Based) Advanced approach

1. Standardized Approach

RBI has directed all banks to adopt Standardized approach in respect of Credit Risks. Under standardized approach, risk rating will be done by credit agencies. Four Agencies are approved for external rating:

1. CARE 2. FITCH India 3. CRISIL 4. ICRA

Risk weights prescribed by RBI are as under:

Rated Corporate

Rating & Risk Percentage

\$ 20%

6. 30%

6. 50%

(v) 100%

BJ. & below 150%

Education Loans 75%

Retail portfolio and SME portfolio 75% Housing loans secured by mortgage 50 to 75%

Commercial Real Estates 100%

Unrated Exposure 100%

2. IRBA – Internal rating Based Approach

At present all advances of Rs. 5.00 crore and above are being rated from external agencies in our bank. IRBA is based on bank's internal assessment. It has two variants (Foundation and advanced). Bank will do its own assessment of risk rating and requirement of Capital will be

calculated on

- i) Probability of default (PD)
- j) Loss given default (LD)
- k) Exposure of default (ED)
- l) Effective maturity. (M)

Bank has developed its own rating module system to rate the undertaking internally. The internal rating is being used for the following purposes:

- m) Credit decisions
- n) Determination of Powers
- o) Price fixing

Rating by Outside Agencies

The risk weights corresponding to the newly assigned rating symbols are as under:

Table : PART A – Long term Claims on Corporate – Risk Weights Long Term Ratings

CARE	CRISIL	Fitch	ICRA	Risk Weights (%)
CARE AAA	CRISIL AAA	Fitch AAA	ICRA AAA	20
CARE AA	CRISIL AA	Fitch AA	ICRA AA	30
CARE A	CRISIL A	Fitch A	ICRA A	50
CARE BBB	CRISIL BBB	Fitch BBB	ICRA BBB	100
CARE BB & below	CRISIL BB & below	Fitch BB & below	ICRA BB & below	150
Unrated	Unrated	Unrated	Unrated	100

How to Calculate RWAs and Capital Charge in respect of Credit risk

- 1st Step : Calculate Fund Based and Non Fund Based Exposure
- 2nd Step: Allowable Reduction
- 3rd Step : Apply Risk Weights as per Ratings
- 4th Step: Calculate Risk Weighted Assets
- 5th Step : Calculate Capital Charge

1st Step: Calculate Fund Based and Non Fund Based Exposure:

Example:

Fund Based Exposure (Amount in '000)

Nature of loan Limit Outstanding Undrawn portion

CC 200 100 100

Bills Purchased 60 30 30

Packing Credit 40 30 10

Term Loan 200 40 160

Total Outstanding 200

Out of Undrawn portion of TL, 60 is to drawn in a year and balance beyond 1 year.

Adjusted Exposure:

100% Outstanding(Unrated) = 200
 20% of Undrawn CC, BP & PC (140*20/100) = 28
 20% of Undrawn TL (1 yr) (60*20/100) = 12
 50% of Undrawn TL (>1Yr) (100*50/100) = 50

Total Adjusted Exposure FB limits 290

Non Fund Based Exposure (Amount in '000)**Type of NBF Exposure CCF Adjusted Exposure**

Financial Guarantees 90 100% 90
 Acceptances 80 100% 80
 Standby LC 50 100% 50
 Clean LC 50 100% 50
 Unconditional Take out finance 100 100% 100
 Performance Guarantee 80 50% 40
 Bid Bonds 20 50% 10
 Conditional Take out finance 50 50% 25
 Documentary LC 40 20% 8

Total Adjusted Exposure FB limits = 453

Total Adjusted Exposure = 290000+453000 = 7,43,000

2nd Step: Allowable Reduction after adjusting CRMs (Credit Risk Mitigates)

Reduction from adjusted exposure is made on account of following eligible financial collaterals:

Eligible Financial Collaterals .

7. Deposits being maintained by a borrower under lien.
8. Cash (including CDs or FDs), Gold, Govt Securities, KVP, NSC, LIC Policy, Debt Securities, Mutual Funds'
9. **Equity and convertible bonds are no more eligible CRMs.**

Formula for Deposits under lien: $C \cdot (1 - H_{fx}) \cdot M_f$

(C=Amount of Deposit; $H_{fx} = 0$ (if same currency), $H_{fx} = 0.08$ (if diff currency) M_f = Maturity factor).

Formula for Approved Financial collaterals: $C \cdot (1 - H_c - H_{fx}) \cdot M_f - E \cdot H_e$

Haircuts(H_e —Haircut for Exposure & H_c —Haircut for Collateral)

Haircut refers to the adjustments made to the amount of exposures to the counter party and also the value of collateral received to take account of possible future fluctuations in the value of either, on account of market movements. Standardized Supervisory Haircuts for collateral /Exposure have been prescribed by RBI and given in the said circular.

Capital Requirement for collateralized transaction

$E^* = \max \{ 0, [E \cdot (1 + H_e) - C \cdot (1 - H_c - H_{fx})] \}$

E^* - exposure value after risk mitigation

E - Current value of exposure for which coll. Qualifies

C = current value of collateral received

Hfx = Haircut appropriate for currency mismatch between collateral and exposure.
E* will be multiplied by the risk weight of the counter party to obtain RWA amount.

Illustrations clarifying CRM

In the case of exposure of Rs 100 (denominated in USD) having a maturity of 6 years to a BBB rated (rating by external credit rating agency) corporate borrower secured by collateral of Rs 100 by way of A+ rated corporate bond with a maturity of 6 years, the exposure amount after the applicable haircut @ 12%, will be Rs 112 and the volatility adjusted collateral value would be Rs 80, (after applying haircut @ 12% as per issue rating and 8% for currency mismatch) for the purpose of arriving at the value of risk weighted asset & calculating charge on capital.

There is an exposure of Rs 100 to an unrated Corporate (having no rating from any external agency) having a maturity of 3 years, which is secured by Equity shares outside the main index having a market value of Rs 100.

The haircut for exposure as well as collateral will be 25%. There is no currency mismatch in this case. The volatility adjusted exposure and collateral after application of haircuts works out to Rs 125 and Rs 75 respectively. Therefore, the net exposure for calculating RWA works out to Rs 50.

There is a demand loan of Rs 100 secured by bank's own deposit of Rs 125. The haircuts for exposure and collateral would be zero. There is no maturity mismatch. Adjusted exposure and collateral after application of haircuts would be Rs 100 and Rs 125 respectively. Net exposure for the purpose of RWA would be zero

Other Examples

No. 1:

- Exposure----- 100 lac with tenure 3 years
- Eligible Collateral in A+ Debt Security -----30 lac with Residual maturity 2 years
- Hair cut on Collateral is 6%
- Table of Maturity factor shows hair cut as 25% for remaining maturity of 2 years/
Calculate Value of Exposure after Risk Mitigation:

Solution:

Value of Exposure after Risk Mitigation =
Current Value of Exposure – Value of adjusted collateral for Hair cut and maturity mismatch
Value of Adjusted Collateral for Hair cut = $C \times (1 - H_c) = 30 \times (1 - 6\%) = 30 \times 94\% = 28.20$
Value of Adjusted Collateral for Hair cut and Maturity Mismatch = $C \times (t - 0.25) / (T - 0.25)$
 $= 28.20 \times (2 - 0.25) / (3 - 0.25) = 17.95$
(Where t = Remaining maturity of Collateral T= Tenure of loan)
Value of Exposure after Risk Mitigation = $100 - 17.95 = 82.05$ lac.

No. 2

An exposure of Rs. 100 lac is backed by lien on FD of 30 lac. There is no mismatch of maturity.

Solution:

Hair Cut for CRM i.e. FDR is zero.

Hence Value of Exposure after Risk Mitigation is 100 lac – 30 lac = 70 lac

Computation of CRAR

In a bank ; Tier 1 Capital = 1000 crore

Tier II Capital = 1200 crore

RWAs for Credit Risk = 10000 crore

Capital Charge for Market Risk = 500 crore

Capital Charge for Op Risk = 300 crore

Find Tier I CRAR and Total CRAR.

Solution:

RWAs for Credit Risk = 10000 crore

RWAs for Market Risk = $500/.09 = 5556$ crore

RWAs for Op Risk = $300/.09 = 3333$ crore

Total RWS = $10000+5556+3333 = 18889$ crore

Tier I Capital = 1000 crore

Tier II Capital can be up to maximum 1000 crore

Total Capital = 2000 crore

Tier I CRAR = Eligible Tier I Capital /Total RWAs = $1000/18889=5.29\%$ Total

CRAR = Eligible Total Capital /Total RWAs = $2000/18889 = 10.59\%$ We may conclude that Tier I Capital is less than the required level.

Credit Risk Mitigates

It is a process through which credit Risk is reduced or transferred to counter party. CRM techniques are adopted at Transaction level as well as at Portfolio level as under:

At Transaction level:

4. Obtaining Cash Collaterals
5. Obtaining guarantees

At portfolio level

4. Securitization
5. Collateral Loan Obligations and Collateral Loan Notes
6. Credit Derivatives

1. Securitization

It is process/transactions in which financial securities are issued against cash flow generated from pool of assets.

Cash flow arising from receipt of Interest and Principal of loans are used to pay interest and repayment of securities. **SPV (Special Purpose Vehicle)** is created for the said purpose.

Originating bank transfers assets to SPV and it issues financial securities.

2. Collateral Loan Obligations (CLO) and Credit Linked Notes (CLN)

It is also a form of securitization. Through CLO, bank removes assets from Balance Sheet and issues tradable securities. They become free from Regulatory Capital.

CLO differs from CLN (Credit link notes in the following manner.

- i) CLO provide credit Exposure to diverse pool of credit where CLN relates to single credit.
- ii) CLO result in transfer of ownership whereas CLN do not provide such transfer.
- iii) CLO may enjoy higher credit rating than that of originating bank.

3. Credit Derivatives

It is managing risks without affecting portfolio size. Risk is transferred without transfer of assets from the Balance Sheet though OTC bilateral contract. These are Off Balance Sheet Financial Instruments. Credit Insurance and LC are similar to Credit derivatives. Under a Credit Derivative PB (Prospective buyer) enter into an agreement with PS (Prospective seller) for transfer of risks at notional value by making of Premium payments. In case of delinquencies, default, Foreclosure, prepayments, PS compensates PB for the losses. Settlement can be Physical or Cash. Under physical settlement, asset is transferred whereas under Cash settlement, only loss is compensated.

Credit Derivatives are generally OTC instruments. ISDA (International Swaps and Derivatives Association) has come out with documentation evidencing such transaction. Credit Derivatives are:

- vii) Credit Default Swaps
- viii) Total Return Swaps
- ix) Credit Linked Notes
- x) Credit Spread Options

Operational Risk

Operational Risk is the risk of loss resulting from

- iii. Inadequate or failed internal processes, people and system.
- iv. External events such as dacoity, burglary, fire etc.

It includes legal risks but excludes strategic /reputation risks.

Identification

- (iii) Actual Loss Data Base
- (iv) RBIA reports
- (v) Risk Control & Self Assessment Survey
- (vi) Key Risk indicators
- (vii) Scenario analysis

Four ways to manage Risk

- 8. Prevent
- 9. Reduce
- 10. Transfer
- 11. Carry/Accept

Operational Risk – Measurement

Three approaches have been defined to measure Operational Risk at the bank:

- **Basic Indicator approach**
- **Standardized approach**
- **AMA i.e. Advanced measurement approach**

Basic Indicator Approach

15% of Average positive gross annual income of previous 3 years will be requirement of capital. To start with banks will have to adopt this approach and huge capital is required to be maintained. In our bank, estimated requirement of capital will be about Rs. 1000 crore.

The Standardized Approach

All banking activities are to be divided in 8 business lines. 1) Corporate finance 2) Trading & Sales 3) Retail Banking 4) Commercial Banking 5) Asset Management 6) Retail brokerage 7) Agency service 8) Payment settlement

Within each business line, Capital requirement will be calculated as under:

By multiplying the average gross income generated by a business over previous 3 years by a factor β ranging from 12 % to 18 % depending upon industry-wise relationships as under:

Retail Banking, Retail Brokerage and Asset Management	-----12%
Commercial Banking and Agency Services-----	15%
Corporate, Trading and Payment Settlement-----	18%

Advanced Measurement Approach

Capital requirement is calculated by the actual risk measurement system devised by bank's own internal Operational Risk Measurement methods using quantitative and qualitative criteria. Our bank has started measuring actual losses and estimating future losses by introducing statement of Operational Risk Loss data w.e.f. 1.4.2005. Minimum 5 year data is required for a bank to switch over to AMA.

How to calculate RWAs for Operational Risk?

RWAs for Operational Risk = Capital Charge / 0.09% (If required CAR is 9%)

Operational Risk – Scenario Analysis

It is a term used in measurement of Operational Risk on the basis of scenario estimates.

Banks use scenario analysis based on expert opinion in conjunction with external data to evaluate its exposure to high severity events.

In addition, scenario analysis is used to assess impact of deviations from correlation assumptions in the bank's Operational Risk measurement framework to evaluate potential losses arising from operational risk loss events.

Operational Risk Mitigation

Insurance cover, if available can reduce the operational risk only when AMA is adopted for

estimating capital requirements. The recognition of insurance mitigation is limited to **20% of total Operational Risk Capital Charge** calculated under AMA.

Practical Example - AMA approach

Under AMA approach, Estimated level of Operational Risk is calculated on the basis of:

- Estimated probability of occurrence
- Estimated potential financial impact
- Estimated impact of internal control.

Estimated Probability of Occurrence: This is based on historical frequency of occurrence & estimated likelihood of future occurrence. Probability is mapped on scale of 5 as under:

Negligible risk -----1

Low risk-----2

Medium Risk-----3

High Risk-----4

Very High Risk-----5

For Calculation, following formula is used:

Estimated level of Operational Risk = {Estimated probability of occurrence x Estimated potential financial impact x Estimated impact of internal control} ^{^0.5}

^{^0.5} implies Under root of whole

Example:

Probability of occurrence = 2 (medium)

Probability of Financial impact = 4 (very high)

Impact of Financial control = 50%

Solution

$[2 \times 4 \times (1 - 0.5)]^{0.5} = \sqrt{4} = 2$ (Low)

Market Risk

It is simply risk of losses on Balance sheet and Off Balance sheet items basically in investments due to movement in market prices. It is risk of adverse deviation of **mark to Market** value of trading portfolio during the period. Any decline in the market value will result into loss.

Market Risk involves the following:

- d) Risk Identification
- e) Risk Measurement
- f) Risk monitoring and control
- g) Risk mitigation.

ALCO: Assets Liability Committee meets at frequent intervals and takes decisions in respect of Product pricing, Maturity profiles and mix of incremental assets and profiles, Interest rate, Funding policy, Transfer pricing and Balance Sheet Management.

Market Risk measurement

Measurement of Market Risk is based on:

2. Sensitivity
3. Downside potential

Sensitivity Measurement

Change in market rate of interest has inverse relation with Value of Bonds. Higher interest rates lower the value of bond whereas decline in interest rate would result into higher bond value. Also More liquidity in the market results into enhanced demand of securities and it will lead to higher price of market instrument. There are two methods of assessment of Market risk:

- ii) Basis Point Value
- iii) Duration method

1. Basis Point Value

This is change in value of security due to 1 basis point change in Market Yield. Higher the BPV higher will be the risk.

Example

Face Value of Bond = 100/- Bond maturity = 5 years

Coupon Rate = 6%

Market price of Rs. 92/- gives yield of 8%

With fall in yield from 8% to 7.95%, market price rises to Rs. 92.10

Difference Yield = 0.5%

Difference in Market price = 0.10

BPV = $0.10 / 0.05 = 2$ i.e. 2 basis points.

Face value of the Bond is 1.00 crore, BPV of the bond is Rs. 2000/- ($1,00,00,000 \times .02 / 100$) Now, if the yield on Bond with BPV 2000 declines by 8 bps, then it will result into profit of Rs. 16000/- (8×2000).

BPV declines as maturity reaches. It will become zero on the date of maturity.

2. Duration Approach

Duration is the time that a bond holder must wait till nos. of years (Duration) to receive Present Value of the bond. e.g. 5 year bond with Face Value of Rs. 100 @ 6% having McCauley Duration 3.7 years. It means Total Cash Flow of Rs. 130 to be received in 5 years would be discounted with Present Value which will be equivalent as amount received in 3.7 years. The Duration of the Bond is 3.7 Years.

Formula of Calculation of McCauley Duration = $\Sigma PV \times T / \Sigma PV$

Modified Duration = $\text{Duration} / 1 + \text{Yield}$

Approximate % change in price = Modified Duration X Change in Yield

Example

A bond with remaining maturity of 5 years is presently yielding 6%. Its modified duration is 5 years. What will be the McCauley Duration.

Modified Duration = Duration / (1 + YTM)

Duration = Modified Duration × (1 + YTM)

= 5 × 1.06 = **5.30**

3. Downside Potential

It captures only possible losses ignoring profit potentials. It integrates sensitivity and volatility with adverse affect of Uncertainty.

This is most reliable measure of Risk for Banks as well as Regulators. VaR is the method to calculate downside potential.

Value at Risk (VaR)

It means how much can we expect to lose? What is the potential loss?

Let VaR = x. It means we can lose up to maximum of x value over the next period say week (time horizon).

Confidence level of 99% is taken into consideration.

Example

A bank having 1 day VaR of Rs. 10 crore with 99% confidence level. It means that there is only one chance in 100 that daily loss will be more than 10 crore under normal conditions. VaR in days in 1 year based on 250 working days = $1 \times 250 / 100 = 2.5$ days per year.

Back Testing

It is a process where model based VaR is compared with Actual performance. It tells us whether results fall within pre-specified confidence bonds as predicted by VaR models.

Stress Testing

It seeks to determine possible change in Market Value of portfolio that could arise due to non-normal movement in one or more market parameters (such as interest rate, liquidity, inflation, Exchange rate and Stock price etc.).

Four test are applied:

1. Simple sensitivity test;

If Risk factor is exchange rate, shocks may be exchange rate $\pm 2\%$, 4%, 6% etc.

2. Scenario test

It is leading stress testing technique. The scenario analysis specifies the shocks if possible events occur. It assesses potential consequences for a firm of an extreme. It is based on historical event or hypothetical event.

3. Maximum loss

The approach assesses the risks of portfolio by identifying most potential combination of moves of market risks

4. Extreme value theory

The theory is based on behavior of tails (i.e. very high and very low potential values) of probable distributions.

RBI guidelines on CCF (Credit Conversion Factor)

Direct Credit Substitutes CCF

General Guarantees (including Standby LCs), Acceptances	-	100%
Transaction related contingent items (Performance bonds, Bid bonds, Warranties, Indemnities, Standby LC relating to particular transaction	-	50%
Short Term LC (Documentary) for Issuing bank as well as confirming bank -		20%

Capital Charge on Un-availed limit

Capital Charge on Undrawn limits is calculated as under:

- (iii) 20% on Undrawn CC limit
- (iv) 20% on Undrawn TL limit (which is to be drawn in a year)
- (v) 50% on Undrawn TL limit (which is to be drawn beyond a year)

Example

In the case of a cash credit facility for Rs.100 lakh (which is not unconditionally cancelable) where the availed portion is Rs. 60 lakh, the un-availed portion of Rs.40 lakh will attract a Credit Conversion Factor (CCF) of 20% (since the cash credit facility is subject to review / renewal normally once a year). The credit equivalent amount of Rs.8 lakh (20% of Rs.40 lakh) will be assigned the appropriate risk weight as applicable to the counterparty / rating to arrive at the risk weighted asset for the unavailed portion. The availed portion (Rs.60 lakh) will attract a risk weight as applicable to the counterparty / rating.

In compliance of the new guidelines banks have advised all the branches for:

- 2. Insertion of Limit Cancellation Clause in loan documents
- 3. Levying of Commitment Charges

Time frame for application of different approaches

Application to RBI by	Approval by RBI by	
IRB approach for Credit Risk	01.04.2012	31.3.2014
AMA approach for Operational Risk	01.04.2012	31.3.2014
Internal Model approach for		
Market Risk	01.04.2010	31.3.2011

BASEL -III Basel III covers Liquidity Risk in addition to Basel II.

It is planned to implement BASEL-III w.e.f. 1.1.2013. The propose reforms are as under:

Capital	Common Equity	Tier –I Total Capital	
Minimum	4.5%	6%	8%
+ Conservative Buffer	2.5%	2.5%	2.5%

Transition Arrangement

As on 1.1.2013, the banks will meet new minimum requirement in relation to Risk Weighted Assets as under:

3.5% of Common Equity + 4.5% of Tier –I Capital = .8% of Total Capital /Risk Weighted Assets.

VaR (Value at Risk)

Value at Risk is how much can we expect to lose? What is potential loss?

We can lose maximum up to VaR (value at Risk) over a given time at a given confidence level.

Calculation of VaR

Market Factor Sensitivity X Daily Volatility X Probability at given confidence level

Suppose impact of 1% change of interest rate (Price) = 6000/-

Daily Volatility = 3% : Confidence level is 99%

Probability of occurrence at 99% confidence level is 2.326

Defeasance period = 1 day

VaR = 6000x3x2.326 = 41874/-

Duration and Modified Duration

Duration is the time that Bondholder must wait for a number of years (duration) to receive Present Value of Cash Inflows i.e. PV of Cash Inflows equals Actual Cash Inflows.

Formula of calculating Duration (Macaulay's Duration)

$\Sigma (PV \cdot T) / \Sigma PV$

For example:

5 years bond of Rs. 100 @ 6% gives Duration of 3.7 years. It means Total Cash flow of Rs. 130/-would be equivalent to receiving Rs. 130/- at the end of 3.7 years.

Modified Duration = Duration / 1 + Yield

Risk Management and Control

Market risk is controlled by implementing the business policies and setting of market risk limits or controlling through economic measures with the objective of attaining higher RAROC. Risk is managed by the following:

- ii) Limits and Triggers
- iii) Risk Monitoring
- iv) Models of Analyses.

Calculation of Capital Charge of Market Risk

The Basel Committee has two approaches for calculation of Capital Charge on Market Risk as under:

- vii) Standardized approach
- viii) Internal Risk Management approach

Under Standardized approach, there are two methods: Maturity method and duration method. RBI has decided to adopt **Standardization duration** method to arrive at capital charge on the basis of investment rating as under:

Investment rating Capital Required

AAA to AA 0%

A+ to BBB (Residual term to maturity)

Less than 6 M 0.25%

Less than 24M 1.00%

More than 24 M 1.60%

Other Investments 8.00%

How to Calculate RWAs, if Capital Charge is given:

RWAs for Market Risk = Capital Charge / 0.09 (If required CAR is 9%)

Other Risks and Capital Requirement

Other Risks like Liquidity Risks, Interest Rate Risk, Strategic Risk, Reputational Risks and Systemic Risks are not taken care of while calculating Capital Adequacy in banks.

Pillar – II – Supervisory Review Process (SRP)

SRP has two issues:

- (a) To ensure that bank is having adequate capital.
- (b) To encourage banks to use better techniques to mitigate risks.

SRP concentrates on 3 main areas:

- (i) Risks not fully captured under Pillar -1 i.e. Interest Rate Risks, Credit concentration Risks, Liquidity Risk, Settlement Risks, Reputational Risks and Strategic Risks.
- (j) Risks not at all taken care of in Pillar -1.
- (k) External Factors.

This pillar ensures that the banks have adequate capital. This process also ensures that the bank managements develop Internal risk capital assessment process and set capital targets commensurate with bank's risk profile and capital environment. Central Bank also ensures through supervisory measures that each bank maintains required CRAR and components of capital i.e. Tier –I & Tier –II are in accordance with BASEL-II norms. RBIA and other internal inspection processes are the important tools of bank's supervisory techniques.

Every Bank will prepare ICAAP (Internal Credit Adequacy Assessment Plan) on solo basis which will comprise of functions of measuring and identifying Risks, Maintaining appropriate level of Capital and Developing suitable Risk mitigation techniques.

Pillar – III – Market Discipline

Market discipline is complete disclosure and transparency in the balance sheet and all the financial statements of the bank. The disclosure is required in respect of the following:

- (ai) Capital structure.
- (aj) Components of Tier –I and Tier –II Capital
- (ak) Bank's approach to assess capital adequacy
- (al) Assessment of Credit Risks, Market Risk and Operational Risk.
- (am) Credit Aspects like Asset Classification, Net NPA ratios, Movement of NPAs and Provisioning.

Frequency of Disclosure

- (bi) Banks with Capital funds of Rs. 100 crore or more will make interim Disclosures on Quantitative aspects on standalone basis on their respective websites.
- (bj) Larger banks with Capital Funds of Rs. 500 crore or more will disclose Tier-I capital, Total Capital, CAR on Quarterly basis on website.

Risk Weight on NPAs

- (iv) Risk weight on NPAs net of specific provision will be calculated as under:

When provision is less than 20% of NPA o/s ---- 150%

When provision is at least 20% of NPA o/s ---- 100%

When provision is at least 50% of NPA o/s ---- 50%

Category	Provision Rate	Risk Weight
Substandard (Secured)	15%	150%
Substandard (Unsecured)	25%	100%
Doubtful (D1) (Secured)	25%	100%
Doubtful (D1) (Un-Secured)	100%	50%
Doubtful (D2) (Secured)	40%	100%
Doubtful (D3) (Secured)	100%	50%
Doubtful (D2)(Un-Secured)	100%	50%

Off-balance sheet items

Off-balance sheet items have been bifurcated as follows:

6. Non-market related off-balance sheet items

7. Market related off-balance sheet items

There is two-step process for the purpose of calculating risk weighted assets in respect of off-balance sheet items:

- 4. The notional amount of the transaction is converted into a credit equivalent factor by multiplying the amount by the specified Credit Conversion Factor (CCF)

2. The resulting credit equivalent amount is then multiplied by the risk weight applicable to the counter party or to the purpose for which the bank has extended finance or the type of asset whichever is higher.

Where the off-balance sheet item is secured by eligible collateral or guarantee, the credit risk mitigation guidelines will be applied.

Non-market related off-balance sheet items:

Off balance sheet items like direct credit substitutes, trade and performance related contingent items and commitments with certain draw downs are classified under Non-market related off-balance sheet items. The credit equivalent amount is determined by multiplying the contracted amount of that particular transaction by the relevant CCF.

Non-market related off-balance sheet items also include undrawn or partially undrawn fund based and non-fund based facilities, which are not unconditionally cancellable. The amount of undrawn commitment is to be included in calculating the off-balance sheet items. Non-market related exposure is the maximum unused portion of the commitment that could be drawn during the remaining period of maturity. In case of term loan with respect to large project to be drawn in stages, undrawn portion shall be calculated with respect of the running stage only.

CREDIT RISK

How to find Risk Weighted Assets?

Fixed Assets : 500 Crore
Govt. Securities : 5000 crore

Standard Assets
Retail ---3000 crore
HL -----2000 crore
Other loans—10000 cr

Sub-Standard Assets
Secured ----500 crore
Unsecured -----150 crore

Doubtful (DAI) -----800 crore

Solution:

Retail----- $3000 \times 75/100 = 2250$ crore
HL----- $2000 \times 50/100 = 1000$ crore
Other loans----- $10000 \times 100/100 = 10000$ crore
Gsec----- $5000 \times 0/100 = 0$
12. Secured----- $500 \times 150/100 = 750$ crore SS
Unsecured ----- $150 \times 100/100 = 150$ crore

Doubtful D1 ----- $800 \times 100/100 = 800$ crore
 Total RWAs = $2250 + 1000 + 750 + 150 + 800 = 4950$ crore

OPERATIONAL RISK

How to find Risk Weighted Assets?

1st year	2nd year	
Net Profit	120 crore	150 crore
Provisions	240 crore	290 crore
Staff Expenses	280 crore	320 crore
Other Oper. Expenses	160 crore	240 crore
Gross Income	800 crore	1000 crore

Average Income $1800/2 = 900$ crore
 Capital Charge $900 \times 15/100 = 135$ crore

RWAs (assuming BASEL rate of 8%)
 Capital Charge/8% = $135 \times 100/8 = 1687.50$ crore

Tier-I and Tier II Capital

CRAR

RWAs --- Credit and Operational Risks = 10000 crore

RWAs ---- Market Risk = 4000 crore

Tier –I Capital

Paid up Capital----- 100 crore

Free Reserves ----- 300 crore

Perpetual non-Cumulative Preference Shares ----- 400 crore

Tier-II Capital

Provisions for contingencies ----- 200 crore

Revaluation Reserve----- 300 crore

Subordinate Debts----- 300 crore

Solution

Tier –I Capital = $100 + 300 + 400 = 800$ crore

Tier-II Capital = $(300 \times 45/100) + 300 + 1.25\% \text{ of RWAs (or Rs. 200 crore)}$
 $= 135 + 300 + 175 = 610$ crore

Total Capital = $800 + 610 = 1410$ crore

Minimum Capital Required and Capital to Support Market Risks In the above example:

$$\text{CAR} = 1410/14000 \times 100 = 10.07\%$$

Minimum Capital Required to support Credit and Operational Risks = $10000 \times 9/100 = 900$ crore Minimum

Tier –I Capital Required to support Credit and Operational Risks = $900 \times 50 = 450$ crore Minimum Tier –II

Capital Required to support Credit and Operational Risks = $900 - 450 = 450$ crore

Amount of Tier –I Capital to support Market Risks = $800 - 450 = 350$ crore Amount

of Tier –II Capital to support Market Risks = $610 - 450 = 160$ crore

Volatility with time horizon & Bond Value

Ex.1

If daily volatility of a Security is 2%, how much will be monthly volatility?

Solution

$$\text{Monthly volatility} = \text{Daily Volatility} \times \sqrt{30} = 2 \times \sqrt{30} = 2 \times 5.477 = \mathbf{10.95\%}$$

Ex.2

If per annum volatility is 30% and nos. of trading days per annum be 250, how much will be daily volatility?

Solution

$$\text{Annual Volatility} = \text{Daily Volatility} \times \sqrt{250} = \text{Daily Volatility} \times 15.81 \quad 30 = \text{Daily Volatility} \times 15.81$$

$$\text{Daily volatility} = 30/15.81 = \mathbf{1.90\%}$$

Ex.3

If 1 day VaR of a portfolio is Rs. 50000/- with 97% confidence level. In a period of 1 year of 300 trading days, how many times the loss on the portfolio may exceed Rs. 50000/-.

Solution

97% confidence level means loss may exceed the given level (50000) on 3 days out of 100. If out of 100 days loss exceeds the given level on days = 3

Then out of 300 days, loss exceeds the given level = $3/100 \times 300 = \mathbf{9 \text{ days}}$.

Ex.4

A 5 year 5% Bond has a BPV of Rs. 50/-, how much the bond will gain or lose due to increase in the yield of bond by 2 bps

Solution

Increase in yield will affect the bond adversely and the bond will lose.

Since BPV of the bond is Rs. 50/-. Increase in yield by 2 bps will result into loss of value of Bond by $50 \times 2 = 100$.

Ex.5

1 day VaR of a portfolio is Rs. 50000/- with 90% confidence level. In a period of 1 year (250 days) how many times the loss on the portfolio may not exceed Rs.50000/-

Ans. 90% confidence level means on 10 days out of 100, the loss will be more than Rs. 50000/-. Out of 250 days, loss will be more than 50000/- on **25 days** Ans.

Bond Value, Current Yield

Bond-1	Bond-2	
Face Value	100	100
Annual Coupon	8%	10%
Term to Maturity	3 yrs	4 yrs
Market Price	80	90

Ex. 1 Find Current Yield of Bond 2

Solution

Coupon amount $\times 100 = 10/90 \times 100 = 11.11\%$

Market Value

Ex. 2 Find YTM of Bond 1 & 2

YTM of Bond 1 = 17.07%

YTM of Bond 2 = 13.41%

Ex. 3 Find McCauley Duration of Bond 1

2.76 years

Ex. 4

Find Modified Duration of Bond 2

Solution

McCauley duration/ $1 + \text{yield}$

$= 3.46 / (1 + 13.41\%) = 3.46 / 1.1341 = 3.05 \text{ yrs.}$

Ex. 5 What is %age change in price of Bond 2 if YTM increases by

1% Expected %age change in price

$= \text{Modified Duration} \times \text{\%age change in yield}$

$= 3.5 \times 1 = -3.05\%$ (Decrease in price of bond)

Ex. 5 What is %age change in price of Bond 2 if YTM decreases by 1% = 3.5

$\times 1 = 3.05\%$ (Increase in price of bond)

Ex.6 As an investor, in which bond would you like to invest.

Bond 1 (YTM is more)

AMA – Estimated level of Operational Risk and Impact of Internal Control

Guidelines on Partial Credit Enhancement to corporate bonds by banks

I. Purpose

1. The credit needs of the infrastructure sector in India are huge. Resources are generally raised through the bond market by corporates for project development. However, the Indian corporate bond market, being at a nascent stage of development, there is excessive pressure on the banking system to fund the credit needs of such projects thereby leading to greater asset-liability mismatch and exposing banks to liquidity risk. The insurance and provident/pension funds, whose liabilities are long term, may be better suited to finance such projects.

2. The regulatory requirement for insurance and provident/pension funds is to invest in bonds of high or relatively high credit rating.

3. With a view to enabling long term providers of funds such as insurance and provident/pension funds, as also other investors, to invest in the bonds issued for funding projects by corporates/SPVs, RBI, in its Second Quarter Review of Monetary Policy 2013-14, proposed to allow banks to offer Partial Credit Enhancement (PCE) to corporate bonds.

4. The objective behind allowing banks to extend PCE is to enhance the credit rating of the bonds issued so as to enable corporates to access the funds from the bond market on better terms.

5. It has been decided that, to begin with, banks can provide PCE to a project as a non-funded subordinated facility in the form of an irrevocable contingent line of credit which will be drawn in case of shortfall in cash flows for servicing the bonds and thereby improve the credit rating of the bond issue.

II. Salient features of the PCE facility

6. The aggregate PCE provided by all banks for a given bond issue shall be 50 per cent of the bond issue size, with a limit up to 20 per cent of the bond issue size for an individual bank.

7. The PCE facility shall be provided at the time of the bond issue and will be irrevocable.

8. Banks are not expected to invest in corporate bonds which are credit enhanced by other banks.

9. Banks may offer PCE only in respect of bonds whose pre-enhanced rating is BBB minus or better.

10. Banks cannot provide PCE by way of guarantee.

11. Banks should have a board approved policy on PCE.

III. Balance sheet treatment, capital requirements, exposure and asset classification norms for exposures arising on account of providing PCE

12. PCE facilities to the extent drawn should be treated as an advance in the balance sheet. Undrawn facilities would be an off-balance sheet item and reported under 'Contingent Liability – Others'.

13. The aggregate capital required to be maintained by the banks providing contingent PCE for a given bond issue for their exposure on account of PCE provided will be computed, as if the entire bond issue was held by banks, as the difference between (a) the capital required on the entire bond amount, corresponding to its pre-credit enhanced rating and (b) the capital required on the bond amount corresponding to its post-credit enhanced rating, as per the risk weights applicable to claims on corporates in the Master Circular – Basel III Capital Regulations (as updated from time to time).

To illustrate, assume that the total bond size is Rs.100 for which PCE to the extent of Rs.20 is provided by a bank. The pre-enhanced rating of the bond is BBB which gets enhanced to AA with the PCE. In this scenario –

a. At the pre-enhanced rating of BBB (100% risk weight), the capital requirement on the total bond size (Rs.100) is Rs.9.00.

b. The capital requirement for the bond (Rs.100) at the enhanced rating (AA, i.e., 30% risk weight) would be Rs.2.70.

c. As such, the PCE provider will be required to hold the difference in capital i.e., Rs.6.30 (Rs.9.00 – Rs.2.70).

14. On a review of the capital requirement for PCE, it has been decided that:

a) To be eligible for PCE from banks, corporate bonds shall be rated by a minimum of two external credit rating agencies at all times;

b) The rating reports, both initial and subsequent, shall disclose both standalone credit rating (i.e., rating without taking into account the effect of PCE) as well as the enhanced credit rating (taking into account the effect of PCE).

c) For the purpose of capital computation in the books of PCE provider, lower of the two standalone credit ratings and the corresponding enhanced credit rating of the same rating agency shall be reckoned.

d) Where the reassessed standalone credit rating at any time during the life of the bond shows improvement over the corresponding rating at the time of bond issuance, the capital requirement may be recalculated on the basis of the reassessed standalone credit rating and the reassessed enhanced credit rating, without reference to the constraints of capital floor and difference in notches.

15. In situations where the notional pre-enhanced rating of the bond slips below investment grade (BBB minus), capital must be maintained as per risk weight of 1250% on the amount of PCE provided.

16. The PCE providing bank will observe the following exposure limits:

(a) PCE exposure to a single counterparty or group of counterparties shall not exceed 5 per cent of the bank's Single Borrower / Group Borrower limit to the counterparty to whom the PCE is provided,

(b) The aggregate PCE exposure of a bank shall not exceed 20 per cent of its Tier 1 capital.

LARGE EXPOSURES FRAMEWORK (LEF)

The following write up on Large Exposures Framework (LEF) is based on RBI Notification No. RBI/2016-17/167 DBR.No.BP.BC.43/21.01.003/2016-17 dated December 1, 2016. Candidates are advised to refer to the Notification for additional details.

In order to align the exposure norms for Indian banks with the BCBS standards, RBI has laid down the guidelines on Large Exposures Framework on December 1, 2016. The guidelines are aimed at significant tightening of norms pertaining to concentration risks of banks, especially in relation to large borrowers. The guidelines come into effect from April 1, 2019.

A large exposure is defined as any exposure to a counter-party or group of counter-parties which is equal to 10 per cent of the bank's eligible capital base (defined as tier-I capital).

LARGE EXPOSURE LIMITS

Single Counterparty: The sum of all the exposure values of a bank to a single counterparty must not be higher than 20 percent of the bank's available eligible capital base at all times. In exceptional cases, Board of banks may allow an additional 5 percent exposure of the bank's available eligible capital base. Banks shall lay down a Board approved policy in this regard.

Groups of Connected Counterparties: The sum of all the exposure values of a bank to a group of connected counterparties, as defined below, must not be higher than 25 percent of the bank's available eligible capital base at all times.

Any breach of the above LE limits shall be under exceptional conditions only and shall be reported to RBI immediately and rectified at the earliest but not later than a period of 30 days from the date of the breach.

Definition of connected counterparties

Bank may have exposures to a group of counterparties with specific relationships or dependencies such that, where one of the counterparties fail, all of the counterparties are likely to fail. A group of this sort is referred to, in this framework, as a group of connected counterparties and must be treated as a single counterparty. In this case, the sum of the bank's exposures to all the individual entities included within a group of connected counterparties is subject to the large exposure limit and to the regulatory reporting requirements.

Counterparties exempted from LEF

The exposures that will be exempted from the LEF are listed below:

- a. Exposures to the Government of India and State Governments which are eligible for zero percent Risk Weight under the Basel III – Capital Regulation framework of the Reserve Bank of India;
- b. Exposures to Reserve Bank of India;
- c. Exposures where the principal and interest are fully guaranteed by the Government of India;
- d. Exposures secured by financial instruments issued by the Government of India;
- e. Intra-day interbank exposures;
- f. Intra-group exposures;
- g. Borrowers, to whom limits are authorised by the Reserve Bank for food credit;
- h. Banks' clearing activities related exposures to Qualifying Central Counterparties (QCCPs)
- i. Rural Infrastructure Development Fund (RIDF) deposits placed with NABARD.

However, a bank's exposure to an exempted entity which is hedged by a credit derivative shall be treated as an exposure to the counterparty providing the credit protection notwithstanding the fact that the original exposure is exempted.

RISK MANAGEMENT

SECTION I

Facilities for Persons Resident in India other than Authorised Dealers Category-I

The facilities for persons resident in India (other than AD Category I banks) are elaborated under paragraphs A and B. **Paragraph A** describes the products and operational guidelines for the respective product. In addition to the operational guidelines under A, the general instructions that are applicable across all products for residents (other than AD Category I banks) are detailed under **Paragraph B**.

A. Products and Operational Guidelines

The product/purpose-wise facilities for persons resident in India (other than AD Category I banks) are detailed under the following subheads:

- Contracted Exposure
- Probable Exposure
- Special Dispensation

4. Contracted Exposures

AD Category I banks have to evidence the underlying documents so that the existence of underlying foreign currency exposure can be clearly established. AD Category I banks, through verification of documentary evidence, should be satisfied about the genuineness of the underlying exposure, irrespective of the transaction being a current or a capital account. Full particulars of the contracts should be marked on the original documents under proper authentication and retained for verification. However, in cases where the submission of original documents is not possible, a copy of the original documents, duly certified by an authorized official of the user, may be obtained. In either of the cases, before offering the contract, the AD Category I banks should obtain an undertaking from the customer and also certificates from the statutory auditor (for details refer para B (b) for General Instructions). While details of the underlying have to be recorded at the time of booking the contract, in the view of logistic issues, a maximum period of 15 days may be allowed for production of the documents. If the documents are not submitted by the customer within 15 days, the contract

may be cancelled, and the exchange gain, if any, should not be passed on to the customer. In the event of non-submission of the documents by the customer within 15 days on more than three occasions in a financial year, booking of permissible derivative contracts in future may be allowed only against production of the underlying documents, at the time of booking the contract.

The products available under this facility are as follows:

F Forward Foreign Exchange Contracts

Participants

Market-makers - AD Category I banks **Users**

- Persons resident in India

Purpose

To hedge exchange rate risk in respect of transactions for which sale and /or purchase of foreign exchange is permitted under the FEMA 1999, or in terms of the rules/regulations/directions/orders made or issued there under.

To hedge exchange rate risk in respect of the market value of overseas direct investments (in equity and loan).

Contracts covering overseas direct investment (ODI) can be cancelled or rolled over on due dates. If a hedge becomes naked in part or full owing to contraction (due to price movement/impairment) of the market value of the ODI, the hedge may be allowed to continue until maturity, if the customer so desires. Rollovers on due date shall be permitted up to the extent of the market value as on that date.

To hedge exchange rate risk of transactions denominated in foreign currency but settled in INR, including hedging the economic (currency indexed) exposure of importers in respect of customs duty payable on imports.

Forward foreign exchange contracts covering such transactions will be settled in cash on maturity.

These contracts once cancelled, are not eligible to be rebooked.

In the event of any change in the rate(s) of customs duties, due to Government notifications subsequent to the date of the forward contracts, importers may be allowed to cancel and/or rebook the contracts before maturity.

Operational Guidelines, Terms and Conditions

General principles to be observed for forward foreign exchange contracts.

4. The maturity of the hedge should not exceed the maturity of the underlying transaction. The currency of hedge and tenor, subject to the above restrictions, are left to the customer. Where the currency of hedge is different from the currency of the underlying exposure, the risk management policy of the corporate, approved by the Board of the Directors, should permit such type of hedging.
5. Where the exact amount of the underlying transaction is not ascertainable, the contract may be booked on the basis of reasonable estimates. However, there should be periodical review of the estimates.
6. Foreign currency loans/bonds will be eligible for hedge only after final approval is accorded by the Reserve Bank, where such approval is necessary or Loan Registration Number is allotted by the Reserve Bank.
7. Global Depository Receipts (GDRs)/American Depository Receipts (ADRs) will be eligible for hedge only after the issue price has been finalized.
8. Balances in the Exchange Earner's Foreign Currency (EEFC) accounts sold forward by the account holders shall remain earmarked for delivery and such contracts shall not be cancelled. They are, however, eligible for rollover, on maturity.
9. In case of contracted exposures, forward contracts, involving Rupee as one of the currencies, in respect of all current account transactions as well as capital account transactions with a residual maturity of one year or less may be freely cancelled and rebooked.
10. In case of forward contracts involving Rupee as one of the currencies, booked by residents in respect of all hedge transactions, if cancelled with one AD Category I bank can be rebooked with another AD Category I bank subject to the following conditions:
 - A. the switch is warranted by competitive rates on offer, termination of banking relationship with the AD Category I bank with whom the contract was originally booked;
 - B. the cancellation and rebooking are done simultaneously on the maturity date of the contract; and
 - C. the responsibility of ensuring that the original contract has been cancelled rests with the AD Category I bank who undertakes rebooking of the contract.

5. Forward contracts can be rebooked on cancellation subject to condition (i) below.
6. The facility of rebooking should not be permitted unless the corporate has submitted the exposure information as prescribed in Annex V.
7. Substitution of contracts for hedging trade transactions may be permitted by an AD Category I bank on being satisfied with the circumstances under which such substitution has become necessary. The AD Category I bank may also verify the amount and tenor of the underlying substituted.

7. Cross Currency Options (not involving Rupee)

Participants

Market-makers - AD Category I banks as approved for this purpose by the Reserve Bank

Users – Persons resident in India

Purpose

To hedge exchange rate risk arising out of trade transactions.

To hedge the contingent foreign exchange exposure arising out of submission of a tender bid in foreign exchange.

Operational Guidelines, Terms and Conditions

7. AD Category I banks can only offer plain vanilla European options¹.
8. Customers can buy call or put options.
9. These transactions may be freely booked and/ or cancelled subject to verification of the underlying.
10. All guidelines applicable for cross currency forward contracts are applicable to cross currency option contracts also.
11. Cross currency options should be written by AD Category I banks on a fully covered back-to-back basis. The cover transaction may be undertaken with a bank outside India, an Off-shore Banking Unit situated in a Special Economic Zone or an internationally recognized option exchange or another AD Category I bank in India. AD Category I banks desirous of writing options, should obtain a one-time approval from the Chief General Manager, Financial Markets Regulation Department, Reserve Bank of India, Central Office, 1st Floor, Main Building, Shahid Bhagat Singh Road, Fort, Mumbai – 400 001, before undertaking the business.

⁸. A European option may be exercised only at the expiry date of the option, i.e. at a single pre-defined point in time.

9. Foreign Currency - INR Options

Participants

Market-makers - AD Category I banks, as approved for this purpose by the Reserve Bank.

Users – Persons resident in India

Purpose

- € To hedge foreign currency exposures in accordance with Schedule I of [Notification No. FEMA 25/2000-RB dated May 3, 2000](#), as amended from time to time.
- € To hedge the contingent foreign exchange exposure arising out of submission of a tender bid in foreign exchange.

Operational Guidelines, Terms and Conditions

11. AD Category I banks having a minimum CRAR of 9 per cent, can offer foreign currency– INR options on a back-to-back basis.
12. For the present, AD category I banks can offer only plain vanilla European options.
13. Customers can buy call or put options.
14. All guidelines applicable for foreign currency-INR foreign exchange forward contracts are applicable to foreign currency-INR option contracts also.
15. AD Category I banks having adequate internal control, risk monitoring/ management systems, mark to market mechanism, etc. are permitted to run a foreign currency– INR options book on prior approval from the Reserve Bank, subject to conditions. AD Category I banks desirous of running a foreign currency-INR options book and fulfilling minimum eligibility criteria listed below, may apply to the Reserve Bank with copies of approval from the competent authority (Board/ Risk Committee/ ALCO), detailed memorandum in this regard, specific approval of the Board for the type of option writing and permissible limits. The memorandum put up to the Board should clearly mention the downside risks, among other matters.

Minimum Eligibility Criteria:

Net worth not less than Rs 300 crore

CRAR of 10 per cent

Net NPAs not exceeding 3 per cent of the net advances

Continuous profitability for at least three years

The Reserve Bank will consider the application and accord a one-time approval at its discretion. AD Category I banks are expected to manage the option portfolio within the Reserve Bank approved risk management limits.

12. AD banks may quote the option premium in Rupees or as a percentage of the Rupee/foreign currency notional.
13. Option contracts may be settled on maturity either by delivery on spot basis or by net cash settlement in Rupees on spot basis as specified in the contract. In case of unwinding of a transaction prior to the maturity, the contract may be cash settled based on market value of an identical off-setting option.
14. Market makers are allowed to hedge the 'Delta' of their option portfolio by accessing the spot and forward markets. Other 'Greeks' may be hedged by entering into option transactions in the inter-bank market.
15. The 'Delta' of the option contract would form part of the overnight open position.
16. The 'Delta' equivalent as at the end of each maturity shall be taken into account for the purpose of AGL. The residual maturity (life) of each outstanding option contract can be taken as the basis for the purpose of grouping under various maturity buckets.
17. AD banks running an option book are permitted to initiate plain vanilla cross currency option positions to cover risks arising out of market making in foreign currency-INR options.
18. Banks should put in place necessary systems for marking to market the portfolio on a daily basis. FEDAI will publish daily a matrix of polled implied volatility estimates, which market participants can use for marking to market their portfolio.
19. The accounting framework for option contracts will be as per FEDAI circular No.SPL-24/FC-Rupee Options/2003 dated May 29, 2003.

8. Foreign Currency-INR Swaps

Participants

Market-makers – AD Category I banks in India. For²entering into swaps with Multilateral (MFI) or International Financial Institutions (IFIs) in which

7. [A. P. \(DIR Series\) Circular No. 28 dated November 5, 2015](#)

Government of India is a shareholder, refer to para. (g) under operational guidelines, terms and conditions.

Users –

3. Residents having a foreign currency liability and undertaking a foreign currency-INR swap to move from a foreign currency liability to a Rupee liability.
4. Incorporated resident entities having a rupee liability and undertaking an INR – foreign currency swap (INR-FCY) to move from rupee liability to a foreign currency liability, subject to certain minimum prudential requirements, such as risk management systems and natural hedges or economic exposures. In the absence of natural hedges or economic exposures, the INR-foreign currency swap (to move from rupee liability to a foreign currency liability) may be restricted to listed companies **or** unlisted companies with a minimum net worth of Rs 200 crore. Further, the AD Category I bank is required to examine the suitability and appropriateness of the swap and be satisfied about the financial soundness of the corporate.

Purpose

To hedge exchange rate and/or interest rate risk exposure for those having long-term foreign currency borrowing or to transform long-term INR borrowing into foreign currency liability.

Operational Guidelines, Terms and Conditions

- 2 No swap transactions involving upfront payment of Rupees or its equivalent in any form shall be undertaken.
- 3 The term “long-term exposure” means exposures with residual maturity of one year or more.
- 4 The swap transactions, once cancelled, shall not be rebooked or re-entered, by whichever mechanism or by whatever name called. In³case of FCY-INR swaps however, where the underlying is still surviving, the client, on cancellation of the swap contract, may be permitted to re-enter into a fresh swap, to hedge the underlying but only after the expiry of the tenor of the original swap contract that had been cancelled. This flexibility is not permitted for INR-FCY swaps.
- 5 AD Category I banks should not offer leveraged swap structures. Typically, in leveraged swap structures, a multiplicative factor other than unity is attached to the

3. [A.P. \(DIR Series\) Circular No. 78 dated February 13, 2015](#)

benchmark rate(s), which alters the payables or receivables vis-à-vis the situation in the absence of such a factor.

AJ. The notional principal amount of the swap should not exceed the outstanding amount of the underlying loan.

AK. The maturity of the swap should not exceed the remaining maturity of the underlying loan.

AL. For hedging their long term foreign currency borrowings residents may enter in to FCY-INR swaps with Multilateral or International Financial Institutions (MFI/IFI) in which Government of India is a shareholding member subject to the following terms and conditions in addition to (a) to (f) above:

Such swap transactions shall be undertaken by the MFI / IFI concerned on a back -to-back basis with an AD Category-I bank in India.

2. AD Category - I banks shall face, for the purpose of the swap, only those Multilateral Financial Institutions (MFIs) and International Financial Institutions (IFIs) in which Government of India is a shareholding member.

The FCY-INR swaps shall have a minimum tenor of three years.

In the event of a default by the resident borrower on its swap obligations, the MFI / IFI concerned shall bring in foreign currency funds to meet its corresponding liabilities to the counterparty AD Cat-I bank in India.

BO. Cost Reduction Structures i.e. cross currency option cost reduction structures and foreign currency –INR option cost reduction structures.

Participants

Market-makers - AD Category I banks

Users – Listed companies and their subsidiaries/joint ventures/associates having common treasury and consolidated balance sheet or unlisted companies with a minimum net worth of Rs. 200 crore

provided

8. All such products are fair valued on each reporting date;
9. The companies follow the Accounting Standards notified under section 211 of the Companies Act, 1956 and other applicable Guidance of the Institute of Chartered Accountants of India (ICAI) for such products/ contracts as also the principle of prudence which

- requires recognition of expected losses and non-recognition of unrealized gains;
12. Disclosures are made in the financial statements as prescribed in ICAI press release dated 2nd December 2005; and
13. The companies have a risk management policy with a specific clause in the policy that allows using the type/s of cost reduction structures.

(Note: The above accounting treatment is a transitional arrangement till AS 30 / 32 or equivalent standards are notified.)”

Purpose

To hedge exchange rate risk arising out of trade transactions, External Commercial Borrowings (ECBs) and foreign currency loans availed of domestically against FCNR (B) deposits.

Operational Guidelines, Terms and Conditions

61. Writing of options by the users, on a standalone basis, is not permitted.
62. Users can enter into option strategies of simultaneous buy and sell of plain vanilla European options, provided there is no net receipt of premium.
63. Leveraged structures, digital options, barrier options, range accruals and any other exotic products are not permitted.
64. The portion of the structure with the largest notional, computed over the tenor of the structure, should be reckoned for the purpose of underlying.
65. The delta of the options should be explicitly indicated in the term sheet.
66. AD Category I banks may, stipulate additional safeguards, such as, continuous profitability, higher net worth, turnover, etc depending on the scale of forex operations and risk profile of the users.
67. The maturity of the hedge should not exceed the maturity of the underlying transaction and subject to the same the users may choose the tenor of the hedge. In case of trade transactions being the underlying, the tenor of the structure shall not exceed two years.
68. The MTM position should be intimated to the users on a periodical basis.

(AK) Hedging of Borrowings in foreign exchange, which are in accordance with the provisions of Foreign Exchange Management (Borrowing and Lending in Foreign Exchange) Regulations, 2000.

Products – Interest rate swap, Cross currency swap, Coupon swap, Crosscurrency option, Interest rate cap or collar (purchases), Forward rate agreement (FRA)

Participants

Market-makers –

AD Category I banks in India

Branch outside India of an Indian bank authorized to deal in foreign exchange in India

(ix) Offshore banking unit in a SEZ in India.

Users –

Persons resident in India who have borrowed foreign exchange in accordance with the provisions of Foreign Exchange Management (Borrowing and Lending in Foreign Exchange) Regulations, 2000.

Purpose

For hedging interest rate risk and currency risk on loan exposure and unwinding from such hedges.

Operational Guidelines, Terms and Conditions

14. The products, as detailed above should not involve the rupee under any circumstances.
15. Final approval has been accorded or Loan Registration Number allotted by the Reserve Bank for borrowing in foreign currency.
16. The notional principal amount of the product should not exceed the outstanding amount of the foreign currency loan.
17. The maturity of the product should not exceed the unexpired maturity of the underlying loan.
18. The contracts may be cancelled and rebooked freely.

35 Probable exposures based on past performance

Participants

Market-makers – AD Category I banks in India. **Users** –

Importers and exporters of goods and services

Purpose

To hedge currency risk on the basis of a declaration of an exposure and based on past performance up to the average of the previous three financial years' (April to March) actual import/export turnover or the previous year's actual import/export turnover, whichever is higher. Probable exposure based on past performance can be hedged only in respect of trades in merchandise goods as well as services.

Products

Forward foreign exchange contracts, cross currency options (not involving the rupee), foreign currency-INR options and cost reduction structures [as mentioned in section B para I 1(v)].

Operational Guidelines, Terms and Conditions

Corporates having a minimum net worth of Rs 200 crores and an annual export and import turnover exceeding Rs 1000 crores and satisfying all other conditions as stipulated in section B para I 1(v) may be allowed to use cost reduction structures.

The contracts booked during the current financial year (April-March) and the outstanding contracts at any point of time should not exceed

The eligible limit i.e. the average of the previous three financial years' actual export turnover or the previous year's actual export turnover, whichever is higher for exports.

Hundred percent of the eligible limit i.e. the average of the previous three financial years' actual import turnover or the previous year's actual import turnover, whichever is higher for imports. Importers, who have already booked contracts up to previous limit of fifty per cent in the current financial year, shall be eligible for difference arising out of the enhanced limit.

Contracts booked up to 75 percent of the eligible limit mentioned at paragraph (b) (i) and (b) (ii) above may be cancelled with the exporter/importer bearing/being entitled to the loss or gain as the case may be. Contracts booked in excess of 75 percent of the eligible limit mentioned at paragraph (b) (i) and

(b) (ii) above shall be on a deliverable basis and cannot be cancelled, implying

that in the event of cancellation, the exporter/importer shall have to bear the loss but will not be entitled to receive the gain.

9. These limits shall be computed separately for import/export transactions.

10. Higher limits will be permitted on a case-by-case basis on application to the Chief General Manager, Financial Markets Regulation Department, Reserve Bank of India, Central Office, 1st Floor, Main Building, Shahid Bhagat Singh Road, Fort, Mumbai – 400 001. The additional limits, if sanctioned, shall be on a deliverable basis.

11. Any contract booked without producing documentary evidence will be marked off against this limit. These contracts once cancelled, are not eligible to be rebooked. Rollovers are also not permitted.

12. AD banks should permit their clients to use the past performance facility only after satisfying themselves that the following conditions are complied with:

An undertaking may be taken from the customer that supporting documentary evidence will be produced before the maturity of all the contracts booked.

Importers and exporters should furnish a quarterly declaration to the AD Category I banks, signed by the Chief Financial Officer (CFO) and the Company Secretary (CS), regarding amounts booked with other AD Category I banks under this facility, as per Annex VI. In the absence of a CS, the Chief Executive Officer (CEO) or the Chief Operating Officer (COO) shall co-sign the undertaking along with the CFO.

For an exporter customer to be eligible for this facility, the aggregate of overdue bills shall not exceed 10 per cent of the turnover.

Aggregate outstanding contracts in excess of 50 per cent of the eligible limit may be permitted by the AD Category I bank on being satisfied about the genuine requirements of their customers after examination of

document as per the format in Annex VII, signed by the CFO and CS, containing the following:

A declaration that all guidelines have been adhered to while utilizing this facility; and.

A certificate of import/export turnover of the customer during the past three years.

In the absence of a CS, the CEO or the CFO shall co-sign the undertaking along with the CFO.

- 2 The past performance limits once utilised are not to be reinstated either on cancellation or on maturity of the contracts.
- 2 AD Category I banks must arrive at the past performance limits at the beginning of every financial year. The drawing up of the audited figures (previous year) may require some time at the commencement of the financial year. However, if the statements are not submitted within three months from the last date of the financial year, the facility should not be provided until submission of the audited figures.
- 2 As part of the annual audit exercise, the Statutory Auditor shall certify the following:
 - The amounts booked with AD Category-I banks under this facility; and
 - All guidelines have been adhered to while utilizing this facility over the past financial year.
- 2 AD Category I banks must institute appropriate systems for validating the past performance limits at pre-deal stage. In addition to the customer declarations, AD Category I banks should also assess the past transactions with the customers, turnover, etc.
- 2 AD Category I banks are required to submit a monthly report (as on the last Friday of every month) on the limits granted and utilised by their constituents under this facility as prescribed in Annex X.

3) Special Dispensation

7) Small and Medium Enterprises (SMEs)

Participants

Market-makers – AD Category I.

Users – Small and Medium Enterprises (SMEs)⁴

Purpose

To hedge direct and / or indirect exposures of SMEs to foreign exchange risk

Product

Forward foreign exchange contracts

Operational Guidelines: Small and Medium Enterprises (SMEs) having direct and / or indirect exposures to foreign exchange risk are permitted to book / cancel /

⁴ SME as defined by the Rural Planning and Credit Department, Reserve Bank of India vide [circularRPCD.PLNS. BC.No.63/06.02.31/2006-07 dated April 4, 2007](https://www.rbi.org.in/links/circulars/circulars.htm).

(e) roll over forward contracts without production of underlying documents to manage their exposures effectively, subject to the following conditions:

Such contracts may be booked through AD Category I banks with whom the SMEs have credit facilities and the total forward contracts booked should be in alignment with the credit facilities availed by them for their foreign exchange requirements or their working capital requirements or capital expenditure.

AD Category I bank should carry out due diligence regarding “*userappropriateness*” and “*suitability*” of the forward contracts to the SME customers as per Para 8.3 of 'Comprehensive Guidelines on Derivatives' issued vide [DBOD.No.BP.BC.44/21.04.157/2011-12 dated November 2,2011](#).

The SMEs availing this facility should furnish a declaration to the AD Category I bank regarding the amounts of forward contracts already booked, if any, with other AD Category I banks under this facility.

(g) Resident Individuals, Firms and Companies

Participants

Market-makers – AD Category I banks

Users: Resident Individuals, Firms and Companies

Purpose

To hedge their foreign exchange exposures arising out of actual or anticipated remittances, both inward and outward, can book forward contracts, without production of underlying documents, up to a limit of USD 1,000,000 (USD one million), based on self-declaration.

Product

Forward foreign exchange contracts and FCY-INR options

Operational Guidelines, Terms and Conditions

- 7) While the contracts booked under this facility would normally be on a deliverable basis, cancellation and rebooking of contracts are permitted. Based on the track record of the entity, the concerned AD Cat-I bank may, however, call for underlying documents, if considered necessary, at the time of rebooking of cancelled contracts. The notional value of the outstanding contracts should not exceed USD 1,000,000 at any time.
- 8) The contracts may be permitted to be booked up to tenors of one year only.

Such contracts may be booked through AD Category I banks with whom the resident individual / firm / company has banking relationship, on the basis of an application-cum-declaration in the format given in Annex XV. The AD Category I banks should satisfy themselves that the hedging entities understand the nature of risk inherent in booking of forward contracts or FCY-INR options and should carry out due diligence regarding “*userappropriateness*” and “*suitability*” of the forward contracts / FCY-INR options to such customer.

8. Simplified Hedging Facility

Users: Resident and non-resident entities, other than individuals.

Purpose: To hedge exchange rate risk on transactions, contracted or anticipated, permissible under Foreign Exchange Management Act (FEMA), 1999⁵.

Products: Any Over the Counter (OTC) derivative or Exchange Traded Currency Derivative (ETCD) permitted under FEMA, 1999.

Cap on Outstanding Contracts: USD 30 million, or its equivalent, on a gross basis.

Designated Bank: Any Authorised Dealer Category-I (AD Cat-I) bank designated as such by the user.

Operational Guidelines, Terms and Conditions

- n) The user shall appoint an AD Cat-I bank as its “Designated Bank”. The designated bank will assess the hedging requirement of the user and set a limit up to the stipulated cap on the outstanding contracts.
- o) If hedging requirement of the user exceeds the limit in course of time, the designated bank may re-assess and, at its discretion, extend the limit up to 150% of the stipulated cap.
- p) Hedge contracts in OTC market can be booked with any AD Cat-I bank, provided the underlying cash flow takes place with the same bank.
- q) Cost reduction structures can be booked by users provided that resident unlisted companies can use such structures only if they have a minimum net worth of Rs.200 crores
- r) Users are not required to furnish any documentary evidence for establishing underlying exposure under this facility. Users may, however, provide basic

¹¹. Rupee denominated bonds issued overseas may be hedged provided it is permitted under contracted exposure hedging.

details of the underlying transaction in a standardised format⁶, only in the case of OTC hedge contracts.

13. Cancelled contracts may be freely rebooked with the same bank.
14. In case of hedge contracts booked in OTC market, while losses will be recovered from the user, net gains i.e. gains in excess of cumulative losses, if any, will be transferred at the time of delivery of the underlying cash flow. In case of part delivery, net gains will be transferred on a pro-rata basis.
15. For hedge contracts on underlying capital account transactions, gains/losses may be transferred to the user as and when they accrue if the underlying asset/liability is already in existence.
16. On full utilisation of the limit or in case of breach of limit, user shall not book new contracts under this facility. In such a case, contracts booked earlier under this facility will be allowed to continue till they expire or are closed. Any further hedging requirements thereafter may be booked under other available hedging facilities.
17. Users booking contracts under this facility shall not book contracts under any other facility in OTC or ETCD market except as provided in para (ix).
18. At the end of each financial year, the user will provide the designated bank with a statement signed by the head of finance or the head of the entity, to the effect that,

Hedge contracts booked in both OTC and ETCD market, under this facility, are backed by underlying exchange rate exposures, either contracted or anticipated.

The exposures underlying the hedge contracts booked under this facility are not hedged under any other facility.
19. On being appointed, the designated bank shall report the details of the users and limits granted to the Trade Repository (TR). On a request by the TR, the exchanges shall report all contracts booked by such users to the TR on a daily basis.
20. The TR will compute user wise outstanding position (across OTC and ETCD market) and provide this information to the designated bank for monitoring. If the outstanding contracts of a user exceeds the limit (or the extended

⁶ Standardized format will be devised by Foreign Exchange Dealers Association of India (FEDAI) and will include details like transaction type, i.e. current account (import, export) or capital account (ECB, FPI, FDI etc.), amount, currency and tenor.

limit, if applicable) the designated bank shall advise the user to stop booking new contracts under this facility.

When user migrates to other available facilities, the designated bank shall report this information to the TR. The TR shall update this information in its records and notify the recognized stock exchanges to stop reporting data for the user concerned.

Banks shall have an internal policy regarding the time limit up to which a hedge contract for a given underlying can be rolled-over or rebooked by the user.

12. General Instructions for OTC forex derivative contracts entered by Residents in India

While the guidelines indicated above govern specific foreign exchange derivatives, certain general principles and safeguards for prudential considerations that are applicable across the OTC foreign exchange derivatives, are detailed below. In addition to the guidelines under the specific foreign exchange derivative product, the general instructions should be followed scrupulously by the users (residents in India other than AD Category I banks) and the market makers (AD Category I banks). For Simplified Hedging Facility, para (a) and (b) below will not be applicable.

- 6 In case of all forex derivative transactions [except INR- foreign currency swaps i.e. moving from INR liability to foreign currency liability as in section B para I(1)(iv)] is undertaken, AD Category I banks must take a declaration from the clients that the exposure is unhedged and has not been hedged with another AD Category I bank. The corporates should provide an annual certificate to the AD Category I bank certifying that the derivative transactions are authorized and that the Board (or the equivalent forum in case of partnership or proprietary firms) is aware of the same.
- 7 In the case of **contracted exposure**, AD Category I banks must obtain:
 - d. An undertaking from the customer that the same underlying exposure has not been covered with any other AD Category I bank/s. Where hedging of the same exposure is undertaken in parts, with more than one AD Category I bank, the details of amounts already booked with other AD Category I bank/s should be clearly indicated in the declaration. This undertaking can also be obtained as a part of the deal confirmation.

- a An annual certificate from the statutory auditors to the effect that the contracts outstanding with all AD category I banks at any time during the year did not exceed the value of the underlying exposures at that time. It is reiterated, however, that that the AD bank, while entering into any derivative transaction with a client, shall have to obtain an undertaking from the client to the effect that the contracted exposure against which the derivative transaction is being booked has not been used for any derivative transaction with any other AD bank.
- \$ Derived foreign exchange exposures are not permitted to be hedged. However, in case of INR- foreign currency swaps, at the inception, the user can enter into one time plain vanilla cross currency option (not involving Rupee) to cap the currency risk.
- \$ In any derivative contract, the notional amount should not exceed the actual underlying exposure at any point in time. Similarly, the tenor of the derivative contracts should not exceed the tenor of the underlying exposure. The notional amount for the entire transaction over its complete tenor must be calculated and the underlying exposure being hedged must be commensurate with the notional amount of the derivative contract.
- \$ Only one hedge transaction can be booked against a particular exposure/ part thereof for a given time period.
- \$ The term sheet for the derivative transactions (except forward contracts) should also necessarily and clearly mention the following:
 - the purpose for the transaction detailing how the product and each of its components help the client in hedging;
 - the spot rate prevailing at the time of executing the transaction; and
 - quantified maximum loss/ worst downside in various scenarios.
- \$ AD Category I banks can offer only those products that they can price independently. This is also applicable to the products offered even on back to back basis. The pricing of all forex derivative products should be locally demonstrable at all times.
- \$ The market-makers should carry out proper due diligence regarding 'user appropriateness' and 'suitability' of products before offering derivative products (except forward contracts) to users as detailed in. [No.BP.BC. 44/21.04.157/2011-12 dated November 2, 2011](#).
- \$ AD Category I may share with the user the various scenario analysis

encompassing both the possible upside as well as the downsides and sensitivity analysis identifying the various market parameters that affect the product.

- \$ The provisions of comprehensive guidelines on Derivatives issued vide [DBOD.No.BP.BC.86/21.04.157/2006-07 dated April 20, 2007](#) and as amended from time to time are also applicable to forex derivatives.
- \$ Sharing of information on derivatives between banks is mandatory and as detailed vide [circular DBOD.No.BP.BC.46/08.12.001/2008-09 dated September 19, 2008](#) and [DBOD.No.BP.BC.94/08.12.001/2008-09 dated December 8, 2008](#).

4. Currency Futures on recognised Stock /New Exchanges

As part of further developing the derivatives market in India and adding to the existing menu of foreign exchange hedging tools available to the residents and non-residents, currency futures contracts have been permitted to be traded in recognized stock exchanges or new exchanges, recognized by the Securities and Exchange Board of India (SEBI) in the country. The currency futures market would function subject to the directions, guidelines, instructions issued by the Reserve Bank and the SEBI, from time to time.

Participation in the currency futures market in India is subject to directions contained in the Currency Futures (Reserve Bank) Directions, 2008 [[Notification No.FED.1/DG\(SG\)-2008 dated August 6, 2008](#)] (Directions) and [Notification No.FED. 2/ED \(HRK\)-2009 dated January 19, 2010](#), as amended⁷ from time to time, issued by the Reserve Bank of India under Section 45W of the Reserve Bank of India Act, 1934.

Currency futures are subject to following conditions:

Permission

\$ Currency futures are permitted in US Dollar (USD) - Indian Rupee (INR), Euro (EUR)-INR, Japanese Yen (JPY)-INR, Pound Sterling (GBP)-INR, EUR-USD, GBP-USD and USD-JPY.

\$ 'Persons resident in India' may purchase or sell currency futures contracts subject to the terms and conditions laid down in paragraph 6 below.

7. [A.P. \(DIR Series\) No. 35 dated December 10, 2015](#) containing Amendment Directions issued under RBI Act, 1934 for introduction of cross-currency futures and options and exchange traded options in EUR-INR, GBP-INR and JPY-INR currency pairs.

7. Foreign Portfolio Investors (FPIs) are permitted to enter into currency futures contracts subject to the terms and conditions laid down in Part A, Section II, paragraph no. 2.

Features of currency futures

Standardized currency futures shall have the following features:

(vi) Foreign Currency-Indian Rupee contracts, viz. USD-INR, EUR-INR, GBP-INR and JPY-INR and Cross Currency contracts (not involving the Indian Rupee), viz. EUR-USD, GBP-USD and USD-JPY are allowed to be traded.

(vii) The size of the USD-INR and USD-JPY contracts shall be USD 1000, of EUR-INR and EUR-USD contracts shall be EUR 1000, of GBP-INR and GBP-USD contracts shall be GBP 1000 and JPY-INR contract shall be JPY 100,000.

(viii) All Foreign Currency-INR contracts shall be quoted and settled in Indian Rupees. EUR-USD and GBP-USD cross currency contracts shall be quoted in USD and USD-JPY contract shall be quoted in JPY. All cross currency contracts shall be settled in Indian Rupees as per the method approved by Reserve Bank.

(ix) The maturity of the contracts shall not exceed 12 months.

(x) The settlement price for USD-INR shall be the Reserve Bank's Reference Rate and for Euro-INR, GBP-INR and JPY-INR contracts shall be the exchange rates published by the Reserve Bank in its press release on the last trading day. The settlement price in Indian Rupees of the cross-currency contracts shall be computed using the Reserve Bank's USD-INR Reference Rate and the corresponding exchange rate published by Reserve Bank for EUR-INR, GBP-INR and JPY-INR on the last trading day.

Membership

BK. The membership of the currency futures market of a recognised stock exchange shall be separate from the membership of the equity derivative segment or the cash segment. Membership for both trading and clearing, in the currency futures market shall be subject to the guidelines issued by the SEBI.

BL. Banks authorized by the Reserve Bank under section 10 of the Foreign Exchange Management Act, 1999 as 'AD Category - I bank' are permitted to become trading and clearing members of the currency futures market of the recognized stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the minimum prudential requirements.

m) AD Category - I banks which do not meet the above minimum prudential requirements and AD Category - I banks which are Urban Co-operative banks or State Co-operative banks can participate in the currency futures market only as clients, subject to approval therefore from the respective regulatory Departments of the Reserve Bank.

Position limits

i. The position limits for various classes of participants in the currency futures market shall be subject to the guidelines issued by the SEBI.

p) The AD Category - I banks, shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits.

Risk Management measures

The trading of currency futures shall be subject to maintaining initial, extreme loss and calendar spread margins and the Clearing Corporations / Clearing Houses of the exchanges should ensure maintenance of such margins by the participants on the basis of the guidelines issued by the SEBI from time to time.

Surveillance and disclosures

The surveillance and disclosures of transactions in the currency futures market shall be carried out in accordance with the guidelines issued by the SEBI.

Authorisation to Currency Futures Exchanges / Clearing Corporations

Recognized stock exchanges and their respective Clearing Corporations / Clearing Houses shall not deal in or otherwise undertake the business relating to currency futures unless they hold an authorization issued by the Reserve Bank under section 10(1) of the Foreign Exchange Management Act, 1999.

5. Currency Options on recognised Stock /New Exchanges

In order to expand the existing menu of exchange traded hedging tools available to the residents and non-residents, plain vanilla currency options contracts have been permitted to be traded in recognized stock exchanges or new exchanges, recognized by the Securities and Exchange Board of India (SEBI) in the country. Exchange traded Currency options are subject to following conditions:

Permission

10. Currency option contracts⁸ are permitted in USD-INR spot rate, EUR-INR spot rate, GBP-INR spot rate and JPY-INR spot rate. Cross currency option contracts (not involving the Indian Rupee) are permitted in EUR-USD spot rate, GBP-USD spot rate and the USD-JPY spot rate.

11. 'Persons resident in India' may purchase or sell exchange traded currency options contracts subject to the terms and conditions laid down in paragraph 6 below.

12. Foreign Portfolio Investors (FPIs) are permitted to enter into exchange traded currency options contracts subject to the terms and conditions laid down in Part A, Section II, paragraph no. 2.

Features of exchange traded currency options

Standardized exchange traded currency options shall have the following features:

- The underlying for the currency option shall be the spot rate of the corresponding permitted currency pair.
- The options shall be premium styled European call and put options.
- The size of the USD-INR and USD-JPY contracts shall be USD 1000, of EUR-INR and EUR-USD contracts shall be EUR 1000, of GBP-INR and GBP-USD contracts shall be GBP 1000 and JPY-INR contract shall be JPY 100,000.
- The premium for all contracts involving the Indian Rupee shall be quoted in Indian Rupees. The premium for EUR-USD and GBP-USD contracts shall be quoted in USD and for USD-JPY contract shall be quoted in JPY. For cross currency contracts the premium shall be payable in Indian Rupees based on the USD-INR Reference Rate or the corresponding exchange rates published by Reserve Bank. The outstanding position shall be in USD for USD-INR and USD-JPY contracts, in Euro for EUR-INR and EUR-USD contracts and in GBP for GBP-INR and GBP-USD contracts.
- The maturity of the contracts shall not exceed twelve months.
- The contracts shall be settled in cash in Indian Rupees.
- The settlement price for USD-INR option contract shall be the Reserve Bank's Reference Rate and for Euro-INR, GBP-INR and JPY-INR

6. [A.P. \(DIR Series\) No. 35 dated December 10, 2015](#) containing Amendment Directions issued under RBI Act, 1934 for introduction of cross-currency futures and options and exchange traded options in EUR-INR, GBP-INR and JPY-INR currency pairs.

contracts shall be the exchange rates published by the Reserve Bank in its press release on the expiry date of the contract. The settlement price in Indian Rupees of the cross-currency contracts shall be computed using the Reserve Bank's USD-INR Reference Rate and the corresponding exchange rate published by Reserve Bank for EUR-INR, GBP-INR and JPYINR on the expiry date of the contract.

Membership

7. Members registered with the SEBI for trading in currency futures market shall be eligible to trade in the exchange traded currency options market of a recognised stock exchange. Membership for both trading and clearing, in the exchange traded currency options market shall be subject to the guidelines issued by the SEBI.

8. Banks authorized by the Reserve Bank under section 10 of the Foreign Exchange Management Act, 1999 as 'AD Category - I bank' are permitted to become trading and clearing members of the exchange traded currency options market of the recognized stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the following minimum prudential requirements:

Minimum net worth of Rs. 500 crores.

Minimum CRAR of 10 per cent.

Net NPA should not exceed 3 per cent.

Made net profit for last 3 years.

The AD Category - I banks, which fulfil the prudential requirements, should lay down detailed guidelines with the approval of their Boards for trading and clearing of the exchange traded currency options contracts and management of risks.

iv) AD Category - I banks, which do not meet the above minimum prudential requirements and AD Category - I banks, which are Urban Co-operative banks or State Co-operative banks, can participate in the exchange traded currency options market only as clients, subject to approval therefor from the respective regulatory Departments of the Reserve Bank.

Position limits

xi) The position limits for various classes of participants for the currency options shall be subject to the guidelines issued by the SEBI.

xii) The AD Category - I banks shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits.

Risk Management measures

The trading of exchange traded currency options shall be subject to maintaining initial, extreme loss and calendar spread margins and the Clearing Corporations / Clearing Houses of the exchanges should ensure maintenance of such margins by the participants on the basis of the guidelines issued by the SEBI from time to time.

Surveillance and disclosures

The surveillance and disclosures of transactions, in the exchange traded currency options market, shall be carried out in accordance with the guidelines issued by the SEBI.

Authorisation to the Exchanges / the Clearing Corporations for dealing in Currency Options

Recognized stock exchanges and their respective Clearing Corporations / Clearing Houses shall not deal in or otherwise undertake the business relating to the exchange traded currency options unless they hold an authorisation issued by the Reserve Bank under section 10 (1) of the Foreign Exchange Management Act, 1999.

v. Terms and conditions for residents participating in the Exchange Traded Currency Derivatives (ETCD)

Persons resident in India may take positions (long or short), without having to establish existence of underlying exposure, upto a single limit of USD 100 million equivalent across all currency pairs involving INR, put together, and combined across all exchanges.

Residents shall be allowed to take positions in the cross-currency futures and exchange traded cross-currency option contracts without having to establish underlying exposure subject to the position limits as prescribed by the exchanges.

Domestic participants who want to take a position in excess of limits mentioned at paragraph (a) above in the ETCD market will have to establish the existence of an underlying exposure. The procedure for the same shall be as under:

- (viii) For participants who are exporters or importers of goods and services, the eligible limit up to which they can take appropriate hedging positions in ETCDs will be determined as higher of the (I) average of the last three years' export or import turnover, or (II) previous year's export or import turnover.
- (ix) The participants shall furnish, to the trading member of the exchange, a certificate(s) from their statutory auditors regarding the limit(s) mentioned above along with an undertaking signed by the Chief Financial Officer (CFO) to the effect that at all time, the sum total of the outstanding OTC derivative contracts and the outstanding ETCD contracts shall be corresponding to the actual exports or imports contracted, as the case may be.
- (x) Based on the above certificate, a trading member can book ETCD contracts upto fifty per cent of the eligible limit [as at paragraph (i) above] on behalf of the concerned customer. If a participant wishes to take position beyond the fifty per cent of the eligible limit in the ETCD, it has to produce a signed undertaking from the Chief Financial Officer (CFO) or the senior most functionary responsible for company's finance and accounts and the Company Secretary (CS) to the effect that the sum total of the outstanding OTC derivative contracts and outstanding ETCD contracts has been in correspondence with the eligible limits. In the absence of a CS, the Chief Executive Officer (CEO) or the Chief Operating Officer (COO) shall co-sign the undertaking along with the CFO or the senior most functionary responsible for company's finance and accounts. Based on such an undertaking, the trading member can book ETCD contracts beyond fifty per cent of the limit and up to limit mentioned in paragraph (i) above.
- (xi) For all other participants having an underlying foreign currency exposure in respect of both current and capital account transactions as also exporters and importers who wish to access the ETCD market on the basis of contracted exposure, they will have to undertake the transaction through AD

Category-I bank/s who are operating as trading members. In such cases, the responsibility for verification of the underlying exposures and ensuring that the ETCD bought/sold is in conformity with the underlying exposure and that no OTC contract has been booked against the same underlying exposure shall rest with the concerned (AD Category I bank) trading member.

All participants in the ETCD market, except those covered by paragraph (iv) above, will be required to submit to the concerned trading member of the exchange a half-yearly signed undertaking from the Chief Financial Officer (CFO) or the senior most functionary responsible for company's finance and accounts and the Company Secretary (CS) to the effect that the sum total of the outstanding OTC derivative contracts and outstanding ETCD contracts has been in correspondence with the eligible limits. In the absence of a CS, the Chief Executive Officer (CEO) or the Chief Operating Officer (COO) shall co-sign the undertaking along with the CFO or the senior most functionary responsible for company's finance and accounts.

- The onus of complying with the provisions of this circular rests with the participant in the ETCD market and in case of any contravention the participant shall be liable to any action that may be warranted as per the provisions of Foreign Exchange Management Act, 1999 and the regulations, directions, etc. issued thereunder. The position limits shall also be monitored by the exchanges, and breaches, if any, may be reported to the Financial Markets Regulation Department, Reserve Bank of India.

7. Commodity Hedging

Refer Hedging of Commodity Price Risk and Freight Risk in Overseas Markets (Reserve Bank) Directions ([RBI/2017-18/138 A.P. \(DIR Series\) Circular No. 19 dated March 12, 2018](#)).

8. Freight hedging

Refer Hedging of Commodity Price Risk and Freight Risk in Overseas Markets (Reserve Bank) Directions ([RBI/2017-18/138 A.P. \(DIR Series\) Circular No. 19 dated March 12, 2018](#)).

SECTION II

Facilities for Persons Resident outside India

Participants

Market-makers – AD Category I banks.

Users – Foreign Portfolio Investors (FPIs), Investors having Foreign Direct Investments (FDI), Non Resident Indians (NRIs), Non Resident exporters and importers, Non Residents lenders having ECBs designated in INR.

The purpose, products and operational guidelines of each of the users is detailed below:

- **Facilities for Foreign Portfolio Investors (FPIs) Purpose**

To hedge currency risk on the market value of entire investment in equity and/or debt in India as on a particular date.

To hedge the coupon receipts arising out of investments in debt securities falling due during the following twelve months.

To hedge Initial Public Offers (IPO) related transient capital flows under the Application Supported by Blocked Amount (ASBA) mechanism.

Products

Forward foreign exchange contracts with rupee as one of the currencies and foreign currency-INR options. Foreign Currency – INR swaps for IPO related flows.

Operational Guidelines, Terms and Conditions

h) FPIs may approach any AD Category I bank for hedging their currency risk on the market value of entire investment in equity and/or debt in India as on a particular date subject to the following conditions:

i. The eligibility for cover may be determined on the basis of a valuation certificate provided by the designated AD category bank along with a declaration by the FPI to the effect that its global outstanding hedges plus the derivatives contracts cancelled across all AD category banks is within the market value of its investments.

The FPI should also provide a quarterly declaration to the custodian bank that the total amount of derivatives contract booked across AD Category banks are within the market value of its investments.

The hedges taken with AD banks other than designated AD banks have to be settled through the Special Non-Resident Rupee A/c maintained with the designated bank through RTGS/NEFT.

If an FPI wishes to enter into a hedge contract for the exposure relating to that part of the securities held by it against which it has issued any PN/ODI, it must have a mandate from the PN/ODI holder for the purpose. Further, while AD Category bank is expected to verify such mandates, in cases where this is rendered difficult, they may obtain a declaration from the FPI regarding the nature/structure of the PN/ODI establishing the need for a hedge operation and that such operations are being undertaken against specific mandates obtained from their clients.

- iv) AD Category I banks may undertake periodic reviews, at least at quarterly intervals, on the basis of market price movements, fresh inflows, amounts repatriated and other relevant parameters to ensure that the forward cover outstanding is supported by underlying exposures. In this context, it is clarified that in case an FPI intends to hedge the exposure of one of its sub-account holders, (cf paragraph 4 of schedule 2 to [Notification No. FEMA 20/2000-RB dated 3rd May 2000](#)) it will be required to produce a clearmandate from the sub-account holder in respect of the latter's intention to enter into the derivative transaction. Further, the AD Category I banks shall have to verify the mandate as well as the eligibility of the contract vis-a-vis the market value of the securities held in the concerned sub-account.
- v) If a hedge becomes naked in part or in full owing to contraction of the market value of the portfolio, for reasons other than sale of securities, the hedge may be allowed to continue till the original maturity, if so desired.
- vi) Forward contracts booked by FPIs, once cancelled, can be rebooked up to

the extent of 10 per cent of the value of the contracts cancelled. The forward contracts booked may, however, be rolled over on or before maturity.

Forward contracts booked for hedging coupon receipts as indicated in para.

(1)(ii) above shall not be eligible for rebooking on cancellation. They may however be rolled over on maturity provided the relative coupon amount is yet to be received.

The cost of hedge should be met out of repatriable funds and /or inward remittance through normal banking channel.

All outward remittances incidental to the hedge are net of applicable taxes.

For IPO related transient capital flows

FPIs can undertake foreign currency- rupee swaps only for hedging the flows relating to the IPO under the ASBA mechanism.

The amount of the swap should not exceed the amount proposed to be invested in the IPO.

The tenor of the swap should not exceed 30 days.

The contracts, once cancelled, cannot be rebooked. Rollovers under this scheme will also not be permitted.

FPIs and other foreign investor are free to remit funds through any bank of its choice for any transaction permitted under FEMA, 1999 or the Regulations / Directions framed thereunder. The funds thus remitted can be transferred to the designated AD Category -I custodian bank through the banking channel. Note should, however, be taken that KYC in respect of the remitter, wherever required, is a joint responsibility of the bank that has received the remittance as well as the bank that ultimately receives the proceeds of the remittance. While the first bank will be privy to the details of the remitter and the purpose of the remittance, the second bank, will have access to complete information from the recipient's perspective. Besides, the remittance receiving bank is required to issue FIRC to the bank receiving the proceeds to establish the fact the funds had been remitted in foreign currency.

4. Terms and conditions for Foreign Portfolio Investors participating in the Exchange Traded Currency Derivatives (ETCD) [Refer Part A, sub-paragraphs (4) & (5)]

Foreign portfolio investors (FPIs) eligible to invest in securities as laid down in

Schedules 2, 5, 7 and 8 of the Foreign Exchange Management (Transfer or Issue of Security by a person resident outside India) Regulations, 2000 ([FEMA 20/2000-RB dated May 3, 2000](#) (GSR406 (E) dated May 3, 2000)) as amended from time to time may enter into currency futures or exchange traded currency options contracts subject to the following terms and conditions:

- a. FPIs will be allowed access to the currency futures or exchange traded currency options for the purpose of hedging the currency risk arising out of the market value of their exposure to Indian debt and equity securities.
- b. Such investors can participate in the currency futures / exchange traded options market through any registered / recognised trading member of the exchange concerned.
- c. FPIs may take positions (long or short), without having to establish existence of underlying exposure, upto a single limit of USD 100 million equivalent across all currency pairs involving INR, put together, and combined across all exchanges.
- d. FPIs, are allowed to take positions in the cross-currency futures and exchange traded cross-currency option contracts without having to establish underlying exposure subject to the position limits as prescribed by the exchanges.
- e. An FPI cannot take a short position beyond USD 100 million equivalent across all currency pairs involving INR, put together, and combined across all exchanges. In order to take a long position in excess of these limits, it will be required to have an underlying exposure. The onus of ensuring the existence of an underlying exposure shall rest with the FPI concerned.
- f. The exchange will, however, be free to impose additional restrictions as prescribed by the Securities and Exchange Board of India (SEBI) for the purpose of risk management and fair trading.
- g. The exchange/ clearing corporation will provide FPI wise information on day-end open position as well as intra-day highest position to the respective custodian banks. The custodian banks will aggregate the position of each FPI on the exchanges as well as the OTC contracts booked with them (i.e. the custodian banks) and other AD banks. If the total value of the contracts exceeds the market value of the holdings on any day, the concerned FPI shall be liable to such penal action as may be laid down by the SEBI in this regard and action as may be taken by Reserve Bank of India under the Foreign Exchange Management Act (FEMA), 1999. The designated

custodian bank will be required to monitor this and bring transgressions, if any, to the notice of RBI / SEBI.

h. The onus of complying with the provisions of this circular rests with the participant in the ETCD market and in case of any contravention the participant shall be liable to any action that may be warranted as per the provisions of Foreign Exchange Management Act, 1999 and the regulations, directions, etc. issued thereunder. The position limits shall also be monitored by the exchanges, and breaches, if any, may be reported to the Financial Markets Regulation Department, Reserve Bank of India.

3. Facilities for Non-resident Indians (NRIs)

Purpose

- v) To hedge the exchange rate risk on the market value of investment made under the portfolio scheme in accordance with provisions of FERA, 1973 or under notifications issued there under or in accordance with provisions of FEMA, 1999. For access to ETCD market, see para. 4 below.
- vi) To hedge the exchange rate risk on the amount of dividend due on shares held in Indian companies.
- vii) To hedge the exchange rate risk on the amounts held in FCNR (B) deposits.
- viii) To hedge the exchange rate risk on balances held in NRE account.

Products

- ix) Forward foreign exchange contracts with rupee as one of the currencies, and foreign currency-INR options.
- x) Additionally, for balances in FCNR (B) accounts – Cross currency (not involving the rupee) forward contracts to convert the balances in one foreign currency to other foreign currencies in which FCNR (B) deposits are permitted to be maintained.

(c) Terms⁹ and conditions for Non-Resident Indians (NRIs) participating in the Exchange Traded Currency Derivatives (ETCD)

- i. NRIs shall designate an AD Cat-I bank for the purpose of monitoring and reporting their combined positions in the OTC and ETCD segments.

(l) [A.P. \(DIR Series\) Circular No. 30 dated February 2, 2017](#)

(an) NRIs may take positions in the currency futures / exchange traded options market to hedge the currency risk on the market value of their permissible (under FEMA, 1999) Rupee investments in debt and equity and dividend due and balances held in NRE accounts.

(ao) The exchange/ clearing corporation will provide details of all transactions of the NRI to the designated bank.

(ap) The designated bank will consolidate the positions of the NRI on the exchanges as well as the OTC derivative contracts booked with them and with other AD banks. The designated bank shall monitor the aggregate positions and ensure the existence of underlying Rupee currency risk and bring transgressions, if any, to the notice of RBI / SEBI.

(aq) The onus of ensuring the existence of the underlying exposure shall rest with the NRI concerned. If the magnitude of exposure through the hedge transactions exceeds the magnitude of underlying exposure, the concerned NRI shall be liable to such penal action as may be taken by Reserve Bank of India under the Foreign Exchange Management Act (FEMA), 1999.

5. Facilities for Hedging Foreign Direct Investment in India Purpose

(bk) To hedge exchange rate risk on the market value of investments made in India since January 1, 1993, subject to verification of the exposure in India

(bl) To hedge exchange rate risk on dividend receivable on the investments in Indian companies

(bm) To hedge exchange rate risk on proposed investment in India

Products

Forward foreign exchange contracts with rupee as one of the currencies and foreign currency-INR options.

Operational Guidelines, Terms and Conditions

(v) In respect of contracts to hedge exchange rate risk on the market value of investments made in India, contracts once cancelled are not eligible to be rebooked. The contracts may, however, be rolled over.

(vi) In respect of proposed foreign direct investments, following conditions would apply:

Contracts to hedge exchange rate risk arising out of proposed

investment in Indian companies may be allowed to be booked only after ensuring that the overseas entities have completed all the necessary formalities and obtained necessary approvals (wherever applicable) for the investment.

8. The tenor of the contracts should not exceed six months at a time beyond which permission of the Reserve Bank would be required to continue with the contract.
9. These contracts, if cancelled, shall not be eligible to be rebooked for the same inflows.
10. Exchange gains, if any, on cancellation shall not be passed on to the overseas investor.

6. Facilities for Hedging Trade Exposures, invoiced in Indian Rupees in India Purpose

To hedge the currency risk arising out of genuine trade transactions involving exports from and imports to India, invoiced in Indian Rupees, with AD Category I banks in India.

Products

Forward foreign exchange contracts with rupee as one of the currencies, foreign currency-INR options.

Operational Guidelines, Terms and Conditions

The AD Category I banks can opt for either Model I or Model II as given below:

Model I

Non-resident exporter / importer or its central treasury (of the group and being a group entity)¹⁰ dealing through their overseas bank (including overseas branches of AD banks in India)

5. Non-resident exporter / importer, or its central treasury approaches his banker overseas with appropriate documents with a request for hedging their Rupee exposure arising out of a confirmed import or export order invoiced in Rupees.
6. The overseas bank in turn approaches its correspondent in India (i.e. the AD bank in India) for a price to hedge the exposure of its customer along

[3.A.P. \(DIR Series\) Circular No. 8 dated October 12, 2017.](#)

with documentation furnished by the customer that will enable the AD bank in India to satisfy itself that there is an underlying trade transaction (scanned copies would be acceptable). The following undertakings also need to be taken from the customer:

That the same underlying exposure has not been hedged with any other AD
Category I bank/s in India

If the underlying exposure is cancelled, the customer will cancel the hedge contract immediately

In case of a central treasury, an authorization from the entity having INR exposure to hedge on its behalf

- iii. A certification on the end client KYC may also be taken as a one-time document from the overseas bank by the AD bank in India.
- iv. The AD bank in India based on documents received from the overseas correspondent should satisfy itself about the existence of the underlying trade transaction and offer a forward price (no two-way quotes should be given) to the overseas bank who, in turn, will offer the same to its customer. The AD bank, therefore, will 'not be' dealing directly with the overseas importer / exporter.
- v. The amount and tenor of the hedge should not exceed that of the underlying transaction and should be in consonance with the extant regulations regarding tenor of payment / realization of the proceeds.
- vi. On due date, settlement is to be done through the correspondent bank's Vostro or the AD bank's Nostro accounts.
- vii. The contracts, once cancelled, cannot be rebooked.
- viii. The contracts may, however, be rolled over on or before maturity subject to maturity of the underlying exposure.
- ix. On cancellation of the contracts, gains may be passed on to the customer subject to the customer providing a declaration that he is not going to rebook the contract or that the contract has been cancelled on account of cancellation of the underlying exposure.
- x. In case the underlying trade transaction is extended, rollover can be permitted once based on the extension of the underlying trade transaction for which suitable documentation is to be provided by the overseas bank and the same procedure followed as in case of the original contract.

Model II

Non-resident exporter / importer or its central treasury (of the group and being a group entity)¹¹ dealing directly with the AD bank in India

- i. The overseas exporter / importer or its central treasury approaches the AD bank in India with a request for forward cover in respect of underlying transaction for which he furnishes appropriate documentation (scanned copies would be acceptable), on a pre-deal basis to enable the AD bank in India to satisfy itself that there is an underlying trade transaction, and details of his overseas banker, address etc. The following undertakings also need to be taken from the customer
 - a. That the same underlying exposure has not been hedged with any other AD Category I bank/s in India.
 - b. If the underlying exposure is cancelled, the customer will cancel the hedge contract immediately.
 - c. In case of a central treasury, an authorization from the entity having INR exposure to hedge on its behalf
- ii. The AD bank may obtain certification of KYC/AML in the format in Annex XVIII. The format can be obtained through the overseas correspondent / bank through SWIFT authenticated message. In case the AD bank has a presence outside India, the AD may take care of the KYC/AML through its bank's offshore branch.
- iii. AD banks should evolve appropriate arrangements to mitigate credit risk. Credit limits can be granted based on the credit analysis done by self / the overseas branch.
- iv. The amount and tenor of the hedge should not exceed that of the underlying transaction and should be in consonance with the extant regulations regarding tenor of payment / realization of the proceeds.
- v. On due date, settlement is to be done through the correspondent bank's Vostro or the AD bank's Nostro accounts. AD banks in India may release funds to the beneficiaries only after sighting funds in Nostro / Vostro accounts.
- vi. The contracts, once cancelled, cannot be rebooked.
- vii. The contracts may, however, be rolled over on or before maturity subject to maturity of the underlying exposure.

11 [A. P. \(DIR Series\) Circular No. 8 dated October 12, 2017.](#)

- viii. On cancellation of the contracts, gains may be passed on to the customer subject to the customer providing a declaration that he is not going to rebook the contract or that the contract has been cancelled on account of cancellation of the underlying exposure.
- ix. In case the underlying trade transaction is extended, rollover can be permitted once based on the extension of the underlying trade transaction for which suitable documentation is to be provided by the overseas bank and the same procedure followed as in case of the original contract.
- x. AD banks shall report hedge contracts booked under this facility to CCIL's trade repository with a special identification tag¹².

7. Facilities for Hedging of ECBs, designated in Indian Rupees, in India

I) Purpose: To hedge the currency risk arising out of ECBs designated in INR either directly with AD Category- I banks in India or through their overseas banks on a back to back basis as per operational guidelines, terms and conditions given under (II) below

Products

Forward foreign exchange contracts with rupee as one of the currencies, foreign currency-INR options and foreign currency-INR swaps.

Operational Guidelines, Terms and Conditions

- i. The foreign equity holder / overseas organisation or individual approaches the AD bank in India with a request for forward cover in respect of underlying transaction for which he needs to furnish appropriate documentation (scanned copies would be acceptable), on a pre-deal basis to enable the AD bank in India to satisfy itself that there is an underlying ECB transaction, and details of his overseas banker, address, etc. The following undertakings also need to be taken from the customer –
 - a. That the same underlying exposure has not been hedged with any other AD Category- I bank/s in India.
 - b. If the underlying exposure is cancelled, the customer will cancel the hedge contract immediately.

¹² [A. P. \(DIR Series\) Circular No. 8 dated October 12, 2017.](#)

- ii. The amount and tenor of the hedge should not exceed that of the underlying transaction and should be in consonance with the extant regulations regarding tenor of payment / realization of the proceeds.
- iii. On due date, settlement is to be done through the correspondent bank's Vostro or the AD bank's Nostro accounts. AD banks in India may release funds to the beneficiaries only after sighting funds in Nostro / Vostro accounts.
- iv. The contracts, once cancelled, cannot be rebooked.
- v. The contracts may, however, be rolled over on or before maturity subject to maturity of the underlying exposure.
- vi. On cancellation of the contracts, gains may be passed on to the customer subject to the customer providing a declaration that he is not going to rebook the contract or that the contract has been cancelled on account of cancellation of the underlying exposure.

AI) Purpose: To hedge the currency risk arising out of ECBs designated in INR extended by recognised non-resident lenders¹³ with AD Category- I banks in India through their overseas banks on a back to back basis.

Products: Foreign currency-INR swaps

Operational Guidelines, Terms and Conditions

- (i) The recognised non-resident lender approaches his overseas bank with appropriate documentation as evidence of an underlying ECB denominated in INR with a request for a swap rate for mobilising INR for onward lending to the Indian borrower.
- (ii) The overseas bank, in turn, approaches an AD Cat-I bank for a swap rate along with documentation furnished by the customer that will enable the AD bank in India to satisfy itself that there is an underlying ECB in INR (scanned copies would be acceptable). The following undertakings also need to be taken from the customer –
 - a) That the same underlying exposure has not been hedged with any other AD Category- I bank/s in India.

¹³In terms of [A.P. \(DIR Series\) Circular No. 25 dated September 3, 2014](#) and [A.P. \(DIR Series\) Circular No. 103 dated May 21, 2015](#)

- b) If the underlying exposure is cancelled, the customer will cancel the hedge contract immediately.
- (iii) A KYC certification on the end client shall also be taken by the AD bank in India as a one-time document from the overseas bank.
- (iv) Based on the documents received from the overseas bank, the AD bank in India should satisfy itself about the existence of the underlying ECB in INR and offer an indicative swap rate to the overseas bank which, in turn, will offer the same to the non-resident lender on a back-to-back basis.
- (v) The continuation of the swap shall be subject to the existence of the underlying ECB at all times.
- (vi) On the due date, settlement may be done through the Vostro account of the overseas bank maintained with its correspondent bank in India.
- (vii) The concerned AD Cat-I bank shall keep on record all related documentation for verification by Reserve Bank.

8. Facility for hedging exposures of Indian subsidiaries ¹⁴ Users

Non-resident parent of an Indian subsidiary or its centralised treasury or its regional treasury outside India.

Products

All FCY-INR derivatives, OTC as well exchange traded that the Indian subsidiary is eligible to undertake as per FEMA, 1999 and Regulations and Directions issued thereunder.

Operational Guidelines, Terms and Conditions

- (i) The transactions under this facility will be covered under a tri-partite agreement involving the Indian subsidiary, its non-resident parent / treasury and the AD bank. This agreement will include the exact relationship of the Indian subsidiary or entity with its overseas related entity, relative roles and responsibilities of the parties and the procedure for the transactions, including settlement. The ISDA agreement between the AD bank and the non-resident entity will be distinct from this agreement.

14 Refer [A.P. \(DIR Series\) Circular No. 41 dated March 21, 2017](#)

- (ii) The non-resident entity should be incorporated in a country that is member of the Financial Action Task Force (FATF) or member of a FATF-Style Regional body.
- (iii) The AD Bank may obtain KYC/ AML certification on the lines of the format in Annex XVIII of the Master Direction on Risk Management and Inter Bank Dealings, as amended from time to time.
- (iv) The non-resident entity may approach an AD Cat-I bank directly which handles the foreign exchange transactions of its subsidiary for booking derivative contracts to hedge the currency risk of and on the latter's behalf.
- (v) The non-resident entity may contract any product either under the contracted route or on past performance basis, which the Indian subsidiary is eligible to use.
- (vi) The Indian subsidiary shall be responsible for compliance with the rules, regulations and directions issued under FEMA 1999 and any other laws/rules/regulations applicable to these transactions in India.
- (vii) The profit/ loss of the hedge transactions shall be settled in the bank account and books of accounts of the Indian subsidiary. The AD bank shall obtain from the Indian subsidiary an annual certificate by its Statutory Auditors to this effect.
- (viii) The concerned AD Bank shall be responsible for monitoring all hedge transactions (OTC as well as exchange traded) booked by the non-resident entity and ensuring that the Indian subsidiary has the necessary underlying exposure for the hedge transactions.
- (ix) AD banks shall report hedge contracts booked under this facility by the non-resident related entity to CCIL's trade repository with a special identification tag.

9. Simplified Hedging Facility

Users: Resident and non-resident entities, other than individuals.

Purpose: To hedge exchange rate risk on transactions, contracted or anticipated, permissible under Foreign Exchange Management Act (FEMA), 1999¹⁵.

¹⁵ Rupee denominated bonds issued overseas may be hedged provided it is permitted under contracted exposure hedging.

Products: Any Over the Counter (OTC) derivative or Exchange Traded Currency Derivative (ETCD) permitted under FEMA, 1999.

Cap on Outstanding Contracts: USD 30 million, or its equivalent, on a gross basis.

Designated Bank: Any Authorised Dealer Category-I (AD Cat-I) bank designated as such by the user.

Operational Guidelines, Terms and Conditions

- i. The user shall appoint an AD Cat-I bank as its “Designated Bank”. The designated bank will assess the hedging requirement of the user and set a limit up to the stipulated cap on the outstanding contracts.
- ii. If hedging requirement of the user exceeds the limit in course of time, the designated bank may re-assess and, at its discretion, extend the limit up to 150% of the stipulated cap.
- iii. Hedge contracts in OTC market can be booked with any AD Cat-I bank, provided the underlying cash flow takes place with the same bank.
- iv. Cost reduction structures can be booked by users provided that resident unlisted companies can use such structures only if they have a minimum net worth of Rs.200 crores.
- v. Users are not required to furnish any documentary evidence for establishing underlying exposure under this facility. Users may, however, provide basic details of the underlying transaction in a standardised format¹⁶, only in the case of OTC hedge contracts.
- vi. Cancelled contracts may be freely rebooked with the same bank.
- vii. In case of hedge contracts booked in OTC market, while losses will be recovered from the user, net gains i.e. gains in excess of cumulative losses, if any, will be transferred at the time of delivery of the underlying cash flow. In case of part delivery, net gains will be transferred on a pro-rata basis.

¹⁶ Standardized format will be devised by Foreign Exchange Dealers Association of India (FEDAI) and will include details like transaction type, i.e. current account (import, export) or capital account (ECB, FPI, FDI etc.), amount, currency and tenor.

- viii. For hedge contracts on underlying capital account transactions, gains/losses may be transferred to the user as and when they accrue if the underlying asset/liability is already in existence.
- ix. On full utilisation of the limit or in case of breach of limit, user shall not book new contracts under this facility. In such a case, contracts booked earlier under this facility will be allowed to continue till they expire or are closed. Any further hedging requirements thereafter may be booked under other available hedging facilities.
- x. Users booking contracts under this facility shall not book contracts under any other facility in OTC or ETCD market except as provided in para (ix).
- xi. At the end of each financial year, the user will provide the designated bank with a statement signed by the head of finance or the head of the entity, to the effect that,
 - a. Hedge contracts booked in both OTC and ETCD market, under this facility, are backed by underlying exchange rate exposures, either contracted or anticipated.
 - b. The exposures underlying the hedge contracts booked under this facility are not hedged under any other facility.
- xii. On being appointed, the designated bank shall report the details of the users and limits granted to the Trade Repository (TR). On a request by the TR, the exchanges shall report all contracts booked by such users to the TR on a daily basis.
- xiii. The TR will compute user wise outstanding position (across OTC and ETCD market) and provide this information to the designated bank for monitoring. If the outstanding contracts of a user exceeds the limit (or the extended limit, if applicable) the designated bank shall advise the user to stop booking new contracts under this facility.
- xiv. When user migrates to other available facilities, the designated bank shall report this information to the TR. The TR shall update this information in its records and notify the recognized stock exchanges to stop reporting data for the user concerned.
- xv. Banks shall have an internal policy regarding the time limit up to which a hedge contract for a given underlying can be rolled-over or rebooked by the user.

10. Operational Guidelines, Terms and Conditions applicable to all non-residents (except non-residents hedging exposures of Indian subsidiaries at para. 8 above and those hedging under Simplified Hedging Facility)

The operational guidelines as outlined for FPIs would be applicable, with the exception of the provision relating to rebooking of cancelled contracts. All foreign exchange derivative contracts permissible for a resident outside India other than a FPI, once cancelled, are not eligible to be rebooked.

Srinivas Kante

SECTION III

Facilities for Authorised Dealers Category-I

1. Management of Banks' Assets-Liabilities

Users – AD Category I banks

Purpose - Hedging of interest rate and currency risks of foreign exchange asset-liability portfolio

Products - Interest Rate Swap, Interest Rate Cap/Collar, Currency Swap, ForwardRate Agreement. AD banks may also purchase call or put options to hedge their cross currency proprietary trading positions.

Operational Guidelines, Terms and Conditions

The use of these instruments is subject to the following conditions:

- a) An appropriate policy in this regard is approved by the Top Management.
- b) The value and maturity of the hedge should not exceed those of the underlying.
- c) No 'stand alone' transactions can be initiated. If a hedge becomes naked, in part or full, owing to the contraction of the value of portfolio, it may be allowed to continue till the original maturity and should be marked to market at regular intervals.
- d) The net cash flows arising out of these transactions are booked as income/ expenditure and reckoned toward foreign exchange position, wherever applicable.

2. Hedging of Gold Prices

Users –

- i. Banks authorised by the Reserve Bank to operate the Gold Deposit Scheme
- ii. Banks, which are allowed to enter into forward gold contracts in India in terms of the guidelines issued by the Department of Banking Regulation (including the positions arising out of inter-bank gold deals)

Purpose – To hedge price risk of gold

Products - Exchange-traded and over-the-counter hedging products available overseas.

Operational Guidelines, Terms and Conditions

- a) While using products involving options, it may be ensured that there is no net receipt of premium, either direct or implied.
- b) Authorised banks are permitted to enter into forward contracts with their constituents (exporters of gold products, jewellery manufacturers, trading houses, etc.) in respect of the underlying sale, purchase and loan transactions in gold with them, subject to the conditions specified by the Reserve Bank in this regard. The tenor of such contracts should not exceed six months.

3. Hedging of Capital

Users – Foreign banks operating in India

Product – Forward foreign exchange contracts

Operational Guidelines, Terms and Conditions

- a) Tier I capital -
 - i) The capital funds should be available in India to meet local regulatory and CRAR requirements and, hence, these should not be parked in nostro accounts. Foreign currency funds accruing out of hedging should not be parked in Nostro accounts but should remain swapped with banks in India at all times.
 - ii) The forward contracts should be for tenors of one or more years and may be rolled over on maturity. Rebooking of cancelled hedges will require prior approval of the Reserve Bank.
- b) Tier II capital -
 - i) Foreign banks are permitted to hedge their Tier II capital in the form of Head Office borrowing as subordinated debt, by keeping it swapped into rupees at all times in terms of [DBOD circular No.IBS.BC.65/23.10.015/2001-02 dated February 14, 2002](#).
 - ii) Banks are not permitted to enter into foreign currency-INR swap transactions involving conversion of fixed rate rupee liabilities in respect of

4. Participation in the currency futures market in India

Please refer to Part-A Section I, paragraph 4. In continuation of the same:

- a) AD Category I Banks may be guided by the DBOD instructions vide [DBOD.No.FSD.BC.29/24.01.001/2008-09 dated August 6, 2008](#).
- b) AD Category I Banks are permitted to become trading and clearing members of the currency futures market of recognised stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the following minimum prudential requirements:
 - i) Minimum net worth of Rs. 500 crores.
 - ii) Minimum CRAR of 10 per cent.
 - iii) Net NPA should not exceed 3 per cent.
 - iv) Net profit for last 3 years.

The AD Category - I banks which fulfill the prudential requirements should lay down detailed guidelines with the approval of their Boards for trading and clearing of currency futures contracts and management of risks.

(c). AD Category - I banks which do not meet the above minimum prudential requirements and AD Category - I banks which are Urban Co-operative banks or State Co-operative banks can participate in the currency futures market only as clients, subject to approval and directions from the respective regulatory Departments of the Reserve Bank.

(d) The AD Category - I banks, shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits. The exposure of the banks, on their own account, in the currency futures market shall form part of their NOP and AG limits.

5. Participation in the exchange traded currency options market in India

Please refer to Part-A Section I, paragraph 5. In continuation of the same:

a) AD Category - I banks are permitted to become trading and clearing members of the exchange traded currency options market of the recognized stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the following minimum prudential requirements:

- i. Minimum net worth of Rs. 500 crores.
- ii. Minimum CRAR of 10 per cent.
- iii. Net NPA should not exceed 3 per cent.
- iv. Made net profit for last 3 years.

The AD Category - I banks, which fulfil the prudential requirements, should lay down detailed guidelines with the approval of their Boards for trading and clearing of the exchange traded currency options contracts and management of risks.

b) AD Category - I banks, which do not meet the above minimum prudential requirements and AD Category - I banks, which are Urban Co-operative banks or State Co-operative banks, can participate in the exchange traded currency options market only as clients, subject to approval therefor from the respective regulatory Departments of the Reserve Bank.

c) The AD Category - I banks shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits. The option position of the banks, on their own account, in the exchange traded currency options shall form part of their NOP and AG limits.

6. Operational Guidelines, terms and conditions for AD Category-I banks participation in the ETCD market

(a) AD Category-I banks may undertake trading in all permitted exchange traded currency derivatives within their Net Open Position Limit (NOPL) subject to limits stipulated by the exchanges (for the purpose of risk management and preserving market integrity) provided that any synthetic USD-INR position created using a combination of exchange traded FCY- INR and cross-currency contracts shall have to be within the position limit prescribed by the exchange for the USD-INR contract.

(b) AD Category-I banks may net / offset their positions in the ETCD market against the positions in the OTC derivatives markets. Keeping in view the volatility in the foreign exchange market, Reserve Bank may however stipulate a separate sub-limit of the NOPL (as a percentage thereof) exclusively for the OTC market as and when required.

PART B

ACCOUNTS OF NON-RESIDENT BANKS

1. General

- (i) Credit to the account of a non-resident bank is a permitted method of payment to non-residents and is, therefore, subject to the regulations applicable to transfers in foreign currency.
- (ii) Debit to the account of a non-resident bank is in effect an inward remittance in foreign currency.

2. Rupee Accounts of Non-Resident Banks

AD Category I banks may open/close Rupee accounts (non-interest bearing) in the names of their overseas branches or correspondents without prior reference to the Reserve Bank. Opening of Rupee accounts in the names of branches of Pakistani banks operating outside Pakistan requires specific approval of the Reserve Bank.

3. Funding of Accounts of Non-resident Banks

- (i) AD Category I banks may freely purchase foreign currency from their overseas correspondents/branches at on-going market rates to lay down funds in their accounts for meeting their bonafide needs in India.
- (ii) Transactions in the accounts should be closely monitored to ensure that overseas banks do not take a speculative view on the Rupee. Any such instances should be notified to the Reserve Bank.

NOTE: Forward purchase or sale of foreign currencies against Rupees for funding is prohibited. Offer of two-way quotes in Rupees to non-resident banks is also prohibited.

4. Transfers from other Accounts

Transfer of funds between the accounts of the same bank or different banks is freely permitted.

5. Conversion of Rupees into Foreign Currencies

Balances held in Rupee accounts of non-resident banks may be freely converted into foreign currency. All such transactions should be recorded in Form A2 and the corresponding debit to the account should be in form A3 under the relevant Returns.

6. Responsibilities of Paying and Receiving Banks

In the case of credit to accounts the paying banker should ensure that all regulatory requirements are met and are correctly furnished in form A1/A2 as the case may be.

7. Refund of Rupee Remittances

Requests for cancellation or refund of inward remittances may be complied with without reference to Reserve Bank after satisfying themselves that the refunds are not being made in cover of transactions of compensatory nature.

8. Overdrafts / Loans to Overseas Branches/ Correspondents

(i) AD Category I banks may permit their overseas branches/ correspondents temporary overdrafts not exceeding Rs.500 lakhs in aggregate, for meeting normal business requirements. This limit applies to the amount outstanding against all overseas branches and correspondents in the books of all the branches of the authorised AD Category I bank in India. This facility should not be used to postpone funding of accounts. If overdrafts in excess of the above limit are not adjusted within five days a report should be submitted to the Chief General Manager, Financial Markets Regulation Department, Reserve Bank of India, Central Office, 1st Floor, Main Building, Shahid Bhagat Singh Road, Fort, Mumbai – 400 001 within 15 days from the close of the month, stating the reasons thereof. Such a report is not necessary if arrangements exist for value dating.

(ii) AD Category I bank wishing to extend any other credit facility in excess of (i) above to overseas banks should seek prior approval from the Chief General Manager, Financial Markets Regulation Department, Reserve Bank of India, Central Office.

9. Rupee Accounts of Exchange Houses

Opening of Rupee accounts in the names of Exchange Houses for facilitating private remittances into India requires approval of the Reserve Bank. Remittances through Exchange Houses for financing trade transactions are permitted upto Rs.15,00,000 per transaction¹⁷.

17 [A. P. \(DIR Series\) Circular No. 102 May 21, 2015](#)

PART C

INTER-BANK FOREIGN EXCHANGE DEALINGS

1. General

The Board of Directors of AD Category I banks should frame an appropriate policy and fix suitable limits for various Treasury functions.

2. Position and Gaps

The net overnight open exchange position (Annex-I) and the aggregate gap limits should be communicated to the Reserve Bank soon after the approval of the Board / Management Committee.

3. Inter-bank Transactions

Subject to compliance with the provisions of paragraphs 1 and 2, AD Category I banks may freely undertake foreign exchange transactions as under:

a) With AD Category I banks in India:

- (i) Buying/Selling/Swapping foreign currency against Rupees or another foreign currency.
- (ii) Placing/Accepting deposits and Borrowing/Lending in foreign currency.

b). With banks overseas and Off-shore Banking Units in Special Economic Zones

- (i) Buying/Selling/Swapping foreign currency against another foreign currency to cover client transactions or for adjustment of own position,
- (ii) Initiating trading positions in the overseas markets.

NOTE :

A. Funding of accounts of Non-resident banks - please refer to paragraph 3 of Part B.

B. Form A2 need not be completed for sales in the inter-bank market, but all such transactions shall be reported to Reserve Bank in R Returns.

4. Foreign Currency Accounts/ Investments in Overseas Markets

(i) Inflows into foreign currency accounts arise primarily from client-related transactions, swap deals, deposits, borrowings, etc. AD Category I banks may maintain balances in foreign currencies up to the levels approved by the Board. They are free to manage the surplus in these accounts through overnight placement and investments with their overseas branches/correspondents subject to adherence to the gap limits approved by the Reserve Bank.

(ii) AD Category I banks are free to undertake investments in overseas markets up to the limits approved by their Board. Such investments may be made in overseas money market instruments and/or debt instruments issued by a foreign state with a residual maturity of less than one year and rated at least as AA (-) by Standard & Poor / FITCH IBCA or Aa3 by Moody's. For the purpose of investments in debt instruments other than the money market instruments of any foreign state, bank's Board may lay down country ratings and country - wise limits separately wherever necessary.

NOTE: For the purpose of this clause, 'money market instrument' would include any debt instrument whose life to maturity does not exceed one year as on the date of purchase.

(iii) AD Category I banks may also invest the un-deployed FCNR (B) funds in overseas markets in long-term fixed income securities subject to the condition that the maturity of the securities invested in do not exceed the maturity of the underlying FCNR (B) deposits.

(iv) Foreign currency funds representing surpluses in the nostro accounts may be utilised for:

a) making loans to resident constituents for meeting their foreign exchange requirements or for the Rupee working capital/capital expenditure needs of exporters/ corporates who have a natural hedge or a risk management policy for managing the exchange risk subject to the prudential/interest-rate norms, credit discipline and credit monitoring guidelines in force.

b) extending credit facilities to Indian wholly owned subsidiaries/ joint ventures abroad in which at least 51 per cent equity is held by a resident company, subject to the guidelines issued by Reserve Bank (Department of Banking Regulation).

(v) AD Category I banks may write-off/transfer to unclaimed balances account, un-reconciled debit/credit entries as per instructions issued by Department of Banking Regulation, from time to time.

5. Loans/Overdrafts

a) All categories of overseas foreign currency borrowings of AD Category I banks, (except for borrowings at (c) below), including existing External Commercial Borrowings and loans/overdrafts from their Head Office, overseas branches and correspondents outside India, International / Multilateral Financial Institutions [see

(e) below] or any other entity as permitted by Reserve Bank of India and overdrafts in nostro accounts (not adjusted within five days), shall not exceed 100 per cent of their unimpaired Tier I capital or USD 10 million (or its equivalent), whichever is higher subject to conditions laid down in (f) below. The aforesaid limit applies to the aggregate amount availed of by all the offices and branches in India from all their branches/correspondents abroad and also includes overseas borrowings in gold for funding domestic gold loans (cf. [DBOD circular No.IBD.BC.33/23.67.001/2005-06 dated September 5, 2005](#)). If drawals in excess of the above limit are not adjusted within five days, a report, as per the format in Annex-VIII, should be submitted to the Chief General Manager, Financial Markets Regulation Department, Reserve Bank of India Central Office, 1st Floor, Main

Building, Shahid Bhagat Singh Road, Fort, Mumbai – 400 001, within 15 days from the close of the month in which the limit was exceeded. Such a report is not necessary if arrangements exist for value dating.

b) The funds so raised may be used for purposes other than lending in foreign currency to constituents in India and repaid without reference to the Reserve Bank. As an exception to this rule, AD Category I banks are permitted to use borrowed funds as also foreign currency funds received through swaps for granting foreign currency loans for export credit in terms of IECD [Circular No 12/04.02.02/2002-03 dated January 31, 2003](#). Any fresh borrowing above this limit shall be made only with the prior approval of the Reserve Bank. Applications for fresh ECBs should be made as per the current ECB Policy.

c) The following borrowings would continue to be outside the limit of 100 per cent of unimpaired Tier I capital or USD 10 million (or its equivalent), whichever is higher:

i).Overseas borrowings by AD Category I banks for the purpose of financing export credit subject to the conditions prescribed in DBOD Master Circular dated July 2, 2015 on Rupee / Foreign Currency Export Credit & Customer Service To Exporters.

ii).Subordinated debt placed by head offices of foreign banks with their branches in India as Tier II capital.

iii) Capital funds raised/augmented by the issue of Innovative Perpetual Debt Instruments and Debt Capital Instruments, in foreign currency, in terms of [Circulars DBOD. No. BP.BC.57/21.01.002/2005-06 dated January 25, 2006, DBOD. No. BP.BC.23/21.01.002/2006-07 dated July 21, 2006](#) and Perpetual Debt Instruments and Debt Capital Instruments in foreign currency issued in terms of [circular DBOD.No.BP.BC.98/21.06.201/2011-12 dated May 2, 2012](#).

iv) Any other overseas borrowing with the specific approval of the Reserve Bank.

d) Interest on loans/overdrafts may be remitted (net of taxes) without the prior approval of Reserve Bank.

e) ¹⁸AD category-I banks may borrow only from International / Multilateral Financial Institutions in which Government of India is a shareholding member or which have been established by more than one government or have shareholding by more than one government and other international organizations.

f) The borrowings beyond 50 per cent of unimpaired Tier I capital of AD Category – I banks will be subject to the following conditions:

(i) The bank should have a Board approved policy on overseas borrowings which shall contain the risk management practices that the bank would adhere to while borrowing abroad in foreign currency.

18 [A.P. \(DIR Series\) Circular No. 112 dated June 25, 2015](#)

(ii) The bank should maintain a CRAR of 12.0 per cent.

(iii) The borrowings beyond the existing ceiling shall be with a minimum maturity of three years.

All other existing norms (FEMA regulations, NOPL norms, etc) shall continue to be applicable.

RBI Guidelines on exposure norms

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MASTER CIRCULAR ON EXPOSURE NORMS

4. **Purpose**

This Master Circular provides a framework of the rules/regulations/instructions issued by the Reserve Bank of India to Scheduled Commercial Banks relating to credit exposure limits for single/ group borrowers and credit exposure to specific industry or sectors and the capital market exposure of banks.

- **Classification**

A statutory guideline issued by the Reserve Bank in exercise of the powers conferred by the Banking Regulation Act, 1949.

- **Previous instructions**

This Master Circular consolidates and updates the instructions on the above subject contained in the circulars listed in **Appendix**.

5. **Application**

To all scheduled commercial banks, excluding Regional Rural Banks.

F INTRODUCTION

As a prudential measure aimed at better risk management and avoidance of concentration of credit risks, the Reserve Bank of India has advised the banks to fix limits on their exposure to specific industry or sectors and has prescribed regulatory limits on banks' exposure to single and group borrowers in India. In addition, banks are also required to observe certain statutory and regulatory exposure limits in respect of advances against / investments in shares, convertible debentures /bonds, units of equity-oriented mutual funds and all exposures to Venture Capital Funds (VCFs). Banks should comply with the following guidelines relating to exposure norms.

F GUIDELINES

2.1 Credit Exposures to Single/Group Borrowers

2.1.1 Ceilings

2.1.1.1 The exposure ceiling limits would be 15 percent of capital funds in case of a single borrower and 40 percent of capital funds in the case of a borrower group. The capital funds for the purpose will comprise of Tier I and Tier II capital as defined under capital adequacy standards (please also refer to paragraph 2.1.3.5 of this Master Circular).

2.1.1.2 Bank's clearing exposure to a Qualifying CCP (QCCP) will be kept outside of the exposure ceiling of 15 per cent of its capital funds applicable to a single counterparty. Clearing exposure would include trade exposure and default fund exposure as defined in the guidelines on capital requirements for banks' exposure to central counterparties issued vide [Circular DBOD.No.BC.28/21.06.201/ 2013-14 dated July 2, 2013](#). Other exposures to QCCPs such as loans, credit lines, investments in the capital of CCP, liquidity facilities, etc. will continue to be within the existing exposure ceiling of 15 per cent of capital funds to a single counterparty. However, all exposures of a bank to a non-QCCP should be within this exposure ceiling of 15 per cent. (please also refer to [circular DBOD.No.BP.BC.82/21.06.217/2013-14 dated January 7, 2014](#))

2.1.1.3 Credit exposure to a single borrower may exceed the exposure norm of 15 percent of the bank's capital funds by an additional 5 percent (i.e. up to 20 percent) provided the additional credit exposure is on account of extension of credit to infrastructure projects. Credit exposure to borrowers belonging to a group may exceed the exposure norm of 40 percent of the bank's capital funds by an additional 10 percent (i.e., up to 50 percent), provided the additional credit exposure is on account of extension of credit to infrastructure projects. The definition of infrastructure lending and the list of sub-sectors under infrastructure is included in the Master Circular on 'Loans and Advances – Statutory and other Restrictions' dated July 1, 2015.

2.1.1.4 In addition to the exposure permitted under paragraphs 2.1.1.1 and 2.1.1.2 above, banks may, in exceptional circumstances, with the approval of their Boards, consider enhancement of the exposure to a borrower (single as well as group) up to a further 5 percent of capital funds subject to the borrower consenting to the banks making

appropriate disclosures in their Annual Reports.

2.1.1.5 With effect from May 29, 2008, the exposure limit in respect of single borrower has been raised to twenty five percent of the capital funds, only in respect of Oil Companies who have been issued Oil Bonds (which do not have SLR status) by Government of India. In addition to this, banks may in exceptional circumstances, as hitherto, in terms of paragraph 2.1.1.3 of the Master Circular, consider enhancement of the exposure to the Oil Companies up to a further 5 percent of capital funds.

2.1.1.6 The bank should make appropriate disclosures in the 'Notes on account' to the annual financial statements in respect of the exposures where the bank had exceeded the prudential exposure limits during the year.

2.1.1.7 Exposures to NBFCs

The exposure (both lending and investment, including off balance sheet exposures) of a bank to a single NBFC / NBFC-AFC (Asset Financing Companies) should not exceed 10% / 15% respectively, of the bank's capital funds as per its last audited balance sheet. Banks may, however, assume exposures on a single NBFC / NBFC-AFC up to 15%/20% respectively, of their capital funds provided the exposure in excess of 10%/15% respectively, is on account of funds on-lent by the NBFC / NBFC-AFC to the infrastructure sector. Exposure of a bank to Infrastructure Finance Companies (IFCs) should not exceed 15% of its capital funds as per its last audited balance sheet, with a provision to increase it to 20% if the same is on account of funds on-lent by the IFCs to the infrastructure sector. Further, banks may also consider fixing internal limits for their aggregate exposure to all NBFCs put together. Infusion of capital funds after the published balance sheet date may also be taken into account for the purpose of reckoning capital funds. Banks should obtain an external auditor's certificate on completion of the augmentation of capital and submit the same to the Reserve Bank of India (Department of Banking Supervision) before reckoning the additions to capital funds.

2.1.1.8 Lending under Consortium Arrangements

The exposure limits will also be applicable to lending under consortium arrangements.

2.1.1.9 Bills discounted under Letter of Credit (LC)

In cases where the bills discounting/purchasing/negotiating bank and LC issuing bank are different entities, bills purchased/discounted/negotiated under LC (where the payment to the beneficiary is not made 'under reserve'), will be treated as an exposure on the LC issuing bank and not on the third party / borrower. However, in cases where the bills discounting/purchasing/negotiating bank and LC issuing bank are part of the same bank, i.e. where LC is issued by the Head Office or branch of the same bank, then the exposure should be taken on the third party/borrower and not on the LC issuing bank. In the case of negotiations 'under reserve', the exposure should be treated as on the borrower.

2.1.1.10 Disinvestment Programme of the Government of India

On account of banks' financing of acquisition of PSU shares under the Government of India disinvestment programmes, if any bank, is likely to exceed the regulatory ceiling of single / group borrower limit, RBI will consider relaxation on specific requests from banks in the single/group credit exposure norms on a case by case basis, provided that the bank's total exposure to the borrower, net of its exposure due to acquisition of PSU shares under the Government of India disinvestment programme, should be within the prudential single/group borrower exposure ceiling prescribed by RBI.

2.1.2 Exemptions

2.1.2.1 Rehabilitation of Sick/Weak Industrial Units

The ceilings on single/group exposure limits are not applicable to existing/additional credit facilities (including funding of interest and irregularities) granted to weak/sick industrial units under rehabilitation packages.

2.1.2.2 Food credit

Borrowers, to whom limits are allocated directly by the Reserve Bank for food credit, will be exempt from the ceiling.

2.1.2.3 Guarantee by the Government of India

The ceilings on single /group exposure limit would not be applicable where principal and interest are fully guaranteed by the Government of India.

2.1.2.4 Loans against Own Term Deposits

Loans and advances (both funded and non-funded facilities) granted against the security of a bank's own term deposits should not be reckoned for computing the exposure to the extent that the bank has a specific lien on such deposits.

2.1.2.5 Exposure on NABARD

The ceiling on single/group borrower exposure limit will not be applicable to exposure assumed by banks on NABARD. The individual banks are free to determine the size of the exposure to NABARD as per the policy framed by their respective Board of Directors. However, banks may note that there is no exemption from the prohibitions relating to investments in unrated non-SLR securities prescribed in terms of the Master Circular on Prudential Norms for Classification, Valuation and Operations of Investment Portfolio by Banks, as amended from time to time.

2.1.3 Definitions

2.1.3.1 Exposure

Exposure shall include credit exposure (funded and non-funded credit limits) and investment exposure (including underwriting and similar commitments). The sanctioned limits or outstandings, whichever are higher, shall be reckoned for arriving at the exposure limit. However, in the case of fully drawn term loans, where there is no scope for re-drawal of any portion of the sanctioned limit, banks may reckon the outstanding as the exposure.

2.1.3.2 Measurement of Credit Exposure of Derivative Products

For the purpose of exposure norms, banks shall compute their credit exposures, arising on account of the interest rate & foreign exchange derivative transactions and gold, using the 'Current Exposure Method', as detailed below. While computing the credit exposure banks may exclude 'sold options', provided the entire premium / fee or any other form of income is received / realised.

Bilateral netting of Mark-To-Market (MTM) values arising on account of such derivative contracts cannot be permitted. Accordingly, banks should count their gross positive MTM value of such contracts for the purposes of capital adequacy as well as for exposure norms.

Current Exposure Method

11. The credit equivalent amount of a market related off-balance sheet transaction calculated using the current exposure method is the sum of current credit exposure and potential future credit exposure of these contracts. While computing the credit exposure banks may exclude 'sold options', provided the entire premium / fee or any other form of income is received / realized.
12. Current credit exposure is defined as the sum of the positive mark-to-market value of these contracts. The Current Exposure Method requires periodical calculation of the current credit exposure by marking these contracts to market, thus capturing the current credit exposure.
 - A. Potential future credit exposure is determined by multiplying the notional principal amount of each of these contracts irrespective of whether the contract has a zero, positive or negative mark-to-market value by the relevant add-on factor indicated below according to the nature and residual maturity of the instrument.

CCF for market related off-balance sheet items		
Residual Maturity	Credit conversion factors	
	Interest Rate Contracts	Exchange Rate Contracts & Gold
One year or less	0.50%	2.00%
Over one year to five years	1.00%	10.00%
Over five years	3.00%	15.00%

8. For contracts with multiple exchanges of principal, the add-on factors are to be multiplied by the number of remaining payments in the contract.
9. For contracts that are structured to settle outstanding exposure following specified payment dates and where the terms are reset such that the market value of the contract is zero on these specified dates, the residual maturity would be set equal to the time until the next reset date. However, in the case of interest rate contracts

which have residual maturities of more than one year and meet the foregoing criteria, the CCF or "add-on factor" applicable shall be subject to a floor of 1.00 per cent.

8. No potential future credit exposure would be calculated for single currency floating /floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.
9. Potential future exposures should be based on effective rather than apparent notional amounts. In the event that the stated notional amount is leveraged or enhanced by the structure of the transaction, banks must use the effective notional amount when determining potential future exposure. For example, a stated notional amount of USD 1 million with payments based on an internal rate of two times the Base Rate would have an effective notional amount of USD 2 million.

2.1.3.3. Credit Exposure

Credit exposure comprises the following elements:

12. all types of funded and non-funded credit limits.
facilities extended by way of equipment leasing, hire purchase finance and factoring services.

2.1.3.4 Investment Exposure

9. Investment exposure comprises the following elements:

investments in shares and debentures of companies.

investment in PSU bonds

investments in Commercial Papers (CPs).

10. Banks' / FIs' investments in debentures/ bonds / security receipts / pass-through certificates (PTCs) issued by an SC / RC as compensation consequent upon sale of financial assets will constitute exposure on the SC / RC. In view of the extraordinary nature of the event, banks / FIs will be allowed, in the initial years, to exceed the prudential exposure ceiling on a case-to-case basis.

11. The investment made by the banks in bonds and debentures of corporates which are guaranteed by a PFI¹(as per list given in **Annex 1**) will be treated as an exposure by the bank on the PFI and not on the corporate.

¹With the merger of ICICI Ltd. with ICICI Bank Ltd. effective from 30.03.2002, the entire liabilities of ICICI Ltd. have been taken over by ICICI Bank Ltd. As per the scheme of merger all loans and guarantee facilities to ICICI Ltd. provided by Government would be transferred to the merged entity. Similarly, the investments made in erstwhile ICICI Ltd. by banks would be treated outside the ceiling of 40% till redemption.

With the merger of IDBI Bank Ltd. with IDBI Ltd., effective April 2, 2005, the entire liabilities of the erstwhile IDBI Bank Ltd. have been taken over by the new, combined entity Industrial Development Bank of India Ltd., since renamed as IDBI Bank Ltd. Therefore, for the purpose of exposure norms, investments made by the banks in the bonds and debentures of corporates guaranteed by the erstwhile IDBI Ltd. would continue to be treated as an exposure of the banks on IDBI Ltd. and not on the corporates, till redemption. Similarly, investments made in the erstwhile IDBI Ltd. by banks would be treated as outside the capital market exposure ceiling of 40%, till redemption.

10. Guarantees issued by the PFI to the bonds of corporates will be treated as an exposure by the PFI to the corporates to the extent of 50 per cent, being a non-fund facility, whereas the exposure of the bank on the PFI guaranteeing the corporate bond will be 100 per cent. The PFI before guaranteeing the bonds/debentures should, however, take into account the overall exposure of the guaranteed unit to the financial system.

2.1.3.5 Capital Funds

Capital funds for the purpose will comprise Tier I and Tier II capital as defined under capital adequacy standards and as per the published accounts as on March 31 of the previous year. However, the infusion of capital under Tier I and Tier II, either through domestic or overseas issue (in the case of branches of foreign banks operating in India, capital funds received by them from their Head Office in accordance with the provisions of Master Circular on New Capital Adequacy Framework as amended from time to time), after the published balance sheet date will also be taken into account for determining the exposure ceiling. Other accretions to capital funds by way of quarterly profits etc. would not be eligible to be reckoned for determining the exposure ceiling. Banks are also prohibited from taking exposure in excess of the ceiling in anticipation of infusion of capital at a future date.

2.1.3.6 Group

16. The concept of 'Group' and the task of identification of the borrowers belonging to specific industrial groups is left to the perception of the banks/financial institutions. Banks/financial institutions are generally aware of the basic constitution of their clientele for the purpose of regulating their exposure to risk assets. The group to which a particular borrowing unit belongs, may, therefore, be decided by them on the basis of the relevant information available with them, the guiding principle being commonality of management and effective control. In so far as public sector undertakings are concerned, only single borrower exposure limit would be applicable.

17. In the case of a split in the group, if the split is formalised the splinter groups will be regarded as separate groups. If banks and financial institutions have doubts about the bona fides of the split, a reference may be made to RBI for its final view in the matter to preclude the possibility of a split being engineered in order to prevent coverage under the Group Approach.

2.1.4 Review

An annual review of the implementation of exposure management measures may be placed before the Board of Directors before the end of June.

2.2. Credit Exposure to Industry and certain Sectors

2.2.1 Internal Exposure Limits

2.2.1.1 Fixing of Sectoral Limits

Apart from limiting the exposures to a single or a Group of borrowers, as indicated above, banks may also consider fixing internal limits for aggregate commitments to specific sectors, e.g. textiles, jute, tea, etc., so that the exposures are evenly spread over various sectors. These limits could be fixed by the banks having regard to the performance of different sectors and the risks perceived. The limits so fixed may be reviewed periodically and revised, as necessary.

2.2.1.2 Unhedged Foreign Currency Exposure of Corporates

To ensure that each bank has a policy that explicitly recognises and takes account of risks arising out of foreign exchange exposure of their clients, foreign currency loans above US \$10 million, or such lower limits as may be deemed appropriate vis-à-vis the banks' portfolios of such exposures, should be extended by banks only on the basis of a well laid out policy of their Boards with regard to hedging of such foreign currency loans. Further, the policy for hedging, to be framed by their boards, may consider, as appropriate for convenience, excluding the following:

20. Where forex loans are extended to finance exports, banks may not insist on hedging but assure themselves that such customers have uncovered receivables to cover the loan amount.
21. Where the forex loans are extended for meeting forex expenditure.

Banks are also advised that the Board policy should cover unhedged foreign exchange exposure of all their clients including Small and Medium Enterprises (SMEs). Further, for arriving at the aggregate unhedged foreign exchange exposure of clients, their exposure from all sources including foreign currency borrowings and External Commercial Borrowings should be taken into account.

Banks which have large exposures to clients should monitor and review on a monthly basis, through a suitable reporting system, the unhedged portion of the foreign currency exposures of those clients, whose total foreign currency exposure is relatively large (say, about US \$ 25 million or its equivalent). The review of unhedged exposure for SMEs should also be done on a monthly basis. In all other cases, banks are required to put in place a system to monitor and review such position on a quarterly basis.

In the case of consortium/multiple banking arrangements, the lead role in monitoring unhedged foreign exchange exposure of clients, as indicated above, would have to be assumed by the consortium leader/bank having the largest exposure.

Banks are also advised to adhere to the instructions relating to information sharing among themselves as indicated in our [circular DBOD.No.BP.BC.94/08.12.001/2008-09 dated December 8, 2008](#) on 'Lending under Consortium Arrangement / Multiple Banking Arrangements'. In this connection, banks may also refer to the [circular DBOD.BP.BC.No.62/21.04.103/2012-13 dated November 21, 2012](#).

Events relating to derivative trades have shown that excessive risk taking by corporates could lead to severe distress to them and large potential credit loss to their bankers in the event of sharp adverse movements in currencies. It is observed that unhedged forex exposure risks are not being evaluated rigorously and built into pricing of credit by banks. It is emphasized that unhedged forex exposure of corporates is a source of risk to the corporates as well as to the financing bank and the financial system. Further, large unhedged forex exposures of corporates have resulted in some accounts turning non-performing. In view of the importance of prudent management of foreign exchange risk, banks are advised that in accordance with the guidelines, they should put in place a proper mechanism to rigorously evaluate the risks arising out of unhedged foreign currency exposure of corporates and price them in the credit risk premium while extending fund based and non-fund based credit facilities to corporates. Banks may also consider stipulating a limit on unhedged position of corporates on the basis of bank's Board approved policy.

2.2.1.3 Exposure to Real Estate

9. Banks should frame comprehensive prudential norms relating to the ceiling on the total amount of real estate loans, single/group exposure limits for such loans, margins, security, repayment schedule and availability of supplementary finance and the policy should be approved by the banks' Boards.

10. The exposure of banks to entities for setting up Special Economic Zones (SEZs) or for acquisition of units in SEZs which includes real estate would be treated as exposure to commercial real estate sector for the purpose of risk weight and capital adequacy from a prudential perspective. Banks would, therefore, have to make provisions, as also assign appropriate risk weights for such exposures, as per the existing guidelines. The above exposure may be treated as exposure to Infrastructure sector only for the purpose of Exposure norms which provide some relaxations for the Infrastructure sector. In this connection, attention is invited to paragraph 3 of our [circular DBOD.BP.BC.No.42/08.12.015/2009-10 dated September 9, 2009](#).

2.2.2 Exposure to Leasing, Hire Purchase and Factoring Services

Banks have been permitted to undertake leasing, hire purchase and factoring activities departmentally. Where banks undertake these activities departmentally, they should maintain a balanced portfolio of equipment leasing, hire purchase and factoring services vis-à-vis the aggregate credit. Their exposure to each of these activities should not exceed 10 per cent of total advances.

2.2.3 Exposure to Indian Joint Ventures/Wholly-owned Subsidiaries Abroad and Overseas Step-down Subsidiaries of Indian Corporates

2.2.3.1 Banks are allowed to extend credit/non-credit facilities (viz. letters of credit and guarantees) to Indian Joint Ventures/Wholly-owned Subsidiaries abroad and step-down subsidiaries which are wholly owned by the overseas subsidiaries of Indian Corporates. Banks are also permitted to provide at their discretion, buyer's credit/acceptance finance to overseas parties for facilitating export of goods & services from India. The above exposure will, however, be subject to a limit of 20 percent of banks' unimpaired capital funds (Tier I and Tier II capital) and would be

subject to the conditions laid down in this regard in the Master Circular on 'Loans and Advances – Statutory and Restrictions' dated July 1, 2015.

2.3 Banks' Exposure to Capital Markets – Rationalisation of Norms

As announced in the [Mid-Term Review of Annual Policy Statement for the year 2005-2006](#), the prudential capital market exposure norms prescribed for banks have been rationalized in terms of base and coverage. Accordingly, the existing guidelines on banks' exposure to capital markets were modified and the revised guidelines, which came into effect from **April 1, 2007**, are as under.

2.3.1 Components of Capital Market Exposure (CME)

Banks' capital market exposures would include both their direct exposures and indirect exposures. The aggregate exposure (both fund and non-fund based) of banks to capital markets in all forms would **include** the following:

- direct investment in equity shares, convertible bonds, convertible debentures and units of equity-oriented mutual funds the corpus of which is not exclusively invested in corporate debt;
 - advances against shares/bonds/debentures or other securities or on clean basis to individuals for investment in shares (including IPOs/ESOPs), convertible bonds, convertible debentures, and units of equity-oriented mutual funds;
 - advances for any other purposes where shares or convertible bonds or convertible debentures or units of equity oriented mutual funds are taken as primary security;
 - advances for any other purposes to the extent secured by the collateral security of shares or convertible bonds or convertible debentures or units of equity oriented mutual funds i.e. where the primary security other than shares/convertible bonds/convertible debentures/units of equity oriented mutual funds does not fully cover the advances;
 - secured and unsecured advances to stockbrokers and guarantees issued on behalf of stockbrokers and market makers;
 - loans sanctioned to corporates against the security of shares / bonds/ debentures or other securities or on clean basis for meeting promoter's contribution to the equity of new companies in anticipation of raising resources;
 - bridge loans to companies against expected equity flows/issues;
 - underwriting commitments taken up by the banks in respect of primary issue of shares or convertible bonds or convertible debentures or units of equity oriented mutual funds.
 - financing to stockbrokers for margin trading;
 - all exposures to Venture Capital Funds (both registered and unregistered).
5. Irrevocable Payment Commitments issued by custodian banks in favour of stock exchanges.

2.3.2 Limits on Banks' Exposure to Capital Markets

2.3.2.1 Statutory limit on shareholding in companies

In terms of Section 19(2) of the Banking Regulation Act, 1949, no banking company shall hold shares in any company, whether as pledgee, mortgagee or absolute owner, of an amount exceeding 30 percent of the paid-up share capital of that company or 30 percent of its own paid-up share capital and reserves, whichever is less, except as provided in sub-section (1) of Section 19 of the Act. Shares held in demat form should also be included for the purpose of determining the exposure limit. This is an aggregate holding limit for each company. While granting any advance against shares, underwriting any issue of shares, or acquiring any shares on investment account or even in lieu of debt of any company, these statutory provisions should be strictly observed.

2.3.2.2 Regulatory Limit

6 Solo Basis

The aggregate exposure of a bank to the capital markets in all forms (both fund based and non-fund based) should not exceed 40 per cent of its net worth (as defined in paragraph 2.3.4), as on March 31 of the previous year. Within this overall ceiling, the bank's direct investment in shares, convertible bonds / debentures, units of equity-oriented mutual funds and all exposures to Venture Capital Funds (VCFs) [both registered and unregistered] should not exceed 20 per cent of its net worth.

7 Consolidated Basis

The aggregate exposure of a consolidated bank to capital markets (both fund based and non-fund based) should not exceed 40 per cent of its consolidated net worth as on March 31 of the previous year. Within this overall ceiling, the aggregate direct exposure by way of the consolidated bank's investment in shares, convertible bonds / debentures, units of equity-oriented mutual funds and all exposures to Venture Capital Funds (VCFs) [both registered and unregistered] should not exceed 20 per cent of its consolidated net worth.

Note For the purpose of application of prudential norms on a group-wise basis, a 'consolidated bank' is defined as a group of entities, which include a licensed bank, which may or may not have subsidiaries.

2.3.2.3 The above-mentioned ceilings (sub-paragraphs A and B) are the maximum permissible and a bank's Board of Directors is free to adopt a lower ceiling for the bank, keeping in view its overall risk profile and corporate strategy. Banks are required to adhere the ceilings on an ongoing basis.

2.3.2.4 If acquisition of equity shares, as indicated in paragraph 5.5 of [circularDBOD.BP.BC.No.97/21.04.132/2013-14 dated February 26, 2014](https://www.reservedbanking.com/circularDBOD.BP.BC.No.97/21.04.132/2013-14%20dated%20February%2026,%202014,%20results%20in%20exceeding%20the%20extant%20regulatory%20Capital%20Market%20Exposure%20(CME)%20limit,%20the%20same%20will%20not%20be%20considered%20as%20a%20breach%20of%20regulatory%20limit.%20However,%20this%20will%20require%20reporting), results not exceeding the extant regulatory Capital Market Exposure (CME) limit, the same will not be considered as a breach of regulatory limit. However, this will require reporting

to RBI and disclosure by banks in the Notes to Accounts in Annual Financial Statements.

On account of banks financing acquisition of PSU shares under the Government of India disinvestment programmes, if any bank is likely to exceed the regulatory ceiling the capital market exposure, RBI will consider requests from these banks for relaxation of the ceiling on a case by case basis, subject to adequate safeguards regarding margin, bank's exposure to capital market, internal control and risk management systems, etc. The relaxation of ceiling will be considered in such a manner that the bank's exposure to capital market in all forms, net of its advances for financing of acquisition of PSU shares shall be within the regulatory ceiling limit.

2.3.3 Definition of Net Worth

Net worth would comprise Paid-up capital plus Free Reserves including Share Premium but excluding Revaluation Reserves, plus Investment Fluctuation Reserve and credit balance in Profit & Loss account, less debit balance in Profit and Loss account, Accumulated Losses and Intangible Assets. No general or specific provisions should be included in computation of net worth. Infusion of capital through equity shares, either through domestic issues or overseas floats after the published balance sheet date, may also be taken into account for determining the ceiling on exposure to capital market. Banks should obtain an external auditor's certificate on completion of the augmentation of capital and submit the same to the Reserve Bank of India (Department of Banking Supervision) before reckoning the additions, as stated above.

2.3.4 Items excluded from Capital Market Exposure

The following items would be excluded from the aggregate exposure ceiling of 40 per cent of net worth and direct investment exposure ceiling of 20 per cent of net worth (wherever applicable):

4. Banks' investments in own subsidiaries, joint ventures, sponsored Regional Rural Banks (RRBs) and investments in shares and convertible debentures, convertible bonds issued by institutions forming crucial financial infrastructure such as National Securities Depository Ltd. (NSDL), Central Depository Services (India) Ltd. (CDSL), National Securities Clearing Corporation Ltd. (NSCCL), National Stock Exchange (NSE), Clearing Corporation of India Ltd., (CCIL), a credit information company which has obtained Certificate of Registration from RBI and of which the bank is a member, Multi Commodity Exchange Ltd. (MCX), National Commodity and Derivatives Exchange Ltd. (NCDEX), National Multi-Commodity Exchange of India Ltd. (NMCEIL), National Collateral Management Services Ltd. (NCMSL), National Payments Corporation of India (NPCI) and United Stock Exchange of India Ltd. (USEIL) and other All India Financial Institutions as given in **Annex 2**. After listing, the exposures in excess of the original investment (i.e. prior to listing) would form part of the Capital Market Exposure.
5. Tier I and Tier II debt instruments issued by other banks;
6. Investment in Certificate of Deposits (CDs) of other banks;

AM. Preference Shares;

AN. Non-convertible debentures and non-convertible bonds;

AO. Units of Mutual Funds under schemes where the corpus is invested exclusively in debt instruments;

AP. Shares acquired by banks as a result of conversion of debt/overdue interest into equity under Corporate Debt Restructuring (CDR) mechanism;

3. Term loans sanctioned to Indian promoters for acquisition of equity in overseas joint ventures / wholly owned subsidiaries under the refinance scheme of Export Import Bank of India (EXIM Bank).

BP. With effect from April 16, 2008, banks may exclude their own underwriting commitments, as also the underwriting commitments of their subsidiaries, through the book running process, for the purpose of arriving at the capital market exposure of the solo bank as well as the consolidated bank. (However, the position in this regard would be reviewed at a future date).

Promoters shares in the SPV of an infrastructure project pledged to the lending bank for infrastructure project lending.

xi banks exposure to brokers under the currency derivatives segment

2.3.5 Computation of exposure

For computing the exposure to the capital markets, loans/advances sanctioned and guarantees issued for capital market operations would be reckoned with reference to sanctioned limits or outstanding, whichever is higher. However, in the case of fully drawn term loans, where there is no scope for re-drawal of any portion of the sanctioned limit, banks may reckon the outstanding as the exposure. Further, banks' direct investment in shares, convertible bonds, convertible debentures and units of equity-oriented mutual funds would be calculated at their cost price.

As regards Irrevocable Payment Commitments (IPC) issued by custodian banks in favour of Stock Exchange, the computation of Capital Market Exposure would be as follows:

i. The maximum risk to the custodian banks issuing IPCs would be reckoned at 50%, on the assumption of downward price movement of the equities bought by FIIs/ Mutual Funds on the two successive days from the trade date (T) i.e., on T+1 and T+2, of 20% each with an additional margin of 10% for further downward movement.

10. Accordingly the potential risk on T+1 would be reckoned at 50% of the settlement amount and this amount would be reckoned as CME at the end of T+1 if margin payment / early pay in does not come in.

11. In case there is early pay in on T+1, there will be no Capital Market exposure. By T+1, we mean 'end of day' (EOD) as per Indian Time. Thus, funds received after EOD as per Indian Time, will not be reckoned as early pay-in on T+1. CME will have to be computed accordingly.

12. In case margin is paid in cash on T+1, the CME would be reckoned at 50% of settlement price minus the margin paid. In case margin is paid on T+1 by way of

permitted securities to FIIs / Mutual Funds, the CME would be reckoned at 50% of settlement price minus the margin paid plus haircut prescribed by the Exchange on the securities tendered towards margin payment.

v. The IPC will be treated as a financial guarantee with a Credit Conversion Factor (CCF) of 100. However, capital will have to be maintained only on exposure which is reckoned as CME because the rest of the exposure is deemed to have been covered by cash/securities which are admissible risk mitigants as per Basel II. Thus capital is to be maintained on the amount taken for CME and the risk weight would be 125% thereon. As the nature of IPC remains the same irrespective of the client for whom it is issued, the measures prescribed for IPCs will be applicable to all IPCs issued by custodian banks.

2.3.6 Intra-day Exposures

At present, there are no explicit guidelines for monitoring banks' intra-day exposure to the capital markets, which are inherently risky. It has been decided that the Board of each bank should evolve a policy for fixing intra-day limits and put in place an appropriate system to monitor such limits, on an ongoing basis. The position will be reviewed at a future date.

2.3.7 Enhancement in limits

Banks having sound internal controls and robust risk management systems can approach the Reserve Bank for higher limits together with details thereof.

14. Prudential Limits on Intra-Group Exposure

To contain concentration and contagion risks arising out of ITEs, certain quantitative limits on financial ITEs and prudential measures for the non-financial ITEs have been imposed as under:

69. Exposure should include credit exposure (funded and non-funded credit limits) and investment exposure (including underwriting and similar commitments). However, exposure on account of equity and other regulatory capital instruments should be excluded while computing exposure to group entities.

70. Banks should adhere to the following intra-group exposure limits :

(AL) Single Group Entity Exposure

5% of Paid-up Capital and Reserves in case of non-financial companies⁸ and unregulated financial services companies

10% of Paid-up Capital and Reserves in case of regulated financial services companies

b. Aggregate Group Exposure

i. 10% of Paid-up Capital and Reserves in case of all non-financial companies and unregulated financial services companies taken together

(BM) 20% of Paid-up Capital and Reserves in case of the group i.e. all group entities (financial and non-financial) taken together.

(BN) Intra-group Exposures Exempted from the Prudential Limits

The following intra-group exposures would be excluded from the stipulated limits :

(x) Banks' investments in the equity of group entities and other capital instruments are presently governed by the [RBI Circulars DBOD.FSD.BC.62/24.01.001/2011-12 dated December 12, 2011](#) on 'Investments in Subsidiaries and Other companies - Guidelines' and [DBOD.No.BP.BC.2/21.06.201/2013-14 dated July 1, 2013](#) on 'Basel III Capital Regulations'. Accordingly, banks' exposures to other banks / financial institutions in the group in form of equity and other capital instruments are exempted from the limits stipulated in above guidelines, and the extant instructions as cited above will continue to apply, subject to the prohibitions stipulated at iv below.

(xi) Inter-bank exposures among banks in the group operating in India. However, prudential limits in respect of both outstanding borrowing and lending transactions in call / notice money market for scheduled commercial banks would continue to be governed by extant instructions on Call / Notice Money Market Operations.

(xii) Letters of Comfort issued by parent bank in favour of overseas group entities to meet regulatory requirements.

iv. Prohibited Exposures

Wherever a bank has been set-up under a NOFHC structure,

19. Bank cannot take any credit or investments (including investments in the equity / debt capital instruments) exposure on NOFHC, its Promoters / Promoter Group entities or individuals associated with the Promoter Group.

20. Bank cannot invest in the equity / debt capital instruments of any financial entities under the NOFHC. (for detailed instructions please refer to [circular DBOD.No.BP.BC.96/21.06.102/2013-14 dated February 11, 2014](#))

36 Financing of equities and investments in shares

13. 1 Advances against shares to individuals

Loans against security of shares, convertible bonds, convertible debentures and units of equity oriented mutual funds to individuals from the banking system should not exceed the limit of Rs.10 lakh per individual if the securities are held in physical form and Rs. 20 lakhs per individual if the securities are held in demat form. Such loans are meant for genuine individual investors and banks should not support collusive action by a large group of individuals belonging to the same corporate or their inter-connected entities to take multiple loans in order to support particular scrips or stock-broking activities of the concerned firms. Such finance should be reckoned as an exposure to capital market. Banks should formulate, with the approval of their Board of Directors, a Loan Policy for granting advances to individuals against shares, debentures, and bonds keeping in view the RBI guidelines. As a prudential measure, banks may also consider laying down appropriate aggregate sub-limits of such advances.

4.2 Financing of Initial Public Offerings (IPOs)

Banks may grant advances to individuals for subscribing to IPOs. Loans/advances to any individual from the banking system against security of shares, convertible bonds, convertible debentures, units of equity oriented mutual funds and PSU bonds should not exceed the limit of Rs.10 lakh for subscribing to IPOs. The corporates should not be extended credit by banks for investment in other companies' IPOs. Similarly, banks should not provide finance to NBFCs for further lending to individuals for IPOs. Finance extended by a bank for IPOs should be reckoned as an exposure to capital market.

4.3 Bank finance to assist employees to buy shares of their own companies

4.3.1 Banks may extend finance to employees for purchasing shares of their own companies under Employees Stock Option Plan (ESOP)/ reserved by way of employees' quota under IPO to the extent of 90% of the purchase price of the shares or Rs.20 lakh, whichever is lower. Finance extended by banks for ESOPs/ employees' quota under IPO would be treated as an exposure to capital market within the overall ceiling of 40 per cent of their net worth. These instructions will not be applicable for extending financial assistance by banks to their own employees for acquisition of shares under ESOPs/ IPOs, as banks are not allowed to extend advances including advances to their employees / Employees' Trusts set up by them for the purpose of purchasing their own banks' shares under ESOPs / IPOs or from the secondary market. This prohibition will apply irrespective of whether the advances are secured or unsecured.

4.3.2 Banks should obtain a declaration from the borrower indicating the details of the loans 1 advances availed against shares and other securities specified above, from any other bank/s in order to ensure compliance with the ceilings prescribed for the purpose.

4.3.3 Follow-on Public Offers (FPOs) will also be included under IPO.

4.4 Advances against shares to Stock Brokers & Market Makers

4.4.1 Banks are free to provide credit facilities to stockbrokers and market makers on the

basis of their commercial judgment, within the policy framework approved by their Boards. However, in order to avoid any nexus emerging between inter-connected stock broking entities and banks, the Board of each bank should fix, within the overall ceiling of 40 per cent of their net worth as on March 31 of the previous year, a sub-ceiling for total advances to –

- 2 all the stockbrokers and market makers (both fund based and non-fund based, i.e. guarantees); and
- 2 to any single stock broking entity, including its associates/ inter-connected companies.

4.4.2 Further, banks should not extend credit facilities directly or indirectly to stockbrokers for arbitrage operations in Stock Exchanges.

4.5 Bank financing to individuals against shares to joint holders or third party beneficiaries

While granting advances against shares held in joint names to joint holders or third party beneficiaries, banks should be circumspect and ensure that the objective of the regulation is not defeated by granting advances to other joint holders or third party beneficiaries to circumvent the above limits placed on loans/advances against shares and other securities specified above.

4.6 Advances against units of mutual funds

While granting advances against units of mutual funds, the banks should adhere to the following guidelines:

- 8) The units should be listed in the stock exchanges or repurchase facility for the units should be available at the time of lending.
- 9) The units should have completed the minimum lock-in-period stipulated in the relevant scheme.
- 10) The amount of advances should be linked to the Net Asset Value (NAV) / repurchase price or the market value, whichever is less and not to the face value of the units.
- 11) Advances against units of mutual funds (except units of exclusively debt oriented mutual funds) would attract the quantum and margin requirements as are applicable to advances against shares and debentures. However, the quantum and margin requirement for loans/ advances to individuals against units of exclusively debt-oriented mutual funds may be decided by individual banks themselves in accordance with their loan policy.
- 12) The advances should be purpose oriented taking into account the credit requirement of the investor. Advances should not be granted for subscribing to or boosting up the sales of another scheme of a mutual fund or for the purchase of shares/ debentures/ bonds etc.

4.7 Bank Loans for Financing Promoters' Contributions

These loans will also be subject to single/group of borrowers exposure norms as well as the statutory limit on shareholding in companies, as detailed above.

4.8 Margin Trading

4.8.1 Banks may extend finance to stockbrokers for margin trading. The Board of each bank should formulate detailed guidelines for lending for margin trading, subject to the following parameters:

- (f) The finance extended for margin trading should be within the overall ceiling of 40% of net worth prescribed for exposure to capital market.
- (g) A minimum margin of 50 per cent should be maintained on the funds lent for margin trading.
- (h) The shares purchased with margin trading should be in dematerialised mode under pledge to the lending bank. The bank should put in place an appropriate system for monitoring and maintaining the margin of 50% on an ongoing basis.
- (i) The bank's Board should prescribe necessary safeguards to ensure that no "nexus" develops between inter-connected stock broking entities/ stockbrokers and the bank in respect of margin trading. Margin trading should be spread out by the bank among a reasonable number of stockbrokers and stock broking entities.

4.8.2 The Audit Committee of the Board should monitor periodically the bank's exposure byway of financing for margin trading and ensure that the guidelines formulated by the bank's Board, subject to the above parameters, are complied with. Banks should disclose the total finance extended for margin trading in the "Notes on Account" to their Balance Sheet.

4.9 Cross holding of capital among banks / financial institutions

4.9.1 (i) Banks' / FIs' investment in the following instruments, which are issued by other banks / FIs and are eligible for capital status for the investee bank / FI, should not exceed 10 percent of the investing bank's capital funds (Tier I plus Tier II):

Equity shares;
Preference shares eligible for capital status;
Subordinated debt instruments;
Hybrid debt capital instruments; and
Any other instrument approved as in the nature of capital.

9) Banks / FIs should not acquire any fresh stake in a bank's equity shares, if by such acquisition, the investing bank's / FI's holding exceeds 5 percent of the investee bank's equity capital.

10) It is clarified that a bank's/FI's equity holdings in another bank held under provisions of a Statute will be outside the purview of the ceiling prescribed above.

- 4.9.2** Banks' / FIs' investments in the equity capital of subsidiaries are at present deducted from their Tier I capital for capital adequacy purposes. Investments in the instruments issued by banks / FIs which are listed at paragraph 2.7.1(i) above, which are not deducted from Tier I capital of the investing bank/ FI, will attract 100 percent risk weight for credit risk for capital adequacy purposes.

9. 'Safety Net' Schemes for Public Issues of Shares, Debentures, etc.

5.1 'Safety Net' Schemes

Reserve Bank had observed that some banks/their subsidiaries were providing buy-back facilities under the name of 'Safety Net' Schemes in respect of certain public issues as part of their merchant banking activities. Under such schemes, large exposures are assumed by way of commitments to buy the relative securities from the original investors at any time during a stipulated period at a price determined at the time of issue, irrespective of the prevailing market price. In some cases, such schemes were offered *suo motto* without any request from the company whose issues are supported under the schemes. Apparently, there was no undertaking in such cases from the issuers to buy the securities. There is also no income commensurate with the risk of loss built into these schemes, as the investor will take recourse to the facilities offered under the schemes only when the market value of the securities falls below the pre-determined price. Banks/their subsidiaries have therefore been advised that they should refrain from offering such 'Safety Net' facilities by whatever name called.

5.2 Provision of buy back facilities

In some cases, the issuers provide buy-back facilities to original investors up to Rs. 40,000/- in respect of non-convertible debentures after a lock-in-period of one year, to provide liquidity to debentures issued by them. If, at the request of the issuers, the banks or their subsidiaries find it necessary to provide additional facilities to small investors subscribing to new issues, such buy-back arrangements should not entail commitments to buy the securities at pre-determined prices. Prices should be determined from time to time, keeping in view the prevailing stock market prices for the securities. Commitments should also be limited to a moderate proportion of the total issue in terms of the amount and should not exceed 25 percent of the owned funds of the banks/their subsidiaries. These commitments will also be subject to the overall exposure limits which have been or may be prescribed from time to time.

List of All-India Financial Institutions
(Counter party exposure - List of institutions guaranteeing bonds of corporates)
[paragraphs 2.1.3.4(c)]

9. Industrial Finance Corporation of India Ltd.
10. Industrial Investment Bank of India Ltd.
11. Tourism Finance Corporation of India Ltd.
12. Risk Capital and Technology Finance Corporation Ltd.
13. Technology Development and Information Company of India Ltd.
14. Power Finance Corporation Ltd.
15. National Housing Bank
16. Small Industries Development Bank of India
17. Rural Electrification Corporation Ltd.
18. Indian Railways Finance Corporation Ltd.
19. National Bank for Agriculture and Rural Development
20. Export Import Bank of India
21. Infrastructure Development Finance Company Ltd.
22. Housing and Urban Development Corporation Ltd.
23. Indian Renewable Energy Development Agency Ltd.

List of All-India Financial Institutions

**[Investment in equity/convertible bonds/ convertible debentures by banks -
List of FIs whose instruments are exempted from Capital Market Exposure ceiling] [paragraph
2.3.4(i)]**

- s) Industrial Finance Corporation of India Ltd. (IFCI)
- t) Tourism Finance Corporation of India Ltd. (TFCI)
- u) Risk Capital and Technology Finance Corporation Ltd. (RCTC)
- v) Technology Development and Information Company of India Ltd. (TDICI)
- w) National Housing Bank (NHB)
- x) Small Industries Development Bank of India (SIDBI)
- y) National Bank for Agriculture and Rural Development (NABARD)
- z) Export Import Bank of India (EXIM Bank)
- aa) Industrial Investment Bank of India (IIBI)
- 12. Life Insurance Corporation of India (LIC)
 - General Insurance Corporation of India (GIC)

MEMORY BASED MCQS ON RISK MANAGEMENT

01 RBI implemented the Basel-III recommendations in India, w.e.f:

a) 01.01.2013, b. 31.03.2013, c. 01.04.2013, d. 30.09.2013

02 Basel III recommendations shall be completely implemented in India by:

31.03.2020, b. 31.03.2019 c. 31.03.2618 d. 31.03.2017

03 Basel III capital regulations were released by Basel Committee on Banking Supervision (BCBS) during as a

Global Regulatory Framework for more resilient banks and banking systems:

December 2010, b. March 2011, c. December 2011, d. December 2012

04 Basel III capital regulations are based on 3 mutually reinforcing pillars. These pillars are (1) Pillar-1 minimum capital standards (2)

supervisory review of capital adequacy (3) risk management.

all the 3 are correct, b. only 1 and 2 are correct, c. only 1 and 3 are correct, d. only 2 and 3 are correct Under Basel II,

05. Under Basel II the options available to compute capital for credit risk are:-

standardized approach, b. risk management approach, c. advanced measurement approach, d. standardized approach,

06. Under Basel III, the options available to compute capital for operational risk are :

standardized approach, b) risk management approach, c) advanced measurement approach, d) basic indicator approach,

07. Under Basel III, the options available to compute capital for market risk are :

standardized approach, b) risk management approach, c) advanced measurement approach, d) basic indicator approach

08. Certain specific prescriptions of Basel II capital adequacy framework will continue to apply along with Basel III (parallel run), till:

31.03.2019, b) 31.03.2018, c) 31.03.2017, d) 31.03.2016

09. A bank in India is to comply with capital adequacy ratio requirements at : (1) consolidated (group) level after consolidating the

assets liabilities of its subsidiaries / joint ventures (2) solo level (3) overseas operations of the bank under (1) and (2).

a) 1 and 2 only correct, b) 1 and 3 only correct, c) 2 and 3 only correct, d) 1 to 3 all correct.

10. In India, the banks are required to maintain a minimum Pillar 1 capital to risk weighted assets ratio (or minimum total

capital to risk weighted assets ratio) of a s o n

a) 8%, 31' Mar each year, b) 9%, 31" Mar each year, c) 8%, ongoing basis, d) 9%, ongoing basis.

11. The banks in India are required to compute Basel III capital ratios in the following manner (1)

Common equity Tier I capital ratio (2)

Tier I capital ratio (3) Tier 2 capital ratio (4) Total capital to risk weighted asset ratio a) 1 to 4 all, b) 1, 2 and 4 only, c) 1, 3

and 4 only, d) 1 and 4 only

12. To calculate capital adequacy ratio, the banks are to take into account, which of the following risk: credit risk and operational risk only, b) credit risk and market risk only, c) market risk and operational risk only, d)

credit risk, market risk and operational risk.

13. Which of the following statement regarding the Total regulatory capital under Basel III is correct:

total regulatory capital is sum total of Tier I capital and Tier 2 capital, b) Tier I capital is called 'going-concern' capital and Tier 2

capital is called 'gone-concern' capital, c) Tier I capital comprises common equity Tier I and additional Tier I, d) all the above.

14 As per Basel III implementation in India, Common Equity Tier 1 capital must be % of risk weighted assets on ongoing basis: a: 5.5% b: 7%, c: 9% d: 11%

15. As per Basel III implementation in India, minimum Tier 1 capital must be % of risk weighted assets on ongoing basis:

a: 5.5% . b: 7%, c: 9% d: 11%

16. As per Basel III implementation in India, within the minimum Tier 1 capital, the additional Tier capital can be:

a: min 5.5% of risk weighted assets (RWA), b: max 5.5% of RWA, c: min 1.5% of RWA, d: max 1.5% of RWA

17. As per Basel III implementation in India, within total capital of 9% of risk weighted assets, the Tier 2 capital can be:

a) max equal to Tier I capital, b) min equal to Tier I capital c) max equal to 2% of risk weighted assets, d) min equal to 2% of risk weighted assets

18. Which of the following statements is not correct regarding Basel III implementation in India:

a) minimum common equity Tier I ratio should be 5.5% of RWAs, b) capital conservation buffer, c) (CCB) consisting of common equity, should be 2.5% of RWAs, d) maximum additional tier 1 capital should be 1.5% of RWAs, e) minimum common equity Tier I ratio plus capital conservation buffer should be 7%

19. Which of the following statements is not correct regarding Basel III implementation in India:

a) minimum Tier I capital ratio should be 8%, b) Tier 2 capital should be max 2%, c) minimum total capital ratio should be 9%, d) minimum total capital ratio plus capital conservation buffer should be 11.5%

20. As per Basel III, which of the following is an element of Common Equity component of Tier I (1) common shares i.e. paid

up equity capital (2) stock surplus i.e. share premium (3) statutory reserves (4) capital reserves representing surplus arising out of sale proceeds of assets (5) balance in profit and loss account at the end of the previous year. a) 1 to 5 all, b) 1 to 4 only, c) 1, 4 and 5 only, d) 1, 2 and 3 only

21. As per Basel III, which of the following can be included in Additional Tier I capital (1) Perpetual Noncumulative Preference

shares — PNCPS (2) stock surplus or share premium resulting from issue of Additional Tier I instruments (3) Debit capital

instruments eligible to be included in additional Tier I.: a) 1 to 3 all, b) 1 and 2 only, c) 1 and 3 only, d) 2 and 3 only

22. As per Basel III, Tier 2 capital comprises which. of the following (1) general provisions and loss reserves (2) debt capital

instruments issued by bank (3) preference share capital instruments with redeemable or cumulative feature (4) revaluation reserve

(5) stock surplus i.e. share premium resulting from issue of Tier 2 eligible instruments.

a) 1 to 5 all, b) 1 to 4 only, c) 1, 4 and 5 only, d) 1, 2 and 3 only.

23. As per Basel III, general provisions and loss reserves are included in Tier-2 capital maximum to the extent of: 1.25% of total risk

weighted assets under standardized approach and 0.6% of total risk weighted assets under IRB approach

a) 0.6% of total risk weighted assets under standardized approach and 0.6% of total risk weighted assets under IRB approach

b) 0.6% of total risk weighted assets under standardized approach and 1.25% of total risk weighted assets under IRB approach

c) 1.25% of total risk weighted assets under standardized approach and 1.25% of total risk weighted assets under IRB approach.

24 As per Basel III, the value of revaluation reserve is to be taken at % discount to include in Tier 2 capital:-

a: 60% b: 55%, c: 50% d: 45%

25 As per Basel III, adjustments / deductions are required to be made from Tier I and Tier 2 capital, relating to which of the following

(1) goodwill and other intangible assets (2) deferred tax assets (3) Investment in own shares (treasury stock) (4) investment

in capital of banking, financial or insurance entities :

1 to 4 all, b) 1 and 2 only, c) 1 and 3 only, d) 1 only

26 As per Basel III, the investment of a bank in the capital of a banking or financial or insurance entity is restricted to which of the following: a) 10% of capital funds (after deductions) of the investing bank, b) 5% of the investee bank's equity capital, c) 30% of paid up capital and reserves of the bank or 30%, of paid up capital of the company, whichever is lower. d) all the above

27 The net stable funding ratio (NSFR) under Basel-III will be implemented in India from: a) 01.01.2017, b) 01.04.2017, c) 01.01.2018, d) 01.04.2018

28. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach, does not match in respect of which of the following:
a. Fund & non-fund based claims on Central Govt. 0%, b) Fund and non-fund based Central Govt. guaranteed claims —0%, c) Fund and non-fund based State Govt. guaranteed claims— 0%
D Fund and non-fund based claims on State Govt. —0%.

29 Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach, does not match in respect of which of the following:
a) Claims on RBI or DICGC 0%, b) Claims on Credit Guarantee Fund Trust for MSE —0%, c) Claims on Credit Risk Guarantee Fund Trust for Low Income Housing—0%, d) Claims on ECGC—0%.

30. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach, does not match for claims on foreign governments (based on rating of international rating agencies such as S & P, Fitch, Moody's Rating), in respect of which of the following:
AAA to AA rating—0%, b: BBB rating—20%, c: Below B rating—150%, d: unrated— 100%

31. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach, does not match for claims on foreign public sector enterprises (based on rating of S & P, Fitch, Moody's Rating), in respect of which of the following:
a: AAA to AA rating—20%, b: A rating—20%, c: BBB to BB rating—100%, d: unrated—100%.

32. Under Basel III, what is the risk weight for capital charge for credit risk on the basis of standardized approach, for claims on Bank for International Settlements, International Monetary Fund, Multi lateral Development Banks:
a: 0% b: 10%, c: 20% d: 50%.

33. Under Basel III, the risk weight is % for capital charge for credit risk on the basis of standardized approach, for claims on banks incorporated in India and foreign bank branches in India, where they meet the level of common equity Tier I capital

and applicable CCB: a: 0% b: 10%, c: 20% d: 50%

34. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach, does not match for claims on foreign banks (based on rating of international rating agencies such as S & P, Fitch, Moody's Rating), in respect of which of the following: a) AAA to AA rating—20% b) BBB rating—50%, c) Below B rating —150% d) unrated — 150%,

35. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach for long term loans, does not match for claims on domestic corporates, AFC and NBFC-IFC (based on rating of internal rating agencies such as CRISIL, CARE, ICRA etc.), in respect of which of the following:

a) AAA rating—20%, b) A rating—50%, c) BBB—100%, d) unrated—150%

36. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach for short term loans, does not match for claims on domestic corporates, AFC and NBFC-IFC (based on rating of internal rating agencies such as CRISIL, CARE, ICRA etc.), in respect of which of the following: a) A1+ - 20%, b) A2 — 50%, c) A3 — 75%, d) A4 — 150%

37. Under Basel III, the risk weight is % for capital charge for credit risk on the basis of standardized approach, for claims included in regulatory retail portfolio: a 20% b: 50%, c 75% d: 100%

38. Under Basel III, which of the following is part of the regulatory retail portfolio (1) mortgage loans which qualify as claim secured by residential property or commercial real estate (2) consumer credit or personal loans or credit card receivables (3) capital market exposure (4) venture capital exposure.

a) 1 and 3 only, b) 2 and 4 only, c) 1 to 4 all, d) none of the above

39. Under Basel III, to consider a claim as part of regulatory retail portfolio, which of the following condition is stated correctly:

(1) orientation criteria i.e. the exposure to individual person or to small business, where total average annual turnover in small business is less than Rs.50 or (2) granularity criteria i.e. no aggregate exposure to one counterpart is more than 02% of overall regulatory retail portfolio (3) maximum retail exposure to one counterpart does not exceed the threshold limit of Rs. 1 cr.

a) 1 to 3 all, b) 1 and 2 only c) 1 and 3 only, d) 2 and 3 only

40. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach for home loan up to Rs.20

lac where loan to value (LTV) ratio is 90% is : a) 20% b) 50%, c) 75% d) 100%.

41. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach for home loan of above

Rs.20 lac up to Rs.75 lac, where loan to value (LTV) ratio is 80% is : a) 20% b: 50%, c 75% d: 100%

42. Under Basel III, the risk weight for capital charge for credit risk as per standardized approach for home loan

of above Rs.75 lac, where loan to value (LTV) ratio is 75% is :- a) 20% b: 50%, c 75% d: 100%

43. Under Basel III, the risk weight is for capital charge for credit risk on the basis of standardized approach

for commercial real estate— residential housing: a) 20% b: 50%, c) 75% d: 100%.

44. Under Basel III, the risk weight is for capital charge for credit risk on the basis of standardized approach for exposure to

commercial real estate:- 20% b: 50%, c: 75% d: 100%.

45. Under Basel III, for home loan purpose, the loan to value ratio (LTV) ratio is calculated as :

a) (principal + other charges) / (realizable value of mortgage property), b) (principal + accrued interest + other charges) /

(realizable value of mortgage property) c) (principal + accrued interest) / (realizable value of mortgage property), d) (principal +

accrued interest + other charges) / (cost of mortgage property)

46. Bank's exposure for dwelling unit to an individual shall be treated as exposure to commercial real estate, as per Basel III:- a:

2nd b: 3rd, c 4th d: 5th

47. As per BaselIII implementation, the risk weight for unsecured portion of NPA for credit risk as per standardized approach is

% if the specific provision is less than 20% of the outstanding in NPA account:- a. 150%, b: 100%, c: 75% d: 50%

48. As per Basel III implementation, the risk weight for unsecured portion of NPA for credit risk as per standardized approach is
% if the specific provision is at least 20% of the outstanding in NPA account:- a) 150% b) 100%, c) 75% d) 50%
49. As per Basel III implementation, the risk weight for unsecured portion of NPA for credit risk as per standardized approach is
% if the specific provision is at least 50% of the outstanding in NPA account:- a) 150% b) 100%, c) 75% d) 50%
50. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach for which of the following exposure, does not match: a) venture capital — 150% b) consumer credit or personal loans— 125%, c) credit card - 125%, d) capital market exposure 100%
51. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach is % for staff loans secured by superannuation benefits or mortgage of flat / house: 20% b) 50%, c) 75% d) 100%
52. Under Basel III, the risk weight for capital charge for credit risk on the basis of standardized approach is % for staff loans other than secured by superannuation benefits or mortgage of flat / house, being eligible under regulatory retail portfolio:
a) 20% b) 50%, c) 75% d) 100%
53. Under Basel III, under standardized approach, the total risk weighted off-balance sheet credit exposure is calculated by taking into account, the credit conversion factor (CCF). In which of the following, the CCF is not correctly stated: -
a) direct credit substitutes such as financial guarantee or standby LC — 100%, b) performance guarantees 50%, c) self liquidating short term LC covering trading in goods— 50%, d) note issuance facilities and revolving underwriting facilities -50%
54. Credit enhancements under Securitization exposure, that are first loss positions, is to be risk weighted at _% under Basel III requirements:- A) 125% b) 375%, c) 625%, d) 1111%
55. Out of the following, which are domestic credit rating agencies, approved by RBI for the purpose of credit rating to determine risk weight for rated exposures (1) Brickwork (2) CARE (3) Fitch (4) CRISIL (5) Moody's (6) SMERA (7) Standard & Poor:
a) 1, 2, 4, 7, b) 1, 2, 4, 6, c) 1, 2, 3, 4, d) 1, 2, 4, 5
56. To be eligible for risk weighting purposes under Basel III, the rating from a credit rating agency approved by RBI, should be in force and confirmed from the monthly bulletin of the concerned rating agency. The rating agency should have reviewed the rating at least once during the previous months.
A) 6 months, b) 9 months, c) 12 months, d) 15 months
57. Under Basel III, which of the following are eligible as collateral for credit risk mitigation purpose: (1) cash (2) gold (3) Central or State Govt. securities (4) Kisan Vikas Tatra or National Saving Certificates (5) Life insurance policies and units of mutual funds (6) debt securities rated or unrated.
a) 1 to 6 all, b) 2 to 6 only, c) 3 to 5 only, d) 3 to 5 only
58. As per Basel III requirements, modified by RBI, call option on Additional Tier 1 instrument (PNCPS and PDI) will be

permissible at the initiative of the issuer after the instrument has run for at least years. a) two years b) three years c)

five years d) ten years

59. As per Basel III, the risk of losses in on-balance sheet and off-balance sheet positions arising from movements in market prices is called :- a) credit risk, b) market risk, c) pricing risk, d) liquidity risk

60. The market risk positions, that are subject to capital charge requirement, includes which of the following positions, under Basel

III: a) risk pertaining to interest rate related instruments in the trading book, b) risk pertaining to equities in the trading book, c)

forex risk including open positions in precious metal d) all the above.

61. The trading book of a bank is subject to market risk. As per Basel III, which of the following is not included in the trading book for

capital adequacy purpose:- securities under HFT and AFS, b) open gold positions and forex positions, c) trading

positions in derivatives, d) securities under HTM

62. If a security has matured and remains unpaid, it attract capital for risk on completion of 90 days delinquency period:- credit

risk, b: market risk, c: operational risk, d: at discretion of the bank

63. For market risk, the minimum capital requirement is expressed in terms of two separately calculated charges which

are:- a) specific risk and general market risk, b: special risk and general risk, c: liquidity risk and liquidation risk, d)

counterparty credit risk and trading partner's risk.

64. The capital requirement for general market risk is designed under Basel III to capture the risk of loss arising from change in :-

a prices of securities, b: market value securities, c: interest rate on securities, d: all the above

65. The capital charge for specific risk under market risk will be % or capital charge in accordance with the risk warranted by

external rating of the counterparty, whichever is higher, under Basel HI. A: 9.00%, b: 9.75%, c: 10.50%,

d: 11.25%

66 The capital charge for general market risk under the market risk will be % on gross equity position, under Basel HI.

a: 9.00%, b: 9.75%, c: 10.50%, d: 11.25%

67. Under Basel III, the risk weight for open foreign currency and open gold position is:-

a: 50% b:75%, c: 100% d: 125%

68. The capital charge (CAR) for open foreign exchange positions and open gold positions, under Basel HI, for market risk is:- a 6%

b: 7%, c: 8% d: 9%

69. The aggregate capital charge for market risk is the sum total of capital charge for (1) interest rate (2) equity investment (3) forex

and gold open positions:- a) 1 to 3 all, b) 1 and 3 only, c) 1 and 2 only, d) 2 and 3 only

70. Under Basel III, the risk of loss resulting from inadequate or failed internal processes, people and systems or from

external events is called :- a) credit risk, b) operational risk, c) market risk, d) reputation risk

71. As per Basel III, which of the following is part of operational risk :- a) legal risk, b) reputational risk, c) strategic risk,

d) all the above.

72. Under Basel HI, by using the Basic Indicator Approach, banks must hold capital for operational risk equal to the average over the

previous years of a fixed percentage (denoted as alpha) of positive annual gross income. a) 2 years, b) 3 years, c) 5 years,

d) at bank discretion

73. Under Basel III, by using the Basic Indicator Approach, banks must hold capital for operational risk equal to the average over the

prescribed no. of previous years, at % (denoted as alpha) of positive annual gross income. a: 8% b: 9%,

c: 12% d: 15%

74. For the purpose of calculation of capital charge for operational risk under basic indicator approach, the gross

income means:- a net interest income, b: net non-interest income, c: net interest income + net non-interest

income, d: net interest income minus net non-interest income.

75. For the purpose of calculation of capital charge for operational risk under basic indicator approach, the gross income

means:- a net profit + provisions and contingencies, b: net profit + provisions and contingencies + operating expenses,

c net profit + operating-expenses, d: provisions and contingencies + operating expenses.

76 The risks that the banks are generally exposed to and are not captured or not fully captured in regulatory CRAR include which of

the following:- a settlement risk, liquidity risk, b: reputational risk, strategic risk, c: risk of under-estimation of credit

risk under standardized approach, d: all the above.

77. Under Pillar-2 of Basel III, the banks are required to have a Board approved ICAAP and assess capital accordingly. ICAAP

stands for: a) Internal Capital Adequacy Assessment Procedure, b) Internal Capital Approval Assessment Process

c) Internal Capital Adequacy Assessment Process, d) Internal Capital Assessment Approved Process

78. As per Basel III requirements, modified by RBI during Sept 2014, banks can issue Tier 2 capital instruments with a

minimum original maturity of at least years : a two years, b three years, c five years, d ten years

79 Which of the following better explains the meaning of risk :- a loss arising on happening of some event, b loss arising

on non-happening of some event, c probability of loss that could arise due to uncertainty, d probability of risk

that could arise due to uncertainty, e risk due to loss as a result of uncertainty

80 Market risk is the risk of loss in (a) on-balance sheet positions (b) off balance sheet positions (c) arising from movement in

market prices:- a a to c all are correct, b only a and c correct, c only b and c correct, d only a and b correct

81 Risk that is associated with inability/failure of banks in payment of amount representing clearing cheques

presented by different banks:- a liquidity risk, b settlement risk, c credit risk, d legal risk e clearing process risk.

82. Risk that could arise due to legal actions or uncertainty of interpretations of contracts and agreements is called:- a) legal risk,

b) contract risk, c) country risk, d) uncertainty risk, e) counter-party risk

83. A bank finds it difficult to repay the short term deposits on maturity to its deposits because the funds of the bank are locked in

long term loans or investments. The risk arising from this situation is called:

a Interest rate risk, b Liquidity risk, c Operational risk, d Market risk, e Credit risk.

84. When failure of the financial system affects other systems such as insurance market or forex market, such risk is:- a liquidity

risk, b settlement risk systemic risk, d systematic risk, e clearing process risk

85 Market risk takes the form of (which one is not correct):-

a commodity price risk, b interest rate risk c loan default risk d liquidity risk.

86 The risk that loss may arise on account of trading in SLR and other securities by a bank is classified as:

a credit risk, b investment fluctuation risk c trading risk, d operational risk, e market risk

87. The risk that the interest rate of different assets and liabilities may change in different magnitude is called?

A) Embedded Risk, b) Maturity Risk, c) Basis Risk, d) Price Risk

88. Exposure to uncertainty in economic value of an investment that could not be marked to market is called:- a) trading

risk, b) business risk, c) market risk, d) liquidity risk, e) investment risk,

89. A foreign exchange dealer forgets to square the over bought position in a foreign currency. It is a..

a) foreign exchange risk, b) settlement risk, c) liquidity risk, d) operational risk

90. Risk that is associated with failure of internal processes of a bank or business organization:

a) settlement risk, b) procedural risk, c) operational risk, d) credit risk

91. A bank has failed to meet its obligation on account of a payment on due date due to its incapacity to pay. What kind of risk it is:

a) credit risk, b) liquidity risk, c) settlement risk, d) payment risk, e) all the above

92. Risk associated with changes in the credit profile of the borrowers and counter parties, is called:

a) credit risk, b) market risk, c) counter-party risk, d) liquidity risk, e) a and b –above

93. The customer service in a bank branch, has been disrupted for 2 hours, due to failure of the central server. What type of risk it

is: a reputation risk, b systemic risk, c operational risk, d settlement risk

94. When the bank is selling 3rd party products, which type of risk is involved:-

a reputation risk, b operational risk, c credit risk, d liquidity risk e Financial Sector Terms

95 When the objective is to follow the best practices to conduct the affairs of a company or bank in a transparent manner for

giving fair deal to all the stake holders, this is called: a implementation of prudential guidelines, b organisational

restructuring, c corporate governance, d corporate restructuring, e autonomy

96 Replacement of relatively high -cost debt with that of lower cost borrowing to take advantage of falling interest rates is called:

a debt replacement, b derivative, c credit enhancement, d credit risk management, e debt swap

97 In capital market, the term 'Market cap' is the product of a market price x authorised capital, b market price x paid

up capital, c market price x outstanding no. of shares, d market price x shares e b and d

98 . A banking system under which the banks are to raise low cost funds and invest such funds in low risk assets such as govt.

securities, is known as:

a) narrow banking, b) universal banking, c) rural banking, d) risk management banking asset liability management banking

99. An entity established or incorporated outside India which proposes to make investment in India and which is registered as such,

in accordance with the SEBI Regulations is called: a) Indian Depository Receipt b) Foreign Institutional Investor c) Foreign

Direct Investment, d) Foreign Currency Convertible Bond

100. market provides a platform for trading of existing securities and price discovery thereof:

a) primary market, b) secondary market, c) money market, d) insurance market

ANSWER

1 C 2 B 3 A 4 B 5 C 6 B 7 C 8 C 9 D 10 D

11 B 12 D 13 D 14 A 15 B 16 D 17 C 18 D 19 A 20 A

21 A 22 A 23 A 24 B 25 A 26 D 27 C 28 C 29 D 30 B
31 B 32 C 33 C 34 D 35 D 36 C 37 C 38 D 39 B 40 B
41 B 42 C 43 C 44 D 45 B 46 B 47 A 48 B 49 D 50 D
51 A 52 C 53 C 54 D 55 B 56 D 57 A 58 C 59 B 60 D
61 D 62 A 63 A 64 C 65 D 66 A 67 C 68 D 69 A 70 B
71 A 72 B 73 D 74 C 75 B 76 D 77 C 78 C 79 C 80 A
81 B 82 A 83 B 84 C 85 C 86 E 87 C 88 B 89 D 90 C
91 C 92 A 93 C 94 B 95 C 96 E 97 C 98 A 99 B 100 B

Srinivas Kante

CASE STUDIES / CASE LETS / PROBLEMS ON RISK MANAGEMENT

Case Study on regulatory adjustments under Basel III

Bank-B has to make regulatory adjustment of Rs.300 cr. This amount relates to deferred tax assets.

RBI rules relating to regulatory adjustment under Basel III provide that adjustments are to be phased- in to the extent of 20% as on 1.4.2013 from Common Equity Tier 1 only. The complete phase-in is to be done by March 31, 2017. During this transition period, the remainder not deducted from Common Equity Tier 1 / Additional Tier 1 / Tier 2 capital will continue to be subject to treatments given under Basel II capital adequacy framework.

Based on above information, answer the following questions:

01 If the deduction amount is taken off from Common Equity Tier I under Basel III, what amount will be deducted from CET1?

- 5. Rs.300 cr
- 6. Rs.240 cr
- 7. Rs.60 cr
- 8. Rs.20 cr

02 What amount will be deducted from Tier 1 capital as per these rules ?

- 9. Rs.300 cr
- 10. Rs.240 cr
- 11. Rs.60 cr
- 12. Rs.20 cr

Answers : 1-c 2-b

Explanation:

Que-1 As per RBI guidelines, only 20% amount is to be reduced from CET1.. Hence amount to be deducted = $300 \times 20\% = 60$ cr.

Que-2 As per RBI guidelines, 20% i.e. Rs.60 cr, is to be reduced from CE 1. ($300 \times 20\% = 60$ cr). The remaining amount is to be deduced as per the existing treatment rules i.e. rules under Basel II. Under Basel II, the amount of DTA is to be reduced from Tier I capital. Hence the remaining amount ($300 - 60 = 240$) is to be reduced from Tier I capital).

Case study on Capital Conservation Buffer in Basel - III

Bank-A earned a net profit after tax and provisions of Rs.3000 and Bank-B of Rs.1200 cr. Common Equity Tier I capital ratio of Bank-A is 6.75% after including the current period retained profits. This ratio for Bank-B is 7%. Both the banks propose to mobilize fresh capital through public issue and to make the issue attractive, want to pay highest dividend.

RBI rules regarding CCR provide as under:

Ratio after including the current periods retained earnings	Minimum Capital Conservation Ratios (expressed as a percentage of earnings)
5.5% - 6.125%	100%

>6.125% - 6.75%	80%
>6.75% - 7.375%	60%
>7.375% - 8.0%	40%
>8.0%	0%

Based on the given information, answer the following questions:

13. What is the amount of net profit which the Bank-A is required not to distribute to ensure compliance of Basel III prescription.

a: Rs.3000 cr b: Rs.2400 cr c: Rs.1600 cr d: Rs.600 cr

02 What is the maximum amount which the Bank-A can distribute as dividend to ensure compliance of Basel III prescription.

a: Rs.3000 cr b: Rs.2400 cr c: Rs.1600 cr d: Rs.600 cr

03 What is the amount of net profit which the Bank-B is required not to distribute to ensure compliance of Basel III prescription.

a: Rs.1200 cr b: Rs.720 cr c: Rs.480 cr d: Rs.240 cr

04 What is the maximum amount which the Bank-A can distribute as dividend to ensure compliance of Basel III prescription.

a: Rs.1200 cr b: Rs.720 cr c: Rs.480 cr d: Rs.240 cr

Answers : 1-b 2-d 3-b 4-c

Explanation: Que-1. Ratio of Bank-A is 6.75% due to which it is required to conserve 80% of its earning. Hence amount to be conserved = $3000 \times 80\% = 2400$ cr. The max amount that can be distributed = $3000 - 2400 =$ Rs.600 cr.

Que-2. Ratio of Bank-A is 6.75% due to which it is required to conserve 80% of its earning. Hence amount to be conserved = $3000 \times 80\% = 2400$ cr. The max amount that can be distributed = $3000 - 2400 =$ Rs.600 cr. Que-3. Ratio of Bank-B is 7% due to which it is required to conserve 60% of its earning. Hence amount to be conserved = $1200 \times 60\%$

14. 720 cr. The max amount that can be distributed = $1200 - 720 =$ Rs.480 cr. Que-4. Ratio of Bank-B is 7% due to which it is required to conserve 60% of its earning. Hence amount to be conserved = $1200 \times 60\% = 720$ cr. The max amount that can be distributed = $1200 - 720 =$ Rs.480 cr.

Case Study on Credit Risk Mitigation as per Basel III Popular Bank granted a corporate loan of Rs.10 cr to XYZ Limited repayable over 3 years. The credit rating of the company is A. The value of collateral in the account is Rs.10 cr in the form of unrated Bonds issued by another bank with a residual maturity of 3 years.

As per RBI guidelines, risk weight of loan to A rated borrower is 50%. The haircut on such bonds is 6% and the haircut for such exposure is zero. Based on this information, answer the following questions.

15. What is the value of collateral security after prescribed haircut.

a: Rs.10 cr b: Rs.9.40 cr c: Rs.0.60 cr d: Rs.0.30 cr

02 What is the value of net exposure after credit risk mitigation taking into account the collateral security with prescribed haircut.

a: Rs.10 cr b: Rs.9.40 cr c: Rs.0.60 cr d: Rs.0.30 cr

03 What is the value of risk weight assets after credit risk mitigation based on the collateral security.

a: Rs.10 cr b: Rs.9.40 cr c: Rs.0.60 cr d: Rs.0.30 cr

Answers : 1-b 2-c 3-d

Explanation :

The following formula is used for calculation of Exposure amount for collateralised transactions:

$$E = \text{Max} \{ 0, [E_x (1 + H_e) - C_x (1 - H_c - HFX)] \}$$

Where,

E = Exposure value after risk mitigation

E = Current value of the exposure

H_e = Haircut appropriate to the exposure

C = Current value of the collateral received

H_c = Haircut appropriate to the collateral

HFX = Haircut appropriate for currency mismatch between the collateral and exposure

Que-1. As per RBI guidelines, the risk weight for such loans is 50%. The haircut for such exposure is zero. The haircut of collateral being 6%, the value of collateral = 9.40 cr (10 cr — 0.60 cr). Hence, the net exposure = Rs.0.60 cr. With 50% risk weight the value of RWA = $0.60 \text{ cr} \times 50\% =$ Rs.0.30 cr.

Que-2. As per RBI guidelines, the risk weight for such loans is 50%. The haircut for such exposure is zero. The haircut of collateral being 6%, the value of collateral = 9.40 cr (10 cr — 0.60 cr). Hence, the net exposure = Rs.0.60 cr. With 50% risk weight the value of RWA = $0.60 \text{ cr} \times 50\% =$ Rs.0.30 cr.

Que-3. As per RBI guidelines, the risk weight for such loans is 50%. The haircut for such exposure is zero. The haircut of collateral being 6%, the value of collateral = 9.40 cr (10 cr — 0.60 cr). Hence, the net exposure = Rs.0.60 cr. With 50% risk weight the value of RWA = $0.60 \text{ cr} \times 50\% =$ Rs.0.30 cr.

Calculation of Admissible Additional Tier 1 and Tier 2 capital as per Basel III Universal bank calculated the capital adequacy ratios as under:

Common Equity Tier 1. Ratio	8.5% of risk weighted assets
Capital conservation buffer	2.5% of risk weighted assets
PNCPS / PDI	3.5% of risk weighted assets
Tier 2 capital issued by bank	2.5% of risk weighted assets

Total capital available	17% of risk weighted assets

As per Basel III rules of RBI, for the purpose of reporting Tier 1 capital and CRAR, any excess Additional Tier 1 (AT1) capital and Tier 2 (12) capital will be recognised in the same proportion as that applicable towards minimum capital requirements. At min 9% total capital, the max AT1 can be 1.5% and 12 can be max 2%. On the basis of given information, answer the following questions:

16. What is the amount of total CE I. capital:

a : 9 % b : 10 % c : 11% d : 12%

17. What is the amount of PNCPS / PDI eligible for Tier1?

a : 3 % b : 2.5 % c : 2.125% d : 1.375%

18. What is the amount of PNCPS / PDI not eligible for Tier I?

a : 3 % b : 2.5 % c : 2.125% d : 1.375%

19. What is the amount of Tier 2 eligible for CRAR?

a : 2 % b : 2.5 % c : 2.833% d : 0.333%

20. What is the amount of PNCPS / PDI eligible for Tier2?

a : 2 % b : 2.5 % c : 2.833% d : 0.333%

21. What is the amount of PNCPS / PDI not eligible for Tier 2 capital?

a : 1.375% b : 1.042% c : 2.125% d : 0.333%

22. What is the total amount of eligible capital?

a : 17% b : 16.43% c : 15.96% d : 14.13%

Answers : 1-c 2-c 3-c 4-c 5-d 6-b 7-c

Explanation

Que-1 : Total CET1 = CET1 + CCB = 8.5% + 2.5% = 11% **Que-2 :** PNCPS / PDI eligible for Tier 1 = $1.5 / 6 \times 8.5 = 2.125\%$ **Que-3 :** PNCPS / PDI not eligible for Tier 1 = $3.5 - 2.125 = 1.375\%$ **Que-4 :** Tier 2 eligible for CRAR = $2 / 6 \times 8.5 = 2.833\%$ **Que-5 :** PNCPS / PDI eligible for Tier 2 = $2.833 - 2.5 = 0.333\%$ **Que-6 :** PNCPS / PDI not eligible for Tier 2 = $1.375 - 0.333 = 1.042\%$

Que-7 : Total CE I. = CET1 + CCB = 8.5% + 2.5% = 11%

PNCPS / PDI eligible for Tier 1 = $1.5 / 6 \times 8.5 = 2.125\%$

PNCPS / PDI not eligible for Tier 1 = $3.5 - 2.125 = 1.375\%$

Tier 2 eligible for CRAR = $2 / 6 \times 8.5 = 2.833\%$

PNCPS / PDI eligible for Tier 2 = $2.833 - 2.5 = 0.333\%$

PNCPS / PDI not eligible for Tier 2 = $1.375 - 0.333 = 1.042\%$

Total capital available :

= CET1 + AT1 + T2 = 11% + 2.125 + 2.833 = 15.958 or 15.96%

Case study on calculation of eligible amount of profits earned after previous financial year, for inclusion in Capital Fund under Basel III.

Bank-A had capital adequacy ratio of 11.33% as on March 31, 2016 and risk weighted assets of Rs.50000 cr. Bank paid annual average dividend of Rs.200 crore during the previous 3 years. In the current year, bank earned a net profit of Rs.100 cr in the first quarter (Jun 2016) and Rs.130 cr in the 2nd quarter (Sep 2016).

On the basis of given information, answer the following questions:

23. What is the amount of profit eligible for inclusion in capital fund at the end of 2nd quarter.

a Rs.230 cr b Rs.200 cr c Rs.130 cr d Rs.100 cr

24. Out of the following, the capital fund increase will be represented by increase in ...

a Common Equity Tier-1 capital b Additional Tier-1 capital c Tier-2 capital d Capital conservation buffer

25. If the level of risk weighted assets remains at Rs.54000 cr as on Sept 30, 2016, what is the capital adequacy ratio of the bank as on :30.09.16?

a 11.33% b 11.57% c 11.77% d 11.98%

Answers : 2-A, 3-B

Solution:

25. Profit eligible for inclusion in capital fund at end of Sep 2016

Eligible profits $EP_t = \{NP_t - 0.25 D\}$ (EP_t stands for eligible profit up to the quarter. t varies from 1 to 4. NP_t stands for net profit up to quarter t and D is average annual dividend paid during last 3 years)

$EP_t = - 0.25 D = 230 - 0.25 \times 200 \times 2 = 230 - 100 = 130$ cr

26. The current year profit, if taken to be included in capital fund shall become part of Common Equity Tier-1 capital, as per RBI guidelines.

27. If the level of risk weighted assets is Rs.54000 cr as on Sept 30, 2016, the capital adequacy ratio of the bank as on 30.09.16: Existing capital = Rs.6118 cr
 $(54000/11.33)$ New capital = $6118 + 130 = 6248$.
 $CAR = 6248 / 54000 \times 100 = 11.57\%$

Case study on calculation of amount investment by banks in instruments issued by other banks as per Basel III guidelines of RBI

Bank-Z has surplus funds and plans to:

28. invest Rs.500 cr in the equity issued by bank X

29. invest Rs.200 cr in the capital of a subsidiary company, being promoted by the bank.

30. Lend Rs.400 cr against fully paid up equity shares of Bank Y with a paid up equity capital of Rs.1000 cr. The paid-up capital and reserves of Bank Z are Rs.400 cr and its capital funds as calculated as per Basel III are Rs.600 cr.

On the basis of given information, answer the following questions:

RBI guidelines : When banks invest in equity of other banks and financial institutions, they have to comply with the following:

31. Max investment in equity can be up to 10% of their capital funds.

32. Investment should not be more than 5% of investee bank's equity capital.

33. Investment in subsidiary company can be up to 10% of paid-up capital and reserves

34. The bank can hold as owner, mortgagee or pledgee, the shares of another company max 30% of its own paid up capital and reserves or 30% of paid up capital of the company, whichever is lower.

On the basis of given information, answer the following questions:

35. What is the maximum amount that Bank-Z can invest in equity issued by Bank-X?

a Rs.500 cr b Rs.120 cr c Rs.60 cr d Rs.40 cr

36. What is the maximum amount that Bank-Z can invest in equity of its subsidiary company?

a Rs.200 cr b Rs.120 cr c Rs.60 cr d Rs.40 cr

03 What is the maximum amount that Bank-Z can lend against equity shares issued by Bank-Y?

a Rs.400 cr b Rs.120 cr c Rs.60 cr d Rs.40 cr

Answers : 1-C, 2-D, 3-B Solution:

01 - Maximum amount Bank-Z can invest in equity issued by Bank-X: Capital funds of Bank Z = 600 cr. Max investment = 10% of 600 = 60 cr

37. Maximum amount Bank-Z can invest in equity of subsidiary company Paid up capital + reserves of Bank Z = 400 cr. Max investment = 10% of Rs.400 cr = Rs.40 cr.

3. Max amount Bank-Z can lend against equity shares issued by Bank-X: Paid up capital + reserves of Bank Z = 400. 30% of 400 = 120 cr Paid up capital of Bank X = 1000. 30 of 1000 = 300 cr. Hence maximum investment can be Rs.120 cr.

Case study on Role of Supervisor under Pillar-2 of Basel III

Under Pillar-2 of Basel III, there are 4 principles of Supervisory Review. Based on these principles, answer the following questions:

38. Supervisor should have the ability to require the bank to hold capital in excess of minimum required capital as per:

a Principle-1 b Principle-2 c Principle-3 d Principle-4

39. Supervisor should review and evaluate a bank's compliance with the regulatory capital, as per:

a Principle-1 b Principle-2 c Principle-3 d Principle-4

40. Supervisor should seek to intervene at an early stage to prevent capital from falling below the minimum regulatory level as per:

a Principle-1, b Principle-2 c Principle-3 d Principle-4 Answers: 1-C, 2-B, 3-D

Solutions:

Under Pillar-2 of Basel III, there are 4 principles of Supervisory Review as under:

Principle-1: Bank should have a process to make internal assessment of its capital requirements

Principle-2: Supervisor should review and evaluate a bank's compliance with the regulatory capital

Principle-3 : Supervisor should have the ability to require the banks to hold capital in excess of minimum required capital

Principle-4 : Supervisor should seek to intervene at an early stage to prevent capital from falling below the minimum regulatory level:

Case study on Calculation of Capital Ratios as per Basel III

Popular Bank Ltd has provided following information as on 31.03.16 (amount in crores of rupees)

Open position in foreign currency	200
Term loan to an Indian corporate with A rating	300
Staff loans fully secured as per bank policy	1500
Loans guaranteed by CGTMSE	1600
Housing loans guaranteed by CRFLIG	100
Individual house loans amount < 30 lac, LW 75%	2000
Retail loans	1000
Other loans	600
Cash with other banks with CAR of 9%	300
Credit cards issued by the bank	200
	7800
Amount of Additional Tier-1 @1.5%	45.15

Based on this information, answer the following questions:

41. What is the amount of risk weight of assets in respect of individual home loans:
a 2030 b 1000 c 703 d zero
42. What is the amount of risk weight of assets in respect of loans to Indian corporates:
a 30) b 375 c 60 d 150
- 03 What is the capital ratio requirement for credit cards?
a 9% b 11.25% c 6.75% d 4.50%
- 04 What is the amount of total risk weight of all assets?
a 7800 b 3010 c 5030 d 6040
- 05 What is the amount of total capital requirement?
a 270.90 b 165.55 c 45.15 d 60.20
- 06 What is the required amount of Common Equity Tier-1 capital?
a 270.90 b 165.55 c 45.15 d 60.20

Answers : 1-c, 2-d, 3-b, 4-b, 5-a, 6-b

Open position in foreign currency	NO	100%	200
Term loan to an Indian corporate with A rating	300	50%	150
Staff loans fully secured as per bank policy	1500	20%	300
Loans guaranteed by CGTMSE	1600	0%	0
Housing loans guaranteed by CRGFLIG	100	0%	0
Individual house loans amount < 30 lac, LTV 75%	2000	35%	700
Retail loans	1000	75%	750
Other loans	600	100%	600
Cash with other banks with CAR of 9%	300	20%	60
Credit cards issued by the bank	200	125%	250
	7800		3010

Amount of capital funds @ 9% 270.9

Amount of Common Equity Tier-1 @5.5% 165.55

Amount of Tier-2 capita @2% 60.2

Amount of capital for credit cards : $9\% \times 125\% = 11.25\%$

Case study on Capital Conservation Buffer in Basel III

The following information relating to 5 different banks is available:

Bank	Common Equity Tier-1 Ratio	Net profit after tax and provisions (Rs.cr)
Bank-A	5.75%	800
Bank-B	6.5%	1200
Bank-C	6.8%	600
Bank-D	7.75%	1700
Bank-E	8.1%	1100

RBI rules regarding CCR provide as under:

Ratio after including the current periods	Minimum Capital Conservation Ratios (expressed as a percentage of)
5.5% - 6.125%	100%
>6.125% - 6.75%	80%
>6.75% - 7.375%	60%
>7.375% - 8.0%	40%
>8.0%	0%

Based on the given information, answer the following questions:

43. What is the amount of net profit which the Bank-A is required not to distribute to ensure compliance of Basel III prescription.
a: Rs.800 cr b: Rs.640 cr c: Rs.480 cr d: Rs.320 cr
- 02 What is the maximum amount which the Bank-B can distribute as dividend to ensure compliance of Basel III prescription.
a: Rs.300 cr b: Rs.240 cr c: Rs.160 cr d: Rs.60 cr
44. What is the amount of net profit which the Bank-C is required not to distribute to ensure compliance of Basel III prescription.

a: Rs.600 cr b: Rs.360 cr Rs.240 cr d: Rs.120 cr

04 What is the maximum amount which the Bank-D can distribute as dividend to ensure compliance of Basel III prescription.

a: Rs.1700 cr b: Rs.1520 cr c: Rs.1280 cr d: Rs.1020 cr

05 What is the maximum amount which the Bank-E can distribute as dividend to ensure compliance of Basel III prescription.

a: Rs.1:00 cr b: Rs.880 cr c: Rs.660 cr d: Rs.440 cr

06 What is the maximum amount which these Banks can distribute as dividend to ensure compliance of Basel III prescription.

a: Rs.3200 cr b: Rs.2980 cr Rs.2600 cr d: Rs.2440 cr

Answers : 1-a 2-b 3-c 4-d 5-a 6-c

Explanation:

Que-1. Ratio of Bank-A is 5.75% due to which it is required to conserve 100% of its earning. Hence amount to be conserved = $800 \times 100\% = 800$ cr.

The max amount that can be distributed = Nil.

Que-2. Ratio of Bank-B is 6.5% due to which it is required to conserve 80% of its earning. Hence amount to be conserved = $1200 \times 80\% = 960$ cr. The max amount that can be distributed = $1200 - 960 = \text{Rs.}240$ cr. **Que-3.** Ratio of Bank-C is 6.8% due to which it is required to conserve 60% of its earning. Hence amount to be conserved = $600 \times 60\% = 360$ cr. The max amount that can be distributed = $600 - 360 = \text{Rs.}240$ cr. **Que-4.**

Ratio of Bank-D is 7.75% due to which it is required to conserve 40% of its earning. Hence amount to be conserved = $1700 \times 40\% = 680$ cr. The max amount that can be distributed = $1700 - 680 = \text{Rs.}1020$ cr. **Que-5.** Ratio of Bank-E is 8.1% due to which it is required to conserve 0% of its earning. Hence amount to be conserved = $1100 \times 0\% = 0$ cr. The max amount that can be distributed = 1100 cr.

Que-6. $240 + 240 + 1020 + 1100 = 2600$

SOME MORE CASE STUDIES

Case Studies on Risk Identification

Case No: 1

A Gujarat based cooperative bank permitted loans amounting to Rs.1500 cr to the group companies of M/s Patel and Shah Limited, against overpriced shares of group companies. The following modus operandi was followed by the bank in disbursing these loans:

The bank will issue pay orders to the borrower without having any real cash balance in their account or without ensuring funding requirements as necessary in case of pre-paid instruments. M/s Patel and Shah Limited was having an account with bank B at a branch in Ahmedabad. Bank B discounted the pay order issued by the cooperative bank amounting to Rs.112 cr and presented these through clearing house. But the cooperative Bank failed to honour the pay order due to lack of fund. Resultantly, the pay orders were dishonoured. The clearing house regulator put embargo on the cooperative Bank. Bank B is still to recover Rs.90 cr from M/s Patel and Shah Limited out of total of Rs.112 cr.

Later on the investigations revealed that on the day of failure to make payment by the cooperative Bank, 65% of the pay orders discounted by Bank B belonged to the cooperative Bank.

Bank B now hold its manager responsible for inadequate management control.

It is also found that around 65% of total loans given by the said cooperative Bank were restricted to 12 entities.

The collapse of the said cooperative Bank had a chain reaction in other cooperative banks.

Based on the above facts, answer the following questions:

01 Bank B's loss of Rs.90 cr in discounting the pay orders is falls under: a) credit risk b)

operational risk

45. market risk

46. combination of credit risk and operational risk

02 Cooperative Bank's outstanding loans to M/s Patel and Shah Limited group was more than 38% of their capital funds.

Such high exposure to a single group by a bank is against the regulatory guidelines to avoid: a) concentration risk b) systematic risk

c) funding risk d) reputation risk

03 RBI is hesitant, for the time being to put embargo or ordered liquidation of the said cooperative Bank, as it could lead to possible:

a) legal risk b) systemic risk

c) counterparty risk d) liquidity risk

04 As per existing guidelines of RBI, the cooperative Bank was required to disclose their exposure to capital market under the heading of:

47. segment reporting

48. transaction with related parties

49. exposure to sensitive sectors

50. maturity pattern of assets and liabilities

Ans - 1 - d 2 - a 3 - b 4 - c

Explanations:

Que-1: Credit risk because it involves borrowing. Operational risk because of staff negligence.

Que-2: Major portion of the advances relate to one group.

Que-3: Systemic risk means the risk of failure of a banking system due to failure of a major bank.

Que-4: Banks are submitting information to RBI on sensitive sector advances such as capital market exposure, commodity exposure etc.

CASE STUDIES ON ASSET LIABILITY MANAGEMENT

Case-1

As per RBI guidelines on ALM, capital and reserves are to be placed in over 5 years bucket, Savings Bank and Current Deposits may be classified into volatile and core portions. Savings Bank (10%) and Current (15%) Deposits are generally withdrawable on demand. This portion may be treated as volatile. While volatile portion can be placed in the time bucket 14 days, the core portion may be placed in over 1-3 years bucket. The term deposits are to be placed in respective maturity buckets.

Capital—Rs.1180cr, Reserves—Rs.12000cr, Current account—Rs.1000cr, Saving Bank—Rs.4000cr, Term deposits 1 month maturity bucket—Rs.400cr, 1 to less than 3 months maturity bucket Rs.800cr, 3 months to less than 6 months maturity bucket—Rs.1200cr, 6 months to less than 12 months maturity bucket Rs.2000cr, 1 year to less than 3 years maturity bucket—Rs.1200cr, 3 years to less than 5 years maturity bucket—Rs.600cr and above 5 years maturity bucket—Rs.800cr. Borrowing from RBI—Rs.400cr.

Based on the given information, answer the following questions:

01 What is the amount of current account deposit that can be placed in 14 days bucket:

- a) Rs. 100 cr b) Rs. 150 cr c) Rs. 200 cr d) Nil

02 What is the amount of saving bank deposit that can be placed in 14 days bucket:

- a) Rs. 100 cr b) Rs. 200 cr c) Rs. 300 cr d) Rs. 400 cr

03 What is the amount of current account deposit that can be placed in 1-3 years bucket:

- a) Rs. 100 cr b) Rs. 400 cr c) Rs. 800 cr d) Rs. 900 cr

04 What is the amount of saving bank deposit that can be placed in 1-3 years bucket:

- a) Rs. 4000 cr b) Rs. 3600 cr c) Rs. 3200 cr d) Rs. 3000 cr

05 What is the total of amount of term deposit that will be placed in various maturity buckets up to less than 12 months;

- a) Rs. 2400 cr b) Rs. 2800 cr c) Rs. 3200 cr d) Rs. 4400 cr

Answers: 1 - b 2 - d 3 - d 4 - b 5 - d

Explanations:

Que-1: Volatile portion of 15% to be placed in this bucket. Hence = $1000 \times 15\% = 150$ cr **Que-2:** Volatile portion of 10% to be placed in this bucket. Hence = $4000 \times 10\% = 400$ cr **Que-3:** Non-volatile portion of 90% to be placed in this bucket. Hence = $1000 \times 90\% = 900$ cr **Que-4:** Non-volatile portion of 90% to be placed in this bucket. Hence = $4000 \times 90\% = 3600$ cr **Que-5:** $400+800+1200+2000 = 4400$ cr

Case-2

International Bank has following assets and liabilities in its balance-sheet as on Mar 31, 2010:

Capital — Rs. 4000 cr, Reserves — Rs. 24000 cr, Current accounts — Rs. 120000 cr, Saving Bank accounts — Rs. 120000 cr, Term deposits — Rs. 120000 cr, Borrowing from RBI — Rs. 12000 cr, cash balances — Rs. 27600 cr, balances with other banks — Rs. 60000 cr, investment in securities — Rs. 60000 cr, bills payable — Rs. 80000 cr, cash credit — Rs. 80000 cr, term loans — Rs. 80000 cr and fixed assets — Rs. 12400 cr. Total assets and total liabilities = Rs. 400000 cr. The term loans have fixed rate of interest. Based on this information, answer the following questions.

01 What is the amount of interest rate sensitive assets:

- a) Rs. 252000 b) Rs. 320000 c) Rs. 360000 d) Rs. 400000

02 What is the amount of interest rate sensitive liabilities:

- a) Rs. 252000 b) Rs. 320000 c) Rs. 360000 d) Rs. 400000

03 In this case, how much and what type of gap in rate sensitive assets and liabilities, the bank is having:

51. Rs. 108000 cr, Negative gap 53. Rs. 108000 cr, Positive gap
52. Rs. 120000 cr, negative gap 54. Information is inadequate

04 What is the amount of Tier-1 capital of the bank:

- a) Rs. 4000 cr b) Rs. 24000 cr c) Rs. 28000 cr d) Inadequate information

Answers: 1 - c 2 - a 3 - b 4 - c

Explanations:

Que-1: Assets other than cash and other assets are rate sensitive. Hence $400000 - 27600$ Q

que-2: Liabilities other than capital, reserves and current accounts are rate sensitive $400000 - 4000 - 24000 - 120000 =$ Rs. 252000 cr

Que-3: Interest sensitive assets are more than interest sensitive liabilities i.e. 360000 Hence, there is positive gap.

Que-4: Tier-1 capital comprises reserves and capital. Hence $4000 + 24000 = 28000$ cr

Case-3

The bank-wise maturity profile of select deposit category of banks in %age terms of select maturity buckets, as on Mar 31, 2010 is as under: (figures in %age)

Liability/Asset	(PSU Banks	Old Private Banks	New Pvt Banks	[Foreign Banks
Deposits	100	100	100	100
Upto 1 year	33	54	52	44
Over 1 yr to 3 years	37	33	44	44
Over 3 year to 5 years	13	6	3	4

Over 5 years	17	7	1	8

On the basis of given information, answer the following questions:

01 There is decline in rate of interest of 2% for a period up to 1 year. The bank group which will gain most is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

02 There is decline in rate of interest of 2% for a period up to 1 year. The bank group which will gain least is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

03 There is increase in rate of interest of 1% for deposit with a period above 1 year to 5 years. The bank group which will be most affected adversely is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

04 There is increase in rate of interest of 1% for deposit with a period above 1 year to 5 years. The bank group which will be least affected adversely is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

05 The bank group which is more relying on long term deposits above 3 years:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

Answers: 1 - b 2 - a 3 - a 4 - b 5 - a

Explanations:

Que-1: Old private banks are dependent up to 54% deposits in up to 1 year category. Hence they gain most. **Que-2:** Public sector banks have the lowest amount of deposits in this category 33%. Hence they gain least. **Que-3:** PSU banks have 50% of their deposits in this category, which is highest in all the 4 bank groups. Hence they are affected most.

Que-4: Old private banks have 39% of their deposits in this category which is lowest. Hence they are least affected. **Que-5:** PSU banks are having 30% of their deposits in this category, which is highest.

Case - 4

The bank-wise maturity profile of borrowing of banks in %age terms of select maturity buckets as on Mar 31, 2010 is as under (Figures in %age)

Liability/Asset	PSU Banks	Old Private Banks	New Pvt Banks	Foreign Banks
Deposits	100	100	100	100
Up to 1 year	81	84	51	84
Over 1 yr to 3 years	15	3	45	11
Over 3 year to 5 years	2	6	2	3
Over 5 years	2	7	2	2

On the basis of given information, answer the following questions

01 There is increase in rate of interest of 2% for a period over 5 years. The bank group which will lose most is: a) PSU Banks b) Old Private Banks c) New Private Banks d) Foreign Banks

02 There is increase in rate of interest of 2% for a period over 1 year up to 3 years. The bank group which will lose most is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

03 There is decrease in rate of interest of 0.5% for a period of over 3 years to 5 years. The bank group which will gain most is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

04 There is decrease in rate of interest of 0.5% for a period of up to 1 year. The bank group which will gain least is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

05 The bank group which is depending most on over 3 years' borrowing is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

Answers: 1 - b 2 - c 3 - b 4 - c 5 - b

Explanations:

Que-1: Old private banks carry the largest %age borrowing of 7% in this bucket. Hence highest cost increase. **Que-2:** New private banks carry the largest %age borrowing of 45% in this bucket. Hence highest cost increase.

Que-3: Old private banks carry the largest %age borrowing of 6% in this bucket. Hence highest cost decrease. **Que-4:** New private banks carry the smallest %age borrowing of 51% in this bucket. Hence lowest cost decline.

Que-5: Old private banks carry the largest %age borrowing of 13% in this bucket.

Case- 5

The bank-wise maturity profile of select loans and advances banks in %age terms of select maturity buckets as on Mar 31, 2010 is as under: (figures in %age)

Liability/Asset	PSU Banks	Old Private Banks	New Pvt Banks	Foreign Banks
Deposits	100	100	100	100
Up to 1 year	39	42	42	54
Over 1 yr to 3 years	37	32	31	18
Over 3 year to 5 years	11	6	12	4
Over 5 years	13	20	15	24

01 There is increase in rate of interest of 0.5% for a period up to 1 year. The bank group which will gain most is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

02 There is increase in rate of interest of 0.5% for a period up to 1 year. The bank group which will gain least is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

03 There is decrease in rate of interest of 1.5% for a period of above 1 year to 3 years. The bank group which will lose least is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

04 There is decrease in rate of interest of 1.5% for a period of above 1 year to 3 years. The bank group which will lose most is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

05 If there is upward movement in interest rate scenario for loans, the bank group having highest %age of loans due for repricing for up to one year term is:

- a) PSU Banks b) Old Private Banks
c) New Private Banks d) Foreign Banks

Answers: 1 - d 2 - a 3 - d 4 - a 5 - d

Explanations:

Que-1: Foreign banks carry the largest %age loans and advances of 54% in this bucket. Hence highest interest increase on loans.

Que-2: PSU banks carry the smallest %age loans and advances of 39% in this bucket. Hence lowest interest increase on loans.

Que-3: Foreign banks carry the smallest %age loans and advances of 18% in this bucket. Hence lowest interest decrease on loans.

Que-4: PSU banks carry the highest %age loans and advances of 37% in this bucket. Hence highest loss of interest.

Que-5: Foreign banks having the largest %age of 54% in this category.

Case- 6

The bank-wise maturity profile of select investments of banks in %age terms of select maturity buckets as on Mar 31, 2010 is as under: (Figures in %age)

Liability/Asset	PSU Banks	Old Pvt Banks	New Pvt Banks	Foreign Banks
Investments	100	100	100	100
Up to 1 year	13	14	53	45
Over 1 yr to 3 year	16	13	42	34

Over 3 year to 5 year	22	9	2	5
Over 5 year	49	64	3	16

01 There is decrease in average yield of 0.75% for up to 1 year maturity. The bank group which will lose most is:

- a) PSU Banks b) Old Private Banks

- c) New Private Banks d) Foreign Banks

02 There is decrease in average yield of 0.75% for over 5 years maturity. The bank group which will lose least is :

- a) PSU Banks b) Old Private Banks

- c) New Private Banks d) Foreign Banks

03 --There is increase in average yield of 1.05% for over 5 years maturity. —The bank group which will gain-most is:

- a) PSU Banks b) Old Private Banks

- c) New Private Banks d) Foreign Banks

04 There is increase in average yield of 1.05% for over 5 years maturity. The bank group which will gain least is:

- a) PSU Banks b) Old Private Banks

- c) New Private Banks d) Foreign Banks

05 Assume that most of the investment comprise investment in govt. bonds and have negligible investments in shares and debentures. There is increase in market rate of interest of 1%. The

highest diminution in the value of investment will be faced by _____ in the over 5 year category:

- a) • PSU Banks b) Old Private Banks

55. New Private Banks d) Foreign Banks • 7

Ans. 1-c 2-c 3-b • 4-c 5-b

Explanations:

Que-1: New private banks have the highest i.e. 53%age of their investment in_ This category.

Hence they will lose the most

Que-2: New private banks have the lowest %age of 3% in this category. Hence, their loss will be lowest.

Que-3: Old private banks have the highest %age of 64% in this category. Hence, they gain most.

Que-4: New private banks have the lowest %age of 3% in this group. So they gain least.

Que-5: Old private banks have largest i.e. 64% of their investment in this category.

The diminution (decline) in value will be highest in their case.

CASE STUDIES: INTEREST RATE RISK MANAGEMENT

Case- I

International Bank has come out with a policy for its branches for acceptance of deposits and granting of advances. its branches have taken deposits and allowed loans as under:

01 One of its branches accepted a deposit of Rs.10 lac which is to double in 10 years. These funds have been invested by the bank in a 3 year bond carrying interest rate of 13%. Which of the following kind of risk the bank is facing:

- a) yield curve risk b) embedded option risk

- c) basis risk d) reinvestment risk

02 The deposits as well as advance are linked by the bank to floating rate. The bank has been facing: a) real interest

rate risk b) basis risk

- 0) reinvestment risk d) volatility risk

03 A branch has given a loan out of deposits at floating rate. The rate of interest on deposit has been linked by the bank with 91 days treasury bill rate and for the loan it is linked to 364 days treasury bill rate. The risk from such situation is called"

- a) gap or mismatch risk b) interest risk

- c) yield curve risk d) basis risk

04 The bank has advised its branches that while sanctioning a term loans, they must put a condition that premature payment will not be accepted in any circumstances. By putting this condition, the bank has avoided which type of interest rate risk?

- a) yield curve risk b) Embedded option risk

- c) Mismatch risk d) Basis risk

05 The depositors at times, have the tendency to withdraw the deposits before maturity, which leads to

- a) yield curve risk b) embedded option risk

- c) basis risk d) reinvestment risk

Ans. 1 - d 2 - b 3 - c 4 - b 5 - b

Explanations:

Que-1: The bank has accepted a deposit with a maturity of 10 years, but the investment has to be rolled over after 3 year and will pose the reinvestment risk.

Que-2: Where the interest rate of different assets and liabilities may change in different magnitudes such interest rate risk, is called basis risk.

Que-3: Where the interest rates on deposit and advance can vary and not necessarily identically, the yield curve risk arises.

Que-4: Embedded option risk is the risk associated with the right given to the borrower to pre-pay their loans or right given to their depositors, to withdraw the deposit before maturity.

Que-5: Embedded option risk is the risk associated with the right given to the borrower to pre-pay their loans or right given to their depositors, to withdraw the deposit before maturity.

Case 2

Mumbai branch of Popular Bank granted term loan of Rs. 2 cr to a reputed corporate client for 6 years at 2% + Base rate. Presently, the *base* rate of the bank is 10%. The loan will be repaid by the company in 20 equal quarterly installments with a moratorium period of 6 months. The loan has been funded by the bank out of fixed deposit @ 7% fixed rate of interest, of equal amount, with a maturity period of 4 years. The CRR and SLR are to be ignored for the purpose of any calculations.

01 In this case, the loan is carrying floating rate and deposit is carrying fixed rate. If rate of interest is reduced during the first 4 years i.e. during the period of FDR, what type of risk, the bank is exposed to:

- a) Funding risk b) Embedded option risk c) Basis risk • d) Gap or mismatch

02 The rate of interest at the end of 4 years on loan and on the fresh deposit to be raised for funding this loan can be different. This is called:

- a) Reinvestment risk b) Embedded option risk c) Basis risk d) Gap or mismatch

03 With quarterly repayment of the loan, the repayment amount have to be deployed by the bank elsewhere and the rate of interest may not be at par with the interest being charged on the loan. Due to this, the bank is exposed to:

- a) Reinvestment risk b) Embedded option risk c) Basis risk d) Gap or mismatch

04 There is a possibility that the company may pre-pay the loan or the depositor may withdraw the deposit pre-maturely. Due to this, the bank is exposed to:

- a) Reinvestment risk b) Embedded option risk c) Basis risk d) Gap or mismatch

05 Which of the following other risk is not associated with this transaction:

- a) Liquidity risk b) Market risk Credit risk d) Operational risk

Answers: 1-c 2-d 3-a 4-b 5-b

56. Explanations: If change in interest rate is of different magnitude, for an asset and its funding liability, such risk is called basis risk.

57. The gap or mismatch risk arises when cost of funding does not match the return on funds and bank finds it difficult to fund the investment gainfully.

58. Reinvestment risk is the risk on account of lack of opportunities to invest the funds at the acceptable rate of return.

59. Embedded risk represents a situation where the counter party is given the option to terminate the transaction before the fixed price of the contract.

60. Market risk is associated with the trading book items. Hence market risk is not associated with this transaction. Other risks are possible.

Case -3

Basic Principles

If Rate sensitive assets are more than Rate sensitive liabilities, there is a positive gap and if Rate Sensitive liabilities are more than Rate sensitive assets, there is negative gap.

If there is negative gap NII increases if there is decline in interest rate and if there is positive gap, Nil increases if there is increase in interest rates.

The international Bank, provides following data regarding rate sensitive assets and liabilities of the bank as on 31 Mar 2010.

Time of buckets	Assets	Liability	Gap	Cumulative gap
1-28 days	800	1000	-200	-200
29 days to 3 months	650	550	100	-100
3 - 6 months	2700	3150	-450	-550
6-12 months	450	600	-150	-700
1-3 years	150	300	-150	-850
3-5 years	450	200	250	-600
Over 5 years—	1000	200	800	200
Non-sensitive	300	500	-200	0
Total	6500	6500	0	

Using the details given above, answer the following questions.

01 If interest rate falls by 25 bps, in the first time bucket, the likely impact on the NII for the bank shall be :

- a) +15.50 cr b) +0.50 cr

61. Overall impact will be nil

62. +0.05 or

02 In terms of extant RBI guidelines on ALM, the maximum non-sensitive assets, a bank can have in percentage to total assets is.

- a) 25% b) 10%

63. no such restriction by RBI

64. 20% 03 The total rate sensitive assets for the bank is Rs.

- a) 6500 b) 6200
c) 6300 d) 6000

04 In rising interest scenario, the bank will have a impact of interest rate changes on NU:

- a) favourable b) adverse
c) insufficient input d) neutral

Ans. 1 - b 2 - c 3 - b 4 - a

Explanation:

Que-1: $200 \times 0.25\% = 0.50$ cr i.e. gain of 0.5 crore. When gap is negative bank gains when interest rate goes down

Que-2: There is no such ceiling prescription of RBI.

Que-3: $6500 - 300 = 6200$

Que-4: Rate sensitive 6200 and liabilities 6000. Bank is asset sensitive. Hence in a rising scenario, the bank gains and in declining, the bank loses.

Case-4

The International Bank, provides following data regarding rate sensitive assets and liabilities of the bank as on 31st Mar 2010. The Nil spread in percentage terms for the bank is 2.00%

Time of buckets	Assets	Liability	Gap	Cumulative gap
1-28 days	2100	2400	-300	-300
29 days to 3 months	2400	2200	200	-100
3-6 months	3100	3700	-600	-700
6-12 months	1200	1400	-200	-900
1-3 years	300	500	-200	-1100
Over 5 years	800	300	500	-600
Non-sensitive	900	100	800	200
Total	11600	11600	0	

01 If interest rate falls by 30 bps, in the time bucket (3-6 months), the likely impact on the Nil for the bank shall be :

- a) +18.00 cr b) +9.00 cr
c) -18.00 cr d) +1.80 cr

02 In terms of extant RBI guidelines on ALM, the maximum non-sensitive assets, a bank can have in percentage to total assets is.

- a) 15% b) 5%
c) 1% d) no such restriction by RBI

03 The total rate sensitive assets for the banks is Rs.

- a) 11600 b) 11300
c) 11100 d) 10800

04 The declining interest scenario, the bank will have a impact of interest rate changes on Nil:

- a) favourable b) adverse
c) insufficient input d) neutral

Ans. 1 - d 2 - d 3 - d 4 - b

Explanation:

Que-1: $600 \times 0.30\% = 1.80$ cr

Que-2: There is no such restriction imposed by RBI.

Que-3: $11600 - 800 = 10800$

Que-4: Rate sensitive 10800 and liabilities 10600. Bank is asset sensitive. Hence in a rising scenario, the bank gains and in declining, the bank loses.

Case-5

International Bank has the following re-pricing assets and liabilities:

Call money	- Rs. 300 cr
Cash credit loans	— Rs. 240 a
Cash in hand	— Rs. 200 cr
Saving Bank	— Rs. 300 cr
Fixed Deposits	— Rs. 300 cr
Current deposits	— Rs. 250 a

On the basis of above information, answer the following questions:

01 What is the adjusted gap in re-pricing assets and liabilities:

- a) Rs. 540 cr b) Rs. 600 cr
c) Rs. 60 cr negative d) Rs. 60 cr positive

02 What is the change in net interest income, if interest falls by 2% points across the board i.e. for all assets and liabilities:

65. Improves by Rs. 1.20 cr
66. Declines by Rs. 1.20 cr
67. Changes by Rs. 1 cr
68. There is no change

03 if the interest rates on assets and liabilities increase by 2%, what is the change in net interest income:

- Improves by Rs. 120 cr
69. Declines by Rs. 1.20 cr
70. Change by Rs. 1 cr

71. There is no change

04 If interest rate falls on call money by 1%, on cash credit by 0.6%, on saving bank by 0.2% and on FD by 1%, what is change in net interest income:

- Improves by Rs. 0/2 cr
- Declines by Rs. 0.82 cr
- Declines by Rs. 0.84 cr
- Declines by Rs. 0.96 cr

05 If interest rate increases on call money by 0.5%, on cash credit by 1%, on saving bank by 0.1% and on FD by 0.8%, what is change in net interest income:

- Improves by Rs. 1.05 cr
- Declines by Rs. 0.90 cr
- Declines by Rs. 1.25 cr
- Declines by Rs. 1.20 cr

Answers: 1 - c 2 - a 3 - b 4 - c 5 d

Explanations:

Que-1: $(SB+FD) - (Call\ money + CC) = (300+300) - (300+240) = Rs. 60\ cr$ (assets are less than liabilities Hence negative gap). The cash in hand and current account deposits are not subject to re-pricing as these are not interest bearing, hence these have been ignored.

Que-2: There is negative gap (interest bearing liabilities more) of Rs. 60 cr $[(300+300) - (300+240)]$, which means the interest cost declines @2% on this negative gap, which leads to increase in Nil. Hence it is Rs. 60 cr $\times 2\% = Rs. 1.20\ cr$.

Que-3: There is negative gap of Rs. 60 cr $[(300+300) - (300+240)]$, which means that the interest cost increases @2% on this negative gap which leads to decline in Nil. Hence it is Rs. 60 cr $\times 2\% = Rs. 1.20\ cr$.

Que-4: Fall in interest income in case of assets = $(Call - 300 \times 1\% = 3\ cr) + (Cash\ credit - 240 \times 0.6\% = 1.44) = Rs. 4.44\ cr$.

Fall in interest expenses in case of liabilities $(SB - 300 \times 0.2 = 0.60\ cr) + (300 \times 1\% = 3.00\ cr) = 3.60\ cr$ Net fall in interest income = $4.44\ cr - 3.60\ cr = 0.84\ cr$

Que-5: Increase in interest amount in case of assets = $(Call - 300 \times 0.5\% = 1.50\ cr) + (Cash\ credit - 240 \times 1\% = 2.40) = Rs. 3.90\ cr$.

Increase in interest amount in case of liabilities $(SB - 300 \times 0.1 = 0.30\ cr) + (300 \times 0.8\% = 2.40\ cr) = 2.70\ cr$
Net improvement = $3.90\ cr - 2.70\ cr = 1.20\ cr$.

Case- 6

International Bank has the following re-pricing assets and liabilities:

Call money	- Rs. 500 cr
Cash credit loans	— Rs. 400 cr
Cash in hand	— Rs. 100 cr
Saving Bank	— Rs. 500 a
Fixed Deposits	— Rs. 500 a
Current deposits	— Rs. 200 cr

There is reduction in rate of interest by 0.5% in call rates, 1% for cash credit, 0.1% for saving bank and 0.8% for FD.

On the basis of above information, answer the following questions:

01 What is the adjusted gap in re-pricing assets and liabilities: a) Rs. 200 cr positive b)

Rs. 200 a negative c) Rs. 100 cr positive d) Rs. 100 cr negative

02 Taking into account, the change in interest rate, calculate the amount of re-pricing assets as per the standard gap method in re-pricing assets and liabilities:

- a) Rs. 700 a
- b) Rs. 650 cr
- c) Rs. 600 cr
- d) Inadequate information

03 Taking into account, the change in interest rate, calculate the amount of re-pricing liabilities as per the standard gap method in re-pricing assets and liabilities:

- a) Rs. 450 cr
- b) Rs. 400 cr
- c) Rs. 300 cr
- d) Insufficient information

04 What is the standard gap of the bank in re-pricing assets and liabilities:

a) Rs. 150 cr negative b) Rs. 175 cr positive

72. Rs. 200 cr positive d) Rs. 250

cr negative 01: d 02: b 03: a 04: c

Explanations:

Que-1: Adjusted gap = $(Call\ money + CC) - (SB + FD) = (500 + 400) - (500 + 500) = (-) Rs. 100\ cr$ (assets are less than liabilities — Hence negative gap). The cash in hand and current account deposits are not subject to re-pricing, hence these have been ignored.

Que-2: $Call\ money 500 \times 0.5 = Rs. 250\ cr + Cash\ credit 400 \times 1 = 400\ cr$; Total = 650 cr

Que-3: $SB 500 \times 0.1 = 50\ cr + FD 500 \times 0.8 = 400\ cr$; Total = 450 cr

Que-4: Assets — $Call\ money 500 \times 0.5 = 250\ cr + Cash\ credit 400 \times 1 = 400\ cr$ Total = 650 cr

Liabilities — $SB 500 \times 0.1 = 50\ cr + FD 500 \times 0.8 = 400\ cr$ Total = 450 cr Net change = 650 -

450 = Rs. 200 cr positive

Case-7

International Bank raised funds by way of 91 day term deposit at 6% rate of interest. It has following options to invest these funds:

73. 91 day treasury bills @ 8%

74. 91 days floating rate loan @ 8% with monthly re-pricing

(c) 3 years term loan @ 8%

If bank makes investment in 91 days treasury bills @ 8% and during the 91 days period, there is 1% increase in interest rate, what will be change in the net interest income, on reinvestment after 91 days?

a) 1% b) 0.5%

75. No change

76. Inadequate information to take decision

02 If bank invests the funds in 91 days floating rate loan @ 8% with monthly re-pricing and there is interest rate rise, what will be impact on net interest income of the bank:

a) NIT will increase b) NII will decrease

c) No change in NII d) Information is inadequate

03 If bank invests the funds in 91 days floating rate loan @ 8% with monthly re-pricing and there is interest rate fall, what will be impact on net interest income of the bank:

a) NIT will increase b) NII will decrease

c) No change in NII d) Information is inadequate

04 If bank invests these funds in a 3 years term loan @ 8%, what will be impact on net interest income of the bank, if there is increase in interest rates:

a) NII will increase b) NII will decrease

c) No change in NII d) Information is inadequate

05 If bank invests these funds in a 3 years term loan @ 8%, what will be impact on net interest income of the bank, if there is fall in interest rates:

a) NII will increase b) NII will decrease

c) No change in NII d) Information is inadequate

Answers: 1-c 2-a 3-b 4-b 5-a

Que-1: Existing cost of deposit = 6% Existing interest on loans = 8%. $NII = 8 - 6 = 2\%$

New cost of deposit = $6 + 1 = 7\%$. New return on treasury bills = $8 + 1 = 9\%$. NII

$= 9 - 7 = 2\%$ Hence no change in NII. It will continue to be 2%.

Que-2: Bank is asset sensitive because change in rate of interest on loan will take place twice in 91 days period due to monthly re-pricing of the loan while the deposit rate will not change during this period. Hence if interest rate increases, the interest income will increase and the NII will increase.

Que-3: Bank is asset sensitive because change in rate of interest on loan will take place twice in 91 days period due to monthly re-pricing of the loan while the deposit rate will not change during this period. Hence if interest rate falls, the interest income will decline and the NII will decline.

Que-4: Bank is liability sensitive because change in rate of interest on deposit will take place after each period of 91 days, as deposits have to be rolled over. On the other hand, the interest on loan will not change during this period. Hence if interest rate increases, the cost of deposits to the bank will increase and there will be no change in interest income. Hence NIT will decrease.

Que-5: Bank is liability sensitive because change in rate of interest on deposit will take place after each period of 91 days, as deposits have to be rolled over. On the other hand, the interest on loan will not change during this period. Hence if interest rate falls, the cost of deposits to the bank will decrease and there will be no change in interest income. Hence NII will increase.

Case — 8

International Bank raised funds by way of 182 days term deposit at 7% rate of interest. It has following options to invest these funds:

(a) 182 days treasury bills @ 9%

(b) 182 days commercial paper at floating rate of @ 9% with monthly re-pricing (c) 3 years term loan @ 9%

01 If bank makes investment in 182 days treasury bills @ 9% and during the 182 days period, there is 1% increase in interest rate, what will be change in the net interest income, on reinvestment after 182 days?

a) 2% b) 1% c) 0.5% d) No change

02 If bank invests the funds in 182 days floating rate commercial paper @ 9% with monthly re-pricing and there is interest rate rise, what will be impact on net interest income of the bank:

a) NIT will increase b) NII will decrease

c) No change in NII d) Information is inadequate

03 If bank invests the funds in 182 days floating rate commercial paper @ 9% with monthly re-pricing and there is interest rate fall, what will be impact on net interest income of the bank:

a) NII will increase b) NII will decrease

c) No change in NII d) Information is inadequate

04 If bank invests these funds in a 3 years term loan @ 9%, what will be impact on net interest income of the bank, if there is increase in interest rates:

a) NIT will increase b) NII will decrease

c) No change in NII d) Information is inadequate

05 If bank invests these funds in a 3 years term loan @ 9%, what will be impact on net interest income of the bank, if there is fall in interest rates:

a) NII will increase b) NII will decrease

Answers: 1 - d 2 - a 3 - b 4 - b 5 - a

Que-1: Existing cost of deposit = 7% Existing interest on loans = 9%. NII = $9 - 7 = 2\%$

Que-2: Bank is asset sensitive because change in rate of interest on loan will take place five times during 182 days period due to monthly repricing of the commercial paper while the deposit rate will not change during this period. Hence if interest rate increases, the interest income will increase and the NII will increase.

Que-4: Bank is liability sensitive because change in rate of interest on deposit will take place after each period of 182 days, as deposits have to be rolled over during this period to fund the loan. On the other hand, the interest on loan will not change during this period. Hence if interest rate increases, the cost of deposits to the bank will increase and there will be no change in interest income. Hence NIT will decrease.

Case 9

78. In the light of reduction in capital of Rs. 80000, he is required to liquidate the holding by Rs. 2 lac (10 times of reduced capital) to pay the excessive borrowing (due to reduced capital). But the market expects further fall in the value of this stock due to which the investment has become illiquid. In such circumstances, he can liquidate the holding at a loss only, which will further deplete his capital, which would force him for further liquidation of his holding for keeping the borrowing in permissible limit of 9 times of capital.

80. The risk of adverse movement in the price of shares has reduced the capital. This is called:

- 02 For a specific security, as in the above case, when the liquidity in the market is reduced, it is called:

- Answers:** 2-b 3-c

81. The risk of adverse movement in the price is called price risk

82. The risk of reduced liquidity in the market for a specific security is called asset liquidity risk

CASE STUDIES ON VOLATILITY, BPV, DURATION, VaR

Steps for calculating Mean, Variance, Volatility

- ### Case—1

On the basis of above information answer the following questions:

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Jan	20	May	24	Sept.	76
Feb	22	Jun	34	Oct.	90
Mar	38	July	46	Nov.	42
April	20	Aug	82	Dec	102

01 What is the mean price (average price) of this stock for the observation period?

- a) Rs.51.37 b) Rs.53.17
c) Rs.55.79 d) Rs.56.22

02 The variance of the selected data (for 12 months) will be approximately....

- a) 974.15 b) 986.12

c) 997.16

03 The volatility (i.e. standard deviation) of this stock for these 12 months period is:

- a) 34.67 b) 33.41
c) 32.39 d) 31.21

Ans. 1 - b 2 - a 3 - d

Explanations: -

Que-1: The average comes to Rs.53.17 (total of all values/12) = 638/12 = 53.17

Que-2: For calculating variance, for each observation deviation is calculated from mean. Then square of each deviation is calculated. The sum of squared deviation is divided by number of observations. This will give variance.

Que-3: The volatility is square root of variance.

Case 2

The stock price of Infosys Limited has shown the following closing prices at the end of each month for the year ended December 2009:

Month	Closing price -	Month	Closing price	Month	Closing price
January	265	May	345	Sept	512
February	276	June	267	October	324
March	390	July	415	Nov	285
April	312	August	421	December	302

On the basis of above information answer the following questions.

01 What is the mean price (average price) of this stock for the observation period?

- a) Rs.342.83 b) Rs.351.22
c) Rs.355.84 d) Rs.356.29

02 The variance of the selected data (for 12 months) will be approximately

- a) 5431.09 b) 5587.78
c) 5743.56 d) 5887.06

03 The volatility (i.e. standard deviation) of this stock for these 12 months period is :

- a) 74.54 b) 76.73
c) 82.93 d) 91.52

Ans. 1 - a 2 - d 3 - b

Explanations:

Que-1: The average comes to Rs.342.83 (total of all values/12) = 4114/12 = 342.83

Que-2: For calculating variance, for each observation deviation is calculated from mean. Then square of each deviation is calculated. The sum of squared deviation is divided by number of observations. This will give variance..

Que-3: The volatility is square root of variance.

Case-3

International Bank analyzed the Operating Profits of 5 regions for last 5 years. The Standard Deviation and Standard Deviation to Mean for the 5 Years are given in the following table.

Name of Zones	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Mean (average)	Standard Deviation (S.D)	S.D. To Mean
Jaipur	10	3	4	8	11	36	7.20	3.56	0.46
Chandigarh	3	8	1	6	4	22	4.40	2.70	0.61
Bangalore	12	8	9	2	4	35	7.00	4.00	0.57
Lucknow	6	9	2	3	5	25	5.00	2.74	0.55
Patna	7	12	5	8	6	38	7.60	2.70	0.36
Total of Zones	38	40	21	27	30	156	31.20	7.85	

From the above data, answer the following questions assuming that the bank's credit exposure is at equal levels for each zone:

01 From business risk point of view, the performance of the zone which is subjected to maximum risk exposure appears to be

- a) Jaipur b) Patna
c) Chandigarh d) Lucknow

- 02 From business risk point of view, the performance of the zone which is subjected least risk exposure appears to be
a) Bangalore b) Patna
c) Chandigarh d) Lucknow
03 The ratio of Standard Deviation to Mean for all zones put together for ABC Bank Limited is
a) 7.85 b) 31.20
c) 0.516 d) 0.25
04 The Zones having wide variance of results from year to year is
a) Jaipur b) Lucknow
c) Chandigarh d) Bangalore

Ans. 1 - c 2 - b 3 - d 4 - d

Explanations:

Que-1: The zone having highest standard deviation to mean ratio, is exposed to more risk, compared to other zones.

Que-2: The zone having lowest standard deviation to mean ratio, is exposed to least risk, compared to other zones.

Que-3: $SD/Mean = 7.85/31.20 = 0.25$

Que-4: The variation range for this zone is highest. The lowest was 2 in 4th year and highest was 12 in the 1st year.

Case - 4

Mumbai branch of Popular Bank has following cash flow from its loan portfolio from different segments:

Year1 Year2 Year3 Total Mean Standard SD/ deviation Mean

Corporate	40	31	36	107	35.66667	4.50925	0.1264
MSE	20	28	19	67	22.33333	4.932883	0.2209
Retail	15	17	17	49	16.33333	1.154701	0.0707
Personal	5	8	6	19	6.333333	1.527525	0.2415
Total	80	84	78	242	80.66667	3.05505	0.0379

01 The risk associated-with cash flow in case of corporate business segment (measured by way of ratio of standard deviation to mean) is:

- a) 35.66% b) 4.50%
c) 12.64% d) 3.79%

02 The highest risk in all the 4 segments of business, in the above case in terms of cash flows, is in case of: a)

Corporate business b) MSE business

c) Retail business d) Personal business

03 The lowest risk in all the 4 segments of business, in the above case in terms of cash flows is in case of a)

Corporate business b) MSE business

c) Retail business d) Personal business

04 The variation in net cash flows arising out of all the business line is:

a) Unidirectional b) Not unidirectional

90. Very volatile

91. Adequate information is not available

05 The overall risk, to the portfolio at the branch is and the variation in different segments ranges between :

92. 3.79%, 3.79% to 24.12%

93. 3.79%, 7.07% to 24.12%

94. 7.07%, 7.07% to 24.12%

95. 7.07%, 3.79% to 24.12%

Answer s: 1- c 2- d 3- c 4- b 5- b E x p l a n a t i o n s:

96. The ratio of standard deviation to mean is 0.1264 or 12.64% in case of corporate business in the above case.

97. The highest variation of 0.2412 or 24.12% is in respect of personal business and the lowest in case of retail segment where it is 7.07% only. For the overall portfolio this is 3.79% only.

98. The highest variation of 0.2412 or 24.12% is in respect of personal business and the lowest in case of retail segment where it is 7.07% only. For the overall portfolio this is 3.79% only.

99. The net cash flows are not unidirectional because in case of retail., these are regularly increasing. In case of MSE segment, the variation is quite wide. So is the position with corporate segment.

100. From the given information, it is observed that for the overall portfolio the risk is 3.79% and the range is 7.07% to 24.12%

Case - 5

International Bank analyzed and Operating Prof ts of 5 regions for last 5 years. The Standard Deviation and Standard Deviation to Mean for the 5 years are given in the following table.

Name of Zones	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Mean (average)	Standard Deviation (S.D)	S.D. To Mean
Jaipur	16	21	18	20	24	99	19.8	3.03	0.15
Chandigarh	9	19	5	12	5	50	10.0	5.83	0.58
Bangalore	13	15	17	18	19	82	16.4	2.41	0.15
Lucknow	16	14	13	16	14	73	14.6	1.34	0.09
Patna	12	21	19	12	17	81	16.2	4.09	0.25
Total of Zones	66	90	72	78	69	385	77.0	8.94	

From the above data, answer the following questions assuming that the bank's credit exposure is at equal levels for each zone:

- 1) a) Jaipur b) Patna
 c) Chandigarh d) Lucknow
 2) From business risk point of view, the performance of the zone which is subjected least risk exposure appears to be
 a) Bangalore b) Patna
 c) Chandigarh d) Lucknow
 3) The ratio of Standard Deviation to Mean for all zones put together for ABC Bank Limited is
 a) 8.94 b) 77.0
 c) 0.32 d) 0.12
 4) The Zones having wide variance of results from year to year is
 a) Jaipur b) Lucknow
 c) Chandigarh d) Bangalore

Ans. 1 - c 2 - d 3 - d 4 - d

Explanations:

Que-1: The zone having highest standard deviation to mean ratio, is exposed to more risk, compared to other zones.

Que-2: The zone having lowest standard deviation to mean ratio, is exposed to least risk, compared to other zones.

Que-3: $SD/Mean = 8.94/77.00 = 0.12$

Que-4: The variation range for this zone is highest. The lowest was 5 in 3rd year and highest was 19 in the 2nd year.

Case- 6

International Bank an investment in bonds as under, on Sept 30, 2009:

	Face value Rs.	Yield %	Price (Rs.)	Cost (Rs.)
7% Gol Bond 2016	100000	7.12	108.40	108400
9% Gol Loan 2018	100000	7.34	124.00	124000

Due to change in yield of these securities, the yield and price changed as under as on Mar 31, 2010:

	Face value Rs.	Yield %	Price (Rs.)	Cost (Rs.)
7% Gol Bond 2016	100000	7.32	105.80	105800
9% Gol Loan 2018	100000	7.65	120.50	120500

On the basis of above information, answer the following questions:

- 01 What is change in basis point value for each basis point increase in yield for 7% Gol bonds during this period?
 a) 14.5 paise b) 13.1 paise c) 12.5 paise d) 12.34 paise
 02 What is the change in basis point value for each basis point increase in yield for 9% Gal bonds during this period?
 a) 10.02 paise b) 11 paise c) 11.29 paise d) 11.90 paise
 03 If there is increase in yield by 100 basis points during this period, what will be the price of 7% Gal bonds.
 a) Rs.95.20 b) Rs.93.90 c) Rs.92.10 d) no change will take place
 04 If there is increase in yield by 100 basis points during this period, what will be the price of 9% Gal bonds.
 a) Rs.112.71 b) Rs.111.96 c) Rs.111.12 d) Rs.110.87
 05 The bank decides to sell the 7% Gol bonds on Mar 31, 2010 itself, to stop the loss. How much it will lose on this sale transaction?
 a) Rs.1210 b) Rs.1670 c) Rs.2400 d) Rs.2600
 06 The bank decides to sell the 9% Gol bonds on Mar 31, 2010 itself, to stop the loss. How much it will lose on this sale transaction?
 a) Rs.3500 b) Rs.3100 c) Rs.2800 d) Rs.2600

Ans. 1 - a 2 - c 3 - b 4 - a 5 - d 6 - a

Explanations:

Que-1: $(108.40-105.80)/(7.32-7.12) = \text{Rs.}2.90/20 = 14.5 \text{ paise}$

Que-2: $(124-120.50)/(7.65-7.34) = \text{Rs.}3.50/31 = 11.29 \text{ paise}$

Que-3: Change for one basis points = $(108.40-105.80)/(7.32-7.12) = \text{Rs.}2.90/20 = 14.5 \text{ paise}$. Change for 100 basis points = $14.5 \times 100 = \text{Rs.}14.50$. Hence value after change = $108.40 - 14.50 = \text{Rs.}93.90$

Que-4: Change for one basis points = $(124-120.50)/(7.65-7.34) = \text{Rs.}3.50/31 = 11.29 \text{ paise}$. Change for 100 basis points = $11.29 \times 100 = \text{Rs.}11.29$. Hence changed value = $12.40 - 11.29 = \text{Rs.}112.71$

Que-5: $108400 - 105800 = 2600$

Que-6: $124000 - 120500 = 3500$

Case - 7

International bank an investment in bonds as under, on Sept 30, 2009:

	Face value Rs.	Yield %	Price (Rs.)	Cost (Rs.)
9% Gol Bond 2016	200000	8.40	107.60	215200
11% Gol Loan 2018	200000	8.80	110.50	221000

Due to change in yield of these securities, the yield and price changed as under as on Mar 31, 2010:

9% Gol Bond 2016	200000	8.20	109.80	219600
11% Gol Loan 2018	200000	8.60	113.30	226600

Q1 What is change in basis point value for each basis point increase in yield for 9% Gol bonds during this period?

- a) 12 paise b) 11 paise
c) 10 paise d) no change

Q2 What is the change in basis point value for each basis point increase in yield for 11% Gol bonds during this period?

- a) 12 paise b) 13 paise
e) 14 paise d) no change

Q3 If there is increase in yield by 100 basis points during this period, what will be the price of 9% Gol bonds.

- a) Rs.118.60 b) Rs.116.90
c) Rs.114.80 d) no change

Q4 If there is decrease in yield by 100 basis points during this period, what will be the price of 11% Gol bonds.

- a) Rs.105.20 b) Rs.109.90
c) Rs.119.10 d) Rs.124.50

Q5 Due to expected adverse change, the bank decides to sell the 9% Gol bonds on Mar 31, 2010 itself, to make the profit.

How much profit it will be able to make on this sale?

- a) Rs.4200 b) Rs.4000
c) Rs.3800 d) Rs.3750

Q6 Due to expected adverse change, the bank decides to sell the 11% Gol bonds on Mar 31, 2010 itself, to make the profit How much profit it will be able to make on this sale?

- a) Rs.4210 b) Rs.4670 c) Rs.5400 d) Rs.5600

Ans. 1 - b 2 - c 3 - a 4 - d 5 - a 6 - d

Explanations:

Que-1: $(109.80-107.60)/(8.40-8.20) = \text{Rs.}2.20/20 = 11 \text{ paise}$

Que-2: $(113.30-110.50)/(8.80-8.60) = \text{Rs.}2.80/20 = 14 \text{ paise}$

Que-3: Change for one basis points = $(109.80-107.60)/(8.40-8.20) = \text{Rs.}2.20/20 = 11 \text{ paise}$. Change for 100 basis points = $11 \times 100 = \text{Rs.}11.00$. Hence value after change = $107.60 + 11.00 = \text{Rs.}118.60$

Que-4: Change for one basis points = $(113.30-110.50)/(8.80-8.60) = \text{Rs.}2.80/20 = 14 \text{ paise}$. Change for 100 basis points = $14 \times 100 = \text{Rs.}14.00$. Hence changed value = $110.50 - 14.00 = \text{Rs.}124.50$

Que-5: $219600 - 215200 = 4200$

Que-6: $226600 - 221000 = 5600$

Case 8

Popular Bank made an investment in govt. bonds worth Rs. 5 cr. The maturity period of the bonds is 5 years, the face value is Rs. 100 and the coupon rate is 8%. The bond has a market yield of 10% and the price is Rs. 92.00. Due to change in interest rates, the market yield changes to 9.90% and the market value to Rs. 92.50.

Q1 Based on the above information, please calculate the basis point value of the bond:

- a) 0.02 b) 0.05 c) 0.10 d) 0.20

Q2 What will be the change in value of investment, for the total investment of Rs. 5 cr for per basis point in the yield:

- a) Rs. 25000 b) Rs. 20000 c) Rs. 15000 d) Rs. 10000

Q3 If there is 0.10% change in the yield, what will be change in the value of the bond on an investment of Rs. 5 cr:

- a) 100000 b) 200000 c) 250000 d) 500000

Answers: 1-b 2-a 3-c Explanations:

101. Change in price of bond = 0.50. Change in yield 10 basis points. Per basis point change = $0.50/.10 = \text{Rs. } 0.05$
102. Change in price of bond = 0.50. Change in yield 10 basis points. Per basis point change = $0.50/.10 = \text{Rs. } 0.05$ OR Per Rs. 1 Cr = Rs. 5000
103. Change in price of bond = 0.50. Change in yield 10 basis points. Per basis point change = $0.50/.10 = \text{Rs. } 0.05$ OR Per Rs. 1 cr = Rs. 5000
- For total investment the change per basis point is = $50000000 \times 0.05 = 25000$
- If per basis point change, the value change is Rs. 25000, for 10 points it will be $25000 \times 10 = 250000$

Case 9

Popular Bank want to invest Rs. 1 lac. It has option to make investment in the following two securities. The cted return is also iven:

Cashflow	Year1	Year2	Year 3	Year4	Year5	Total
Investment1	8000	8000	8000	8000	8000	40000
Investment2	5000	7000	14000	6000	12000	44000

01 If time value of money is not taken into account, the rate of return on these investments is:

- a) 8% and 8% b) 8% and 8.5%
c) 8% and 8.8% d) 8.5% and 8.8%

02 Out of these 2 investment, which one would be more preferable for the bank:

104. Investment 1 because it provides stable return
105. Investment 2 because it provides higher return
106. Investment 1 or 2 at judgement of the bank based on risk
107. Inadequate information is given. Decision not possible

03 If return from both the investments is taken as equal taking into account the risk associated with volatility, what is the risk adjusted rate of return and what is the risk premium:

- a) 8.8%, 8% b) 8%, 8.8% e) 8.8%, 0.8% d) 8, 0.8%

Answers: 1-c 2-a 3-d Explanations:

108. Investment 1 = Average return = $40000/5 = 8000$. Rate of return $8000/1\text{lac} = 8\%$

Investment 2 = Average return = $44000/5 = 8800$. Rate of return $8800/1\text{lac} = 8.8\%$

109. Investment 1 provides stable return which is risk free, while Investment 2 provides volatile return, which is risk prone. Hence, overall investment 1 is better.

110. The gap of return will be the risk premium i.e. $8.8\% - 8\% = 0.8\%$. The risk adjusted rate of return will be 8%.

Case -10

The dealer at Popular Bank purchased 5000 shares of a public sector undertaking at Rs. 200 per shares totaling Rs. 10,00,000. If the price change is 1%, there will be impact of Rs. 10000. The price change can go up to 4%. That may result into a loss of Rs. 93040.

03. In this transaction, the stock price is known as:

- a) Market factor b) Market factor sensitivity c) Volatility d) Defeasance period

02 What is the market factor sensitivity:

- a) 5000 shares b) Rs. 200 per shares c) Rs. 10 lac d) Rs. 10000

03 The price change can go up to 4%. This means the daily _____ is 4%:

- a) Defeasance factor b) Market factor c) Volatility d) Value at risk

04 The defeasance period in this transaction is:

- a) One day b) 2 days c) 4 days d) 7 days

05 What is the value at risk (VaR) in this transaction:

- a) Rs. 93040 b) Rs. 100000 c) Rs. 105900 d) Rs. 120000

Answers: 1-a 2-d 3-c 4-a 5-a Explanations:

111. The stock price is known as market factor.

112. Rs. 10000 is the market factor sensitivity as with 1% change, the effect would be Rs. 10000.

113. This is called volatility i.e. daily fluctuation.

114. The defeasance period represents the daily fluctuation period.

Case - 11

The VaR of a Govt. of India bond security is 0.70%. The current yield is 8.10%.

01 In the worst case scenario, the prospective:

115. buyer of the security can expect, the yield to fall to 7.40% by next day
116. buyer of the security can expect, the yield to rise to 8.80% by next day
117. seller of the security can expect, the yield to fall to 7.40% by next day
118. None of the above

02 In the worst case scenario, the prospective:

119. seller of the security can expect, the yield to fall to 7.40% by next day
120. buyer of the security can expect, the yield to rise to 8.80% by next day

121. seller of the security can expect, the yield to rise to 8.80% by next day

122. None of the above

03 In the above case, the VaR at 95% confidence means:

123. There is 5% possibility for the yield to be higher than 0.70%

124. There is 1% possibility for the yield to be lower than 0.70%

125. There is 5% possibility of adverse change being higher than 0.70%

126. Inadequate information to draw any conclusion **Answers: 1-a**

2-c 3-c Explanations:

127. VaR of 0.70% means that the maximum change in the yield can be 0.70%. Hence in a worst case scenario, the buyer of the security can expect, the yield to fall to 7.40% ($8.10 - 0.70\%$) by next day and the seller can expect the yield to rise to 8.80% ($8.10 + 0.70\%$).

128. VaR of 0.70% means that the maximum change in the yield can be 0.70%. Hence in a worst case scenario, the buyer of the security can expect, the yield to fall to 7.40% ($8.10 - 0.70\%$) by next day and the seller can expect the yield to rise to 8.80% ($8.10 + 0.70\%$).

129. At 95% confidence level, the possibility for an adverse change in yield being higher than 0.70% is only to the extent of 5% (i.e. loss being higher than 0.70%). At 99% confidence, this possibility is to the extent of 1% only.

Asst. Liability Management – Terminology

Asset

An asset is anything of value that is owned by a person or business

Available for Sale

The securities available for sale are those securities where the intention of the bank is neither to trade nor to hold till maturity. These securities are valued at the fair value which is determined by reference to the best available source of current market quotations or other data relative to current value.

Balance Sheet

A balance sheet is a financial statement of the assets and liabilities of a trading concern, recorded at a particular point in time.

Banking Book

The banking book comprises assets and liabilities, which are contracted basically on account of relationship or for steady income and statutory obligations and are generally held till maturity.

Basel Capital Accord

The Basel Capital Accord is an Agreement concluded among country representatives in 1988 to develop standardised risk-based capital requirements for banks across countries. The Accord was replaced with a new capital adequacy framework (Basel II), published in June 2004. Basel II is based on three mutually reinforcing pillars that allow banks and supervisors to evaluate properly the various risks that banks face.

These three pillars are: minimum capital requirements, which seek to refine the present measurement; supervisory review of an institution's capital adequacy and internal assessment process; and market discipline through effective disclosure to encourage safe and sound banking practices

Basel Committee on Banking Supervision

The Basel Committee is a committee of bank supervisors consisting of members from each of the G10 countries. The Committee is a forum for discussion on the handling of specific supervisory problems. It coordinates the sharing of supervisory responsibilities among national authorities in respect of banks' foreign establishments with the aim of ensuring effective supervision of banks' activities worldwide.

Basic Indicator Approach

An operational risk measurement technique permitted under Basel II. The approach sets a charge for operational risk as a fixed percentage ("alpha factor") of a single indicator. The indicator serves as a proxy for the bank's risk exposure.

Basis Risk

The risk that the interest rate of different assets, liabilities and off-balance sheet items may change in different magnitude is termed as basis risk.

Capital

Capital refers to the funds (e.g., money, loans, equity) which are available to carry on a business, make an investment, and generate future revenue. Capital also refers to physical assets which can be used to generate future returns.

Capital adequacy

A measure of the adequacy of an entity's capital resources in relation to its current liabilities and also in relation to the risks associated with its assets. An appropriate level of capital adequacy ensures that the entity has sufficient capital to support its activities and that its net worth is sufficient to absorb adverse changes in the value of its assets without becoming insolvent. For example, under BIS (Bank for International Settlements) rules, banks are required to maintain a certain level of capital against their risk-adjusted assets.

Capital reserves

That portion of a company's profits not paid out as dividends to shareholders. They are also known as un-distributable reserves.

Convertible Bond

A bond giving the investor the option to convert the bond into equity at a fixed conversion price or as per a pre-determined pricing formula.

Core Capital

Tier 1 capital is generally referred to as Core Capital

Credit risk

Risk that a party to a contractual agreement or transaction will be unable to meet their obligations or will default on commitments. Credit risk can be associated with almost any transaction or instrument such as swaps, repos, CDs, foreign exchange transactions, etc. Specific types of credit risk include sovereign risk, country risk, legal or force majeure risk, marginal risk and settlement risk.

Debentures

Bonds issued by a company bearing a fixed rate of interest usually payable half yearly on specific dates and principal amount repayable on a particular date on redemption of the debentures.

Deferred Tax Assets

Unabsorbed depreciation and carry forward of losses which can be set-off against future taxable income which is considered as timing differences result in deferred tax assets. The deferred Tax Assets are accounted as per the Accounting Standard 22. Deferred Tax Assets have an effect of decreasing future income tax payments, which indicates that they are prepaid income taxes and meet definition of assets; whereas deferred tax liabilities have an effect of increasing future year's income tax payments, which indicates that they are accrued income taxes and meet definition of liabilities.

Derivative

A derivative instrument derives much of its value from an underlying product. Examples of derivatives include futures, options, forwards and swaps. For example, a forward contract can be derived from the spot currency market and the spot markets for borrowing and lending. In the past, derivative instruments tended to be restricted only to those products which could be derived from spot markets. However, today the term seems to be used for any product that can be derived from any other.

Duration

Duration (Macaulay duration) measures the price volatility of fixed income securities. It is often used in the comparison of the interest rate risk between securities with different coupons and different maturities. It is the weighted average of the present value of all the cash flows associated with a fixed income security. It is expressed in years. The duration of a fixed income security is always shorter than its term to maturity, except in the case of zero coupon securities where they are the same.

Foreign Institutional Investor

An institution established or incorporated outside India which proposes to make investment in India in securities; provided that a domestic asset management company or domestic portfolio manager who manages funds raised or collected or brought from outside India for

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investment in India on behalf of a sub-account shall be deemed to be a Foreign Institutional Investor.

Forward Contract

A forward contract is an agreement between two parties to buy or sell an agreed amount of a commodity or financial instrument at an agreed price for delivery on an agreed future date. In contrast to a futures contract, a forward contract is not transferable or exchange tradable, its terms are not standardized and no margin is exchanged. The buyer of the forward contract is said to be long the contract and the seller is said to be short the contract.

General provisions and loss reserves

Such reserves, if they are not attributable to the actual diminution in value or identifiable potential loss in any specific asset and are available to meet unexpected losses, can be included in Tier II capital

General risk

Risk that relates to overall market conditions while specific risk is risk that relates to the issuer of a particular security

Hedging

Taking action to eliminate or reduce exposure to risk

Held for Trading

Securities where the intention is to trade by taking advantage of short-term price / interest rate movements.

Horizontal Disallowance

A disallowance of offsets to required capital used the BIS Method for assessing market risk for regulatory capital. In order to calculate the capital required for interest rate risk of a trading portfolio, the BIS Method allows offsets of long and short positions. Yet interest rate risks of instruments at different horizontal points of the yield curve are not perfectly correlated. Hence, the BIS Method requires that a portion of these offsets be disallowed.

Hybrid debt capital instruments

In this category fall a number of capital instruments which combine certain characteristics of equity and certain characteristics of debt. Each has a particular feature which can be considered to affect its quality as capital. Where these instruments have close similarities to equity, in particular when they are able to support losses on an ongoing basis without triggering liquidation, they may be included in Tier II capital.

Interest rate risk

Risk that the financial value of assets or liabilities (or inflows/outflows) will be altered because of fluctuations in interest rates. For example, the risk that future investment may have to be made at lower rates and future borrowings at higher rates.

Long Position

A long position refers to a position where gains arise from a rise in the value of the underlying.

Market risk

Risk of loss arising from movements in market prices or rates away from the rates or prices set out in a transaction or agreement.

Modified Duration

The modified duration or volatility of an interest bearing security is its Macaulay Duration divided by one plus the coupon rate of the security. It represents the percentage change in the securities' price for a 100-basis point change in yield. It is generally accurate for only small changes in the yield.

$$MD = - dP / dY \times 1/P$$

Where, MD= Modified Duration

P= Gross price (i.e. clean price plus accrued interest)

dP= Corresponding small change in price

dY = Small change in yield compounded with the frequency of the coupon payment.

Mortgage-backed security

A bond-type security in which the collateral is provided by a pool of mortgages. Income from the underlying mortgages is used to meet interest and principal repayments.

Mutual Fund

Mutual Fund is a mechanism for pooling the resources by issuing units to the investors and investing funds in securities in accordance with objectives as disclosed in offer document. A fund established in the form of a trust to raise monies through the sale of units to the public or a section of the public under one or more schemes for investing in securities, including money market instruments.

Net Interest Margin

Net interest margin is the net interest income divided by average interest earning assets

Net NPA

Net NPA = Gross NPA – (Balance in Interest Suspense account + DICGC/ECGC claims

received and held pending adjustment + Part payment received and kept in suspense account
(x) Total provisions held)

Nostro accounts

Foreign currency settlement accounts that a bank maintains with its overseas correspondent banks. These accounts are assets of the domestic bank.

Off-Balance Sheet exposures

Off-Balance Sheet exposures refer to the business activities of a bank that generally do not involve booking assets (loans) and taking deposits. Off-balance sheet activities normally generate fees, but produce liabilities or assets that are deferred or contingent and thus, do not appear on the institution's balance sheet until or unless they become actual assets or liabilities.

Open position

It is the net difference between the amounts payable and amounts receivable in a particular instrument or commodity. It results from the existence of a net long or net short position in the particular instrument or commodity.

Option

An option is a contract which grants the buyer the right, but not the obligation, to buy (call option) or sell (put option) an asset, commodity, currency or financial instrument at an agreed rate (exercise price) on or before an agreed date (expiry or settlement date). The buyer pays the seller an amount called the premium in exchange for this right. This premium is the price of the option.

Risk

The possibility of an outcome not occurring as expected. It can be measured and is not the same as uncertainty, which is not measurable. In financial terms, risk refers to the possibility of financial loss. It can be classified as credit risk, market risk and operational risk.

Risk Asset Ratio

A bank's risk asset ratio is the ratio of a bank's risk assets to its capital funds. Risk assets include assets other than highly rated government and government agency obligations and cash, for example, corporate bonds and loans. The capital funds include capital and undistributed reserves. The lower the risk asset ratio the better the bank's 'capital cushion'.

Risk Weights

Basel II sets out a risk-weighting schedule for measuring the credit risk of obligors. The risk weights are linked to ratings given to sovereigns, financial institutions and corporations by external credit rating agencies.

Securitization

The process whereby similar debt instruments/assets are pooled together and repackaged into marketable securities which can be sold to investors. The process of loan securitisation is used by banks to move their assets off the balance sheet in order to improve their capital asset ratios.

Short position

A short position refers to a position where gains arise from a decline in the value of the underlying. It also refers to the sale of a security in which the seller does not have a long position.

Specific risk

Within the framework of the BIS proposals on market risk, specific risk refers to the risk associated with a specific security, issuer or company, as opposed to the risk associated with a market or market sector (general risk).

Subordinated debt

Refers to the status of the debt. In the event of the bankruptcy or liquidation of the debtor, subordinated debt only has a secondary claim on repayments, after other debt has been repaid.

Tier one (or Tier I) capital

A term used to refer to one of the components of regulatory capital. It consists mainly of share capital and disclosed reserves (minus goodwill, if any). Tier I items are deemed to be of the highest quality because they are fully available to cover losses. The other categories of capital defined in Basel II are Tier II (or supplementary) capital and Tier III (or additional supplementary) capital.

Tier two (or Tier II) capital

Refers to one of components of regulatory capital. Also known as supplementary capital, it consists of certain reserves and certain types of subordinated debt. Tier II items qualify as regulatory capital to the extent that they can be used to absorb losses arising from a bank's activities. Tier II's capital loss absorption capacity is lower than that of Tier I capital.

Trading Book

A trading book or portfolio refers to the book of financial instruments held for the purpose of short-term trading, as opposed to securities that would be held as a long-term investment. The trading book refers to the assets that are held primarily for generating profit on short-term differences in prices/yields. The price risk is the prime concern of banks in trading book.

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Underwrite

Generally, to underwrite means to assume a risk for a fee. Its two most common contexts are:

- 16 Securities: a dealer or investment bank agrees to purchase a new issue of securities from the issuer and distribute these securities to investors. The underwriter may be one person or part of an underwriting syndicate. Thus the issuer faces no risk of being left with unsold securities.
- 17 Insurance: a person or company agrees to provide financial compensation against the risk of fire, theft, death, disability, etc., for a fee called a premium.

Undisclosed Reserves

These reserves often serve as a cushion against unexpected losses, but they are less permanent in nature and cannot be considered as 'Core Capital'. Revaluation reserves arise from revaluation of assets that are undervalued on the bank's books, typically bank premises and marketable securities. The extent to which the revaluation reserves can be relied upon as a cushion for unexpected losses depends mainly upon the level of certainty that can be placed on estimates of the market values of the relevant assets, the subsequent deterioration in values under difficult market conditions or in a forced sale, potential for actual liquidation at those values, tax consequences of revaluation, etc.

Value at risk (VAR)

It is a method for calculating and controlling exposure to market risk. VAR is a single number (currency amount) which estimates the maximum expected loss of a portfolio over a given time horizon (the holding period) and at a given confidence level.

Venture capital Fund

A fund with the purpose of investing in start-up business that is perceived to have excellent growth prospects but does not have access to capital markets.

Vertical Disallowance

In the BIS Method for determining regulatory capital necessary to cushion market risk, a reversal of the offsets of a general risk charge of a long position by a short position in two or more securities in the same time band in the yield curve where the securities have differing credit risks

ACH	- Automated Clearing Houses
ACU	- Asian Clearing Union
AD	- Authorised Dealer
ADB	- Asian Development Bank
ADR	- American Depositary Receipt
AFS	- Available for Sale
AIFI	- All India Financial Institutions
ALD	- Aggregate Liabilities to the Depositors

ALM	- Asset Liability Management
AMFI	- Association of Mutual Funds in India
AML	- Anti Money Laundering
AMS	- Aggregate Measures of Support
ARCIL	- Asset Reconstruction Company of India Ltd.
ARDC	- Agriculture Refinance and Development Corporation
ASEAN	- Association of South East Asian Nations
BCBS	- Basel Committee on Banking Supervision
BCP	- Business Continuity Plan
BFS	- Board for Financial Supervision
BFSI	- Banking, Financial Services and Insurance
BIFR	- Board for Industrial and Financial Reconstruction
BIS	- Bank for International Settlements
BoP	- Balance of Payments
BPLR	- Benchmark Prime Lending Rate

BPSS	- Board for Payment and Settlement Systems
CBLO	- Collateralized Borrowing and Lending Obligation
CBoT	- Chicago Board of Trade
CCIL	- Clearing Corporation of India Limited
CD	- Certificate of Deposit
CDR	- Corporate Debt Restructuring
CEPT	- Common External Preferential Tariff
CFMS	- Centralized Funds Management System
CFS	- Consolidated Financial Statement
CFTS	- Centralized Funds Transfer System
CGRA	- Currency and Gold Revaluation Account
CGTSI	- Credit Guarantee Fund Trust for Small Industries
CIB	- Capital Indexed Bond
CIBIL	- Credit Information Bureau of India Limited
CLF	- Collateralized Lending Facility
CPI	- Consumer Price Index
CPI-IW	- Consumer Price Index for Industrial Workers
CPR	- Consolidated Prudential Report
CP	- Commercial Paper
CPSS	- Committee on Payment and Settlement Systems
CRAR	- Capital to Risk-Weighted Assets Ratio
CRM	- Country Risk Management
CRR	- Cash Reserve Ratio
CSGL	- Constituents' Subsidiary General Ledger Account
CVPS	- Currency Verification and Processing System
DBOD	- Department of Banking Operations and Development
DBS	- Department of Banking Supervision
DCA	- Debtor-Creditor Agreement

DFHI	- Discount and Finance House of India
DFI	- Development Finance Institution
DFRC	- Duty Free Replenishment Certificate
DICGC	- Deposit Insurance and Credit Guarantee Corporation
DNSS	- Deferred Net Settlement System
DP	- Depository Participant
DRI	- Differential Rate of Interest
DRS	- Disaster Recovery System
DSS	- Debt Swap Scheme
DRT	- Debt Recovery Tribunal
DTA	- Domestic Tariff Area
DTL	- Demand and Time Liabilities
D v P	- Delivery versus Payment
EC	- Exchange Control
ECB	- External Commercial Borrowing
ECD	- Exchange Control Department
ECGC	- Export Credit Guarantee Corporation
ECR	- Export Credit Refinance
ECS	- Electronic Clearing Services
EDI	- Electronic Data Interchange
EEA	- Exchange Equalization Account
EEFC	- Exchange Earners' Foreign Currency Account
EFT	- Electronic Funds Transfer
EKMS	- Enterprise Knowledge Management System
EME	- Emerging Market Economy
EMU	- European Monetary Union
EOU	- Export Oriented Unit
EPCG	- Export Promotion Capital Goods

EU	-	European Union
EXIM	-	Export Import
FCA	-	Foreign Currency Assets
FCNRA	-	Foreign Currency Non-Resident Account
FCNR (B)	-	Foreign Currency Non-Resident (Banks)
FCRA	-	Forward Contract Regulation Act
FCCB	-	Foreign Currency Convertible Bond
FDI	-	Foreign Direct investment
FEDAI	-	Foreign Exchange Dealers' Association of India
FED	-	Foreign Exchange Department
FEMA	-	Foreign Exchange Management Act
FER	-	Foreign Exchange Reserves
FET-ERS	-	Foreign Exchange Transactions Electronic Reporting System
FII	-	Foreign Institutional Investor
FIMMDA	-	Fixed Income Money Market and Derivatives Association of India
FRA	-	Forward Rate Agreement
FRB	-	Floating Rate Bond
FRBM	-	Fiscal Responsibility and Budget Management
FSSA	-	Financial System Stability Assessments
FTT	-	Foreign Travel Tax
G-20	-	Group of Twenty
GAAP	-	Generally Accepted Accounting Principles
GATS	-	General Agreement on Trade in Services
GATT	-	General Agreement on Tariffs and Trade
GDCF	-	Gross Domestic Capital Formation
GDP	-	Gross Domestic Product
GDS	-	Gross Domestic Saving
GDR	-	Global Depository Receipt

GFCF	- Gross Fixed Capital Formation
GFD	- Gross Fiscal Deficit
GRF	- Guarantee Redemption Fund
GSO	- Green Shoe Option
HFT	- Held for Trading
HTM	- Held to Maturity
IAS	- Integrated Accounting System
ICA	- Inter-creditor Agreement
ICDs	- Inter-Corporate Deposits
ICOR	- Incremental Capital Output Ratio
IDL	- Intra-day Liquidity
IDMD	- Internal Debt Management Department
IDR	- Indian Depository Receipt
IFC	- International Finance Corporation
IFCI	- Industrial Finance Corporation of India
IFI	- International Financial Institution
IFR	- Investment Fluctuation Reserve
IIBI	- Industrial Investment Bank of India
IIP	- Index of Industrial Production
IIP	- International Investment Position
IMF	- International Monetary Fund
IMFC	- International Monetary and Financial Committee
INFINET	- Indian Financial Network
IRB	- Internal Rating Based
IRDA	- Insurance Regulatory and Development Authority
IRF	- Interest Rate Future
IRS	- Interest Rate Swap
ISA	- Information System Audits

ISP	- Information Security Policy
LAF	- Liquidity Adjustment Facility
LaR	- Liquidity at Risk
LC	- Letter of Credit
LIBOR	- London Inter-Bank Offered Rate
LIFFE	- London Inter-Bank Financial Futures Exchange
M3	- Broad Money
MBS	- Mortgage-Backed Securities
MFA	- Multi Fiber Agreement
MICR	- Magnetic Ink Character Recognition
MIFOR	- Mumbai Inter-Bank Forward Offered Rate
MNBC	- Miscellaneous Non-Banking Company
MoU	- Memorandum of Understanding
MPBF	- Maximum Permissible Bank Finance
MPI	- Macro-Prudential Indicator
MSS	- Market Stabilization Scheme
MTFRP	- Medium-Term Fiscal Reforms Programme
NAV	- Net Asset Value
NFA	- Net Foreign Assets
NBFC	- Non-Banking Financial Company
NCAER	- National Council of Applied Economic Research
NCD	- Non-Convertible Debenture
NDA	- Net Domestic Assets
NDS	- Negotiated Dealing System
NDTL	- Net Demand and Time Liabilities
NEER	- Nominal Effective Exchange Rate
NEFT	- National Electronic Funds Transfer
NHAI	- National Highway Authority of India

NIC	- National Industrial Credit
NMS	- Network Management System
NOF	- Net-Owned Fund
NPA	- Non-Performing Asset
NPC	- National Payments Council
NRE	- Non-Resident External
NRI	- Non-Resident Indian
NR(NR)RD	- Non-Resident (Non-Repatriable) Rupee Deposits
NRO	- Non-Resident Ordinary Accounts
NRSR	- Non-Resident Special Rupee Deposits
NSSF	- National Small Saving Fund
NSDL	- National Securities Depository Ltd.
NSS	- National Settlement System
NIC	- National Industrial Credit
OBU	- Offshore Banking Unit
OCB	- Overseas Corporate Body
OLTAS	- Online Tax Accounting Systems
OMO	- Open Market Operation
ONGC	- Oil and Natural Gas Commission
OPAC	- Online Public Access Catalogue
OPEC	- Organisation of Petroleum Exporting Countries
OSMOS	- Off-site Monitoring and Surveillance
OTCEI	- Over-the-Counter Exchange of India
OTS	- One-Time Settlement
PCA	- Prompt Corrective Action
PCD	- Partially Convertible Debenture
PD	- Primary Dealer
PDO	- Public Debt Office

PFI	- Public Financial Institution
PIO	- Person of Indian Origin
PKI	- Public Key Infrastructure
PLR	- Prime Lending Rate
PMO	- Primary Market Operations
PMS	- Portfolio Management Services
PSRS	- Prudential Supervisory Reporting System
PSSC	- Payment and Settlement Systems Committee
PTA	- Preferential Trading Agreement
QIS	- Quantitative Impact Study
RBS	- Risk-Based Supervision
RC	- Reconstruction Companies
RDBMS	- Relational Data Base Management System
REER	- Real Effective Exchange Rate
RFC (D)	- Resident Foreign Currency (Domestic)
Repo	- Ready Forward/Repurchase Agreement
RIB	- Resurgent India Bond
RIDF	- Rural Infrastructure Development Fund
RIN	- Risk Intelligence Network
RNBC	- Residuary Non-Banking Company
ROA	- Return on Total Assets
ROE	- Return on Equity
RPT	- Risk Profile Template
RSSS	- Recommendations for Securities Settlement System
RTGS	- Real Time Gross Settlement
RTIA	- Regional Trade and Investment Area
SAFE	- South Asian Federation of Stock Exchanges
SAFTA	- South Asian Free Trade Agreement

SASF	- Stressed Assets Stabilization Fund
SCRA	- Securities Contracts (Regulation) Act, 1956
SDF	- Submission of Declaration Form
SDRM	- Sovereign Debt Restructuring Mechanism
SDR	- Special Drawing Right
SEFER	- Securities held as Foreign Exchange Reserves
SEFT	- Special Electronic Funds Transfer
SFMS	- Structured Financial Messaging Solution
SGL	- Subsidiary General Ledger
SIPS	- Systemically Important Payment System
SITP	- Strategic Information Technology Plan
SLR	- Statutory Liquidity Ratio
SME	- Small and Medium Enterprise
SPV	- Special Purpose Vehicle
BS	- Securities Settlement System
STP	- Straight Through Processing
SIFI	- Systemically Important Financial Intermediaries
SWIFT	- Society for Worldwide Inter-bank Financial Telecommunications
TAC	- Technical Advisory Committee
TBT	- Technical Barriers to Trade
TFPG	- Total Factor Productivity Growth
TIN	- Tax Information Network
UIP	- Uncovered Interest Parity
UNCTAD	- United Nations Conference for Trade and Development
VaR	- Value at Risk
WADR	- Weighted Average Discount Rate
WAN	- Wide Area Network
WCDL	- Working Capital Demand Loan

WDM	- Wholesale Debt Market
WMA	- Ways and Means Advance
WPI	- Wholesale Price Index
Y-on-Y	- Year-on-Year
YTM	- Yield-to-Maturity

RISK MANAGEMENT recollected questions:-

Maturity bucket case study

Modified Duration (YTM) Semiannual, Convexity case study

Basel 3 T1 and T2 case study

LTV ratio case study

Foreign exchange case study

Rating Migration case study

MCLR Case Study

Basis risk

Trading book

EAD, PD, LGD

BPV

Various Approaches for Market Risk, Credit Risk , Operational Risk

Various 1 marks numericals on foreign exchange

Various RWA were asked

Etc.

Risk management

Case study: 1 case study on forex option

1 case study spot forward rate

Case study of YTM

Case study maculary duration modified duration

Case study on stress testing

Case study on exposure norms using tier 1 tier 2 capital reference

Basic indicator approach, standardised approach case study

Var calculation

Daily volatility 2 qstn

Caiib Risk management recollected

Chief risk officer duty,reporting,appointmemt

Leverage ratio numerical

Operational risk

Pcr

Firb credit risk

Rsca operstional risk

Pillar 3 disclosure norms period

Rwas calculation

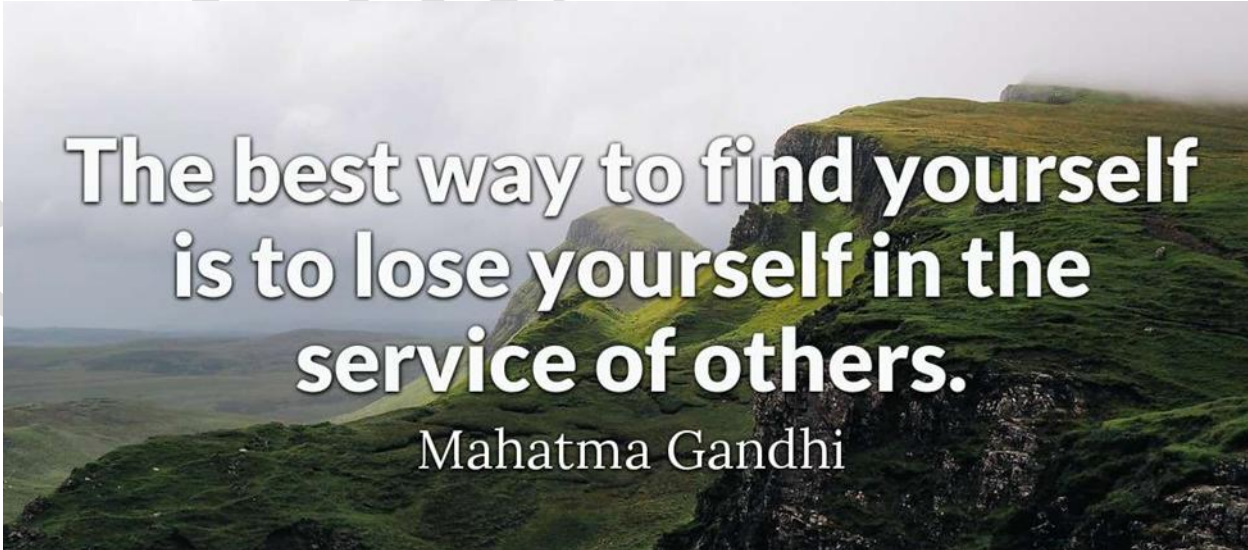
Numerical from BVP was also there,
Ques Obejective from PD ,EAD ,LGD
Market credit and operational risk theory based,

Which method we use for calculation of capital for credit operational and market risk
Case beta factor for agency services,
Icaap come under which pillar,
CRO function
Reputation risk systematic risk come under

****BEST OF LUCK ****

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**The best way to find yourself
is to lose yourself in the
service of others.**

Mahatma Gandhi

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