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**Department of Off-site Supervision  
Bangladesh Bank  
Head Office  
Dhaka-1000**

DOS Circular No.-02

Date: 15 February 2012  
03 Falgun 1418

Chief Executives  
All Scheduled Banks in Bangladesh

Dear Sir,

**Risk Management Guidelines for Banks**

You are aware that banks in the financial services industry are facing various challenges attributable to increased competition and expansion of diversified business network. Though Bangladesh has fortunately been spared some of the recent worst upheavals that have occurred in other countries, the necessity of constant vigilance cannot be ignored. Bangladesh Bank has already issued guidelines on risk based capital adequacy, stress testing and managing banking risks in six core areas.

With a view to managing various risks in a prudent manner, scheduled banks are hereby instructed to follow the attached risk management guidelines. The document should be treated as ***supplement to, and not a substitute for, existing core risks guidelines.***

Banks have to prepare a risk management paper and must place the same in the monthly meeting of the Risk Management Unit. The minutes of the meetings should contain specific decisions based on the analyses/recommendations made in the risk management paper.

Banks have to submit risk management papers (hard & soft copies for successive months of each quarter) along with the minutes of the meetings within 10 days of each quarter end to the Department of Off-site Supervision.

This circular along with the guidelines are available on the website of Bangladesh Bank and shall come into force with immediate effect.

Yours sincerely,

(K.M. Gousuzzaman)  
General Manager  
Phone: 7120376

Enclosure: As above

# Risk Management Guidelines for Banks

February 2012



DEPARTMENT OF OFF-SITE SUPERVISION  
BANGLADESH BANK

# **Risk Management Guidelines for Banks**

## **February 2012**



**Department of Off-site Supervision**  
**Bangladesh Bank**

## Preamble

The first decade of the 21st century, 2001 through 2010, was an extremely challenging decade for the financial services industry in many parts of the world. Credit institutions (including banks), securities firms, insurance companies, money service providers, foreign exchange dealers, and other kinds of financial institutions in many parts of the world faced increasing competition, natural and man-made disasters, increased volatility in interest rates, exchange rates, and share prices, asset price bubbles, deep recessions, sudden deteriorations in credit quality, and unpredictable changes in the legal and regulatory framework. Most financial institutions were able to cope with these challenges, but a great many, including some very large and well-known institutions, were not. Spectacular failures occurred, resulting in great cost to taxpayers and surviving institutions and in a general decline in customer confidence in banks and consumer confidence in the economy as a whole.

We now know that there were stark differences in management between those institutions that survived and those that did not. The key difference was risk management. Surviving banks understood the risks that they faced, entered new markets and rolled out new products cautiously, did not expand their scale of operations faster than their capital bases and reasonably-priced sources of funds could accommodate, kept activity within legal, regulatory, and internally-set limits, shared information across their organizations, and had good information on hand at all times as to the positions they were taking and the possible declines in their profitability and capital that could occur should unfavourable conditions develop.

As you know, scheduled banks in Bangladesh also face challenges in the second decade of the present century. Although we have fortunately been spared some of the worst upheavals that have occurred in other countries, the need to be constantly vigilant is still upon us. Bangladesh Bank has already issued sets of guidelines for capital adequacy in accordance with Basel II, including stress testing, and there are the mandatory Core Risk Guidelines with which you are already familiar:

- i. Internal Control and Compliance Risk
- ii. Foreign Exchange Risk
- iii. Credit Risk
- iv. Asset Liability Management Risk
- v. Money Laundering Risk
- vi. Information & Communication Technology Security Risk

This document is a supplement to, and not a substitute for, these guidelines already issued. This document promotes an *integrated, bank-wide* approach to risk management that we hope will propel banks in Bangladesh to the forefront among banks in our region in adopting contemporary methods to identify, measure, monitor, and control risks throughout their institutions.

World-class risk management can seem like a costly endeavour for our banks. But the costs of being caught unaware or unprepared for unexpected, unfavourable changes in the banking environment, from wherever these changes may come, would be far, far higher.



**(Mohammad Naushad Ali Chowdhury)**

Executive Director  
Bangladesh Bank

# **Risk Management Guidelines for Banks**

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## List of Acronyms

ALCO	Asset-Liability Management Committee
ALM	Asset Liability Management
BB	Bangladesh Bank
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BOD	Board of Directors
CCR	Credit Concentration Risk
CDR	Credit Deposit Ratio
CFP	Contingency Funding Plans
CP <sub>1</sub>	Credit Policy
CP <sub>2</sub>	Core Principles
CMU	Capital Management Unit
CRMC	Credit Risk Management Committee
CRMD	Credit Risk Management Department
CRO	Chief Risk Officer
CRR	Cash Reserve Ratio
DTL	Demand and Time Liabilities
EAD	Exposure at Default
EB	Executive Board
GDP	Gross Domestic Product
ICAAP	Internal Capital Adequacy Assessment Process
IRB	Internal Rating Based
IRR	Interest Rate Risk
LGD	Loss Given Default
MCO	Maximum Cumulative Outflow
MDA	Modified Duration of Assets
MDL	Modified Duration of Liabilities
MIS	Management Information System
OBS	Off-Balance Sheet
PD	Probability of Default
PEST	Political, Legal, Social and Technological analysis
RAF	Risk Appetite Framework
RMC	Risk Management Committee
RMD	Risk Management Department
ROA	Return on Assets
ROE	Return on Equity
RSA	Rate Sensitive Assets
RSL	Rate Sensitive Liabilities
RU	Recovery Unit
RW	Risk Weighted
SLR	Statutory Liquidity Requirement
SREP	Supervisory Review Evaluation Process
SRP	Supervisory Review Process
SWOT	Strengths, Weaknesses, Opportunities, Threats analysis
VaR	Value at Risk
WBG	Wholesale Borrowing Guidelines

### 1.1 Introduction

These guidelines are issued by Bangladesh Bank (BB) under section 45 of 'ব্যাংক কোম্পানী আইন, ১৯৯১'<sup>1</sup> and introduced to provide a structured way of identifying and analyzing potential risks, and devising and implementing responses appropriate to their impact. These responses generally draw on strategies of risk prevention, risk transfer, impact mitigation or risk acceptance. BB is going to make these guidelines as mandatory for all scheduled banks working in Bangladesh from February 2012.

These guidelines are prepared in line with internationally accepted risk management principles and best practices. The guidelines are also aligned with the revised version of Core Principles for Effective Banking Supervision published by the Basel Committee on Banking Supervision (BCBS) in October 2006. The CP<sup>2</sup> on 'Risk Management Processes' (CP7) requires that banks and banking groups must have comprehensive risk management processes (including Board and senior management oversight) to identify, evaluate, monitor and control or mitigate all material risks and to assess their overall capital adequacy in relation to their risk profile. These processes should be commensurate with the size and complexity of the bank. Other relevant CPs touch on credit risk (CP8), market risk (CP13) liquidity risk (CP14), operational risk (CP15) and interest rate risk (CP16). Whilst the types and degree of risks an organization may be exposed to depend upon a number of factors such as its size, complexity, business activities, volume, etc., these guidelines cover the most common risks in banking companies in Bangladesh, namely: Strategic Risk, Credit Risk, Liquidity Risk, Interest Rate Risk, Foreign Exchange Rate Risk, Price Risk, Operational Risk, Compliance Risk and Reputation Risk. These guidelines will be called 'Risk Management Guidelines for Banks'.

The guidelines are structured on following four aspects:

- a) Risk Management Objectives ;
- b) Risk Management Structure;
- c) Risk Management Requirements ;
- d) Risk Management Process.

In these guidelines, 'credit' means all types of loans and advances and 'borrower' means obligor or counterparty.

These guidelines are also applicable for scheduled banks that are operating based on Islamic Shriah and Islamic banking branches/windows of conventional banks.

<sup>1</sup> Bank Company Act, 1991

<sup>2</sup> Core Principle

## 1.2 Scope of application

These guidelines pertain to all scheduled banks operating in Bangladesh. The risk management process described in these guidelines is supplementary to the standards set by the legislative requirements. This document does not replace or supersede them.

## 1.3 Definition

Risk management is the deliberate acceptance of risk for profit-making. It requires informed decisions on the tradeoff between risk and reward, and uses various financial and other tools to maximize risk-adjusted returns within pre-established limits.

Risk-taking is an inherent element of the banking business and, indeed, profits are in part the reward for successful risk taking in business. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the safety of a bank's depositors.

## 1.4 Objectives of risk management

The objective of risk management is to identify and analyze risks and manage their consequences. The banking sector has perhaps the most specific focus on the management of financial risks. The guiding standard that is a key influence on central banks and banking regulations comes from the Swiss-based Bank for International Settlements (BIS), and particularly its BCBS. The update of the standards, known as Basel II, has been, or is in the process of being, applied by bank regulators across the world. While Basel II introduces a new and more complex method of calculating regulatory capital requirements, its implementation requires that the bank adopt enhanced policies and procedures of risk management, in order to generate the necessary data for the calculations.

Risk management is a discipline at the core of every financial institution and encompasses all the activities that affect its risk profile. It involves identification, measurement, monitoring and controlling risks to ensure that

- a) The individuals who take or manage risks clearly understand it;
- b) The organization's risk exposure is within the limits established by the board;
- c) Risk taking decisions are explicit and clear;
- d) Risk taking decisions are in line with the business strategy and objectives set by the board;
- e) The expected payoffs compensate for the risks taken; and
- f) Sufficient capital as a buffer is available to take risk.

BB puts forward this document for the purpose of providing guidelines to all banking companies on risk management systems that are expected to be in place. The document sets

out minimum standards that shall be expected of the risk management framework at any banking company. For the purpose of these guidelines, risk in a banking company refers to the possibility that the outcome of an action or event could have an adverse impact on the bank's capital, earnings or its viability. Such outcomes could either result in direct loss of earnings and erosion of capital or may result in imposition of constraints on a bank's ability to meet its business objectives. These constraints could hinder a bank's capability to conduct its business or to take advantage of opportunities that would enhance its business. As such, banks are expected to ensure that the risks an institution is taking are warranted.

## 1.5 Overview of risk

Risks are considered warranted when they are understandable, measurable, controllable and within a banking company's capacity to readily withstand adverse results. Sound risk management systems enable managers of banking companies to take risks knowingly, reduce risks where appropriate and strive to prepare for a future, which by its nature cannot be predicted with absolute certainty.

Risk management is a discipline at the core of every banking company and encompasses all activities that affect its risk profile. Banks should attach considerable importance to improve the ability to identify measure, monitor and control the overall risks assumed. Risk management is very important especially when the banks are dealing with multiple activities, involving huge funds having both local and international currency exposure.

Banking companies in Bangladesh, while conducting day-to-day operations, usually face the following major risks:

- a) Credit risk (including concentration risk, country risk, transfer risk, and settlement risk)
- b) Market risk (including interest rate risk in the banking book, foreign exchange risk, and equity market risk)
- c) Liquidity Risk
- d) Operational Risk
- e) Other risks (Compliance, strategic, reputation and money laundering risk)

## 1.6 Risk management unit

BB should ensure that the banks are prudently managing their risks because risks can cause systemic threats and jeopardize the stability of the entire financial system. Therefore, BB has imposed prudential requirements to assess banks' risk management capacity and has instructed the banks to establish an independent Risk Management Unit (RMU). The RMU not only conducts stress testing for examining the bank's capacity of handling future shocks, but also deals with all potential risks that might occur in future.

### 2.1 Elements of a sound risk management system

The key elements of a sound risk management system should encompass the following:

- a) Risk management structure with board and senior management;
- b) Organizational policies, procedures and limits that have been developed and implemented to manage business operations effectively;
- c) Adequate risk identification, measurement, monitoring, control and management information systems that are in place to support all business operations; and
- d) Established internal controls and the performance of comprehensive audits to detect any deficiencies in the internal control environment in a timely fashion.

It should not be understood that risk management is only limited to the individual(s), who are responsible for overall risk management function. Business lines are equally responsible for the risks they are taking. Because the line personnel can understand the risks of their activities, any lack of accountability on their part may hinder sound and effective risk management.

### 2.2 Board and senior management oversight

The quality of board and senior management oversight is evaluated in relation to the following elements:

- a) whether the board and senior management have identified and have a clear understanding of the types of risk inherent in business lines and whether they have taken appropriate steps to ensure continued awareness of any changes in the levels of risk;
- b) whether the board and senior management have been actively involved in the development and approval of policies to limit the risks, consistent with the bank's risk appetite;
- c) whether the board and senior management are knowledgeable about the methods available to measure risks for various activities;
- .d) whether the board and senior management carefully evaluate all the risks

associated with new activities and ensure that the proper infrastructure and internal controls are in place; and

- e) whether the board and senior management have provided adequate staffing for the activity and designated staff with appropriate credentials to supervise the activity.

### **2.3 Policies, procedures and limit structure**

The following key factors are to be considered in evaluating the adequacy of policies, procedures and limits:

- a) whether policies, procedures and limits are properly documented, drawn up after careful consideration of the risks associated with the activity and reviewed and approved by management at the appropriate level;
- b) whether policies assign full accountability and clear lines of authority for each activity and product area; and
- c) whether compliance monitoring procedures have been developed. These procedures should include internal compliance checks for adherence to all policies, procedures and limits by an independent function within a bank such as an internal control unit.

### **2.4 Risk measurement, monitoring and management reporting systems**

- a) Effective risk monitoring requires banks to identify and measure all quantifiable and material risk factors. Consequently, risk monitoring activities must be supported by information systems that provide the management with timely and accurate reports on the financial condition, operating performance and risk exposure of the bank.
- b) Management information systems should provide regular and sufficiently detailed reports for line managers engaged in the day-to-day management of the bank's business operations.
- c) All banks are expected to have risk monitoring and management information systems that provide senior management with a clear understanding of the bank's positions and risk exposures.
- d) The following factors should be considered in assessing the effectiveness of the risk measurement, monitoring and management reporting systems:



- i. the adequacy, on a historical basis, of the risk monitoring practices and reports addressing all material risks of the organization;
- ii. the adequacy and appropriateness of the key assumptions, data sources and procedures used to measure and monitor risk, including the adequacy of analysis, documentation and reliability testing of the system on a continuing basis;
- iii. any material changes in the bank's lines of business or products that might require changes in the measuring and monitoring systems;
- iv. any changes in the information technology or management information system environment that have significantly changed the production process for reports or the assumptions on which reports are based;
- v. how consistently management information reports and other forms of communication monitor all meaningful exposures, check compliance with established limits, goals or objectives and compare actual with expected performance; and
- vi. the adequacy, accuracy and timeliness of reports to the Board and senior management and whether such reports contain sufficient information for them to identify any adverse trends and to evaluate the level of risks fully.

## 2.5 Internal controls and comprehensive audits

- a) A critical element of a bank's ability to operate in a safe and sound manner and to maintain an acceptable risk management system is the adequacy of its internal control environment. Establishing and maintaining an effective system of controls, including the enforcement of official lines of authority and the appropriate segregation of duties, is one of management's most important responsibilities. Serious lapses or deficiencies in internal controls such as inadequate segregation of duties may warrant supervisory action.
- b) When properly structured, a system of internal controls promotes effective operations, provides for reliable financial reporting, safeguards assets and helps to ensure compliance with relevant laws, regulations and internal policies. An independent internal auditor should test internal controls and the results of these audits, including management's response to the findings, should be properly documented.

The following factors should be considered in evaluating the adequacy of the internal control environment:

- i. the appropriateness of the system of internal controls in relation to the type and level of risks posed by the nature and scope of the bank's business operations and products;
- ii. whether the bank's organization structure establishes adequately clear lines of authority and responsibility for monitoring compliance with policies, procedures and limits;
- iii. whether reporting lines provide for sufficient independence of the control functions from the business areas, as well as adequate segregation of duties throughout the organization (such as those relating to trading, custodial and back-office operations or loan origination, marketing and processing);
- iv. whether the official organizational structure reflects actual operating practices;
- v. the reliability, accuracy and timeliness of all financial, operational and regulatory reports;
- vi. the adequacy of procedures for ensuring compliance with applicable laws, regulations and internal policies and procedures;
- vii. the effectiveness, independence and objectivity of internal audit or other control and review procedures in providing adequate coverage of the bank's operations;
- viii. whether internal controls and information systems are adequately tested and reviewed;
- ix. whether the coverage, procedures, findings and management responses to audits are adequately documented; and
- x. whether identified material weaknesses are given appropriate and timely high-level attention and management's actions to correct material deficiencies are objectively verified and reviewed.

## **2.6 The concept of risk appetite**

The risk management framework is expected to be developed and applied within an overarching statement of risk appetite. Risk appetite is set by the Board and reflects shareholder aspirations within the constraints of regulatory requirements, creditor and legal obligations.

### **2.6.1 Definition of risk appetite**

Risk appetite is the level and type of risk a bank is able and willing to assume in its exposures and business activities, given its business objectives and obligations to stakeholders (depositors, creditors, shareholders, borrowers, regulators). Risk appetite is generally expressed through both quantitative and qualitative means and should consider extreme

conditions, events, and outcomes. It should be stated in terms of the potential impact on profitability, capital, and liquidity.

### 2.6.2 Risk appetite framework

The science of developing and adopting a risk appetite framework (RAF) is still evolving at banks all over the world. Some banks have adopted a high-level, brief, and qualitative statement of RAF, while others make it complex, lengthy, and quantitative.

Some rudiments for an effective RAF are mentioned below:

- a) RAFs discuss the desired business mix and composition of the balance sheet, risk preferences (which risks are embraced, tolerated, and avoided), the acceptable trade-off between risk and reward, tolerances for volatility, capital thresholds, tolerance for post-stress loss, optimum liquidity ratios, and others;
- b) It should focus on the bank's key strengths and competitive advantages;
- c) It should enable the Board to challenge business proposals outside of the bank's traditional product and service lines;
- d) It should make forward-looking discussions of risk easier;
- e) It should codify the types of risk the bank is willing to bear and under what conditions, as well as which risks the bank is unwilling to assume.

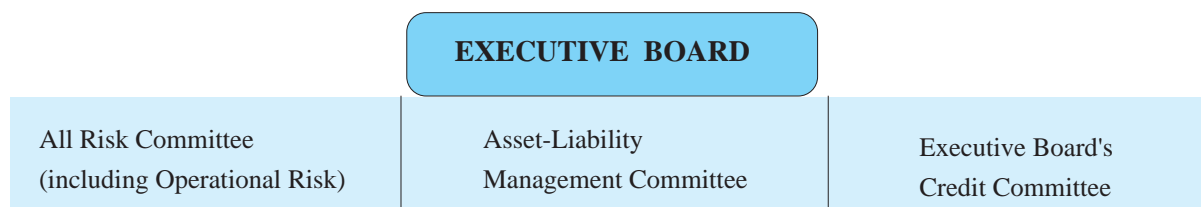
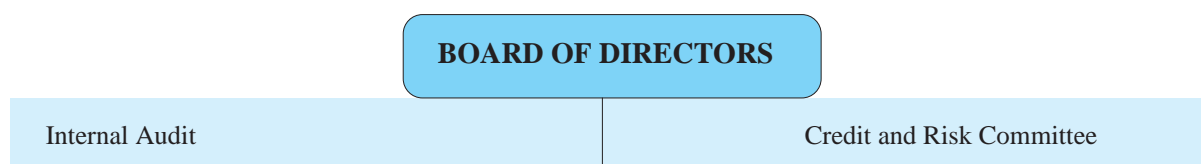
Risk appetite is the cornerstone of a successful risk management framework. Risk appetite can be fitted into the risk management framework in the following manner:

Elements of risk management framework	Linkage to risk appetite
Risk governance	Clear risk appetite statement approved by the board and embodied in risk policy and delegated authorities. This sets the 'tone from the top' and the foundation for the risk culture.
Risk assessment	Frequent risk assessment process to identify new and changing risk landscape in context to risk appetite.
Risk quantification and aggregation	Regular quantification and aggregation of risk to prioritize focus of risk management and control.
Monitoring and reporting	Monitoring and reporting of performance against risk-based limits based on risk appetite.
Risk and control optimization	Framework of controls calibrated in line with risk appetite to optimize cost/benefit.

Making sure that an adequate risk management framework is in place is the responsibility of each bank's senior executives, in particular the CEO, subject to the oversight of the Board of Directors (BOD). Some suggestions for the BOD to enhance their oversight of risk are mentioned below. However, these do not reduce or transfer the responsibility of management in the risk management process.

- i. BODs need to be well conversant with risk issues and to be given the means to understand risk appetite and the firm's performance against it.
- ii. Some BODs may find it appropriate for their bank to have separate audit and risk committees, given the differing skills and adequate time to devote to review issues.
- iii. It is useful to have at least a portion of members of the risk committee of the BOD with technical financial sophistication in risk disciplines. This will give a clear perspective on risk issues.
- iv. The BOD should understand the risk appetite and assure itself that management has properly considered the firm's risks.

## 2.7 Optimal risk organization



Risk Management Unit	Office of CFO	Credit Department	Treasury Department	Business Units
Risk Parameters, Models, Stress Testing, Reporting, Monitoring	Capital Management	Credit Methods and Processes	Liquidity Management	
	Market Risk Management	Credit Portfolio Management		

### **2.7.1 Role of the BOD**

- a) Defining the risk appetite;
- b) Designing the organizational structure to manage risk within the bank;
- c) Understanding the inherent risks of the bank;
- d) Reviewing and approving risk management policies and re-reviewing at least annually;
- e) Enforcing and using adequate recordkeeping and reporting systems;
- f) Reviewing and approving limits and re-reviewing at least annually; and
- g) Monitoring compliance with overall risk management policies and limits

### **2.7.2 Credit and risk committee**

The functions of Credit and Risk Committee shall be set by the board. The Credit and Risk Committee shall work as a consulting panel on significant credit exposures submitted to the board.

### **2.7.3 Role of the executive board**

- a) Ensuring appropriate knowledge, experience, and expertise of lower-level managers and staff involved in risk management;
- b) Ensuring sufficient staff resources for each risk management activity;
- c) Establishing standards of ethics and integrity for staff and enforcing these standards;
- d) Supervising day-to-day activities of senior managers and heads of business lines;
- e) Identifying risks involved in new products and activities and ensuring that the risks can be measured, monitored, and controlled adequately; and
- f) Establishing committees and sub-committees to be in charge of ongoing risk management.

### **2.7.4 All risk committee**

The functions of All Risk Committee shall be set by the Executive Board (EB). All Risk Committee shall be responsible for managing all risk types across the bank. Responsibilities include the following:

- a) Setting targets for capital ratios and capital composition;

- b) Managing the balance sheet;
- c) Managing the funding structure;
- d) Determining general principles for measuring, managing, and reporting the bank's risks;
- e) Developing risk policies for business units;
- f) Determining the overall investment strategy;
- g) Identifying, monitoring, and managing the bank's current and potential operational risk exposures;
- h) Handling "critical risks" (risks that require follow-up and further reporting);
- i) Following up on reviews by and reports from BB and informing the EB of issues affecting the bank's operational risks;
- j) Following up on reports prepared by Internal Audit and informing the Executive Board of unusual circumstances; and
- k) Preparing management information on issues such as IT security, physical security, business continuity, and compliance.

### 2.7.5 Asset-liability management committee (ALCO)

ALCO is a senior management level committee responsible for supervision/ management of market risk (mainly interest rate and liquidity risks). The committee generally comprises of senior managers from treasury, chief financial officer, business heads generating and using the funds of the bank, credit, and individuals from the departments having direct link with interest rate, foreign exchange and liquidity risks. The CEO must be the head of the committee.

To be effective ALCO should have members from each area of the bank that significantly influences interest rate, foreign exchange and liquidity risks. In addition, the head of the Information System Department (if any) may be an invitee for building up of MIS and related computerization.

#### **Major responsibilities of ALCO include the following:**

- a) Ensure that the bank's measurement and reporting systems accurately convey the degrees of liquidity risk, interest-rate risk, and foreign exchange risk;
- b) Monitor the structure/composition of bank's assets and liabilities Identifying balance sheet management issues like balance sheet gaps, interest rate gap/profiles etc. that are leading to under performance;
- c) Decide on major aspects of balance sheet structure, such as maturity and currency mix of assets and liabilities, mix of wholesale versus retail funding;
- d) Decide on how to respond to significant, actual and expected increases and decreases in the need for funding;

- e) Develop maturity profile and mix of incremental assets and liabilities;
- f) Articulate interest rate view of the bank and deciding on the future business strategy;
- g) Review and revise bank's funding policy;
- h) Decide on the transfer pricing policy of the bank;
- i) Evaluate market risk involved in launching of new products;
- j) Review deposit-pricing strategy for the local market; and
- k) Review liquidity contingency plan for the bank.

ALCO should ensure that risk management is not limited to collection of data only. Rather, it will ensure that detailed analysis of assets and liabilities is carried out so as to assess the overall balance sheet structure and risk profile of the bank. The ALCO should cover the entire balance sheet/business of the bank while carrying out the periodic analysis. The ALCO should meet on a regular basis at least once in a month.

#### **2.7.6 Executive board's credit committee**

The responsibilities of Executive Board's Credit Committee include the following:

- a) Deciding on credit applications that exceed the lending authorities of business units;
- b) Preparing credit policies for approval by the board; and
- c) Participating in decisions on the overall valuation of the loan portfolio and the adequacy of loan-loss allowances

#### **2.7.7 Risk management unit**

The Risk Management Unit (RMU) shall be headed by the Chief Risk Officer (CRO). The RMD needs to manage and measure risks on the basis of the bank's approved risk parameters, independently of regulatory requirements and categories. It should also be independent from ratings of transactions, which may not address the bank's specific issues or be aligned to the bank's standards and risk management goals. The responsibilities of RMD include the following:

- a) Serving as secretariat of All Risk Committee;
- b) Designing bank's overall risk management strategy;
- c) Developing and overseeing implementation of stress tests;
- d) Developing, testing, and observing use of models for measuring and monitoring risk;
- e) Informing the board and All Risk Committee about the appetite for risk across the bank;
- f) Communicating views of the board and senior management throughout the bank;

- g) Independently monitoring limits, in addition to the monitoring that is done by business units;
- h) Establishing risk management policies and procedures;
- i) Formulating guidelines on the handling of all property and liability claims involving the organization;
- j) Developing and implementing loss prevention/loss retention programs;
- k) Identifying and quantifying bank's exposures to material loss;
- l) Securing and maintaining adequate loss coverage at the most reasonable cost;
- m) Adopting proper financial protection measures through risk transfer, risk avoidance, and risk retention programs;
- n) Determining the most cost-effective way to construct, refurbish, or improve the loss protection system of any facility leased, rented, purchased, or constructed by the bank;
- o) Managing claims for insured and uninsured losses; and
- p) Participating on all contract negotiations involving insurance, indemnity, or other pure risk assumptions or provisions prior to the execution of the contracts.

## 2.8 Risk management reporting

The following reports are required to be submitted before the board on different intervals:

### 2.8.1 Quarterly reporting

**ICAAP:** Internal capital adequacy assessment process (ICAAP), including an evaluation of the bank's preferred risk profile, the actual risks identified, the means by which they will be mitigated, and what risks will be covered by capital. The results of stress tests should be covered in this report. The overall capital need shall also be reported.

**Key figures from the credit portfolio:** An overview of credit-quality indicators focusing on unauthorized excesses and overdue payments, the number of upgrades and downgrades in the classification system, and trends in lending volumes.

**Market risk:** An analysis of the bank's current equity, interest-rate risk, and foreign exchange risk positions as well as reports on the utilization of board-approved limits since the preceding report.

**Large exposures:** An overview of exposures equal to or exceeding 10 percent of the bank's capital base, and the sum of all such large exposures as a percentage of the bank's capital base.



**Industry analyses:** Industry analyses for those industries in which the bank's exposures are concentrated.

**Liquidity risk:** Report on liquidity gap in different time buckets and other required liquidity metrics.

### 2.8.2 Annual reporting

**Risk policy:** Review of the overall risk policy, including a consideration of whether any revisions are required.

**ICAAP:** An evaluation of the preferred risk profile, the overall capital need, and the conclusions drawn from stress testing.

**Risk management framework:** A thorough analysis of the bank's risk profile, including identification and description of risks and an update on the use of risk management models.

**Credit portfolio quality:** An analysis of adversely-classified loans, provisions and charge-offs by types of loan.

### 3.1 Capital management and its relationship with risk management

Capital management in a bank usually refers to implementing measures aimed at maintaining adequate capital, assessing internal capital adequacy of the bank and calculating its capital adequacy ratio. It is gaining increasing importance around the world, as reflected from taking several reform initiatives and changes in the prudential requirements undertaken by banks in different countries in line with the reform measures proposed by the Basel Committee on Banking Supervision.

Risk management is increasingly becoming difficult to separate from capital management. Most banking risks can be quantified as numerical indicators, and this quantification naturally leads to the principle that increased capital can be held to cover unexpected losses at a certain confidence level. The followings indicate the relationship between risk management and capital requirement:

- a) Capital management helps to ensure that the bank has sufficient capital to cover the risks associated with its activities;
- b) As part of the internal capital adequacy assessment process (ICAAP), management identifies the risks that the bank is exposed to, and determines the means by which they will be mitigated;
- c) Capital is used to cover some of these risks, and the remainder of these risks is mitigated by means of collateral or other credit enhancements, contingency planning, additional reserves and valuation allowances, and other mechanisms.

The results of capital management are:

- i. A Capital Plan that meets the needs of the Bank over a three-year time horizon;
- ii. An ICAAP that determines precise levels of required capital (the "solvency need") according to the measures of balance sheet capital and regulatory capital (Tier 1 and Tier 2);
- iii. A process to regularly compare available capital with current and projected solvency needs, and address deficiencies in a timely manner.

## 3.2 Framework of capital management

Banks will devise and establish suitable capital management systems in order to calculate the capital adequacy ratio and secure adequate capital to cover the risks they face, from the standpoint of ensuring soundness and appropriateness of their businesses. Roles and responsibilities at various levels as well as the framework of capital management are outlined as below:

### 3.2.1 Role and responsibilities of board of directors and senior management

The Board of Directors and Senior Management will take the following steps:

- (1) Define the goals of capital management in an official policy statement. Such goals must include the followings:
  - a) Regulatory compliance, such that capital levels always exceed BB's requirements;
  - b) Capital levels are aligned with the risks in the business and consistent with the strategic plan; and
  - c) Capital levels maintain an appropriate balance between maximizing shareholder returns and protecting the interests of depositors and other creditors.
- (2) Prepare a set of policies and internal rules with regard to capital management, and segregate the relevant tasks between two or more units/divisions, namely Risk Management Unit (RMU) and Capital Management Unit (CMU) - depending on the diversity of the tasks, including development and implementation of capital plans, assessment of capital adequacy, calculation of the capital adequacy ratio and capital allocation processes. Alternatively, the existing RMU of the bank could be entrusted with the task of capital management;
- (3) Integrate capital management into the bank's strategic plan, taking into account the fact that lack of the same could jeopardise the attainment of the bank's strategic objectives. Annually, conduct a detailed strategic planning process over a three-year time horizon, the outcomes of which are embodied in a Strategic Plan. The planning process should include forecasting key economic variables which business lines may use in allocating resources. New strategic initiatives to be undertaken over the planning period and their financial impact are then determined;
- (4) These planning processes are used then to review capital ratios, targets, and levels of different classes of capital against the Bank's risk profile and risk appetite. The Board

must be satisfied that capital levels under specific stressed economic scenarios are sufficient to remain above both BB and the Bank's internal requirements;

- (5) Review the policies and specific measures for developing and establishing an adequate capital management system with a full grasping of the assessment, monitoring and control techniques of internal capital adequacy as well as the significance of capital management;
- (6) Disseminate the capital management policies throughout the bank. The policies should be inclusive of the following matters:
  - a) The role and responsibilities of the Board of Directors, executive management, and the RMU/CMU of the bank with regard to capital management;
  - b) Basic policies for maintaining sufficient capital and on the capital allocation process;
  - c) Organizational frameworks of RMU/CMU and the authority assigned thereto;
  - d) Policy on the risk limits in relation to the capital;
  - e) The definition of capital and risk as used in the Internal Capital Adequacy Assessment Process (ICAAP);
  - f) Calculation of the capital adequacy ratio in line with capital adequacy guidelines issued by Bangladesh Bank; and
  - g) Methods of internal capital adequacy assessment in conducting capital allocation process, and the basis for the calculation of capital to be allocated to risks.
- (7) Analyze present as well as future capital needs of the Bank and adopt suitable capital-raising methods, satisfying the prudential and regulatory requirements issued by BB;
- (8) Ensure consistency of the capital management system with the bank's risk profile and the competing business environment;
- (9) Set an appropriate level of capital target for the short-term, medium-term and long-term and develop a Capital Plan to achieve the target. The Capital Plan must identify the capital issuance requirements and options around capital products, such as the issuance of common equity, timing and markets to execute the Capital Plan under differing market and economic conditions.

The following factors should be taken into account in setting the capital targets:

- a) BB's regulatory capital requirements;
  - b) Coverage of unexpected losses up to a certain probability of occurrence (economic capital);
  - c) Expected asset growth and profitability;
  - d) Dividend policy; and
  - e) Stress test scenarios.
- (10) Specify the basis for the calculation of capital to be allocated to risk;
  - (11) Prepare capital management rules exhaustively covering the arrangements necessary for the ICAAP and the calculation of the capital adequacy ratio and specify the arrangements appropriately in a manner befitting the scale and nature of the bank business and its risk profile;
  - (12) Depute a manager for RMU/CMU, develop internal rules, specifying the arrangements concerning capital management and disseminate them to the employees concerned in accordance with the bank's capital management policy;
  - (13) Ensure consistency of the definition of capital used in the ICAAP and the bank's corporate management policy and plans, its strategic objectives, etc.;
  - (14) Make clear the basis for determining the definition of capital as used in the ICAAP in reference to capital as defined under regulations concerning capital adequacy ratios- Tier 1 and 2 capital, and eligible capital;
  - (15) Allocate to the RMU/CMU an adequate number of staff/official with the necessary knowledge and experience to execute the relevant business and assign such staff the authority necessary for implementing the business;
  - (16) Keep the RMU/CMU in charge of the ICAAP and the calculation of the capital adequacy ratio independent from other offices/divisions and secure a check-and-balance system; and
  - (17) Enable the manager of the RMU/CMU to supervise the Unit(s) with necessary training.

### 3.2.2 Role and responsibilities of the manager of CMU/RMU

The manager/head of RMU/CMU will take the following steps:

- 1) Decide, in accordance with the corporate management plans, capital plans, capital management policy, the ICAAP and the method of monitoring thereof and develop the capital management rules, on the basis on a full understanding of the scale and nature of the bank's business and its risk profile as well as the capital management technique. The manager must disseminate the capital management rules to all of the relevant employees upon approval by the Board;
- 2) Provide for measures to have the exercise of a check-and-balance system in order to conduct the system of capital management appropriately, in accordance with corporate management plans, capital plans, the capital management policy and the capital management rules of the Bank;
- 3) Specify the information necessary for conducting an appropriate capital management befitting the bank's risk profile, and make sure to receive reports from divisions which hold the necessary information in a regular and timely manner or on an as needed basis;
- 4) Establish a manual, for the purpose of calculating the capital adequacy ratio and capital allocation process and provide a system to obtain accurate raw data for calculation;
- 5) Ensure the provision of training and education to enhance the ability of employees to conduct capital management in an effective manner, thus developing human resources with relevant expertise;
- 6) Provide a system to ensure that matters specified by the Board are reported in a regular and timely manner or on an as needed basis. In particular, the manager will provide a system to ensure that matters that would seriously affect corporate management are reported to the Board without delay;
- 7) Revise capital management rules and organizational frameworks when such is warranted;
- 8) Conduct monitoring on an ongoing basis with regard to the status of the execution of operations at the RMU/CMU;
- 9) Review the effectiveness of the capital management system in a regular and timely manner or on an as needed basis, and, as necessary, revise the capital management rules and the relevant organizational framework, or present the Board with proposals for improvement;

- 10) Develop a system to disclose the information concerning capital adequacy as specified by BB in a timely and appropriate manner;
- 11) Specify the matters to be directly reported to an external auditor;
- 12) Develop internal audit guidelines, specify the matters subject to internal audit and the audit procedure and internal audit plan regarding capital management;
- 13) Periodically determine whether there are any weaknesses or problems in the capital management system and the particulars thereof, and review their causes by precisely analyzing the status of capital management and assessing the effectiveness of capital management, based on all the information available regarding the status of capital management, such as the results of audits by external and internal audits, findings of investigations and BB inspections, and reports from various divisions;
- 14) Provide a system to implement improvements in the areas of the problems and weaknesses in the capital management system identified through the analysis, assessment and review in a timely and appropriate manner based on the results obtained by developing and implementing an improvement plan as required or by other appropriate methods; and
- 15) Ensure that the risk identification process of the Bank covers the full extent of business including those of overseas offices, consolidated subsidiaries and consignees, in addition to exhaustively covering the risk categories such as the credit risk, market risk and operational risk.

### **3.2.3 Role and responsibilities of capital management unit**

- 1) The CMU will smoothly implement measures for capital adequacy in accordance with corporate management plans and capital plans, etc. and monitor changes in external environment, including the economic cycle.;
- 2) Conduct sufficient analysis and deliberations in order to maintain a sufficient level of capital based on the results of monitoring of the status of the internal environment (risk profile, status of use of the risk limits, etc.) and external environment (economic cycle, market, etc.);
- 3) Assume the possibility of the institution failing to maintain sufficient capital and examine feasible countermeasures to build up the capital base and conduct such an examination by taking into consideration the possibility in particular that reputational risk will make it more difficult for the institution to raise capital than under normal conditions;

- 4) Identify risks faced by the bank exhaustively on a category-by-category basis and specify the risks to be subjected to capital management in the ICAAP in light of the size and nature of the identified risks;
- 5) Apply capital management to the credit concentration risk and the interest rate risk in the banking book in the ICAAP and consider whether to apply capital management to the risks not included in the calculation of the capital adequacy ratio, such as legal risk and reputation risk;
- 6) Assess risks appropriately in the ICAAP with a risk assessment method befitting the scale and nature of the business and its risk profile;
- 7) Review the validity of the risk assessment and measurement techniques and the assumptions thereof, etc. The review should include, but not be limited to, the following items:
  - a) The treatment of core deposits and the technique of measuring optional risks involved in assets and liabilities appropriately when measuring the interest rate risk related to the banking book;
  - b) Use of the appropriate scenarios, when scenario method is used to measure the risk quantification; and
  - c) Ensure that when VaR, a uniform yardstick to measure the risk quantity is employed, the measuring technique, the holding period and the confidence level applied are suited to the financial institution's strategic objectives and risk profile.
- 8) Assess capital adequacy in a manner befitting the scale and nature of the financial institution's business and its risk profile. Take into consideration the following items:
  - a) Suitability of the quality of capital to the internal capital adequacy assessment;
  - b) The validity of the ICAAP;
  - c) The limitations and weaknesses of the risk assessment method taken;
  - d) The conduct of internal capital adequacy assessment in light of two or more stress scenarios and based on the analysis of the level of the impact thereof on the capital;
  - e) The stress scenarios should give due consideration to all material risks that would seriously affect capital adequacy in the medium and long term; and
  - f) The lack or excess of loan loss provisions against expected losses.



- 9) Calculate the capital adequacy ratio, according to the calculation formula specified in the RBCA Guidelines issued by BB.

#### **3.2.3.1 Monitoring of capital adequacy**

The CMU/RMU, in accordance with the capital management policy and the capital management rules, will monitor capital adequacy in light of the bank's capital plan, internal environment (risk profile, the status of the use of risk limits, etc.) and external environment (economic cycle, markets, etc.).

#### **3.2.3.2 Reporting to board of directors and senior management**

The RMU/CMU, in line with the capital management policy and the capital management rules, will provide in a regular and timely manner or on an as needed basis information necessary for the Board to make appropriate assessment and judgment with regard to the status of capital management and capital adequacy.

#### **3.2.3.3 Feedback to relevant divisions**

The RMU/CMU will give feedback the results of its assessment, analysis and consideration with regard to the status of capital adequacy to relevant divisions as necessary.

#### **3.2.3.4 Control**

##### **(i) Countermeasures to case where unmanageable risks exist**

In the case where risks not covered by capital management have a non-negligible impact from the viewpoint of capital adequacy or where risks subject to capital management cannot be managed appropriately, the CMU/RMU will provide information necessary for the Board to make decisions as to whether the bank should withdraw from or downsize the operations affected by those risks.

##### **(ii) Countermeasures to the case where capital adequacy is insufficient**

In the case where capital adequacy is insufficient, the CMU/RMU will promptly consider feasible countermeasures to build up the capital base and provide information necessary for the board and senior management to make decisions as to what specific countermeasures should be taken in the future.

#### **3.2.3.5 Review and revision**

The CMU/RMU will regularly review whether the ICAAP suits the bank's strategic objectives, the scale and nature of its business, and its risk profile and revise the method, or

provide information necessary for the Board to make appropriate assessment and judgments. The Dept./Unit will review and revise the following items:

- i) Consistency of the definition of capital as used in the ICAAP with the corporate management policy, corporate management plans and strategic objectives, etc. and validity of the grounds for determining the definition;
- ii) Validity of identification of risks subject to capital adequacy in the internal capital adequacy assessment;
- iii) Validity of the risk assessment method used in the ICAAP
- iv) Validity of the ICAAP itself ; and
- v) Appropriateness of the use of the ICAAP itself, taken in consideration of its limitations and weaknesses.

### 4.1 Defining credit risk

Credit risk arises from the potential that a bank's borrower will fail to meet its obligations in accordance with agreed terms. Credit risk also refers to the risk of negative effects on the financial result and capital of the bank caused by a borrower's default on its obligations to the bank.

Generally, credits are the largest and most obvious source of credit risk. However, credit risk could stem from both on-balance sheet and off-balance sheet activities. It may arise from either an inability or an unwillingness to perform in the pre-committed contracted manner. Credit risk comes from a bank's dealing with individuals, corporate, banks and financial institutions or a sovereign.

The assessment of credit risk involves evaluating both the probability of default by the borrower and the exposure or financial impact on the bank in the event of default.

### 4.2 Principles of bank's credit risk management

**Principle 1:** The board should have responsibility for approving and periodically reviewing the credit risk strategy and significant credit risk policies of the bank. The strategy should reflect the bank's risk appetite and the level of profitability the bank expects to achieve for incurring various credit risks.

**Principle 2:** Senior management should have responsibility for implementing the credit risk strategy approved by the board and for developing policies and procedures for identifying, measuring, monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities and at both the individual credit and portfolio levels.

**Principle 3:** Banks should identify and manage credit risk inherent in all products and activities. Banks should ensure that the risks of products and activities new to them are subject to adequate procedures and controls before being introduced or undertaken, and approved in advance by the BOD or its appropriate committee.

**Principle 4:** Banks must operate under sound, well-defined credit-granting criteria. These criteria should include a thorough understanding of the borrower or counter party, as well as the purpose and structure of the credit, and its source of repayment.

**Principle 5:** Banks should establish overall credit limits at the level of individual borrowers, and group of connected counter parties that aggregate different types of exposures, both in the banking and trading book and on and off balance sheet.

**Principle 6:** Banks should have a clearly established process in place for approving new credits as well as the extension of existing credits.

**Principle 7:** All extensions of credit must be made on an arm's-length basis. In particular, credits to related companies and individuals must be monitored with particular care and other appropriate steps taken to control or mitigate the risks of connected lending.

**Principle 8:** Banks should have in place a system for the ongoing administration of their various credit risk-bearing portfolios.

**Principle 9:** Banks must have in place a system for monitoring the condition of individual credits, including determining the adequacy of provisions and reserves.

**Principle 10:** Banks should develop and utilize internal risk rating systems in managing credit risk. The rating system should be in line with the regulatory instructions and consistent with the nature, size and complexity of a bank's activities.

**Principle 11:** Banks must have information systems and analytical techniques that enable management to measure the credit risk inherent in all on balance sheet and off-balance sheet activities. The management information system should provide adequate information on the composition of the credit portfolio, including identification of any concentrations of risk.

**Principle 12:** Banks must have in place a system for monitoring the overall composition and quality of the credit portfolio.

**Principle 13:** Banks should take into consideration potential future changes in economic conditions when assessing individual credits and their credit portfolios, and should assess their credit risk exposures under stressful conditions.

**Principle 14:** Banks should establish a system of independent, ongoing credit review and the results of such reviews should be communicated directly to the board and senior management.

**Principle 15:** Banks must ensure that the credit-granting function is being properly managed and that credit exposures are within levels consistent with prudential standards and internal limits. Banks should establish and enforce internal controls and other practices to ensure that exceptions to policies, procedures and limits are reported in a timely manner to the appropriate level of management.

**Principle 16:** Banks must have a system in place for managing problem credits and various other workout situations.

### 4.3 Credit risk management framework

A typical credit risk management framework in a bank may be broadly categorized into following main components:

- a) Board oversight
- b) Senior management's oversight
- c) Organizational structure
- d) Systems and procedures for identification, acceptance, measurement of risks
- e) Monitoring and control of risks

#### 4.3.1 Board oversight

The board has a vital role in granting credit as well as managing the credit risk of the bank. It is the overall responsibility of a bank's board to approve credit risk strategies and significant policies relating to credit risk and its management which should be based on the overall business strategy. Overall strategies as well as significant policies have to be reviewed by the board on regular basis.

The responsibilities of the board with regard to credit risk management shall include the following:

- a) Ensure that appropriate policies, plans and procedures for credit risk management are in place. Ensure that bank implements sound fundamental policies
- b) Define the bank's overall risk appetite in relation to credit risk
- c) Ensure that top management as well as staffs responsible for credit risk management possess sound expertise and knowledge to accomplish the risk management function
- d) Ensure that bank's significant credit risk exposure is maintained at prudent levels and consistent with the available capital
- e) Review trends in portfolio quality and the adequacy of bank's provision for credit losses
- f) Ensure that internal audit reviews the credit operations to assess whether or not the bank's policies and procedures are adequate and properly implemented
- g) Review exposures to insiders and their related parties, including policies related thereto
- h) Ratify exposures exceeding the level of the management authority delegated to management and be aware of exposures and
- i) Outline the content and frequency of management report to the board on credit risk management

### 4.3.2 Senior management oversight

The responsibility of senior management is to transform strategic directions set by the board in the shape of policies and procedures. Senior management has to ensure that the policies are embedded in the culture of the bank. Senior management is responsible for implementing the bank's credit risk management strategies and policies and ensuring that procedures are put in place to manage and control credit risk and the quality of credit portfolio in accordance with these policies.

The responsibilities of senior management with regard to credit risk management shall include:

- a) Developing credit policies and credit administration procedures for Board approval;
- b) Implementing credit risk management policies to ensure an effective credit risk management process;
- c) Ensuring the development and implementation of appropriate reporting system;
- d) Monitoring and controlling the nature and composition of the bank's credit portfolio;
- e) Monitoring the quality of the credit portfolio and ensuring that the portfolio is thoroughly and conservatively valued and probable losses are adequately provided for;
- f) Establishing internal controls and setting clear lines of accountability and authority; and
- g) Building lines of communication for the timely dissemination of credit risk management policies, procedures and other credit risk management information to all the credit staffs.

### 4.3.3 Organizational structure

Organizational structures may vary according to size, complexity and diversification of bank's activities. The structure should facilitate effective management oversight and proper execution of credit risk management and control processes. It is necessary to maintain the bank's overall credit risk exposure within the parameters set by the Board.

#### 4.3.3.1 Credit risk management committee

Each bank, depending upon its size, should constitute a credit risk management committee (CRMC), ideally comprising the heads of the risk management department, credit department and treasury. This committee reports to the bank's risk management committee (or All Risk Committee, as described above) and should be empowered to oversee credit risk taking

activities and overall credit risk management function. The CRMC should be mainly responsible for:

- a) Implementation of the credit risk policy/strategy approved by the Board;
- b) Monitoring credit risk on a bank-wide basis and ensure compliance with limits approved by the Board;
- c) Making recommendations to the board, for its approval, clear policies on standards for presentation of credit proposals, financial covenants, rating standards and benchmarks; and
- d) Deciding 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.

## **4.4 Systems and procedures**

### **4.4.1 Credit strategy**

The primary purpose of a bank's credit strategy is to determine the risk appetite. Once it is determined, the bank shall develop a plan to optimize return while keeping credit risk within predetermined limits. The credit risk strategy thus should cover:

- a) The bank's plan to grant credit based on various client segments and products, economic sectors, geographical location, currency and maturity;
- b) Target market within each lending segment and level of diversification /concentration;
- c) Pricing strategy.

Credit risk strategy should be developed on the basis of the bank's target market and its internal strength. The strategy should take into account the cyclical aspect of the country's economy and the resulting shifts in composition and quality of the overall credit portfolio. The strategy should be reviewed periodically and amended, as deemed necessary. The strategy should be viable in the long term and through various economic cycles.

### **4.4.2 Credit policies**

Credit Policies (CP) reflect the bank's appetite for credit risk. Every bank has to develop a credit policy as a part of an overall credit risk management framework and get it approved by the Board. The CP should clearly outline the bank's view of business development priorities and the terms and conditions that should be applicable for credits to be approved. The CP

should be periodically updated, taking into account changing internal and external circumstances. To make it effectual, CP should be communicated timely and implemented by all levels of the bank through appropriate procedures. It should be distributed to all lending authorities and credit officers. Significant deviations from the CP must be communicated to the senior management or Board and corrective measures should be taken. The CP should at least include:

- a) Detailed and formalized credit evaluation/appraisal process;
- b) Credit origination, administration and documentation procedures;
- c) Formal credit approval process;
- d) Approval procedure of credit extension beyond prescribed limits and other exceptions to the CP;
- e) Risk identification, measurement, monitoring and control;
- f) Internal rating (risk grading) systems including definition of each risk grade and clear demarcation for each risk grade in line with BB regulations and policies;
- g) Risk acceptance criteria;
- h) Credit approval authority at various levels including authority for approving exceptions and responsibilities of staffs involved in credit operations;
- i) Roles and responsibilities of staffs involved in origination and management of credit;
- j) Acceptable and unacceptable types of credit. These types can be on the basis of credit facilities, type of collateral security, types of borrowers, or geographic sectors on which the bank may focus;
- k) Clear and specific guidelines for each of the various types of credits, including maximum loan-to-value (LTV) ratios;
- l) Concentration limits on single party or group of connected parties, particular industries or economic sectors, geographic regions and specific products. Banks are allowed to set their own stringent internal exposure limits, as long as they are at least as strict as prudential limits or restrictions set by BB;
- m) Pricing of credits;
- n) Review and approval authority of allowances for probable losses and write-offs;
- o) Guidelines on regular monitoring and reporting systems, including borrower follow-up and mechanisms to ensure that loan proceeds are used for the stated purpose;
- p) Guidelines on management of problem loans;
- q) Policies on loan rescheduling and restructuring; and
- r) The process to ensure appropriate reporting.



In order to be effective, credit policies must be communicated throughout the bank, implemented through appropriate procedures, and periodically revised to take into account changing internal and external circumstances. Any significant deviation/exception to these policies must be communicated to the Board/ senior management and corrective measures should be taken. It is the responsibility of senior management to ensure effective implementation of these policies.

#### **4.4.3 Credit procedures**

The credit procedures should aim to obtain a wide understanding of the bank's clients and their businesses in order to fully know their customers. Banks should develop procedures that adequately capture salient issues regarding the borrower's industry, macro economic factors, the purpose of credit, source of repayment, track record and repayment history of the borrower, repayment capacity of the borrower, the proposed terms and conditions and covenants, adequacy and enforceability of collaterals, and appropriate authorization for the credit.

#### **4.4.4 Credit origination/extension**

In case of new relationships, consideration should be given to the integrity and reputation of the borrower as well as its legal capacity to assume the liability. Prior to entering into any new credit relationship the banks must become familiar with the borrower and be confident that they are dealing with an individual or organization of sound reputation and credit worthiness. A bank must not grant credit simply on the basis of the fact that the borrower is a highly reputed individual or company (i.e. name, status, social and national recognition etc.).

Credits should be extended within the target markets as per the lending strategy of the bank itself. Before allowing a new or extended credit facility, the bank should assess the risk profile of the customer. This assessment should include:

- a) Credit assessment of the borrower's industry, macro-economic factors, and firm specific analysis;
- b) The purpose of credit and source of repayment;
- c) The repayment history of borrower;
- d) Repayment capacity and other sources of income of the borrower;
- e) Expected future cash flows from the borrower in consistent with past history;
- f) Terms, conditions and covenants for the credit agreement;
- g) Adequacy, enforceability and liquidity status of collaterals; and
- h) Approval from appropriate authority.

If the borrower has utilized funds for the purposes not shown in the original proposal, banks should take steps to determine the negative implications on credit worthiness. In case of corporate credits where the borrower is a group of companies, banks should classify such connected companies and conduct credit assessment on a consolidated/ group basis.

In case of credit syndication, all syndicate participants should perform their own independent assessment, analysis and review of syndicate terms.

Banks utilize collaterals and guarantees to help mitigate risks inherent in individual credits. However, the primary focus should be on the strength of the borrower's repayment capacity and reputation in the market. Collaterals cannot be a substitute for a comprehensive assessment of the borrower, nor can they compensate for insufficient information. These should be considered as a buffer providing protection in case of default.

In case of structuring credit facilities banks should appraise the amount and timing of the cash flows as well as the financial position of the borrower. It is extremely important that due consideration should be given to the risk reward trade-off in granting a credit facility and credit should be priced to cover all embedded costs. Relevant terms and conditions should be laid down to protect the bank's interest.

Banks should have policies covering the acceptability of various forms of collateral, procedures for the ongoing valuation of such collateral, and a process to ensure that collateral is, and continues to be, enforceable and realizable. With regard to guarantees, banks should evaluate the level of coverage being provided in relation to the credit-quality and legal capacity of the guarantor.

Banks' credit-granting approval process should establish accountability for decisions taken and designate who has the authority to approve credits or changes in credit terms. A potential area of exploitation arises from granting credit to connected and related parties, (sometimes called "insiders") whether companies or individuals. Related parties typically include a bank's promoters, major shareholders, subsidiaries, affiliate companies, directors, and executives. The relationship includes the ability to exert control over or influence a bank's policies and decision-making, especially concerning credit decisions. It is crucial for a bank to systematically identify and track extensions of credit to insiders. The issue is whether credit granting decisions are made rationally and according to approved policies and procedures. In no case should a loan be granted to a related party with terms and conditions more favorable to the borrower than on a similar loan to an unrelated party. Terms and conditions include amount of the loan, interest rate, amount and type of collateral required, repayment schedule, origination fee, and the possibility of extension or rescheduling.

#### **4.4.5 Delegation of authority**

Banks are required to establish responsibility for credit sanctions and delegate authority to approve credits or changes in credit terms. It is the responsibility of the bank's Board to

approve the overall lending authority structure, and explicitly delegate credit sanctioning authority to senior management and the credit committee. Lending authority assigned to officers should be commensurate with their experience, ability and personal character. It is preferable if banks develop risk-based authority structure where lending power is tied to the risk ratings of the borrower. Banks may adopt multiple credit approvers for sanctioning such as credit ratings, risk approvals etc. to constitute a more effective system of check and balance. The credit policy should spell out the escalation process to ensure appropriate reporting and approval of credit extension beyond prescribed limits. The policy should also spell out authorities for unsecured credit (while remaining within regulatory limits), approvals of disbursements excess over limits and other exceptions to the credit policy.

In cases where lending authority is assigned to the loan originating function, there should be compensating processes and measures to ensure adherence to lending standards. There should also be periodic review of lending authority assigned to officers.

#### **4.4.6 Credit limits**

An important element of credit risk management is to establish exposure limits covering on-balance sheet and off-balance sheet credit exposures for single party/group of connected parties. Banks are expected to develop their own stringent limit structure while remaining within the exposure limits set by BB.

The size of credit limits should be based on the credit strength of the borrower, genuine purpose of credit, economic conditions and the bank's risk appetite. Limits should also be set for respective products, activities, specific industry, economic sectors and/or geographic regions to avoid concentration risk. Credit limits should be reviewed periodically at least semi-annually or more frequently if borrower's credit quality deteriorates. All requests for increases in credit limits should be authenticated by the appropriate authority.

Sometimes, the borrower may want to share its facility limits with its related companies. Banks should review such arrangements and impose necessary limits if the transactions are frequent and significant.

#### **4.5 Credit administration**

The credit administration function is basically a back office activity that supports and controls extension and maintenance of credit. While developing credit administration areas, banks must ensure:

- a) the efficiency and effectiveness of credit administration operations, including monitoring documentation, contractual requirements, legal covenants, collateral, etc;

- b) the accuracy and timeliness of information provided to management information systems;
- c) the adequacy of control over all "back office" procedures; and
- d) compliance with prescribed management policies and procedures as well as applicable laws and regulations.

Banks need to enunciate a system that enables them to monitor quality of the credit portfolio on day-to-day basis and take remedial measures as and when any deterioration occurs. Such a system would enable a bank to ascertain whether loans are being serviced as per facility terms, confirm the adequacy of provisions, and establish that the overall risk profile is within limits established by management and compliance of regulatory limits. Monitoring procedures and systems should be in place so as to provide an early signal of the deteriorating financial health of a borrower.

A typical credit administration unit performs the following functions:

**a. Documentation:** It is the responsibility of credit administration to ensure completeness of documentation (loan agreements, guarantees, transfer of title of collaterals etc.) in accordance with approved terms and conditions. Outstanding documents should be tracked and followed up to ensure execution and receipt.

**b. Credit disbursement:** The credit administration should ensure that the credit application has proper approval before entering facility limits into computer systems. Disbursement should be effected only after completion of covenants, and receipt of collateral holdings. In case of exceptions necessary approval should be obtained from competent authorities.

**c. Credit monitoring:** After the credit is approved and draw down allowed, the credit should be continuously monitored. These include keeping track of borrowers' compliance with credit terms, identifying early signs of irregularity such as loan proceeds being used other than for the intended purpose, conducting periodic valuation of collateral and monitoring timely repayments.

**d. Credit repayment:** The borrowers should be communicated ahead of time as and when the principal/markup installment becomes due. Any exceptions such as non-payment or late payment should be tagged and communicated to the management. Proper records and updates should also be made after receipt.

**e. Maintenance of credit files:** Institutions should devise procedural guidelines and standards for maintenance of credit files. The credit files not only include all correspondence with the borrower but should also contain sufficient information necessary to assess the financial health of the borrower and its repayment performance. Information should be filed in an organized way so that external/internal auditors or BB inspectors could review it easily.

**f. Collateral and security documents:** Institutions should ensure that all security documents are kept in a fireproof custody under dual control. Proper records for security documents must be maintained to track their movement. Procedures should also be established to track and review relevant insurance coverage for certain facilities/collateral. Physical checks on security documents must be conducted on a regular basis.

#### 4.6 Measuring credit risk

The measurement of credit risk is a vital part of credit risk management. To start with, banks should establish a credit risk rating framework across all type of credit activities. Among other things, the rating framework may, incorporate:

##### *Business risk*

- i. Industry characteristics
- ii. Competitive position (e.g. marketing/technological edge)
- iii. Management

##### *Financial risk*

- i. Financial condition
- ii. Profitability
- iii. Capital structure
- iv. Present and future cash flows

#### 4.6.1 Internal credit risk rating

An internal credit rating system should categorize all credits into various classes on the basis of underlying credit quality. Banks should develop an internal credit risk rating system in line with BB's regulations and guidelines for its credits in consistent with the nature, size and complexity of the bank's activities. All credit facilities should be assigned a risk grade. If any deterioration in risk is observed, the risk grade assigned to a borrower and its facilities should be immediately changed. The rating system must be endorsed by the Board and should have at least the following parameters:

- a) covers a broad range of the bank's credit exposure, including off-balance sheet exposures;
- b) covers both performing and non-performing assets;
- c) has several grades covering exposures, with the lowest rating accorded to those where losses are expected;
- d) has risk ratings for "performing" credits with several grades (including the grade corresponding to "special mention");

- e) cross-references the regulatory classifications (standard, special mention, sub-standard, doubtful & bad/loss) within the risk rating systems; and
- f) has the credit risk rating system detailed in the credit policy and procedures developed for the determination and periodic review of the credit grades.

Banks should regularly monitor and evaluate the actual default or loss experience of credits in each risk grade as one means to assess the consistency and reliability of the ratings being used.

#### **4.7 Credit risk monitoring and control**

Banks need to develop and implement comprehensive procedures and information systems to monitor the condition of each individual credit across various portfolios. Banks need to enunciate a system that enables them to monitor quality of the credit portfolio on a day-to-day basis and take remedial measures as and when any deterioration occurs. These procedures need to define criteria for identifying and reporting potential problem credits and other transactions to ensure that they are subject to more frequent monitoring as well as possible corrective action, classification and/or provisioning. Establishing an efficient and effective credit monitoring system would help senior management to monitor the overall quality of the total credit portfolio and its trends and helps to reassess credit strategy/policy accordingly before encountering any major setback.

The banks credit policy should explicitly provide procedural guideline relating to credit risk monitoring. At the minimum it should lay down procedure relating to:

- a) The roles and responsibilities of individuals responsible for credit risk monitoring;
- b) The assessment procedures and analysis techniques (for individual loans & overall portfolio)
- c) The frequency of monitoring;
- d) The periodic examination of collaterals and credit covenants;
- e) The frequency of site visits; and
- f) The identification of deterioration in any credit;

**An effective credit monitoring system includes measures to:**

- i. ensure that the bank understands the current financial condition of the borrowers;
- ii. ensure that all credits are in compliance with existing covenants;
- iii. follow the use customers make of approved credit lines;
- iv. ensure that projected cash flows on major credits meet debt servicing requirements;

- v. ensure that, where applicable, collateral provides adequate coverage relative to the obligor's current condition; and
- vi. identify and classify potential problem credits on a timely basis.

Given below are some key indicators that depict the credit quality of an exposure:

- 1) Banks need to watch carefully the financial standing of the borrowers. The key financial performance indicators namely profitability, equity, leverage and liquidity should be analyzed. While making such analysis due consideration should be given to business/industry risk, borrowers' position within the industry and external factors such as economic condition, government policies and regulations. For companies whose financial position is dependent on key management personnel and/or shareholders, for example, in small and medium enterprises, institutions would need to pay particular attention to the assessment of the capability and capacity of the management/shareholder(s).
- 2) In the case of an existing borrower, banks should monitor the borrower's account activity, repayment history and instances of excesses over credit limits. For trade financing, banks should monitor cases of repeat in extensions of due dates for trust receipts and bills.
- 3) Bank should regularly review the credit in terms of the borrower's ability to adhere to financial covenants stated in the credit agreement, and any breach detected should be addressed promptly.
- 4) Banks need to reassess the value of collaterals on a periodic basis. Appropriate inspection should be conducted to verify the existence and valuation of the collateral. The frequency of such valuation is very subjective and depends upon nature of collaterals. For instance, credits granted against shares need revaluation on almost daily basis whereas if there is mortgage of a residential property the revaluation may not be necessary as frequently. In case of credit facilities secured against inventory or goods at the obligor's premises, appropriate inspection should be conducted to verify the existence and valuation of the collateral. If such inventory or goods are perishable or such that their value diminishes rapidly (e.g. electronic equipment/computers), additional precautionary measures should be taken.

#### **4.8 Credit risk review and stress testing**

The bank must develop a mechanism of independent, ongoing assessment of the credit risk management process. All facilities except those managed on a portfolio basis should be subjected to individual risk review at least twice in a year. More frequent review should be conducted for new accounts where banks may not be familiar with the borrower, and for classified or adversely rated accounts that have a higher probability of default. The results of

such review should be properly documented and reported directly to the Board or its sub-committee or senior management evading the lending authority.

The purpose of such reviews is to assess the credit administration process, the accuracy of credit rating and overall quality of loan portfolio independent of relationship with the obligor. Banks should conduct the credit review with updated information on the borrower's financial and business conditions, as well as conduct of account. Exceptions noted in the credit monitoring process should also be evaluated for impact on the borrower's creditworthiness. Credit review should also be conducted on a consolidated group basis to factor in the business connections among entities in a borrowing group.

An important element of sound credit risk management is analyzing what could potentially go wrong with individual credits and the overall credit portfolio if conditions/environment, in which borrowers operate, change significantly. The results of this analysis should then be factored into the assessment of the adequacy of provisioning and capital of the bank. Such stress analysis can reveal previously undetected areas of potential credit risk exposure that could arise in times of crisis.

Possible scenarios that banks should consider in carrying out stress testing include:

- a) Significant economic or industry sector downturns;
- b) Adverse market-risk events; and
- c) Unfavorable liquidity conditions.

Banks should have industry profiles in respect of all industries where they have significant exposures. Such profiles must be reviewed/updated on a regular basis. Each stress test should be followed by a contingency plan as regards recommended corrective actions. Senior management must regularly review the results of stress tests and contingency plans. The results must serve as an important input into a review of credit risk management framework and setting limits and provisioning levels.

Banks have to follow the instructions cited in the "Revised Guidelines on Stress Testing" issued by BB on 23 February 2011 and its subsequent amendments.

#### **4.9 Managing credit concentration risk**

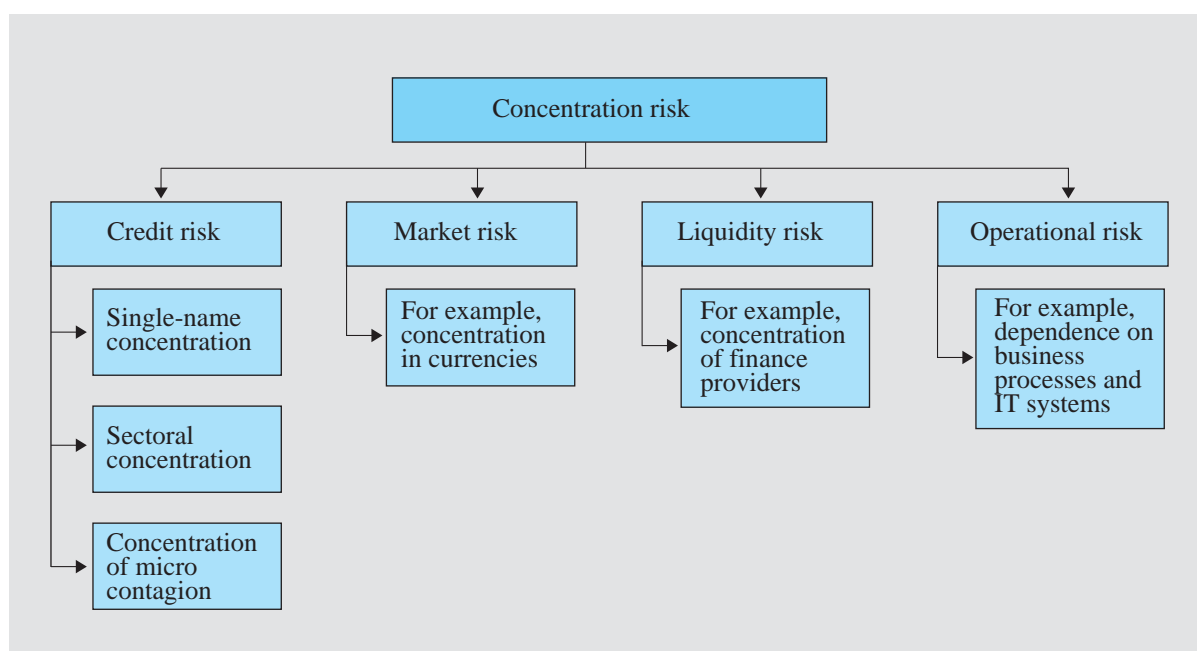
Concentration risk generally designates the risk arising from an uneven distribution of counterparties in credit or any other business relationships or from a concentration in business sectors or geographical regions which is capable of generating losses large enough to jeopardize an institution's solvency.



Credit concentrations of a bank may be pre-planned and part of its business philosophy. However, banks should make greater efforts to identify and limit concentration risk or to demand appropriate risk premiums. Each bank should have effective internal policies, systems and controls to identify, measure, monitor and control credit risk concentrations (CCR). Banks should minimize concentration risk possibilities rather than providing capital cover. However, BB reserves the right to require higher levels of capital for individual banks with excessive concentration risk.

Concentration risk can be considered from either a macro (systemic) or a micro (idiosyncratic) perspective. From the point of view of financial stability (macro perspective), the focus is on risks for groups of banks which, for example, emerge from a joint concentration in certain business lines or a joint regional concentration in lending.

### Overview of concentration risk



Source: 'Concentration risk in credit portfolios', DEUTSCHE BUNDESBANK, Monthly Report, June 2006

#### 4.10.1.1 Single-name concentration risk

Single-name concentration risk, i.e., the firm-specific (idiosyncratic) risk in a credit portfolio arises from the credit risk of large borrowers. Firm-specific risk comprises the risks resulting from the potential default of a single borrower or a legally or financially-connected group of borrowers. By contrast, systematic risk - the second risk component of a credit portfolio - comprises all of the risks affecting several legally independent borrowers or the entire portfolio, for example, the state of the economy or industry-sector-dependent risks.

#### **4.10.1.2 Sectoral credit concentrations**

Sectoral concentration in credit portfolios can be broken down into concentration in certain sectors of industry and concentration in individual regions. While commercial credit risk models, used widely in the financial sector, usually measure both kinds of sectoral concentration using a similar methodology, there are many differences from a theoretical point of view. By contrast, concentration risk from exposures to industry sectors arises from credit dependencies between enterprises, resulting from a common sector affiliation and the prevailing economic environment in that sector.

#### **4.10.1.3 Concentrations of micro contagion**

Interdependencies between enterprises owing to bilateral business relations also contribute to the emergence of risks. Concentration in firms which are connected through business relations is more risky than lending to enterprises without such ties. This is also referred to as micro contagion. This kind of concentration risk at the micro level is, in terms of the strength of dependencies, positioned between single-name concentration and sectoral concentration.

#### **4.10.1.4 Concentration in liabilities**

Concentration in liabilities, such as a concentration of certain refinancing instruments or of investors or depositors, may also play an important role. These concentrations belong more to a bank's general liquidity risk, however.

#### **4.10.1.5 Concentration in IT System**

Concentration risk is also inherent in the area of operational risk, for example, through dependence on a particular IT system.

### **4.10.2 Measuring concentration risk**

Commonly used heuristic methods for measuring credit concentration risk in industrial finance are:

#### **4.10.2.1 Single borrower/group exposure concentration**

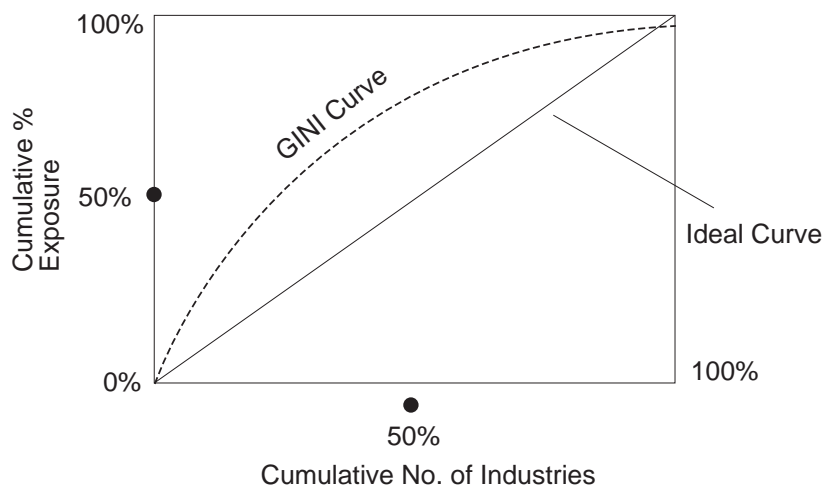
Single borrower and group exposure concentration can be derived in the following ways:

1. Exposure to top 10/20/50/100 borrowers (single counterparties or group of connected counterparties) to percentage of total loans and advances
2. Other concentration risk indicators

- a) Geographical distribution
  - Division-wise
- b) Exposures to sensitive sectors (as percentage of total exposures/credit portfolio)
  - Capital market
  - Real estate
  - Other sectors with high intrinsic risk
- c) Unsecured exposure to total credit exposure
- d) Residual maturity-wise concentration
  - Percentage of term loans with residual maturity of more than 3 years to total credit portfolio
  - Correlation with deposit/funds maturity pattern
- e) Off-balance sheet exposure to total credit exposure
- f) Rating-wise distribution
  - Total exposures below - for example, 'BBB' to total credit exposure
  - Unrated exposures to total credit exposure

#### 4.10.2.2 GINI coefficient

The Gini coefficient provides a further method of measuring single-name concentration. This ratio can be interpreted as a concentration index, i.e., a measure of the deviation of a distribution of exposure amounts from an even distribution. A coefficient close to zero signifies a homogeneous portfolio in which all of the exposure amounts are distributed equally; a coefficient close to one points to a highly concentrated portfolio.



### Plotting GINI coefficient:

- a) Cumulative percentage share of number of accounts, industries, sectors on 'horizontal' axis
- b) Respective cumulative percentage shares of total credit exposure to borrowers, industries, sectors on 'vertical' axis
- c) Comparing the plotted curve against Ideal Curve (diagonal)
- d) The coefficient indicates the concentration

The Gini Coefficient represents the area of concentration between the Lorenz curve and the line of perfect equality. Mathematically, the Gini Coefficient can be computed using the following formula:

$$G = 1 - \sum_{i=0}^N (\sigma Y_{i-1} + \sigma Y_i)(\sigma X_{i-1} - \sigma X_i)$$

Where  $\sigma X$  and  $\sigma Y$  are cumulative percentages of Xs and Ys (in fractions) and N is the number of elements (observations).

However, the Gini coefficient has limited suitability for measuring single name concentration risk because it may rise if a relatively small loan to a new borrower is added to the portfolio despite the fact that this diminishes the concentration.

#### 4.10.2.3 Herfindahl-Hirschman Index (HHI)

Credit concentration by business segment can also be quantified based on the Herfindahl-Hirschman Index (HHI). The HHI is another simple model-free approach for quantifying undiversified idiosyncratic risk. The HHI is defined as the sum of the squares of the relative portfolio shares of all borrowers. Well-diversified portfolios with a very large number of very small borrowers have an HHI value close to zero, whereas heavily concentrated portfolios can have a considerably higher HHI value. In the extreme case of a single borrower, the HHI takes the value of 10,000. It is calculated by squaring the market shares of all firms in the market and then summing the squares, as follows:

$$HHI = \sum_{i=1}^n (MS_i)^2$$

where  $MS_i$  is the market share of the  $i$ th firm and  $n$  is the number of firms.

The calculation process and other details are also stated in the "Process Document for SRP-SREP Dialogue on ICAAP" issued by BB on February 2011. An activity may be considered to be concentrated whenever the HHI exceeds 1,800.

The Gini coefficient and Herfindahl-Hirschman Index (HHI) are good measures for concentration but they do not seem to serve well for concentration risk because they do not take distribution of different quality obligors into consideration. Granularity adjustment or simulation-based approaches may be another way of measuring concentration risk. Banks should have an appropriate system to perform simulation-based approaches in practice.

Risk concentrations should be adequately identified and managed by banks. An integrated approach to risk across the firm is fundamental so that all sources of risk (including on- and off-balance-sheet risks, contractual and non-contractual risks, and contingent and non-contingent risks) will be effectively captured. Models and procedures should be implemented in such a way that they will be able to capture concentration risks to individual obligors, risk factors, industries, geographic regions, and counterparties.

#### 4.10.3 Techniques for Managing Concentration Risk

Banks use a variety of techniques to manage concentration risk. Among the most important methods are:

**Risk appetite:** The bank should define its appetite for concentration risk in a Board-approved document;

**Limits:** The bank should not only have internal limits for large exposures and connected counterparty exposures, but also have sector, geographical, and product line limits;

**Authorities:** The bank should require higher levels of authority to approve new credits or other exposures as the exposure approaches the limit;

**Portfolio management:** The bank should monitor risk concentrations continuously and closely to correct for new concentrations that may arise;

**Risk transfer:** As with traditional credit risk, banks may manage concentration risk by selling excessive exposures or requiring additional collateral or guarantees;

**Capital buffers:** The bank should consider increasing its regulatory capital above BB's required limits to handle increased concentration risk. Alternatively, an increase in general loan loss provisions could offer protection against linked failures of counterparties;

**Stress testing:** The bank should periodically subject its more concentrated portfolios to stress testing, when adverse scenarios are applied to geographical or economic sectors, and to product lines. An example of a "product line" stress test is determining the impact on the bank of a 30 percent drop in single-family house or apartment prices on the mortgage loan portfolio.

## 4.11 Managing problem credits

Banks should establish a system that helps identify a problem credit ahead of time, when there may be more options available for remedial measures. Once the credit is identified as a problem, it should be managed under a dedicated remedial process.

A bank's credit risk policies should clearly set out how the bank will manage problem credits. Responsibility for problem credits may be assigned to the originating business function, a specialized workout section, or a combination of both, depending upon the size and nature of the credit and the reason for its problems. When a bank has significant credit-related problems, it is important to segregate the workout function from the credit origination function. The additional resources, expertise and more concentrated focus of a specialized workout section normally improve collection results. In such case, the Recovery Unit (RU), as a separate unit, shall manage accounts with sustained deterioration (a risk rating of sub-standard or worse).

The RU's primary functions can be to:

- a) Determine action plan/recovery strategy;
- b) Pursue all options to maximize recovery, including placing customers into legal proceedings or liquidation as appropriate;
- c) Ensure adequate and timely loan loss provisions are made based on actual and expected losses; and
- d) Regular review of accounts classified as sub-standard or worse.

A problem credit management process encompasses the following basic elements:

**Negotiation & follow up:** A proactive effort should be taken in dealing with borrowers to implement remedial plans, by maintaining frequent contact and internal records of follow-up actions. Often rigorous efforts made at an early stage prevent banks from litigations and loan losses;

**Workout remedial strategies:** Sometimes appropriate remedial strategies such as restructuring of the credit facility, enhancement in credit limits, or reduction in interest rates help improve the borrower's repayment capacity. However, it depends upon business conditions, the nature of problems being faced and most importantly the borrower's commitment and willingness to repay the credit. A bank's failure to address problem credits timely may threaten its solvency. While such remedial strategies often bring up positive results, banks need to exercise great caution in adopting such measures and ensure that such a policy must not encourage borrowers to default intentionally. The bank's interest should be the primary consideration in case of any such workout plans;

Before implementation, the workout plan must be approved by the competent authority at the bank;

**Reviewing collateral and security documents:** Banks have to ascertain the credit recoverable amount by updating the values of available collateral with formal valuation. Security documents should also be reviewed to ensure the completeness as well as enforceability of contracts and collateral/guarantee; and

**Status report and review:** Problem credits should be subject to more frequent review and monitoring. The review should update the status and development of the credit accounts and progress of the remedial plans. Progress made on problem credit should be reported to the senior management.

#### 4.12 Management information system (MIS)

A bank's quality of risk management depends on the accuracy, validity, reliability and timeliness of information available. A bank's credit risk measurement process is highly dependent on the quality of management information systems (MIS). The information thus generated enables the board and all levels of management to fulfill their respective oversight roles, including determining the adequate level of capital that the bank should be holding. Banks should have a MIS in place to ensure that exposures approaching risk limits are brought to the attention of senior management. All exposures should be included in a risk limit measurement system. The information system should be able to aggregate credit exposures to individual borrowers and report on exceptions to credit risk limits on a meaningful and timely fashion.

### 5.1 Defining market risk

It is the risk of potential losses in the on-balance sheet and off-balance sheet positions of a bank, stems from adverse movements in market rates or prices such as interest rates, foreign exchange rates, equity prices, credit spreads and/or commodity prices.

**Banks may be exposed to market risk in variety of ways. Market risk exposure-**

- a) may be explicit in portfolios of securities/equities and instruments that are actively traded;
- b) may be implicit such as interest rate risk due to mismatch of assets and liabilities; and
- c) may arise from activities categorized as off-balance sheet items.

The risk arising from market risk factors such as interest rates, foreign exchange rates, and equity prices have been discussed below.

### 5.2 Interest rate risk

Interest rate risk is the potential impact on a bank's earnings and net asset values due to changes in market interest rates. Interest rate risk arises when a bank's principal and interest cash flows (including final maturities), both on- and off-balance sheet, have mismatched repricing dates. The amount at risk is a function of the magnitude and direction of interest rate changes and the size and maturity structure of the mismatch position. Bank's lending, funding and investment activities give rise to interest rate risk.

Interest rate risk management must be conducted within the context of a comprehensive business plan.

#### 5.2.1 Effects of interest rate risk

The immediate impact of a variation in interest rates is on the bank's net interest income, while a long term impact is on the bank's net worth since the economic value of bank's assets, liabilities and off-balance sheet exposures are affected. Consequently, there are two common perspectives for the assessment of interest rate risk.

- a) **Earning perspective:** In the earning perspective, the focus of analysis is the impact of variation in interest rates on accrual or reported earnings. This is a traditional



approach to interest rate risk assessment and obtained by measuring the changes in the net interest income (NII), the difference between the total interest income and the total interest expense or net interest margin (NIM) i.e. net interest income to gross interest-earning assets. Variation in earnings is an important focal point for interest rate risk analysis because reduced earnings or outright losses can threaten the financial stability of a bank by undermining its capital adequacy and by reducing market confidence.

- b) **Economic value perspective:** Variations in market interest rates can also affect the economic value of a bank's assets, liabilities, and OBS positions. The economic value of a bank can be viewed as the present value of the bank's expected net cash flows, defined as the expected cash flows on assets minus the expected cash flows on liabilities plus the expected net cash flows on OBS positions. In this sense, the economic value perspective reflects one view of the sensitivity of the net worth of the bank to fluctuations in interest rates. 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.
- c) **Embedded losses:** A bank should also consider that past interest rates may have some impact on future performance. In particular, instruments that are not marked to market may already contain embedded gains or losses due to past rate movements. These gains or losses may be reflected over time in the bank's earnings.

### 5.2.2 Sources of interest rate risks

The sources of interest risk are:

- a) **Re-pricing risk:** This risk arises from the timing differences in the maturity (for fixed-rate) and re-pricing (for floating-rate) of bank assets, liabilities, and OBS positions. For instance, a bank that funded a long-term fixed-rate credit with a short-term deposit could face a decline in both the future income arising from the position and its underlying value if interest rates increase. These declines arise because the cash flows on the credit are fixed over its lifetime, while the interest paid on the funding is variable, and increases after the short-term deposit matures;
- b) **Yield curve risk:** Yield curve risk arises when unanticipated shifts of the yield curve have adverse effects on a bank's income or underlying economic value. For instance, the underlying economic value of a long position in 10-year treasury bond hedged by a short position in 5-year treasury bond could decline sharply if the yield curve steepens, even if the position is hedged against parallel movements in the yield curve;

- c) **Basis risk:** Basis risk arises from the changing rate relationships among different yield curves effecting bank activities. It arises from imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar re-pricing characteristics. When interest rates change, these differences can give rise to unexpected changes in the cash flows and earnings spread between assets, liabilities and OBS instruments of similar maturities or re-pricing frequencies;
  
- d) **Optionality:** An additional and increasingly important source of interest rate risk arises from the options embedded in many bank assets, liabilities, and OBS portfolios. Formally, an option provides the holder the right, but not the obligation, to buy, sell, or in some manner alter the cash flow of an instrument or financial contract. Options may be stand-alone instruments such as exchange-traded options and over-the-counter (OTC) contracts, or they may be embedded within otherwise standard instruments. While banks use exchange-traded and OTC options in both trading and non-trading accounts, instruments with embedded options are generally more important in non-trading activities. Examples of instruments with embedded options include various types of bonds and notes with call or put provisions, credits which give borrowers the right to prepay balances, and various types of non-maturity deposit instruments which give depositors the right to withdraw funds at any time, often without any penalties. If not adequately managed, the asymmetrical payoff characteristics of instruments with optionality features can pose significant risk particularly to those who sell them, since the options held, both explicit and embedded, are generally exercised to the advantage of the holder and the disadvantage of the seller. Moreover, an increasing array of options can involve significant leverage which can magnify the influences (both negative and positive) of option positions on the financial condition of the firm.

### 5.2.3 Sound interest rate risk management practices

Sound interest rate risk management involves the application of following basic elements in the management of assets, liabilities, and OBS instruments:

- a) Appropriate board and senior management oversight;
- b) Adequate risk management policies and procedures;
- c) Appropriate risk measurement, monitoring, and control functions; and
- d) Comprehensive internal controls and independent audits.

As with other risk factor categories, interest rate risk should be monitored on a consolidated, comprehensive basis, to include interest rate exposures in subsidiaries. At the same time, banks should fully recognize any legal distinctions and possible obstacles to cash flow movements among affiliates and adjust their risk management process accordingly. While

consolidation may provide a comprehensive measure in respect of interest rate risk, it may also underestimate risk when positions in one affiliate are used to offset positions in another affiliate. This is because a conventional accounting consolidation may allow theoretical offsets between such positions from which a bank may not in practice be able to benefit because of legal or operational constraints. Management should recognize the potential for consolidated measures to understate risks in such circumstances.

#### **5.2.4 Measurement of interest rate risk**

Managing interest rate risk requires a clear understanding of the amount at risk and the impact of changes in interest rates on this risk position. To make these determinations, sufficient information must be readily available to permit appropriate action to be taken within acceptable, often very short, time periods. The longer it takes a bank to eliminate or reverse an unwanted exposure, the greater the possibility of loss.

Each bank needs to use risk measurement techniques that accurately and frequently measure the impact of potential interest rate changes on the bank. In choosing appropriate rate scenarios to measure the effect of rate changes, the bank should consider the potential volatility of rates and the time period within which the bank could realistically react to close the position.

Ideally, a bank's interest rate risk measurement system would take into account the specific characteristics of each individual interest sensitive position, and would capture in detail the full range of potential movements in interest rates.

Re-pricing schedules and simulation approaches are the commonly used interest rate risk measurement techniques. Each bank should use a combination of these techniques in managing its interest rate risk exposure. Each technique provides a different perspective on interest rate risk, has distinct strengths and weaknesses, and is more effective when used in combination with another.

##### **5.2.4.1 Maturity/re-pricing schedules**

The simplest techniques for measuring a bank's interest rate risk exposure begin with a maturity/re-pricing schedule that distributes interest-sensitive assets, liabilities, and OBS positions into a certain number of predefined time bands according to their maturity (if fixed-rate) or time remaining to their next re-pricing (if floating-rate). Those liabilities lacking definitive re-pricing intervals (e.g. sight deposits or savings accounts) are assigned to re-pricing time bands according to the judgment and past experience of the bank.

###### ***i) Gap analysis***

Simple maturity/re-pricing schedules can be used to generate simple indicators of the interest

rate risk sensitivity of both earnings and economic value to changing interest rates. When this approach is used to assess the interest rate risk of current earnings, it is typically referred to as gap analysis.

To evaluate earnings exposure, interest rate-sensitive liabilities (ISL) in each time band are subtracted from the corresponding interest rate-sensitive assets (ISA) to produce a re-pricing "gap" for that time band.

A negative or liability-sensitive gap occurs when interest-bearing liabilities exceed interest-earning assets (including OBS positions) in a given time band, that is more interest-bearing liabilities re-price than interest-earning assets. This gap implies that an increase in market interest rates could cause a decline in net interest income. In this situation, a decrease in interest rates should improve the net interest rate spread in the short term, as deposits are rolled over at lower rates before the corresponding assets. An increase in interest rates lowers earnings by narrowing or eliminating the interest spread.

Conversely, a positive or asset-sensitive gap occurs when interest-earning assets exceed interest-bearing liabilities (including OBS positions) in a given time band, that is, more interest-earning assets re-prices than interest-bearing liabilities. This gap implies that a decrease in market interest rates could cause a decline in net interest income. In this situation, a decline in interest rates should lower or eliminate the net interest rate spread in the short term, as assets are rolled over at lower rates before the corresponding liabilities. An increase in interest rates should increase the net interest spread.

An interest sensitive gap ratio is also a good indicator of bank's interest rate risk exposure.

$$\text{Relative IS GAP} = \text{IS GAP} / \text{Bank's Total Asset}$$

Also an ISA to ISL ratio of bank for particular time band could be a useful estimation of a bank's position.

$$\text{Interest Sensitive Ratio} = \text{ISA} / \text{ISL}$$

#### *ii) Measuring risk to net interest income (NII)*

Gap schedules can provide an estimate of changes in bank's net interest income given changes in interest rates. The gap for particular time band can be multiplied by a hypothetical change in interest rate to obtain an approximate change in net interest income. The formula to

translate gaps into the amount of net interest income at risk, measuring exposure over several periods, is:

$$\Delta\text{NII} = \Delta i \times \text{Periodic Gap} \times \text{Maturity Bucket}$$

Where,

$\Delta\text{NII}$  = Change in net interest income

$\Delta i$  = Change in interest rate

Periodic Gap = (RSA-RSL)

Maturity Buckets = 1 day, 2-7 days, 8 days to 1 month, 1-3 months, 3-12 months, 1-5 years, and 5+ years.

The size of the interest rate movement used in the analysis can be based on a variety of factors, including historical experience, simulation of potential future interest rate movements, and the judgment of bank management.

While such gap measurements apparently seem perfect, practically there are some problems such as interest paid on liabilities of a bank which are generally short term tend to move quickly compared with that being earned on assets many of which are relatively longer term. This problem can be minimized by assigning weights to various ISA and ISL that take into account the tendency of the bank interest rates to vary in speed and magnitude relative to each other and with the up and down business cycle.

The gap reports are important to an interest rate risk management program because they indicate how much net interest income is at risk, and, to some extent, the timing of the risk. However, gap analysis has a number of shortcomings. Few are as follows:

- a) gap analysis provides an objective measure of risk associated with current positions only, it does not incorporate future growth or changes in the mix of business;
- b) gap analysis does not capture basis risk or investment risk, is generally based on parallel shifts in the yield curve;
- c) gap analysis does not take account of variation in the characteristics of different positions within a time band;
- d) gap analysis does not account for the time value of money;
- e) gap analysis does not take into account any changes in the timing of payments that might occur as a result of changes in the interest rate environment; and
- f) most gap analyses fail to capture variability in non-interest revenue and expenses, which is potentially an important source of risk to current income.

Accordingly, the use of gap reports should be complemented with present-value sensitivity systems, such as duration analysis or simulation models.

### *iii) Duration analysis*

Duration is the time-weighted average maturity of the present value of the cash flows from assets, liabilities and off-balance sheet items. It measures the relative sensitivity of the value of these instruments to changing interest rates (the average term to re-pricing), and therefore reflects how changes in interest rates will affect the bank's economic value, that is, the present value of equity. In this context, the maturity of an investment is used to provide an indication of interest rate risk.

Generally, the longer the term to maturity (next re-pricing date) of an investment and the smaller the payments that occur before maturity (e.g. coupon payments), the higher the duration (in absolute value). Higher duration implies that a given change in the level of interest rates will have a larger impact on economic value.

Duration-based weights can be used in combination with a maturity/re-pricing schedule to provide a rough approximation of the change in a bank's economic value that could occur given a particular set of changes in market interest rates.

Specifically, an "average" duration is assumed for the positions that fall into each time band. The average durations are then multiplied by an assumed change in interest rates to construct a weight for each time band. In some cases, different weights are used for different positions that fall within a time band, reflecting broad differences in the coupon rates and maturities (for instance, one weight for assets, and another for liabilities). In addition, different interest rate changes are sometimes used for different time bands, generally to reflect differences in the volatility of interest rates along the yield curve. The weighted gaps are aggregated across time bands to produce an estimate of the change in economic value of the bank that would result from the assumed changes in interest rates.

Alternatively, a bank could estimate the effect of changing market rates by calculating the precise duration of each asset, liability, and OBS position and then deriving the net position for the bank based on these more accurate measures, rather than by applying an estimated average duration weight to all positions in a given time band. This would eliminate potential errors occurring when aggregating positions/cash flows. As another variation, risk weights could also be designed for each time band on the basis of actual percentage changes in market values of hypothetical instruments that would result from a specific scenario of changing market rates. That approach - which is sometimes referred to as effective duration- would better capture the non-linearity of price movements arising from significant changes in market interest rates and, thereby, would avoid an important limitation of duration.

Duration incorporates an instrument's remaining time to maturity, the level of interest rates, and intermediate cash flows. If a fixed income instrument has only one cash flow, as a zero coupon bond does, duration will equal the maturity of the instrument: a zero coupon bond with five years remaining to maturity has duration of five years. If coupon payments are received before maturity, the duration of the bond declines, reflecting the fact that some cash is received before final maturity.

### *Properties of duration*

In general, duration exhibits the following characteristics:

- a) As maturity increases, duration increases and the bond's price becomes more sensitive to interest rate changes;
- b) For two instruments with the same maturity, a high-coupon instrument will have a lower duration than a low-coupon instrument and will also be less price-sensitive. A larger proportion of a high coupon's cash flows will be received sooner and thus the average time to receipt of the cash flows will be less;
- c) A given fixed income instrument will have a higher duration in a low interest rate environment than in a high interest rate environment;
- d) Duration may be positive or negative. A fixed rate instrument would have a positive duration, and an increase in interest rates would generally decrease the market value of the instrument. Mortgage servicing rights and interest only (IO) mortgage-backed securities generally have a negative duration, since an increase in interest rates would decrease the prepayment speed of the underlying mortgages, increasing the market value of the instruments; and
- e) Durations are additive when weighted by the amount of the contract. For example, if a portfolio consists of two bonds of equal market value, one with duration of six and the other with duration of two, the duration of the portfolio would be four.

### *Duration of equity*

The duration of equity is derived from the duration of all assets, liabilities, and off-balance-sheet contracts.

To understand how the duration of equity measures risk, the economic value of portfolio equity may be viewed as a net bond position. Assets are analogous to long bond positions with positive durations, and liabilities are analogous to short bond positions with negative durations. Duration indicates whether the economic value of the net bond position or portfolio equity will increase or decrease with a change in rates.

A bank with long-term assets funded by short-term liabilities will generally have duration of equity that is positive. The economic value of portfolio equity of this bank will decline as interest rates rise. A bank with short-term assets funded with long-term liabilities will generally have a negative duration of equity. The economic value of this bank will increase as interest rates rise. The higher the duration of a bank's equity (whether the number is positive or negative), the more sensitive is its economic value to changes in rates.

### ***Modified duration***

Modified duration is standard duration divided by  $1 + r$ , where  $r$  is the level of current market interest rates. It reflects the percentage change in the economic value of the instrument for a given percentage change in  $1 + r$ . As with simple duration, it assumes a linear relationship between percentage changes in value and percentage changes in interest rates.

### ***Effective duration***

Effective duration (sometimes called option-adjusted duration) further refines the modified duration calculation and is particularly useful when a portfolio contains callable securities. Effective duration is derived by using simulation techniques to calculate the change in price of an instrument for a given change in interest rates. Effective duration incorporates a bond's yield, coupon, final maturity and call features into one number that indicates how price-sensitive a bond or portfolio is to change in interest rates. For assets with variable cash flows, it is appropriate to calculate the effective duration rather than the modified duration.

### ***Duration of single instrument***

To measure the duration of a single instrument, a bank has to calculate the weighted average of each cash flow at time  $t$  by the following formula:

$$W_t = \frac{CF_t / (1+y)^t}{\text{Bond price}}$$

These weighted averages are then summed to get duration by using the following formula:

$$\text{Duration} = \sum_{t=1}^T t \times w_t$$



Here,

$W_t$  = Weighted average of cash flow at time t

$CF_t$  = Cash flow at time t

y = Yield to maturity

T = Number of cash flow periods

### ***Duration of a portfolio of instruments***

The duration of a portfolio of assets or liabilities is the market value of weighted average of the individual duration of each asset or liability on the bank's balance sheet.

The calculation of duration depends on three factors:

- a) The final maturity of the financial instruments;
- b) The size and timing of cash flows (coupon payments);
- c) The yield to maturity (YTM).

The duration of a portfolio of assets can be calculated by computing the weighted average maturity of all the cash flows in the portfolio individually. Banks can estimate the duration of a portfolio of contracts by weighting the durations of the individual contracts and summing them.

### ***Measuring duration gap***

To measure duration gap and the impact of net changes in the market value of equity, a bank should:

- a) Estimate the market value of each on-balance sheet rate sensitive assets and liabilities of the bank to arrive at market value of equity;
- b) Calculate the durations of each asset and liability of the on-balance sheet portfolio arrive at the aggregate weighted average duration of assets and liabilities;
- c) Calculate the duration GAP by subtracting aggregate duration of liabilities from that of assets;
- d) Estimate the changes in the economic value of equity due to change in interest rates on on-balance sheet positions based on the three interest rate changes i.e. 1%, 2%, and 3%;
- e) Calculate surplus/(deficit) on off-balance sheet items under the assumption of three different interest rate changes i.e. 1%, 2%, and 3%; and

- f) Estimate the impact of net change (both for on-balance sheet and off-balance sheet) in the market value of equity.

**Formulae:**

Weighted average duration of assets,  $(DA) = \sum_{i=1}^n W_A \times DA$

Weighted average duration of liabilities,  $(DL) = \sum_{i=1}^n W_L \times DL$

Duration gap:  $DGAP = DA - \left[ \frac{MV_L}{MV_A} \right] DL$

$\Delta MVE = (-DGAP) \times \left[ \frac{\Delta i}{(1+y)} \right] \times \text{Total Assets}$

Where,

$y = \text{YTM}$

Total Assets = Market value of total assets

**iv) Simulation models**

Banks having complex financial instruments or otherwise having complex risk profiles may employ more sophisticated interest rate risk measurement systems.

Simulation models are sophisticated models and a valuable complement to gap and duration analysis. In static simulations, the cash flows arising solely from the bank's current on-balance sheet and off-balance sheet positions are assessed. In a dynamic simulation approach, the simulation builds in more detailed assumptions about the future course of interest rates and expected changes in a bank's business activity over that time.

Simulation models are useful tools for strategic planning; they permit banks to effectively integrate risk management and control into the planning process. Their forecasts are based on a number of assumptions including:

- a) future levels and directional changes of interest rates;
- b) the slope of the yield curve and the relationship between the various indices that the bank uses to price credits and deposit;
- c) pricing strategies for assets and liabilities as they mature; and
- d) the growth, volume and mix of future business.

Simulation is usually used to measure interest rate risk by estimating what effect changes in interest rates, business strategies, and other factors will have on net interest income, net income and interest rate risk positions. Simulation models can also be used to calculate the present value and durations of assets and liabilities.

Regardless of the measurement system, the usefulness of each technique depends on the validity of the underlying assumptions and the accuracy of the basic methodologies used to model risk exposure. Further the integrity and timeliness of data relating to current positions is key element of risk measurement system.

While measuring risk in traded portfolios banks should use a valuation approach. They should develop risk measurement models that relate market risk factors to the value of the traded portfolios or the estimated value of non-traded portfolios. The underlying liquidity of markets for traded portfolios and the potential impact of changes in market liquidity should be specifically addressed by market risk measures. There should be separate risk factors corresponding to each of the equity markets in which the bank has positions. The banks measurement of equities risk should include both price movements in the overall equity market (e.g. a market index) and specific sectors of the equity market (for instance, industry sectors or cyclical and non-cyclical sectors), and individual equity issues.

### **5.2.5 Interest risk management program**

Significant factors in managing interest rate risk include the frequency, volatility and direction of rate changes, the slope of the interest rate yield curve, the size of the interest-sensitive position and the basis for re-pricing at rollover dates.

A comprehensive interest rate risk management program requires:

- a) establishing and implementing sound and prudent interest rate risk policies;
- b) developing and implementing appropriate interest rate risk measurement techniques; and
- c) developing and implementing effective interest rate risk management and control procedures.

### **5.2.6 Interest rate risk management policies**

Sound and prudent interest rate risk management requires clear policies. These policies need to include:

- a) an interest rate risk philosophy governing the extent to which the bank is willing to assume interest rate risk; and
- b) explicit and prudent limits on the bank's interest rate risk exposure.

#### ***a) Interest rate risk philosophy***

The capacity of each bank to assume rate risk will vary with the extent of other risks (e.g., liquidity, credit risk, foreign exchange risk, investment risk) and its ability to absorb potential losses. The objective of interest rate risk management need not necessarily be the complete

elimination of exposure to changes in interest rates. Rather, it should be to manage the impact of interest rate changes within self-imposed limits set after careful consideration of a range of possible interest rate environments.

#### ***b) Interest rate risk limits***

Each bank needs to establish explicit and prudent interest rate risk limits, and ensure that the level of interest rate risk exposure does not exceed these limits.

Interest rate risk limits need to be set within a bank's overall risk profile, which reflects factors such as its capital adequacy, liquidity, credit quality, investment risk and foreign exchange risk. Interest rate positions should be managed within a bank's ability to offset such positions if necessary.

Interest rate risk limits need to be reassessed on a regular basis to reflect potential changes in interest rate volatility, the institution's overall risk philosophy and risk profile.

Risk limits are usually defined in terms of earnings or in terms of the present value of equity at risk and are normally expressed in terms of the allowable amounts of mismatched positions for specified or cumulative maturity periods.

Earnings are the reported net income before taxes. Changes in interest rates may affect earnings by:

- a) affecting the interest income or expenses relating to assets, liabilities and off-balance sheet items; and
- b) affecting the value of fixed-rate assets, liabilities and off-balance sheet items that are carried on a market valuation basis.

Present value of equity is the present value of assets and off-balance sheet items generating cash inflows, less the present value of liabilities and off-balance sheet items generating cash outflows. Changes in interest rates affect the present value of the cash flows from, and the value of these items, and therefore the economic value of shareholders' equity.

Limits may also appropriately be defined in terms of regulatory capital, shareholders' equity and earning assets.

### **5.2.7 Interest rate risk management and control procedures**

Each bank needs to develop and implement effective and comprehensive procedures and information systems to manage and control interest rate risk in accordance with its interest

rate risk policies. These procedures should be appropriate to the size and complexity of the bank's interest rate risk-taking activities.

Internal inspections/audits are a key element in managing and controlling a bank's interest rate risk management program. Each bank should use them to ensure compliance with, and the integrity of, the interest rate risk policies and procedures. Internal inspections/audits should, at a minimum, randomly test all aspects of interest rate risk management activities in order to:

- a) ensure interest rate risk management policies and procedures are being adhere to;
- b) ensure effective management controls over interest rate risk positions;
- c) verify the adequacy and accuracy of management information reports; and
- d) ensure that personnel involved in interest rate risk management fully understand the bank's interest rate risk policies and risk limits and have the expertise required to make effective decisions consistent with the interest rate risk policies.

Assessments of the interest rate risk operations should be presented to the Board on regular basis for review.

### **5.3 Foreign exchange risk**

Foreign exchange risk is the current or prospective risk to earnings and capital arising from adverse movements in currency exchange rates.

The foreign exchange positions arise from the following activities:

- a) trading in foreign currencies through spot, forward and option transactions as a market maker or position taker, including the unheeded positions arising from customer-driven foreign exchange transactions;
- b) holding foreign currency positions in the banking book (e.g. in the form of loans, bonds, deposits or cross-border investments); or
- c) engaging in derivative transactions that are denominated in foreign currency for trading or hedging purposes.

In the foreign exchange business, banks also face the risk of default of the counter parties or settlement risk. Thus, banks may incur replacement cost, which depends upon the currency rate movements.

Banks also face another risk called time-zone risk, which arises out of time lags in settlement of one currency in one center and the settlement of another currency in another time zone.

The foreign exchange transactions with counter parties situated outside Bangladesh also involve sovereign or country risk.

### **5.3.1 Foreign exchange risk management program**

Managing foreign exchange risk involves prudently managing foreign currency positions in order to control, within set parameters, the impact of changes in exchange rates on the financial position of the bank. The frequency and direction of rate changes, the extent of the foreign currency exposure and the ability of counterparts to honor their obligations to the bank are significant factors in foreign exchange risk management. A comprehensive foreign exchange risk management program requires:

- a) establishing and implementing sound and prudent foreign exchange risk management policies; and
- b) developing and implementing appropriate and effective foreign exchange risk management and control procedures.

#### ***a) Foreign exchange risk management policy***

A bank should establish a written policy on foreign exchange risk that:

- i. includes a statement of principles and objectives governing the extent to which a bank is willing to assume foreign exchange risk;
- ii. establishes explicit and prudent limits on a bank's exposure to foreign exchange risk; and
- iii. clearly defines the levels of personnel who have the authority to trade in foreign exchange.

#### ***i) Statement of foreign exchange risk principles and objectives***

Before setting foreign exchange risk limits and management controls it is necessary for a bank to decide the objectives of its foreign exchange risk management program and in particular its willingness to assume risk.

The tolerance of each bank to assume foreign exchange risk will vary with the extent of other risks (e.g. liquidity, credit risk, interest rate risk, investment risk) and the bank's ability to absorb potential losses. The objective of foreign exchange risk management need not necessarily be the complete elimination of exposure to changes in exchange rates. Rather, it should be to manage the impact of exchange rate changes within self imposed limits after careful consideration of a range of possible foreign exchange rate scenarios.

## *ii) Foreign exchange risk limits*

Each bank needs to establish explicit and prudent foreign exchange risk limits, and ensure that the level of its foreign exchange risk exposure does not exceed these limits. Where applicable, these limits need to cover, at a minimum:

- a) the currencies in which the bank is permitted to incur exposure; and
- b) the level of foreign currency exposure that the institution is prepared to assume.

Foreign exchange risk limits need to be set within a bank's overall risk profile, which reflects factors such as its capital adequacy, liquidity, credit quality, investment risk and interest rate risk. Foreign exchange positions should be managed within a bank's ability to quickly cover such positions if necessary. Moreover, foreign exchange risk limits need to be reassessed on a regular basis to reflect potential changes in exchange rate volatility, the bank's overall risk philosophy and risk profile.

Authorized currencies will normally include currencies in which the bank may be called on to settle foreign exchange transactions. These are usually the currencies in which the bank or its customers conduct business.

Limits on a bank's foreign exchange exposure should reflect both the specific foreign currency exposures that arise from daily foreign currency dealing or trading activities (transactional positions) and those exposures that arise from a bank's overall asset/liability infrastructure, both on- and off-balance sheet (structural or translational positions). The establishment of aggregate foreign exchange limits that reflect both foreign currency dealing and structural positions helps to ensure that the size and composition of both positions are appropriately and prudently managed and controlled and do not overextend a bank's overall foreign exchange exposure.

Usually, risk limits are established in terms of a relationship between the foreign exchange position and earnings or capital, or in terms of foreign exchange volume, such as total dollars or numbers of transactions.

Although the overall assessment of foreign exchange counterparties is an integral component of any foreign exchange operation, this may be conducted by a bank's credit risk management function, thus obviating the need for separate counterparty assessment within the bank's foreign exchange operations.

## *iii) Delegation of authority*

Clearly defined levels of delegated authority help to ensure that a bank's foreign exchange positions do not exceed the limits established under its foreign exchange risk management

policies. Authorities may be absolute, incremental or a combination thereof, and may also be individual, pooled, or shared within a committee.

The delegation of authority needs to be clearly documented, and must include at a minimum:

- a) the absolute and/or incremental authority being delegated;
- b) the units, individuals, positions or committees to whom authority is being delegated;
- c) the ability of recipients to further delegate authority; and
- d) the restrictions, if any, placed on the use of delegated authority.

The extent to which authority is delegated will be the experience and ability of the individuals for carrying out the foreign exchange risk management activities.

#### ***b) Foreign exchange risk management and control procedures***

Each bank engaged in foreign exchange activities is responsible for developing, implementing and overseeing procedures to manage and control foreign exchange risk in accordance with its foreign exchange risk management policies. These procedures must be at a level of sophistication commensurate with the size, frequency and complexity of the bank's foreign exchange activities.

Foreign exchange risk management procedures need to include, at a minimum:

- i. accounting and management information systems to measure and monitor foreign exchange positions, foreign exchange risk and foreign exchange gains or losses;
- ii. controls governing the management of foreign currency activities; and
- iii. independent inspections or audits.

#### ***i) Measurement of foreign exchange risk***

Managing foreign exchange risk requires a clear understanding of the amount at risk and the impact of changes in exchange rates on this foreign currency exposure. To make these determinations, sufficient information must be readily available to permit appropriate action to be taken within acceptable, often very short, time periods.

Each bank engaged in foreign exchange activities needs to have an effective accounting and management information system in place that accurately and frequently records and measures its foreign exchange exposure and the impact of potential exchange rate changes on the bank.



At a minimum, each bank should have in place monitoring and reporting techniques that measure:

- a) the net spot and forward positions in each currency or pairings of currencies in which the bank is authorized to have exposure;
- b) the aggregate net spot and forward positions in all currencies; and
- c) transactional and translational gains and losses relating to trading and structural foreign exchange activities and exposures.

***ii) Control of foreign exchange activities***

The key elements of any foreign exchange control program are well-defined procedures governing:

- a) organizational controls to ensure that there exists a clear and effective segregation of duties between those persons who initiate foreign exchange transactions and those persons who are responsible for operational functions such as arranging prompt and accurate settlement, and timely exchanging and reconciliation of confirmations, or account for foreign exchange activities;
- b) procedural controls to ensure that:
  - i. transactions are fully recorded in the records and accounts of the bank;
  - ii. transactions are promptly and correctly settled; and
  - iii. unauthorized dealing is promptly identified and reported to management; and
- c) controls to ensure that foreign exchange activities are monitored frequently against the bank's foreign exchange risk, counterparty and other limits and that excesses are reported.

Moreover, each bank needs to ensure that employees conducting foreign exchange trading activities on behalf of the bank do so within a written code of conduct governing foreign exchange dealing. Such a code of conduct should include guidance respecting trading with related parties and transactions in which potential conflicts of interest exists. These should include trading with affiliated entities, personal foreign exchange trading activities of foreign exchange traders, and foreign exchange trading relationships with foreign exchange and money market brokers with whom the bank deals. Each bank should ensure that these guidelines are periodically reviewed with all foreign exchange traders.

The use of hedging techniques is one means of managing and controlling foreign exchange risk. In this regard, many different financial instruments can be used for hedging purposes,

the most commonly used, being derivative instruments. Examples include forward foreign exchange contracts, foreign currency options, and foreign currency swaps.

Each bank should consider which hedging techniques are appropriate for the nature and extent of its foreign exchange activities, the skills and experience of trading staff and management, and the capacity of foreign exchange rate risk reporting and control systems. Before using hedging products, banks must ensure that they understand the hedging techniques and they are satisfied that the instrument meets their specific needs in a cost-effective manner.

The effectiveness of hedging activities should be assessed not only on the basis of the technical attributes of individual transactions but also in the context of the overall risk exposure of the bank resulting from a potential change in asset/liability mix and other risk exposures such as credit, interest rate and position risk.

In this context, hedging activities need to take place within the framework of a clear hedging strategy, the implications of which are well understood by the bank under varying market scenarios. In particular, the objectives and limitations of using hedging products should be uniformly understood, so as to ensure that hedging strategies result in an effective hedge of an exposure rather than the unintentional assumption of additional or alternate forms of risk.

### ***iii) Independent inspections/audits***

Independent inspections/audits are a key element in managing and controlling a bank's foreign exchange risk management program. Each bank should use them to ensure compliance with, and the integrity of, the foreign exchange policies and procedures. Independent inspections/audits should, at a minimum, and over a reasonable period of time, test the bank's foreign exchange risk management activities in order to:

- a) ensure foreign exchange management policies and procedures are being adhered to;
- b) ensure effective management controls over foreign exchange positions;
- c) verify the adequacy and accuracy of management information reports regarding the bank's foreign exchange risk management activities;
- d) ensure that foreign exchange hedging activities are consistent with the bank's foreign exchange risk management policies, strategies and procedures; and
- e) ensure that personnel involved in foreign exchange risk management are provided with accurate and complete information about the bank's foreign exchange risk policies and risk limits and positions and have the expertise required to make effective decisions consistent with the foreign exchange risk management policies.

Assessments of the foreign exchange risk operations should be presented to the board on a timely basis for review.

### **5.3.2 Foreign exchange settlement risk**

Foreign exchange settlement risk is the risk of loss when a bank in a foreign exchange transaction pays the currency it sold but does not receive the currency it bought. A bank should have systems that provide appropriate and realistic estimates of foreign exchange exposures on a timely basis. These systems would include policies and procedures similar to those mentioned in the previous section with emphasis on understanding settlement risk and formulating a clear and firm plan on its management.

Foreign exchange settlement risk management should be integrated into the overall risk management process. A bank's procedures for managing its foreign exchange settlement risks should be commensurate with the range and scope of its activities. Adequate training should be provided to all staff responsible for the various aspects of foreign exchange settlement risk.

Bank's board should approve a policy on foreign exchange settlement risk. This policy should be an integral and consistent part of the bank's overall policy towards counter-party risk. It should be regularly reviewed and, where necessary, modified to take account of new circumstances such as changes in the scale or nature of the bank's foreign exchange operations or in the method of settlement used.

Senior management should exercise appropriate oversight of settlement exposures. They should ensure that they fully understand the foreign exchange settlement risks incurred by the bank and should clearly define lines of authority and responsibility for managing these risks.

### **5.3.3 Contingency planning to mitigate settlement risk**

Contingency planning and stress testing should be an integral part of the foreign exchange settlement risk management process. Contingency plans should be established to include a broad spectrum of stress events, ranging from internal operational difficulties to individual counter-party failures to broad market related events. Adequate contingency planning in the foreign exchange settlement risk area includes ensuring timely access to key information, such as payments made, received or in process, and developing procedures for obtaining information and support from correspondent institutions. Contingency plans should be tested periodically.

## **5.4 Equity price risk**

Equity price risk is the risk of losses caused by changes in equity prices. These losses could arise because of changes in the value of listed shares held directly by the bank; changes in the

value of listed shares held by a bank subsidiary; changes in the value of listed shares used as collateral for loans from a bank or a bank subsidiary, whether or not the loan was made for the purpose of buying the shares; and changes in the value of unlisted shares.

Equity price risk associated with equities could be systematic or unsystematic. The former refers to sensitivity of portfolio's value to changes in overall level of equity prices, while the later is associated with price volatility that is determined by firm specific characteristics.

From an accounting perspective (although not an economic perspective) in Bangladesh, equity risk is "one-sided" - equity securities must be held at the lower of cost or market value. If market value drops below cost, banks are required to form loss allowances or "provisions" on the liability side of the balance sheet, by means of an expense on the profit and loss statement. However, if market values rise above cost, there is no corresponding income recorded unless the security is sold. Even though the one-sided risk is purely in an accounting sense, it will have a real implication for banks that fall below required levels of regulatory capital because of declines in the market value of securities they hold. Accordingly, it is vitally important for banks to measure, monitor, and control their equity market risk.

#### **5.4.1 Effective equity price risk management**

An effective equity risk management system should have the following criteria:

- a) Policies for equity investments should reflect the board's risk appetite, and should provide clear authorities, conservative limits, and assigned responsibilities;
- b) Policies should permit risk-taking authority consistent with the expertise of bank personnel;
- c) Management should have broad capital markets experience and should establish strong policy controls and risk limits;
- d) Policy exceptions should be properly approved. There should be formal procedures to report how and why exceptions have occurred, and how they have been resolved;
- e) Trading and sales personnel should have broad experience in the products traded, technically competent, and comfortable with the bank's culture;
- f) Risk management personnel should have an in-depth understanding of equity market risk and risk management principles, including VaR;

- g) Equity investments in companies that the bank has never before invested in are subject to a formal review program, with all relevant bank units participating in risk assessment and control procedures;
- h) The firms in whose shares the bank or its subsidiary is considering investing is should be analyzed rigorously, and by reviewing as much or even more financial information, as would be reviewed in a credit decision;
- i) Management reports should be prepared independently of the investing and trading function and should provide a comprehensive and accurate summary of investing and trading activity. Reports should assess compliance with policy limits, measure loss potential in both normal and stressed markets and produced in time. Management at all levels should understand and monitor equity market risk;
- j) Incompatible duties should be properly segregated. Risk monitoring, valuation, and control functions should be independent of the trading and investing functions;
- k) The bank should have to conducts stress tests regularly and has a precise understanding and measurement of how much and why profitability, balance sheet capital, and regulatory capital will be affected by major declines in the equity market overall, or in the value of individual shares;
- l) If the bank has a subsidiary that invests in shares directly or lends to customers for the purchase of shares, the bank should closely monitor the financial condition and performance of the subsidiary, and calculate its risk-adjusted return on the invested capital in that subsidiary. The bank should redeploy that capital away from its subsidiary if the risk-adjusted returns are low;
- m) If the bank has shares in unlisted companies, the bank should consider these investments as extremely high-risk, and devote significant staff resources to obtain, verify, and analyze financial information on these companies; and
- n) Given the illiquidity of investments in unlisted companies, the bank should have a detailed exit strategy for disposing of these investments in the event that they no longer fit into the bank's desired business strategy, are prohibited by regulatory requirements, or suffer significant losses in value.

#### **5.4.2 Securities portfolio management program**

Sound securities portfolio management involves prudently managing the risk/reward relationship and controlling and minimizing securities portfolio risks across a variety of dimensions, such as quality, portfolio concentration/diversification, maturity, volatility, marketability, type of security, and the need to maintain adequate liquidity.

A comprehensive securities portfolio management program requires:

- a) establishing and implementing sound and prudent policies to effectively manage the securities portfolio, securities activities and position risk;
- b) developing and implementing effective securities portfolio management processes governing securities investment decision making and authority; and
- c) developing and implementing comprehensive procedures to effectively monitor and control the nature, characteristics, and quality of the securities portfolio and the extent of position risk assumed.

***a) Securities portfolio management policies***

The foundation of an effective securities portfolio management program is the development and implementation of clearly defined policies, formally established in writing that set out the securities portfolio management objectives of the bank and the parameters under which securities activities are to be undertaken and controlled.

Each bank needs to establish explicit and prudent securities portfolio management objectives governing:

- i. the extent to which a bank is willing to assume position risk;
- ii. general areas of securities activities in which a bank is prepared to engage or is restricted from engaging, including the bank's policy with respect to acquiring securities of related parties;
- iii. minimum quality and rate of return expectations for the securities portfolio; and
- iv. securities portfolio concentration and exposure limits.

Securities portfolio management objectives reflect a bank's risk philosophy, codify investment criteria, establish the foundation for the development of securities portfolio management strategies, and provide the basis for monitoring portfolio characteristics and measuring portfolio performance. Securities portfolio objectives provide overall parameters governing securities investment decisions by describing the broad purpose and goals of securities investments as a means for profitability. Securities portfolio objectives assist in ensuring that securities investments are sound and prudent, and that the securities portfolio risk is acceptable given the expected return.

In establishing securities portfolio management objectives, each bank needs to give consideration to a number of factors, including the bank's nature of liabilities, its liquidity needs, market volatility, the extent of other risks assumed (e.g. credit risk, interest rate risk,

foreign exchange risk), the bank's ability to absorb potential losses and its overall strategic business objectives.

To be effective, securities portfolio management objectives must be communicated in a timely fashion, be implemented through all levels of the organization by appropriate procedures and revised periodically in light of changing circumstances.

***b) Securities portfolio management process***

To develop and maintain a sound securities portfolio, each bank must have:

- i. an effective formal evaluation process that provides for an objective analysis and assessment of securities investment proposals; and
- ii. clearly defined, prudent and appropriate levels of delegation of securities transaction approval authority, formally established in writing.

***c) Securities portfolio monitoring & control procedures***

Each bank needs to develop and implement effective and comprehensive procedures, accounting policies and information systems to monitor and manage the characteristics and quality of its securities portfolio. These procedures should be appropriate to the size and complexity of the bank's securities activities and, at a minimum, need to include:

- i. Systems to measure and monitor securities positions;
- ii. Controls governing the management of the securities portfolio; and
- iii. Independent inspections or audits.

***i) Systems to measure & monitor***

Managing securities activities requires a clear understanding of the nature and characteristics of the securities portfolio and securities positions. To make these determinations, each bank needs to ensure that:

- a) effective information systems are developed and used to appropriately record, regularly monitor and evaluate the securities portfolio;
- b) effective and appropriate quality and performance criteria are developed and implemented, and that the portfolio is regularly assessed against these criteria; and

- c) appropriate and conservative accounting policies and procedures are developed, documented and implemented to properly classify and carry securities on the books of account of the bank and recognize income related to such securities.

Regular evaluations of the securities portfolio should be carried out so as to provide an effective means of ensuring that portfolio performance and quality is meeting the bank's securities portfolio management policies and objectives, and that the portfolio is not unduly concentrated by type of security, and by single and associated groups of issuers, particularly issuers connected to the bank.

#### *ii) Securities portfolio management controls*

Effective procedures and controls ensure that securities activities are in compliance with the bank's securities portfolio management policies and provide safeguards to protect a bank from potential losses by ensuring that unauthorized exposure does not occur from improper or uncontrolled securities activities.

Although the controls over securities activities will vary among banks depending upon the nature and extent of their activities, the key elements of any securities portfolio management control program are well-defined guidelines governing:

- a) organizational controls to ensure that there exists a clear and effective segregation of duties between those persons who authorize, initiate or supervise securities activities and those persons who are responsible for operational functions such as the physical custody of securities, or arranging prompt and accurate settlement of securities transactions, or account for securities activities;
- b) procedural controls to ensure that securities are properly recorded and accounted for by the bank, transactions are settled in a timely and accurate manner and unauthorized securities activities are quickly identified and reported to the management; and
- c) controls to ensure that securities activities are monitored frequently against the bank's securities portfolio management policies and risk limits, and excesses reported.

Moreover, each bank needs to ensure that employees conducting securities trading activities on behalf of the bank do so with a written code of conduct or guideline governing securities dealing. Such a guideline or code of conduct should provide guidance respecting trading with related parties and transactions in which potential conflicts of interest exist. These should include trading with affiliated entities, personal trading and investment activities of securities



portfolio management personnel, including trading on insider information and taking personal gain from one's position, and trading relationships with securities dealers with whom the bank deals.

### *iii) Independent inspection/audit*

Independent inspections/audits provide an objective assessment of the securities portfolios' existence, quality and value, the integrity of the securities portfolio management process, and they promote the detection of problems relating thereto. Each bank should use them to ensure compliance with, and the integrity of, the securities portfolio management policies and procedures. Independent inspections/audits should, at a minimum, and over a reasonable period of time, test the bank's securities portfolio management activities in order to:

- a) ensure that securities activities are in compliance with the bank's securities portfolio management policies and procedures, and with the laws and regulations to which these activities are subject;
- b) ensure that securities transactions are duly authorized and accurately and completely recorded on the books of the bank;
- c) ensure that recorded securities are conservatively valued on the books of the bank;
- d) confirm that securities held by depositories to the order of the bank conform with the records of the bank;
- e) ensure that management has established suitably designed controls over securities positions and that such controls operate effectively;
- f) ensure the adequacy and accuracy of management information reports regarding the bank's securities portfolio management activities; and
- g) ensure that personnel involved in securities portfolio management are provided with accurate and complete information on the bank's securities portfolio management policies and risk limits and have the expertise required to make effective decisions consistent with these policies.

### **5.4.3 Securities portfolio concentration limits**

Clearly defined and documented securities portfolio concentration limits ensure that the nature and level of a bank's exposure in the form of securities position is appropriately diversified and does not exceed sound and prudent limits.

Securities portfolio concentration occurs when a bank's securities portfolio contains an excessive level of exposure to one type or class of security or a single or group of associated issuers of securities.

At a minimum, securities portfolio diversification policies must place sound and prudent aggregate and individual exposure limits for each type or class of security, and for single issuers and groups of associated issuers in which the bank is permitted to invest. Usually, limits by class of security include limits for how much of the portfolio should be made up of specific types of securities such as equities and the portfolio concentration by industrial sector. Such limits need to be established in the context of the bank's aggregate exposure to a single issuer or group of associated issuers in terms of both securities and credit exposures. The management of such aggregate exposures is usually done at a level senior to securities traders and lending personnel so as to ensure that appropriate "firewalls" are maintained between the securities portfolio and credit risk management areas of the bank. Securities concentrations by single or associated issuer need to be reviewed regularly.

#### **5.4.4 Securities analysis and assessment**

Securities investment decisions should be made only after careful examination and consideration of several areas including:

- a) the bank's securities portfolio management policies, and other corporate objectives and policies, such as the nature of the bank's liabilities and the need to maintain adequate liquidity;
- b) potential risks and returns related to a particular security within the overall context of the bank's securities portfolio management policies, the composition of the securities portfolio and the reasonable expectation of a fair return or appreciation given the nature of the security, and the risk of loss or impairment;
- c) current and projected regulatory and economic/financial environment under which securities transactions are made; and
- d) investment alternatives.

#### **5.4.5 Securities transaction approval authorities**

Clearly defined and appropriate levels of securities transaction authority help ensure that a bank's securities activities are appropriately undertaken and that securities positions do not exceed the limits established under its securities portfolio management policies.

Approval limits may relate to type of security, size, maturity, or other criteria, such as the retention or delegation of voting rights acquired through securities. Authorities may be

absolute, incremental or a combination thereof, and may also be individual, pooled, or shared within a committee.

The delegation of authority needs to be clearly documented, and should include as a minimum:

- a) the absolute and/or incremental securities transaction approval being delegated;
- b) the units, individuals, positions or committees to whom securities transaction authority is being delegated;
- c) the ability of recipients to further delegate approval authority; and
- d) the restrictions, if any, placed on the use of delegated authority.

The degree of delegation of securities transaction authority will depend on a number of variables including:

- i. the bank's securities portfolio management objectives and overall risk philosophy;
- ii. the quality of the securities portfolio;
- iii. the ability of the bank to absorb losses;
- iv. the size and types of securities and the complexities of risks being assessed; and
- v. the experience and ability of the individuals responsible for carrying out the securities portfolio management activities.

Assessments of the securities portfolio management activities should be presented to the bank's board on a timely basis for review.

#### **5.4.6 Measuring equity price risk**

##### ***Value at risk***

Value at Risk (VaR) is generally accepted and widely used tool for measuring market risk inherent in trading portfolios. VaR summarizes the predicted maximum loss (or worst loss) over a target horizon within a given confidence level.

It is a statistical estimate of expected potential loss that is derived by translating the riskiness of any financial instrument into a common standard. Banks may use a 99% or a 95% confidence level, and each day return on its trading portfolios. That means about once (with 99% confidence) or five (with 95% confidence) in every one hundred days the trading position are expected to lose more than the VaR estimate.

An inherent limitation of VaR is that it gives no information about how much losses could exceed their expected levels.

Generally there are three methods of computing VaR:

- a) Parametric or variance-covariance method
- b) Historical simulation method
- c) Monte Carlo simulation method

Among these methods, the historical simulation method is simple to apply and fairly straightforward to explain. Data sets used for this method are easily available. Therefore, banks are encouraged to calculate VaR for secondary market shares that are held for trading using historical simulation method. However, to calculate the VaR for overall investment portfolio (except credits), banks may use the variance covariance method.

#### ***Variance-covariance method***

The following formula can be used to assess the VaR of a portfolio consisting more than two stocks:

Portfolio VaR= Total Portfolio X SD of Portfolio

Where,

Standard Deviation, SD =  $[S_1^2 + S_2^2 + S_3^2 + 2S_1S_2P(1,2) + 2S_1S_3P(1,3)+2S_2S_3P(2,3)]^{1/2}$

Here,

- S<sub>1</sub> = the standard deviation or volatility of the first asset
- S<sub>2</sub> = the standard deviation or volatility of the second asset
- S<sub>3</sub> = the standard deviation or volatility of the third asset
- P = Correlation

#### ***Historical simulation method***

Let us assume a bank has a portfolio of three stocks of one unit each. To calculate VaR of that portfolio the bank needs to collect the historical market price of each of the stocks in the portfolio for last 100 days. Then, the following formulae are to be applied:

a) Weight A=  $\frac{\text{Closing Market Price of Stock A}}{\text{Closing Market Price of Stock (A+B+C)}}$

$$\text{b) Total weighted return to portfolio market price (\%)} = \frac{\text{Total weighted return}}{\text{Closing Market Price of Stock (A+B+C)}} \times 100$$

Then, the 99th percentile will be the VaR at 99% confidence level.

## 5.5 Managing market risk

Each bank should put in place a set of systems and procedures appropriate to its size and complexity of its operations for identifying, measuring monitoring and controlling market risk. The risk appetite in relation to market risk should be assessed keeping in view the capital of the bank as well as exposure to other risks. Once the market risk appetite is determined, the bank should develop a strategy for market risk-taking in order to maximize returns while keeping exposure to market risk at or below the pre-determined level.

### 5.5.1 Board oversight

Management of market risk should start from the Board and senior management level. Effective Board and senior management oversight of the bank's overall market risk exposure is a foundation of risk management process. For its part, the board is responsible to:

- a) define bank's overall risk appetite in relation to market risk;
- b) ensure that bank's overall market risk exposure is maintained at prudent levels and consistent with the available capital;
- c) ensure that senior management as well as individuals responsible for market risk management possesses sound expertise and knowledge to accomplish the risk management function;
- d) ensure that the bank implements sound fundamental principles that facilitate the identification, measurement, monitoring and control of market risk;
- e) ensure that adequate resources (technical as well as human) are devoted to market risk management;
- f) review and approve market risk policies based on recommendations by the bank's senior management;
- g) review periodically, but at least once a year, the market risk management program, policy, techniques, procedures and information systems referred to in that policy;
- h) outline the content and frequency of management market risk (for each type of risk) reports to the Board;

- i) ensure that an independent inspection/audit function reviews the credit operations, foreign exchange operations and securities portfolio management functions to ensure that the bank's market risk management policies and procedures are appropriate and are being adhered to; and
- j) review specially the trends in securities portfolio quality and value.

The Board of directors should periodically review the financial results of the bank and, based on these results, determine if changes need to be made to the strategy. While the Board gives a strategic direction and goals, it is the responsibility of senior management to transform those directions into procedural guidelines and policy document and ensure proper implementation of those policies.

### 5.5.2 Senior management oversight

In case of managing market risk, senior management of a bank is responsible to:

- a) develop and recommend market risk management policies for approval by the Board;
- b) implement the market risk management policies;
- c) develop and implement procedures that translate business policy and strategic direction set by BOD into operating standards that are well understood by bank's personnel;
- d) ensure adherence to the lines of authority and responsibility that Board has established for measuring, managing, and reporting market risk;
- e) oversee the development, implementation and maintenance of an appropriate MIS that identify, measure, monitor, and control bank's market risk;
- f) establish effective internal controls to monitor and control market risk;
- g) establish and utilize a method for accurately measuring the bank's market risk.
- h) ensure that an independent inspection/audit function reviews and assesses the market risk management program;
- i) ensure that all types of market risks are managed and controlled within the market risk management program;

- j) develop lines of communication to ensure the timely dissemination of the market risk policies and procedures to all individuals involved in the market risk management process;
- k) report comprehensively on the market risk management program to the board at least once a year; and
- l) monitor and control the nature, composition and quality of the bank's securities portfolio and ensure that the securities portfolio is soundly and conservatively valued.

The banks should formulate market risk management policies which are approved by Board. The policy should clearly define the lines of authority and the responsibilities of the Boards, senior management and other personnel responsible for managing market risk; set out the risk management structure and scope of activities; and identify risk management issues, such as market risk control limits, delegation of approving authority.

## 5.6 Stress testing

Bank's risk measurement system should support a meaningful evaluation of the effect of stressful market conditions on the bank. Stress testing should be designed to provide information on the kinds of conditions under which strategies or positions would be most vulnerable, and thus may be tailored to the risk characteristics of the bank. Possible stress scenarios might include:

- a) abrupt changes in the general level of market rates;
- b) changes in the relationships among key market rates (i.e. basis risk);
- c) changes in the slope and the shape of the yield curve (i.e. yield curve risk);
- d) changes in the liquidity of key financial markets or changes in the volatility of market rates; or
- e) conditions under which key business assumptions and parameters break down.

In conducting stress tests, special consideration should be given to instruments or markets where concentrations exist as such positions may be more difficult to liquidate or offset in stressful situations. Banks should consider "worst case" scenarios in addition to more probable events. Management and the Board of directors should periodically review both the design and the results of such stress tests, and ensure that appropriate contingency plans are in place.

### 6.1 Introduction

Liquidity risk is the potential for loss to a bank arising from either its inability to meet its obligations as they fall due or to fund increases in assets as they fall due without incurring unacceptable cost or losses.

Liquidity risk arises when the cushion provided by the liquid assets are not sufficient enough to meet maturing obligations. Accordingly, a bank short of liquidity may have to undertake transactions at heavy cost resulting in a loss of earnings or, in a worst case scenario, the liquidity risk could result in liquidation of the bank if it is unable to undertake transactions even at current market prices.

Banks with large off-balance sheet exposures or those rely heavily on large corporate deposits have relatively high level of liquidity risk. Further, banks experiencing a rapid growth in assets should have major concerns for liquidity.

Liquidity risk is often triggered by the consequences of other financial risks such as credit risk, interest rate risk, foreign exchange risk, etc. For instance, a large loan default or changes in interest rate can adversely impact a bank's liquidity position.

Liquidity risks can be classified into four categories:

- a) Term liquidity risk (due to discrepancies between maturities);
- b) Withdrawal/call risk (mass disinvestment before maturity);
- c) Structural liquidity risk (when the necessary funding transactions cannot be carried out or only on less favorable terms); and
- d) Market liquidity risk.

An incipient liquidity problem may initially reveal itself in the bank's financial monitoring system as a downward trend with potential long-term consequences for earnings or capital.

### 6.2 Liquidity risk indicators

Given below are some early warning indicators that have potential to ignite liquidity problem for a bank. Bank management needs to monitor carefully such indicators and exercise careful scrutiny wherever it deems appropriate. Examples of such internal indicators are:



- a) A negative trend or significantly increased risk in any area or product line;
- b) Concentrations in either assets or liabilities;
- c) Deterioration in quality of credit portfolio;
- d) A decline in earnings performance or projections;
- e) Rapid asset growth funded by volatile large deposit;
- f) A large size of off-balance sheet exposure;
- g) Deteriorating third party evaluation (negative rating) about the bank and negative publicity; and
- h) Unwarranted competitive pricing that potentially stresses the banks.

Liquidity risk management involves not only analyzing banks on- and off-balance sheet positions to forecast future cash flows, but also how the funding requirement would be met. The latter involves identifying the funding market the bank has access to, understanding the nature of those markets, evaluating banks current and future use of the markets and monitor signs of confidence erosion.

### **6.3 Managing liquidity risk**

The formality and sophistication of risk management processes established to manage liquidity risk should reflect the nature, size and complexity of a bank's activities. Sound liquidity risk management employed in measuring, monitoring and controlling liquidity risk is critical to the viability of any bank. Banks should have a thorough understanding of the factors that could give rise to liquidity risk and put in place the mitigating controls.

Liquidity risk management involves not only analyzing banks on and off-balance sheet positions to forecast future cash flows but also how the funding requirement would be met. The later involves identifying the funding market the bank has access, understanding the nature of those markets, evaluating banks current and future use of the market and monitor signs of confidence erosion.

Bank's liquidity risk management procedures should be comprehensive and holistic. At the minimum, they should cover formulation of overall liquidity strategy, risk identification, measurement, and monitoring and control process.

### **6.4 Board oversight**

The prerequisites of an effective liquidity risk management include an informed Board, capable management, staff having relevant expertise and efficient systems and procedures. It is primarily the duty of Board of directors to understand the liquidity risk profile of the bank

and the tools used to manage liquidity risk. The Board has to ensure that the bank has necessary liquidity risk management framework and the bank is capable of dealing with uneven liquidity scenarios. The Board should approve the strategy and significant policies related to the management of liquidity. Generally, the responsibilities of the Board include:

- a) providing guidance on the level of appetite for liquidity risk;
- b) appointing senior managers who have ability to manage liquidity risk and delegate to them the required authority to accomplish the job;
- c) continuously monitoring the bank's performance and overall liquidity risk profile through reviewing various reports; and
- d) ensuring that senior management takes the steps necessary to identify, measure, monitor and control liquidity risk.

### **6.5 Senior management oversight**

Senior management is responsible for the implementation of sound policies and procedures keeping in view the strategic direction and risk appetite specified by the Board. To effectively oversee the daily and long-term management of liquidity risk, senior management should at least:

- a) develop and implement procedures and practices that translate the Board's goals, objectives, and risk appetite into operating standards that are well understood by bank personnel and consistent with the board's intent;
- b) adhere to the lines of authority and responsibility that the Board has approved for managing liquidity risk;
- c) oversee the implementation and maintenance of management information and other systems that identify, measure, monitor, and control the bank's liquidity risk;
- d) develop and recommend liquidity and funding policies for approval by the Board and implement the liquidity and funding policies;
- e) develop lines of communication to ensure the timely dissemination of the liquidity and funding policies and procedures to all individuals involved in the liquidity management and funding risk management process;
- f) ensure that liquidity is managed and controlled within the liquidity management and funding management programs;
- g) ensure the development and implementation of appropriate reporting systems with respect to the content, format and frequency of information concerning the bank's liquidity position, in order to permit the effective analysis, sound and prudent management and control of existing and potential liquidity needs;

- h) establish and utilize a method for accurately measuring the bank's current and projected future liquidity;
- i) monitor economic and other operating conditions to forecast potential liquidity needs;
- j) ensure that an internal inspection/audit function reviews and assesses the liquidity management program; and
- k) report comprehensively on the liquidity management program to the Board at least once a year.

## 6.6 Liquidity risk strategy

Each bank should have an agreed liquidity strategy for the day-to-day management of liquidity. This strategy should address the bank's goal of protecting financial strength and the ability to withstand stressful events in the market.

The liquidity risk strategy defined by Board should enunciate specific policies on particular aspects of liquidity risk management, such as:

- a) **Composition of assets and liabilities:** The strategy should outline the mix of assets and liabilities to maintain liquidity. Liquidity risk management and asset/liability management should be integrated to avoid high costs associated with having to rapidly reconfigure the asset liability profile from maximum profitability to increased liquidity.
- b) **Diversification and stability of liabilities:** A funding concentration exists when a single decision or a single factor has the potential to result in a significant and sudden withdrawal of funds. Since such a situation could lead to an increased risk, the Board and senior management should specify guidance relating to funding sources and ensure that the bank has diversified sources of funding day-to-day liquidity requirements. A bank would be more resilient to tight market liquidity conditions if its liabilities were derived from more stable sources. To comprehensively analyze the stability of liabilities/funding sources a bank needs to identify:
  - i. liabilities that would stay with the bank under any circumstances;
  - ii. liabilities that run-off gradually if problems arise; and
  - iii. liabilities that run-off immediately at the first sign of problems.

Each bank needs to have explicit and prudent policies that ensure funding is not unduly concentrated with respect to:

- i. individual depositor;
  - ii. type of deposit instrument;
  - iii. market source of deposit;
  - iv. term to maturity; and
  - v. currency of deposit, if the bank has liabilities (both on- and off-balance sheet) in foreign currencies.
- c) **Managing liquidity in different currencies:** The bank should have a strategy on how to manage liquidity in different currencies.
- d) **Dealing with liquidity disruptions:** The bank should put in place a strategy on how to deal with the potential for both temporary and long-term liquidity disruptions. The interbank market can be important source of liquidity. However, the strategy should take into account the fact that in crisis situations access to interbank market could be difficult as well as costly.

The liquidity strategy must be documented in the liquidity policies, and communicated throughout the bank. The strategy should be evaluated periodically to ensure that it remains valid.

## 6.7 Liquidity policies

Sound and prudent liquidity policies set out the sources and amount of liquidity required to ensure that the liquidity is adequate for the continuation of operations and to meet all applicable regulatory requirements. These policies must be supported by effective procedures to measure, achieve and maintain liquidity.

Operating liquidity is the level of liquidity required to meet a bank's day-to-day cash outflow commitments. Factors influencing a bank's operating liquidity include:

- i. cash flows and the extent to which expected cash flows from maturing assets and liabilities match; and
- ii. the diversity, reliability and stability of funding sources, the ability to renew or replace deposits and the capacity to borrow.

For regulatory purposes a bank is required to hold a specific amount of assets classed as "liquid", based on its liabilities. Generally, undue reliance should not be placed on these assets, or those formally pledged, for operating purposes other than as a temporary measure, as legally they may not be available for encashment if needed.

In assessing the adequacy of liquidity, each bank needs to accurately and frequently measure:

- a) the term profile of current and approaching cash flows generated by assets and liabilities, both on- and off-balance sheet;
- b) the extent to which potential cash outflows are supported by cash inflows over a specified period of time, maturing or liquefiable assets, and cash on hand;
- c) the extent to which potential cash outflows may be supported by the bank's ability to borrow or to access discretionary funding sources; and
- d) the level of statutory liquidity and reserves required and to be maintained.

The banks should formulate liquidity policies, which are recommended by senior management/ALCO and approved by the Board. Board should ensure that there are adequate policies to govern liquidity risk management process. While specific details vary across banks according to the nature of their business, the key elements of any liquidity policy include:

- i. a statement of liquidity risk appetite;
- ii. general liquidity strategy (short- and long-term), specific goals and objectives in relation to liquidity risk management, process for strategy formulation and the level within the bank it is approved;
- iii. roles and responsibilities of individuals performing liquidity risk management functions, including structural balance sheet management, pricing, marketing, contingency planning, management reporting, lines of authority and responsibility for liquidity decisions;
- iv. Liquidity risk management structure for monitoring, reporting and reviewing liquidity;
- v. liquidity risk management tools for identifying, measuring, monitoring and controlling liquidity risk (including the types of liquidity limits and ratios in place and rationale for establishing limits and ratios);
- vi. Mechanisms for dealing with deviations from the policy and the restrictions it imposes; and
- vii. contingency plan for handling liquidity crises.

To be effective the liquidity policy must be communicated down the line throughout the bank. It is important that the Board and senior management ensure that policies are reviewed on a regular basis (at least annually) and when there are any material changes in the bank's current and prospective liquidity risk profile. Such changes could stem from internal circumstances (e.g. changes in business focus) or external circumstances (e.g. changes in economic conditions).

Reviews provide the opportunity to fine-tune the bank's liquidity policies in light of the bank's liquidity management experience and development of its business. Any significant or frequent exception to the policy is an important barometer to gauge its effectiveness and any potential impact on bank's liquidity risk profile.

## **6.8 Procedures and limits**

Banks should establish appropriate procedures, processes and limits to implement their liquidity policies. The procedural manual should explicitly narrate the necessary operational steps and processes to execute the relevant liquidity risk controls. The manual should be periodically reviewed and updated to take into account new activities, changes in risk management approaches and systems.

## **6.9 Liquidity management structure**

The responsibility for managing the overall liquidity of the bank should be delegated to a specific, identified group within the bank. This may be in the form of an Asset Liability Committee (ALCO).

Since liquidity management is a technical job requiring specialized knowledge and expertise, it is important that responsible officers not only have relevant expertise but also have a good understanding of the nature and level of liquidity risk assumed by the bank and the means to manage that risk.

It is critical that there be close links between those individuals responsible for liquidity and those monitoring market conditions, as well as other individuals with access to critical information. This is particularly important in developing and analyzing stress scenarios.

## **6.10 Liquidity risk management process**

An effective liquidity risk management process should include systems to identify, measure, monitor and control its liquidity exposures. Management should be able to accurately identify and quantify the primary sources of a bank's liquidity risk in a timely manner. To properly identify the sources, management should understand both existing as well as future risk that the bank can be exposed to. Management should always be alert for new sources of liquidity risk at both the transaction and portfolio levels.

Key elements of an effective risk management process include an efficient MIS to measure, monitor and control existing as well as future liquidity risks and reporting them to senior management and the Board of directors.

## 6.11 Management information system

An effective management information system (MIS) is essential for sound liquidity management decisions. Information should be readily available for day-to-day liquidity management and risk control, as well as during times of stress. Data should be appropriately consolidated, comprehensive yet succinct, focused, and available in a timely manner. Ideally, the regular reports a bank generates will enable it to monitor liquidity during a crisis; managers would simply have to prepare the reports more frequently. Managers should keep crisis monitoring in mind when developing liquidity MIS. There is usually a trade-off between managing liquidity risk accuracy and timeliness. Liquidity problems can arise very quickly, and effective liquidity management may require daily internal reporting. Since bank liquidity is primarily affected by large, aggregate principal cash flows, detailed information on every transaction may not improve analysis.

Management should develop systems that can capture significant information. The content and format of reports depend on a bank's liquidity management practices, risks, and other characteristics. However, certain information can be effectively presented through standard reports such as "Funds Flow Analysis," and "Contingency Funding Plan Summary". These reports should be tailored to the bank's needs. Other routine reports may include a list of large funds providers, a cash flow or funding gap report, a funding maturity schedule, and a limit monitoring and exception report. Day-to-day management may require more detailed information, depending on the complexity of the bank and the risks it undertakes. Management should regularly consider how best to summarize complex or detailed issues for senior management or the Board. Besides other types of information important for managing day-to-day activities and for understanding the bank's inherent liquidity risk profile should include:

- a) Asset quality and its trends;
- b) Earnings projections;
- c) Bank's general reputation in the market and the condition of the market itself;
- d) The type and composition of the overall balance sheet structure; and
- e) The type of new deposits being obtained, as well as its source, maturity, and price.

As far as information system is concerned, various units related to treasury activities, the dealing, the treasury operation and risk management department should be integrated. Furthermore, management should ensure proper and timely flow of information among front office, back office and middle office in an integrated manner; however, their reporting lines should be kept separate to ensure independence of these functions.

## 6.12 Periodic reviews

Periodic reviews should be conducted to determine whether the bank complies with its liquidity risk policies and procedures. Positions that exceed established limits should receive prompt attention of appropriate management and should be resolved according to the process described in approved policies. Periodic reviews of the liquidity management process should also address any significant changes in the nature of instruments acquired, limits, and internal controls that have occurred since the last review.

## 6.13 Measurement of liquidity risk

An effective liquidity risk measurement system not only helps in managing liquidity in times of crisis but also optimize return through efficient utilization of available funds. Banks should institute systems that enable them to capture liquidity risk ahead of time, so that appropriate remedial measures could be prompted to avoid any significant losses.

Liquidity risk of a bank varies depending upon its size and complexity of business and thus requires liquidity risk measurement techniques accordingly. For instance, banks having large networks may have access to low cost stable deposit, while small banks may only have significant reliance on large size corporate deposits. However, abundant liquidity does not obviate the need for a mechanism to measure and monitor liquidity profile of a bank.

At a very basic level, liquidity measurement involves assessing all of a bank's cash inflows against its outflows to identify the potential for any net shortfalls going forward. This includes funding requirements for off-balance sheet commitments. A number of techniques can be used for measuring liquidity risk, ranging from simple calculations and static simulations based on current holdings to highly sophisticated modeling techniques.

An important aspect of measuring liquidity is making assumptions about future funding needs. While certain cash inflows and outflows can be easily calculated or predicted, banks must also make assumptions about future liquidity needs, both in the very short-term and for longer time periods. One important factor to consider is the critical role a bank's reputation plays in its ability to access funds readily and at reasonable terms. For that reason, bank's staff responsible for managing overall liquidity should be aware of any information (such as an announcement of a decline in earnings or a downgrading by a rating agency) that could have an impact on market and public perceptions about the soundness of the bank.

Some commonly used liquidity measurement and monitoring techniques that may be adopted by the banks are:



### 6.13.1 Contingency funding plans

In order to develop comprehensive liquidity risk management framework, banks should have in place plans to address stress scenarios. Such a plan commonly known as Contingency Funding Plan (CFP), is a set of policies and procedures that serves as a blueprint for a bank to meet its funding needs in a timely manner and at a reasonable cost.

A CFP is a projection of future cash flows and funding sources of a bank under market scenarios including aggressive asset growth or rapid liability erosion. To be effective it is important that a CFP should represent management's best estimate of balance sheet changes that may result from a liquidity or credit event. A CFP can provide a useful framework for managing liquidity risk both short term and in the long term. Further it helps ensure that a bank can prudently and efficiently manage routine and extraordinary fluctuations in liquidity.

#### 6.13.1.1 Use of CFP for routine liquidity management

For day-to-day liquidity risk management integration of liquidity scenario will ensure that the bank is best prepared to respond to an unexpected problem. In this sense, a CFP is an extension of ongoing liquidity management and formalizes the objectives of liquidity management by ensuring:

- a) a reasonable amount of liquid assets are maintained;
- b) measurement and projection of funding requirements during various scenarios; and
- c) access to funding sources.

#### 6.13.1.2 Use of CFP for emergency and distress environments

It is not always that a liquidity crisis shows up gradually. In case of a sudden liquidity stress, it is important for a bank to seem organized, candid, and efficient to meet its obligations to the stakeholders. Since such a situation requires a spontaneous action, banks that already have plans to deal with such situation could address the liquidity problem more efficiently and effectively. A CFP can help ensure that bank management and key staffs are ready to respond to such situations. Bank liquidity is very sensitive to negative trends in credit, capital, or reputation. Deterioration in the bank's financial condition (reflected in items such as asset quality indicators, earnings, or capital), management composition, or other relevant issues may result in reduced access to funding.

#### 6.13.1.3 Scope of CFP

The sophistication of a CFP depends upon the size, nature, and complexity of business, risk exposure, and organizational structure. To begin, the CFP should anticipate all of the bank's funding and liquidity needs by:

- a) Analyzing and making quantitative projections of all significant on- and off balance- sheet;
- b) Funds flows and their related effects;
- c) Matching potential cash flow sources and uses of funds; and
- d) Establishing indicators that alert management to a predetermined level of potential risks.

The CFP should project on the bank's funding position during both temporary and long-term liquidity changes, including those caused by liability erosion. The CFP should explicitly identify, quantify, and rank all sources of funding by preference, such as:

- i. Reducing assets;
- ii. Modification or increasing liability structure; and
- iii. Using other alternatives for controlling balance sheet changes.

The CFP should include asset side as well as liability side strategies to deal with liquidity crises. The asset side strategy may include: whether to liquidate surplus money market assets, when to sell liquid or longer-term assets, etc. While liability side strategies specify policies such as pricing policy for funding, the dealer who could assist at the time of liquidity crisis, policy for early redemption request by retail customers, use of BB discount window etc. A CFP also chalks out roles and responsibilities of various individuals at the time of liquidity crises and the management information system between management, ALCO, traders, and others.

### **6.13.2 Maturity ladder**

Banks may utilize flow measures to determine their cash position. A maturity ladder estimates a bank's cash inflows and outflows and thus net deficit or surplus (GAP) both on a day-to-day basis and over a series of specified time periods.

Banks need to focus on the maturity of its assets and liabilities in different tenors. Mismatch is accompanied by liquidity risk and excessive longer tenor lending against shorter-term borrowing can put a bank's balance sheet in a very critical and risky position. To address this risk and to make sure a bank does not expose itself in excessive mismatch, a bucket-wise (e.g. call, 2-7 days, 8 days-1 month, 1-3 months, 3-12 months, 1-5 years, over 5 years) maturity profile of the assets and liabilities to be prepared to understand mismatch in every bucket. A structural maturity ladder has been furnished in the DOS circular no. 02 dated 29 March 2011.

The number of time frames in a maturity ladder is of significant importance and up to some extent depends upon the nature of bank's liabilities or sources of funds. Banks, which rely on short term funding, will concentrate primarily on managing liquidity on very short term.

However, other banks might actively manage their net funding requirement over a slightly longer period. In the short term, a bank's flow of funds could be estimated more accurately and also such estimates are of more importance as these provide an indication of actions to be taken immediately. Further, such an analysis for distant periods will maximize the opportunity for the bank to manage the gap well in advance before it crystallizes. Consequently, banks should use short time frames to measure near term exposures and longer time frames thereafter.

Banks need to calculate daily gap for the next one or two weeks, monthly gap for next six months or a year and quarterly thereafter. While making an estimate of cash flows, the following aspects need to be considered:

- a) The funding requirement arising out of off- balance sheet commitments also need to be accounted for;
- b) Many cash flows associated with various products are influenced by interest rates or customer behavior. Banks need to take into account behavioral aspects along with contractual maturity. In this respect past experiences could give important guidance to make any assumption;
- c) Some cash flows may be seasonal or cyclical; and
- d) Management should also consider increases or decreases in liquidity that typically occur during various phases of an economic cycle.

Banks should have sufficient liquidity to meet fluctuations in loans and deposits. As a safety measure banks should maintain a margin of excess liquidity. To ensure that this level of liquidity is maintained, management should estimate liquidity needs in a variety of scenarios.

### **6.13.3 Liquidity ratios and limits**

Banks may use a variety of ratios to quantify liquidity. These ratios can also be used to create limits for liquidity management. However, such ratios would be meaningless unless used regularly and interpreted taking into account qualitative factors. Ratios should always be used in conjunction with more qualitative information about borrowing capacity, such as the likelihood of increased requests for early withdrawals, decreases in credit lines, decreases in transaction size, or shortening of term funds available to the bank. To the extent that any asset-liability management decisions are based on financial ratios, a bank's asset-liability managers should understand how a ratio is constructed, the range of alternative information that can be placed in the numerator or denominator, and the scope of conclusions that can be drawn from ratios. Because ratio components as calculated by banks are sometimes inconsistent, ratio-based comparisons of banks or even comparisons of periods at a single bank can be misleading.

Examples of ratios and limits that can be used are:

- (a) **Cash flow ratios and limits:** One of the most serious sources of liquidity risk comes from a bank's failure to "roll over" a maturing liability. Cash flow ratios and limits attempt to measure and control the volume of liabilities maturing during a specified period of time.

Banks earn money from mismatches, i.e. by borrowing short term and lending long term. A bank has to find out the right combination for longer term mismatch. The medium term funding (MTF) ratio is based on the amount of liabilities with a contractual maturity of more than one year to assets with a contractual maturity of more than one year, that is MTF should be done on the basis of 1 year and above but less than 2 years term deposit. The desirable ratio of MTF should be at least 30% and 45% to be considered as an ideal situation.

Maximum cumulative outflow (MCO) guidelines control the net outflow (inflow from asset maturity minus outflow from liability maturity) over the period overnight, one week and one month. However, as per DOS circular No. 02 dated 29 March 2011, the following formula is to be used by the banks:

$$\text{MCO} = \frac{\text{Total outflows upto one month} + \text{Total OBS upto one month}}{\text{Total Inflows} + \text{Net nostro account balance} + \text{Available Fcy balance with BB}}$$

- (b) **Liability concentration ratios and limits:** Liability concentration ratios and limits help to prevent a bank from relying on too few providers or funding sources. Limits are usually expressed either as a percentage of liquid assets or absolute amount. Sometimes they are more indirectly expressed as a percentage of deposits, purchased funds, or total liabilities.
- (c) **Other balance sheet ratios:** Examples of common ratios used by banks to monitor current and potential funding levels are:
- i. Total credit to total deposits;
  - ii. Liquid assets to total deposits;
  - iii. Liquid assets to short-term liabilities ; and
  - iv. Borrowed funds to total assets; etc.

In addition to the statutory liquidity requirement and cash reserve requirement, the board and senior management should establish limits on the nature and amount of liquidity risk they are willing to assume. The limits should be periodically reviewed and adjusted when conditions or risk tolerances change. When limiting risk exposure, senior management should consider

the nature of the bank's strategies and activities, its past performance, the level of earnings, capital available to absorb potential losses, and the Board's risk appetite. Balance sheet complexity will determine how much and what types of limits a bank should establish over daily and long term horizons. While limits will not prevent a liquidity crisis, limit exceptions can be early indicators of excessive risk or inadequate liquidity risk management.

#### **6.14 Foreign currency liquidity management**

Each bank should have a measurement, monitoring and control system for its liquidity positions in the major currencies in which it is active. In addition to assessing its aggregate foreign currency liquidity needs and the acceptable mismatch in combination with its domestic currency commitments, a bank should also undertake separate analysis of its strategy for each currency individually.

#### **6.15 Internal controls**

Banks should have adequate internal controls to ensure the integrity of their liquidity risk management process. These internal controls should be an integral part of the bank's overall system of internal control. They should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations and internal policies. An effective system of internal control for liquidity risk includes:

- a) a strong control environment;
- b) an adequate process for identifying and evaluating liquidity risk;
- c) the establishment of control activities such as policies and procedures;
- d) adequate information systems; and
- e) continual review of adherence to established policies and procedures.

With regard to control policies and procedures, attention should be given to appropriate approval processes, limits, reviews and other mechanisms designed to provide a reasonable assurance that the bank's liquidity risk management objectives are achieved. Many attributes of a sound risk management process, including risk measurement, monitoring and control functions, are key aspects of an effective system of internal control. Banks should ensure that all aspects of the internal control system are effective, including those aspects that are not directly part of the risk management process.

In addition, an important element of a bank's internal control system over its liquidity risk management process is regular evaluation and review. This includes ensuring that personnel are following established policies and procedures, as well as ensuring that the procedures that were established actually accomplish the intended objectives. Such reviews and evaluations should also address any significant change that may impact on the effectiveness of controls.

In particular, the review should identify if and when limits were breached, and, if so, what the consequences were for the staff that initiated and approved the breach. The board should ensure that all such reviews and evaluations are conducted regularly by individuals who are independent of the function being reviewed. When revisions or enhancements to internal controls are warranted, there should be a mechanism in place to ensure that these are implemented in a timely manner.

### **6.16 Monitoring and reporting risk exposures**

Senior management and the board, or a committee thereof, should receive reports on the level and trend of the bank's liquidity risk at least quarterly. From these reports, senior management and the board should learn how much liquidity risk the bank is assuming, whether management is complying with risk limits, and whether management's strategies are consistent with the board's expressed risk appetite. The sophistication or detail of the reports should be commensurate with the complexity of the bank.

### 7.1 Introduction

Operational risk is defined as the risk of unexpected losses due to physical catastrophe, technical failure and human error in the operation of a bank, including fraud, failure of management, internal process errors and unforeseeable external events.

It is clear that operational risk differs from other risks in that it is typically not directly taken in return for an expected reward, but exists in the natural course of corporate activity, and that this affects the risk management process. At the same time, failure to properly manage operational risk can result in a misstatement of a bank's risk profile and expose the bank to significant losses.

Operational risk can be subdivided into two components: operational strategic risk and operational failure risk. It is also defined as internal operational risk.

Operational strategic risk arises from environmental factors such as a new competitor that changes the business paradigm, a major political and regulatory regime change, and other factors that are generally outside the control of the bank. It also arises from a major new strategic initiative, such as getting into a new line of business or redoing how current business is to be done in the future. It is also defined as external operational risk.

Operational failure risk arises from the potential for failure in the course of operating the business. A firm uses *people, process, and technology* to achieve business plans, and any one of these factors may experience a failure of some kind. Accordingly, operational failure risk is the risk that exists *within* the business unit caused by the failure of people, process or technology. A certain level of the failures may be anticipated and should be built into the business plan. These failures can be expected to occur periodically, although both their impact and their frequency may be uncertain.

Operational Risk	
Operational strategic risk	Operational failure risk
<p>The risk of choosing an inappropriate strategy in response to environmental factors, such as</p> <ul style="list-style-type: none"> <li>• Political</li> <li>• Government</li> <li>• Regulation</li> <li>• Taxation</li> <li>• Societal</li> <li>• Competition, etc.</li> </ul>	<p>The risk encountered in the pursuit of a particular strategy due to</p> <ul style="list-style-type: none"> <li>• People</li> <li>• Process</li> <li>• Technology</li> </ul>

## 7.2 Categorization of operational risk

Banks are required to adopt and utilize standard categorizations of operational risk events, according to Event Type and Business Line. Not all Business Lines will be relevant for all banks. There are seven major Event Types, and eight major (Level 1) Business Lines, and within each combination of Event Type and Business Line there may be one or more Scenario Descriptions. The following list of Scenario Descriptions, categorized by Event Type and Business Line, represent the largest scenarios most frequently reported by banks. For any bank, it is unlikely, but possible, that some of the scenarios may occur under business lines in addition to the ones reported in the table.

Event Type	Business Line	Scenario Descriptions
<b>Type A:</b> Internal Fraud	Corporate Finance	Loan Fraud Embezzlement Failure to follow procedures/limits
	Trading & Sales	Unauthorized trading/rogue trader Misappropriation of assets Breach of trading limits
	Retail Banking	Theft of customer data/information Embezzlement Theft of assets
	Commercial Banking	Fraudulent transfer of funds Embezzlement Theft of customer funds
	Payment and Settlement	Payment fraud Theft of client funds or assets
	Asset Management	Unauthorized trading activities
	Not allocated to any business line	Embezzlement Misuse of confidential information Misappropriation of assets
<b>Type B:</b> External Fraud	Corporate Finance	Client misrepresentation of information Theft Loan fraud
	Trading & Sales	Loan fraud Cybercrime Forgery
	Retail Banking	Cybercrime Check fraud Theft of information/data
	Commercial Banking	Fraudulent transfer of funds Credit product fraud (loans, L/C, guarantees)
	Payment and Settlement	Payment fraud
	Not allocated to any business line	Loan fraud Cybercrime Robbery
<b>Type C:</b> Employment Practices and Workplace Safety	Trading & Sales	Discrimination Occupational accident
	Retail Banking	Occupational accident Discrimination Environmental issue
	Not allocated to any business line	Pandemic Wrongful termination Discrimination



Event Type	Business Line	Scenario Descriptions
<b>Type D:</b> Clients, Products, and Business Practices	Corporate Finance	Regulatory breach Compromised customer information Fiduciary breach
	Trading & Sales	Fiduciary breach Regulatory breach Compromised customer information
	Retail Banking	Regulatory breach Mis-selling Compromised customer information
	Commercial Banking	Noncompliance with money laundering regulations Regulatory breach Mis-selling
	Asset Management	Mis-selling
	Not allocated to any business line	Client suitability Noncompliance with money laundering regulations
<b>Type E:</b> Damage to Physical Assets	Trading & Sales	Business continuity failure Damage to building and premises
	Retail Banking	Fire Flood Damage to building and premises
	Commercial Banking	Damage to building and premises Natural disaster
	Not allocated to any business line	Natural disaster Terrorist attack vandalism Earthquake
<b>Type F:</b> Business Disruption and System Failure	Trading & Sales	IT system failure
	Retail Banking	IT system failure Utility outage
	Commercial Banking	Off-shoring/Outsourcing risk IT system failure
	Payment and Settlement	IT system failure Failure of payments infrastructure
	Agency Services	IT system failure
	Asset Management	IT system failure
	Not allocated to any business line	IT system failure
<b>Type G:</b> Execution, Delivery, and Process Management	Corporate Finance	Inaccurate/Incomplete contract Transaction error Staff error in lending process
	Trading & Sales	Data entry error Model risk
	Retail Banking	Pricing error Failure of external supplier
	Commercial Banking	Failure to follow procedures Lost or incomplete loan/legal documentation Processing error Collateral management error
	Payment and Settlement	Data entry error Failure to follow procedures
	Agency Services	Processing error
	Asset Management	Mismanagement of account assets
	Not allocated to any business line	Unapproved access given to client accounts Inaccurate financial statement Failure of supplier/vendor Tax noncompliance

### 7.3 Operational risk management principles

There are 6 fundamental principles that all banks, regardless of their size or complexity, should address in their approach to operational risk management.

- a) Ultimate accountability for operational risk management rests with the board, and the level of risk that the organization accepts, together with the basis for managing those risks, is driven from the top down by those charged with overall responsibility for running the business.
- b) The board and senior management should ensure that there is an effective, integrated operational risk management framework. This should incorporate a clearly defined organizational structure, with defined roles and responsibilities for all aspects of operational risk management/monitoring and appropriate tools that support the identification, assessment, control and reporting of key risks.
- c) The board and senior management should recognize, understand and have defined all categories of operational risk applicable to the bank. Furthermore, they should ensure that their operational risk management framework adequately covers all of these categories of operational risk, including those that do not readily lend themselves to measurement.
- d) Operational risk policies and procedures that clearly define the way in which all aspects of operational risk are managed should be documented and communicated. These operational risk management policies and procedures should be aligned to the overall business strategy and should support the continuous improvement of risk management.
- e) All business and support functions should be an integral part of the overall operational risk management framework in order to enable the institution to manage effectively the key operational risks facing the bank.
- f) Line management should establish processes for the identification, assessment, mitigation, monitoring and reporting of operational risks that are appropriate to the needs of the bank, easy to implement, operate consistently over time and support an organizational view of operational risks and material failures.

The board should provide senior management with clear guidance and direction regarding the principles underlying the framework and approve the corresponding policies developed by senior management.

## 7.4 Operational risk management framework

An operational risk management framework should be based on an appropriate definition of operational risk, which clearly articulates what constitutes operational risk in the bank. The framework should cover the bank's tolerance for operational risk, as specified through the policies for managing this risk and the bank's prioritization of operational risk management activities, including the extent of, and manner in which, operational risk is transferred outside the bank. It should also include policies outlining the bank's approach to identifying, assessing, monitoring and controlling/mitigating the risk. The degree of formality and sophistication of the bank's operational risk management framework should be commensurate with the bank's risk profile. There should be separation of responsibilities and reporting lines between operational risk control functions, business lines and support functions in order to avoid conflict of interest. The framework should also articulate the key processes the bank needs to have in place to manage operational risk.

## 7.5 Board oversight

The board is responsible for creating an organizational 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 emphasizes high standards of ethical behavior at all levels of the bank. The board should promote an organizational culture, which establishes through both actions and words the expectations of integrity for all employees in conducting the business of the bank. Generally, the board should at least:

- a) establish tolerance level and set strategic direction in relation to operational risk. Such a strategy should be based on the requirements and obligation to the stakeholders of the bank;
- b) approve the implementation of a bank-wide framework to explicitly manage operational risk as a distinct risk to the bank's safety and soundness;
- c) provide senior management clear guidance and direction regarding the principles underlying the framework and approve the corresponding policies developed by senior management;
- d) establish a management structure capable of implementing the bank's operational risk management framework specifying clear lines of management responsibility, accountability and reporting; and
- e) review the operational risk management framework regularly to ensure that the bank is managing the operational risks. This review process should also aim to assess industry best practice in operational risk management appropriate for the bank's activities, systems and processes.

## 7.6 Senior management oversight

The senior management should at least:

- a) translate the operational risk management framework established by the board into specific policies, processes and procedures that can be implemented and verified within the different business units;
- b) clearly assign authority, responsibility and reporting relationships to encourage and maintain this accountability and ensure that the necessary resources are available to manage operational risk effectively;
- c) assess the appropriateness of the management oversight process in light of the risks inherent in a business unit's policy;
- d) ensure that bank activities are conducted by qualified staff with the necessary experience, technical capabilities and access to resources, and that staff responsible for monitoring and enforcing compliance with the bank's risk policy have authority and are independent from the units they oversee;
- e) ensure that the bank's operational risk management policy has been clearly communicated to staff at all levels in units that are exposed to material operational risks; and
- g) ensure that the bank's remuneration policies are consistent with its appetite for risk. Remuneration policies which reward staff that deviate from policies (e.g. by exceeding established limits) weaken the bank's risk management processes.

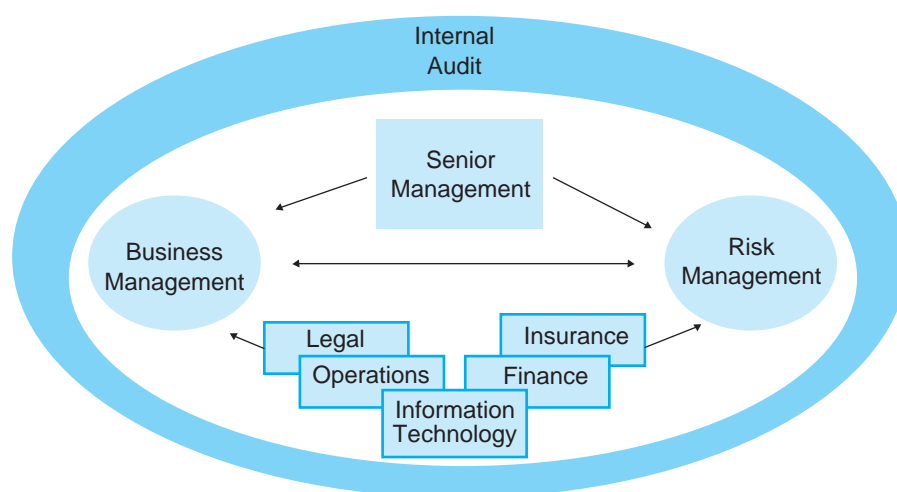


Figure: Managing operational risk

## 7.7 Policies, procedures and limits

Particular attention should be given to the quality of documentation controls and to transaction-handling practices. Policies, processes and procedures related to advanced technologies supporting high transactions volumes, in particular, should be well documented and disseminated to all relevant personnel.

The bank should put in place an operational risk management policy. The policy should, at minimum, include:

- a) The strategy given by the board of the bank;
- b) The systems and procedures to institute effective operational risk management framework; and
- c).The structure of operational risk management function and the roles and responsibilities of individuals involved.

The policy should establish a process to ensure that any new or changed activity, such as new products or systems conversions, will be evaluated for operational risk prior to coming into effect. It should be approved by the board and documented. Senior management should ensure that it is clearly communicated and understood to staff at all levels in units that are exposed to material operational risks. Senior management also needs to place proper monitoring and control processes in order to have effective implementation of the policy. The policy should be regularly reviewed and updated, to ensure it continue to reflect the environment within which the bank operates.

Banks should also establish policies for managing the risks associated with outsourcing activities. Outsourcing of activities can reduce the bank's risk profile by transferring activities to others with greater expertise and scale to manage the risks associated with specialized business activities. However, a bank's use of third parties does not diminish the responsibility of the board and senior management to ensure that the third-party activity is conducted in a safe and sound manner and in compliance with applicable laws. Outsourcing arrangements should be based on robust contracts and/or service level agreements that ensure a clear allocation of responsibilities between external service providers and the outsourcing institution. Furthermore, banks need to manage residual risks associated with outsourcing arrangements, including disruption of services. Firms that utilize third-party vendors to provide services with which customers come into direct contact (such as a partnership with a mobile network operator to allow customers to transfer funds via SMS) need to exercise caution so that service interruptions do not damage the reputation of the bank.

## 7.8 Risk assessment and quantification

Banks should identify and assess the operational risk inherent in all material products, activities, processes and systems and its vulnerability to these risks. 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. While a number of techniques are evolving, operating risk remains the most difficult risk category to quantify. It would not be feasible at the moment to expect banks to develop such measures. However, the banks could systematically track and record frequency, severity and other information on individual loss events. Such data could provide meaningful information for assessing the bank's exposure to operational risk and developing a policy to mitigate/control that risk.

Effective risk assessment allows the bank to better understand its risk profile and most effectively target risk management resources. Amongst the possible tools that may be used by banks for identifying and assessing operational risk are:

- (a) **Self risk assessment:** A bank assesses its operations and activities against a menu of potential operational risk vulnerabilities. This process is internally driven and often incorporates checklists and/or workshops to identify the strengths and weaknesses of the operational risk environment.
- (b) **Risk mapping:** in this process, various business units, organizational functions or process flows are mapped by risk type. This exercise can reveal areas of weakness and help prioritize subsequent management actions.
- (c) **Risk indicators:** risk indicators are statistics and/or metrics, often financial, which can provide insight into a bank's risk position. These indicators are to be reviewed on a periodic basis (such as monthly or quarterly) to alert banks to changes that may be indicative of risk concerns. Such indicators may include the number of failed trades, staff turnover rates and the frequency and/or severity of errors and omissions. Threshold/limits could be tied to these indicators such that when exceeded, could alert management on areas of potential problems.
- (d) **Historical data analyses:** The use of data on a bank's historical loss experience could provide meaningful information for assessing the bank's exposure to operational risk and developing a policy to mitigate/control the risk. An effective way of making good use of this information is to establish a framework for systematically tracking and recording the frequency, severity and other relevant information on individual loss events. Banks may also combine internal loss data with external loss data (from other banks), scenario analyses, and risk assessment factors.

## 7.9 Mitigation of risks

Some significant operational risks have low probabilities but potentially very large financial impact. Moreover, not all risk events can be controlled, e.g. natural disasters. Risk mitigation tools or programs can be used to reduce the exposure to, or frequency and/or severity of such events. For example, insurance policies can be used to externalize the risk of "low frequency, high severity" losses which may occur as a result of events such as third-party claims resulting from errors and omissions, physical loss of securities, employee or third-party fraud, and natural disasters.

However, banks should view risk mitigation tools as complementary to, rather than a replacement for, thorough internal operational risk control. Having mechanisms in place to quickly recognize and rectify legitimate operational risk errors can greatly reduce exposures. Careful consideration also needs to be given to the extent to which risk mitigation tools such as insurance truly reduce risk, or transfer the risk to another business sector or area, or even create a new risk e.g. legal or counterparty risk.

Investments in appropriate processing technology and information technology security are also important for risk mitigation. However, banks should be aware that increased automation could transform high-frequency, low-severity losses into low-frequency, high-severity losses. The latter may be associated with loss or extended disruption of services caused by internal factors or by factors beyond the bank's immediate control e.g. external events. Such problems may cause serious difficulties for banks and could jeopardize a bank's ability to conduct key business activities. Banks should therefore establish disaster recovery and business continuity plans that address this risk.

## 7.10 Risk monitoring

An effective monitoring process is essential for adequately managing operational risk. Regular monitoring activities can offer the advantage of quickly detecting and correcting deficiencies in the policies, processes and procedures for managing operational risk. Promptly detecting and addressing these deficiencies can substantially reduce the potential frequency and/or severity of a loss event. There should be regular reporting of pertinent information to senior management and the board that supports the proactive management of operational risk. Senior management should establish a program to:

- a) Monitor assessment of the exposure to all types of operational risk faced by the bank;
- b) Assess the quality and appropriateness of mitigating actions, including the extent to which identifiable risks can be transferred outside the bank; and
- c) Ensure that adequate controls and systems are in place to identify and address problems before they become major concerns.

**It is essential that:**

- i. Responsibility for the monitoring and controlling of operational risk should follow the same type of organizational structure that has been adopted for other risks, including market and credit risk;
- ii. Senior management ensure that an agreed definition of operational risk together with a mechanism for monitoring, assessing and reporting is designed and implemented; and
- iii. This mechanism should be appropriate to the scale of risk and activity undertaken.

In addition to monitoring operational loss events, banks should identify appropriate indicators that provide early warning of an increased risk of future losses. Such indicators (often referred to as key risk indicators or early warning indicators or operational risk matrix) should be forward-looking and could reflect potential sources of operational risk such as rapid growth, the introduction of new products, employee turnover, transaction breaks, system downtime, and so on. When thresholds are directly linked to these indicators an effective monitoring process can help identify key material risks in a transparent manner and enable the bank to act upon these risks appropriately. Regular reviews should be carried out by internal audit, or other qualified parties, to analyze the control environment and test the effectiveness of implemented controls, thereby ensuring business operations are conducted in a controlled manner.

The results of monitoring activities should be included in regular management and board reports, as should compliance reviews performed by the internal audit and risk management functions.

Banks should carry out an initial due diligence test and monitor the activities of third party providers, especially those lacking experience of the banking industry's regulated environment, and review this process (including re-evaluations of due diligence) on a regular basis. For critical activities, the bank may need to consider contingency plans, including the availability of alternative external parties and the costs and resources required to switch external parties, potentially on very short notice.

### **7.11 Risk reporting**

Senior management should ensure that information is received by the appropriate people, on a timely basis, in a form and format that will aid in the monitoring and control of the business. The reporting process should include information such as:

- a) The critical operational risks facing, or potentially facing, the bank;
- b) Risk events and issues together with intended remedial actions;



- c) The effectiveness of actions taken;
- d) Details of plans formulated to address any exposures where appropriate;
- e) Areas of stress where crystallization of operational risks is imminent; and
- f) The status of steps taken to address operational risk.

The operational risk reports should contain internal financial, operational, and compliance data, as well as external market information about events and conditions that are relevant to decision making. Reports should be distributed to appropriate levels of management and to areas of the bank on which concerns may have an impact. Reports should fully reflect any identified problem areas and should motivate timely corrective action on outstanding issues. To ensure the usefulness and reliability of these reports, management should regularly verify the timeliness, accuracy, and relevance of reporting systems and internal controls in general. Management may also use reports prepared by external sources (auditors, supervisors) to assess the usefulness and reliability of internal reports. Reports should be analyzed with a view to improving existing risk management performance as well as developing new risk management policies, procedures and practices.

In general, the board should receive sufficient higher level information to enable them to understand the bank's overall operational risk profile and focus on the material and strategic implications for the business.

### **7.12 Establishing control mechanism**

Control activities are designed to address the operational risks that a bank has identified. For all material operational risks that have been identified, the bank should decide whether to use appropriate procedures to control and/or mitigate the risks, or bear the risks. For those risks that cannot be controlled, the bank should decide whether to accept these risks, reduce the level of business activity involved, or withdraw from this activity completely. To be effective, control activities should be an integral part of the regular activities of a bank. A framework of formal, written policies and procedures is necessary; it needs to be reinforced through a strong control culture that promotes sound risk management practices.

### **7.13 Contingency planning**

Banks should have disaster recovery and business continuity plans to ensure its ability to operate as a going concern and minimize losses in the event of severe business disruption. The business disruption and contingency plans should take into account different types of scenarios to which the bank may be vulnerable and should be commensurate with the size and complexity of its operations. Management should identify critical business processes, including those where there is dependence on external vendors or other third parties, for which rapid resumption of service would be most essential.

## 7.14 Internal controls

Internal control systems should be established to ensure adequacy of the risk management framework and compliance with a documented set of internal policies concerning the risk management system. Principal elements of this could include, for example:

- a) Top-level reviews of the bank's progress towards the stated objectives;
- b) Checking for compliance with management controls;
- c) Policies, processes and procedures concerning the review, treatment and resolution of non-compliance issues; and
- d) A system of documented approvals and authorizations to ensure accountability to the appropriate level of management.

Although a framework of formal, written policies and procedures is critical, it needs to be reinforced through a strong control culture that promotes sound risk management practices. Board and senior management are responsible for establishing a strong internal control culture in which control activities are an integral part of the regular activities of a bank.

Operational risk can be more pronounced where banks engage in new activities or develop new products (particularly where these activities or products are not consistent with the bank's core business strategies), enter unfamiliar markets, and/or engage in businesses that are geographically distant from the head office. It is therefore important for banks to ensure that special attention is paid to internal control activities including review of policies and procedures to incorporate such conditions.

Banks should have in place adequate internal audit coverage to verify that operating policies and procedures have been implemented effectively. The board (either directly or indirectly through its audit committee) should ensure that the scope and frequency of the audit program is appropriate to the risk exposures. Audit should periodically validate that the bank's operational risk management framework is being implemented effectively across the bank.

To the extent that the audit function is involved in oversight of the operational risk management framework, the board should ensure that the independence of the audit function is maintained. This independence may be compromised if the audit function is directly involved in the operational risk management process. The audit function may provide valuable input to those responsible for operational risk management, but should not itself have direct operational risk management responsibilities.

An effective internal control system also requires existence of appropriate segregation of duties and that personnel are not assigned responsibilities which may create a conflict of interest. Assigning such conflicting duties to individuals, or a team, may enable them to

conceal losses, errors or inappropriate actions. Therefore, areas of potential conflict of interest should be identified, minimized, and subjected to careful independent monitoring and review.

In addition to segregation of duties, banks should ensure that other internal practices are in place as appropriate to control operational risk. Examples of these include:

- a) Close monitoring of adherence to assigned risk limits or thresholds;
- b) Maintaining safeguards for access to, and use of, bank's assets and records;
- c) Ensuring that staffs have appropriate expertise and training;
- d) Identifying business lines or products where returns appear to be out of line with reasonable expectations e.g. where a supposedly low risk, low margin trading activity generates high returns that could call into question whether such returns have been achieved as a result of an internal control breach; and
- e) Regular verification and reconciliation of transactions and accounts.

### 8.1 Introduction

Strategic risk is the current or prospective risk to earnings and capital arising from adverse business decisions, improper implementation of decisions, or lack of responsiveness to changes in the business environment, both internal and external. This risk is a function of the compatibility of a bank's strategic goals, the business strategies developed and resources employed to achieve strategic goals, and the quality of implementation of those goals.

Strategic risk can arise from two main sources: external and internal risk factors. External risk factors are difficult for the bank to control or that the bank has no control over, and affect or deter the realization of the goals determined in the strategic plan. Such factors include:

- a) **Competition:** A strategic plan and business plan must be in line with current and anticipated future competition. Competitive factors must be taken into consideration in the bank's pricing practices and when developing new products.
- b) **Change of target customers:** Changes in demographics and consumer profiles may affect the customer base, earnings and capital funding of a bank.
- c) **Technological changes:** A bank may face risks from changing technology because its competitors can develop more efficient systems or services at lower costs. The bank should ensure that the level of technology in use is sufficient to retain its customer base.
- d) **Economic factors:** Global, regional or national economic conditions affect the level of profits of a bank. Thus, continual assessment and monitoring of economic trends and forecasts are needed.
- e) **Regulations:** Changes in laws and regulations of the supervisor, tax authorities, local authorities and other authorized agencies may affect the implementation of strategic and business plans established to meet the bank's goals; and may require adjustments to the plans in order to ensure compliance.

Internal risk factors are controllable by the bank but can affect or deter the implementation of the strategic plan. Such factors include:

- i. **Organizational structure:** It is important for the implementation of strategic and business plans, and to meet overall goals in the most efficient manner. A bank

should have an organizational structure consistent with its plans and that prevents conflicts of interest among its directors, managers, shareholders and staff.

**ii. Work processes and procedures:** These factors enable timely and accurate implementation of business plans. The board should establish responsibilities and clear guidelines, policies and procedures in order to prevent deficiencies in internal controls.

**iii. Personnel:** The success of accomplishing strategic and business plan is dependent on the knowledge, experience, and vision of the board, management and staff. The staff should have the necessary expertise and training to conduct their assignments in an efficient and effective manner. Lack of competent and sufficient staff levels can increase risk exposures, impair financial performance and damage the bank's reputation.

**iv. Information:** Adequate, appropriate, accurate and timely information will provide a clear understanding of the bank and its market place, thereby positively affecting the formulation of strategic and business plans, and management decisions.

**v. Technology:** Technology systems should serve and support complex transactions and all customers' needs, as well as maintain the competitiveness and support of new business lines.

Risk mitigation factors help in the implementation of a strategic plan. Such factors include a qualified board, adequate preparation of strategic and business plans, quality personnel and their ongoing training, an effective risk management system, adequate access to information, and timely and efficient introduction of new products or services.

Strategic risk, if not adequately managed, may gradually manifest itself in different units of a bank. It can further affect a bank's position in the market, e.g. through falling share of the target market.

## 8.2 Strategic plan

A strategic plan is a document reflecting the mission and strategic goals of a bank, generally for a period of at least five years. A good strategic plan must be clear, consistent with goals, flexible, and adjustable to changes in the environment. A strategic plan should contain, at least the following:

- a) Analysis of the external environment in which the bank operates, including the PEST (Political, Economic, Social and Technological) analysis;

- b) Critical review of the institutional performance including SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis;
- c) Bank's strategic goals and objectives;
- d) Description of the bank's risk management system;
- e) Mission, goals and operating plans for each of the bank's units; and
- f) Bank's quantitative projection of financial statements for the planning period.

### **8.3 Board oversight**

The board is responsible for the strategic direction of the bank. The vision and mission of the bank should reflect the direction to which the bank is heading in the medium to long term. It is the overall responsibility of the board to provide the strategic direction documented in a strategic plan setting out in clear terms objectives and goals in all major areas of the bank's business. On the basis of the approved strategic plan, the board should, among others, set up a corporate governance structure which clearly indicates lines of responsibilities and accountability, establish communication channels appropriate for effective implementation of the plans, approve strategic risk management policies and ensure that senior management is sufficiently qualified and experienced.

The board should be knowledgeable about the bank's market, economic and competitive conditions and ensure that the strategic plan is implemented effectively and reviewed at least annually. They should receive relevant reports that are accurate and timely, and can be appropriately used in the decision making process.

### **8.4 Senior management oversight**

Management of a bank is responsible for implementing the bank's approved strategic and business plans. Creation of adequate conditions for implementation, including the design and adoption of a strategic risk management policy, procedures, as well as duties and responsibilities of different units is the most critical step towards effective implementation of the strategic and business plans.

Senior management must translate the strategic goals into attainable operational goals, prioritizing them in terms of their strategic importance. Strategic goals should be cascaded down into smaller executable bits assigned to different business units within the overall set up of the institution.

The plans and objectives should be compatible with the nature, size and the complexity of the bank and the activities it performs as well as the market of the bank's operations.

## 8.5 Policies, procedures and limits

Strategic risk management should be based on an approved Strategic Risk Management Policy, which is in compliance with the bank's overall policy of risk management. The strategic risk management policy should provide general guidelines to strategic risk management. The policy should contain at least the following:

- a) Definition of strategic risk;
- b) Sources of strategic risk (external and internal risk factors);
- c) Risk mitigation factors to strategic risk;
- d) Manner of managing strategic risk; and
- e) Bank's accepted tolerance for strategic risk exposure.

## 8.6 Identification, measurement and monitoring of strategic risk

An effective measurement and monitoring process is essential for adequately managing strategic risk. Identification and measurement of strategic risk can be determined through strategic planning, the preparatory process of a strategic plan and the reasonableness of a strategic plan. Both the strategic plan and the operational plans and budget should be consistent with the business scope, complexity, external environment and internal factors of the bank, including its size and resources.

Management should fully participate and carefully decide on the basis of information that business and strategic plans are feasible and appropriate. Management should ensure good communication and cooperation between all employees and departments involved in the strategic planning process.

The goals of the operational plans should be consistent with the strategic plan and overall objectives of the bank as well as allocation of budget. The bank should set goals, such as the quality of credit portfolio, that are consistent with its capacity, current market share, and competitive environment.

A bank should periodically evaluate actual performance against the strategic plan in order to monitor and adjust its plans appropriately and consistently with changes. The evaluation should be measurable, and with adequate frequency.

An effective measurement and monitoring process is essential for adequately managing strategic risk. To assess the adequacy and appropriateness of strategic risk monitoring and reports, as well as the information system of the bank, each business unit must consider the following factors:

- a) Contents of the reports submitted to inform decisions at higher level;
- b) Frequency of the reports;
- c) Presentation styles of the should facilitate understandability; and
- d) The reports should highlight material risks and strategies mounted to counter them.

### **8.7 Management information system (MIS)**

For effective monitoring of strategic risk, a robust management information system (MIS) should be in place. MIS supports the implementation of the strategic plan, through the following:

- a) Provides, collects, and processes data;
- b) Reduces operating cost;
- c) Enhances communication among staff; and
- d) MIS should enable the bank to identify and measure its strategic risk on a timely manner and generate data and reports for use by the board and management.

The effectiveness of risk monitoring depends on the ability to identify and measure all risk factors, and must be supported by appropriate, accurate and timely MIS with analysis and decision making. Therefore, management must develop and upgrade its information system to identify and measure risks in an accurate and timely manner.

The MIS should be consistent with the complexity and diversity of the bank's business operations. For example, a large bank with many complex transactions should have a reporting system and risk monitoring system that can measure the overall risk level. It should have ability to collect, store and retrieve both internal and external data including financial data; economic condition data, the competition data, technology and regulatory requirements.

MIS should ensure timely and continuous monitoring and control of strategic risk, as well as reporting to the board and senior management on the implementation of the strategic risk management process. Accordingly, MIS should provide proper information and data on the bank's business activities.

Effective MIS must be adequately supportive of objectives, goals, and provisions of the services provided by the bank, be able to timely report in a desirable format, and appropriately specify information access levels.

### **8.8 Strategic risk control**

The board and senior management should monitor market changes and advancements in technology, to determine new services or products that maintain the bank's competitiveness



and allow timely responses to customers' needs. Offering new services or products, however, may increase the risk to the bank if proper considerations are not taken. Therefore, the board and senior management must carefully formulate a strategic plan for all new products.

In order to effectively fulfill the strategic plan, a bank should:

- a) Review performance of senior management against set goals at least annually. The review should determine if performance is satisfactory and management is capable of achieving the goals.
- b) Establish a policy or plan for management succession. The policy or plan should be reviewed at least annually, be consistent with the organizational structure and job descriptions, and cover the necessary training and minimum qualifications for each position and career path.
- c) Monitor and control performance of outsourcing arrangements.
- d) Set compensation guidelines and methods for management and employees. The compensation should be appropriate to the financial standing of the bank.
- e) Set a training plan and adequately budget for training. It should also have staff retention plan to retain capable individuals who have the proper knowledge and understanding of the bank's business and operations.

### 9.1 Introduction

Compliance risk is the current or prospective risk to earnings and capital arising from violations or non-compliance with laws, rules, regulations, agreements, prescribed practices, or ethical standards, as well as from the possibility of incorrect interpretation of effective laws or regulations. Banks are exposed to compliance risk due to relations with a great number of stakeholders, e.g. regulators, customers, counter parties, as well as, tax authorities, local authorities and other authorized agencies.

Compliance risk arises from the necessity of the bank to conduct its businesses in conformity with the business and contractual legal principles applicable in each of the jurisdictions where the bank conducts its business, as well as, when there is a possibility that the institution's failure to meet legal requirements may result in unenforceable contracts, litigation, or other adverse consequences.

Compliance risk can lead to license revocation, fines and penalties, payment of damages, deteriorating position in the market, reduced expansion potential, and lack of contract enforceability. Compliance risk can also lead to a diminished reputation, also known as Reputation risk, arising from an adverse perception of the image of the bank by customers, counter parties, shareholders, or regulators. This affects the bank's ability to establish new relationships, services or products, or service existing relationships. This risk may also expose the institution to administrative, civil and criminal liability, financial loss or a decline in its customer base.

Appropriate actions for the bank to take in mitigating compliance risk would include: reducing exposures of sources of compliance risk, an appropriate compliance risk management process and putting in place an effective compliance function in the institution.

The bank should identify sources of compliance risk. For instance, common sources of compliance risk are:

- a) Violations or noncompliance with laws and regulations and prescribed standards;
- b) Lack of or inadequate compliance with contractual obligations and other legal documentation;
- c) Inadequate identification of rights and responsibilities between the institution and its customers;

- d) Complaints by customers and other counterparties;
- e) Harming the interests of third parties;
- f) Litigation procedures, potential exposure (including cost of litigation) and nature of pending or threatened litigation;
- g) Involvement in money laundering, insider trading, violation of taxation rules, forgery and damage from computer hacking by the institution, its intermediaries or its customers; and/or
- h) Limited knowledge and postponed response by management to implement legal and reputation risk management.

## 9.2 Board oversight

The Board should be aware of the major aspects of the bank's compliance risk as a separate risk category that should be managed. The Board is responsible for the following:

- a) defining the compliance risk management system and ensure that the system is aligned with overall business activities;
- b) Approving a compliance risk management policy that provides the senior management with clear guidelines and procedures for managing compliance risk;
- c) establishing a management structure capable of implementing the bank's compliance risk management process; and
- d) periodically reviewing the bank's compliance risk management policy to ensure proper guidance is provided for effectively managing the institution's compliance risk.

The Board should ensure that the bank's compliance risk management system is subject to implementation by the senior management and a qualified compliance officer/staff, and reviewed by an effective and comprehensive internal audit function.

## 9.3 Senior management oversight

Senior management is responsible for running the bank on a day-to-day basis, to manage and monitor the bank's overall risk environment. Senior management is therefore responsible for the effective management of the bank's compliance risk including:

- a) Implementing the compliance risk management system approved by the Board;
- b) Establishing an effective organizational structure for compliance risk management, and be in regular contact with employees that are directly responsible for conducting compliance risk management (bank's compliance staff and lawyers);

- c) Ensuring that all employees are working in order to protect the bank's reputation;
- d) Ensuring that sufficient human and technical resources are devoted for compliance risk management; and
- e) Ensuring ongoing compliance training that covers compliance requirements for all business lines, particularly when entering new markets or offering new products.

The size of the bank and the complexity of its business activities dictate the scope of the compliance function and staffing requirements (number and competencies) of a compliance function unit. Not all compliance responsibilities are necessarily carried out by a compliance unit. Compliance responsibilities may be exercised by staff in different departments or all compliance responsibilities may be conducted by the compliance unit/department.

Regardless of how the compliance function is organized within the bank, it should be independent, with sufficient resources and clearly specified activities. The compliance staff, especially the head of compliance, should not be in a position where there may arise a conflict of interest between their compliance responsibilities and any other responsibilities they may have.

The head of compliance function may or may not be a member of senior management. If the head of compliance function is a member of senior management, he or she should not have direct business line responsibilities. If the head of compliance function is not a member of senior management, he or she should have a direct reporting line to a member of senior management who does not have direct business line responsibilities.

Compliance risk should be included in the risk assessment methodology of the internal audit function, and an audit program that covers the adequacy and effectiveness of the bank's compliance function should be established, including testing of controls commensurate with the perceived level of risk. This principle implies that the compliance function and the internal audit function should be separate to ensure that the activities of the compliance function are subject to independent review. However, the audit function should keep the head of compliance informed of any audit findings related to compliance.

#### **9.4 Policies, procedures and limits**

Banks should put in place adequate policies and procedures for managing compliance risk. Compliance policy should explain the main processes by which compliance risk is to be identified and managed through all levels of the bank's organizational structure. The policy should also define the compliance function as an independent function, with specific roles and responsibilities of the compliance staff, and detailing the compliance officer's communication methods with the management and staff in the various business units.

Compliance risk management policy should be part of the overall risk management policy of the bank, and should precisely determine all important processes and procedures in minimizing the institution's compliance risk exposure. The policy should be clearly formulated and in writing. The policy must contain, at least the following:

- a) Definition of compliance risk;
- b) Objectives of compliance risk management;
- c) Procedures for identifying, assessing, monitoring, controlling and managing compliance risk;
- d) Well defined authorities, responsibilities and information flows for compliance risk management at all management levels; and
- e) Clear statement of the institution's accepted tolerance for compliance risk exposure.

Procedures for compliance risk should contain at a minimum:

- a) Definition of the required legal documents establishing the collateral on loans for clients. These also include verification, by the bank's legal expert, of the legitimacy of the collateral on the basis of the available documentation;
- b) Definition of standard procedures for foreclosures;
- c) Standardized contracts for similar bank's products, clients, and other services with third parties. The terms or conditions of a contract should be confirmed by the bank's legal expert. Special attention should be paid to the procedures for changing the terms of a signed contract. The bank's legal expert should also confirm annexes to any contract;
- d) Legal due diligence of the bank's major clients and counterparties, vendors and outsourcing companies;
- e) Documentation standards for all initiated court proceedings against or on behalf of the bank. Permanent and accurate information and documents of the institution's effectiveness in court proceedings is also needed. The bank's legal experts should keep a list of all court proceedings with their opinion on the possible result of the case, as well as, a list of court cases that in the name of the institution are lead by outside attorneys. In addition, the bank should separately retain data describing the types of claims for which the institution has usually initiated litigation and in which cases the institution was sued;
- f) Definition of the major mitigating actions to compliance risk (e.g., through reviewing contract terms by experienced lawyers, restricted dealings to reputable counterparts, placing limits on exposure to legal interpretations, etc.);
- g) Clear documentation standards for the bank's shareholders;
- h) Documentation standards for all decisions made by the central bank in respect of the bank and written communications between the central bank and the institution;
- i) Procedures for safeguarding of original legal documents;
- j) Regular compliance checks;

## 9.5 Identification, measurement and monitoring of compliance risk

An effective measurement and monitoring process is essential for adequately managing compliance risk. In order to understand its compliance risk profile a bank should identify the sources of compliance risk that it is exposed to and assess its vulnerability to these risks. If a new compliance risk is not recognized, the bank's legal experts may never thoroughly review the existing contracts. Thus, the bank should identify and assess the compliance risk inherent in all existing or new, rules, procedures, internal processes, activities, contracts and court cases.

The bank needs to define the appropriate approach to assessing each identified source of risk. There are various tools used for identifying and assessing compliance risk, such as:

- (a) **Self-assessment:** A bank assesses its operations and activities against a list of potential risk vulnerabilities. This process is internally driven and often incorporates checklists to identify the strengths and weaknesses of the compliance risk environment.
- (b) **Risk indicators:** Risk indicators are statistics or matrices that can provide insight into a bank's risk position. Such indicators may include the volume and/or frequency of law violations, frequency of complains, number of initiated litigation procedures, payments of damages, fines and court expenses, unfavorable court verdicts or number of finalized court cases on a periodical basis, and frequency of actual or suspected fraud or money laundering activities. These indicators should provide good incentives, tying risk to capital to desirable improvement in the compliance function.
- (c) **Risk mapping:** In this process, various departments or units are outlined by risk types (for example credit unit/department can be outlined by the risk of the lack of contract enforcement or incorrect interpretation of the agreements). This exercise can disclose areas of weakness and help to identify priorities for management action.

The bank should consider ways to measure compliance risk by using performance indicators, such as the increasing number of: customer complaints, corrective measures taken against the institution, or litigation procedures as a result of noncompliance with laws and regulations.

Compliance risk can also be measured by regular legal reviews on different bank's products and services, and their relevant documentation in order to ensure that all contracts are in conformity with laws and regulations. This review may take place on each transaction individually or may cover the legal adequacy of standardized documentation and procedures.

Banks are responsible for monitoring their compliance risk profiles on an on-going basis by reviewing defined compliance risk indicators in order to provide management with early warning. Monitoring should be an integrated part of a bank's activities. The results of these monitoring activities should be included in regular management and Board reports.

Banks should have processes and procedures in place to control compliance risk. There should also be a constant review of the bank's progress towards meeting legal objectives, and checking for compliance with policies and procedures and defined duties and responsibilities.

### **9.6 Management information system (MIS)**

For effective monitoring of compliance risk, a robust management information system (MIS) should be in place. MIS should enable the bank to identify and measure its compliance risk on a timely manner and generate data and reports for use by the board and management.

The effectiveness of risk monitoring depends on the ability to identify and measure all risk factors, and must be supported by appropriate, accurate and timely MIS with analysis and decision making. Therefore, management must develop and upgrade its information system to identify and measure risks in an accurate and timely manner. The MIS should be consistent with the complexity and diversity of the bank's business operations.

The bank should establish a database of its legal documents. This database should contain at least: type of legal documents (contracts, memorandum of understanding, etc.), period of document validation, and responsible department/unit for document enforcement.

### **9.7 Internal controls**

Banks should have proper internal control systems that integrate compliance risk management into their overall risk management process. The audit of compliance risk management should be incorporated into the annual plan of the Internal Audit function.

The Internal Audit function should, within its scope of operations, cover the following aspects of compliance risk management:

- a) Verifying that compliance risk management policies and procedures have been implemented effectively across the bank;
- b) Assessing the effectiveness of controls for mitigating fraud and risks to reputation;
- c) Determining that senior management takes appropriate corrective actions when compliance failures are identified;
- d) Ensuring that the scope and frequency of the audit plan/program is appropriate to the risk exposures;
- e) Determining the level of senior management compliance with central bank directives;
- f) Monitoring compliance risk profiles on an on-going basis; and
- g) Analyzing the timeliness and accuracy of compliance risk reports to senior management and board of directors.

### 10.1 Reputation risk

Reputation risk may arise from the possibility that negative publicity regarding the bank and its business practices, in the territory or elsewhere through related entities, and whether accurate or not, will adversely impact the operations and position of the bank. Reputation risk may also arise from an institution, or an affiliate, being domiciled in a jurisdiction where the legal and organizational framework for the regulation and supervision of financial institutions is generally viewed as failing to meet international standards for the protection of consumers of financial services and for the prevention of sheltering the proceeds of organized crime. Reputation risks are very difficult to measure and thus are difficult to manage.

#### 10.1.1 Characteristics of effective reputation risk management

The characteristics of effective reputation risk management include the following:

- a) Management anticipates and responds to changes of a market or regulatory nature that affect its reputation in the marketplace;
- b) The bank effectively self-polices risk, and rarely, if ever, commits violations of laws, regulations, best banking practices, and consumer rights that could affect its reputation;
- c) The bank is not subject to significant litigation, large monetary losses, or a high volume of customer complaints;
- d) The bank is routinely seen in a leadership role in community development and corporate social responsibility; and
- e) Management has a clear awareness of privacy issues and uses customer information responsibly.

### 10.2 Money laundering risk

A definition of what constitutes the offence of money laundering under Bangladesh law is set out in Section 2 (Tha) of the Prevention of Money Laundering Act 2002 (Act No. 7 of 2002) which is reads as follows: "Money Laundering means:

- (Au) Properties acquired or earned directly or indirectly through illegal means;
- (Aa) Illegal transfer, conversion, concealment of location or assistance in the above act of the properties acquired or earned directly or indirectly through legal or illegal means;"



### 10.2.1 Characteristics of effective AML risk management

The characteristics of effective AML risk management include the following:

- a) Management fully understands the aspects of AML risk and exhibits strong commitment to compliance;
- b) When deficiencies are identified, management promptly implements meaningful corrective action;
- c) Authority and accountability for compliance are clearly defined and enforced, including designation of a qualified AML compliance officer;
- d) The Board has approved an AML compliance program that includes adequate policies, procedures, controls, and information systems;
- e) Training is appropriate, effective, covers applicable personnel, and necessary resources have been provided to ensure compliance;
- f) Effective customer identification processes and account-opening procedures are in place;
- g) Management has identified and developed controls that are applied appropriately to high-risk areas, products, services, and customers of the bank, and there are few or no instances of unreported suspicious activity, unreported large currency transactions, structured transactions, or substantive violations of law;
- h) The compliance system and controls quickly adapt to changes in international lists; and
- i) The compliance system and controls effectively identify and appropriately report suspicious activity.

In addition, the management of money laundering risk has been extensively described in the "Managing Core Risks in Banking: Guidance Notes on Prevention of Money Laundering" issued by Bangladesh Bank.

### 11.1 Risk management characteristics at successful banks

For banks to have a successful risk management function, leading to successful outcomes even in stressful environments, the following characteristics must be present:

- a) Banks must compile for the Board and senior management relevant measures of risk, how risk levels compare with limits, the level of capital the bank must maintain after sustaining large losses, and actions that management could take to restore capital;
- b) Information must be shared across the organization;
- c) There can be no disparity between the risk that the bank is taking and the risk the Board perceives it to be taking;
- d) Risk management must be an active, firm-wide approach, and cannot rely only on individual business lines to carry it out;
- e) Banks must develop in-house expertise and not rely only on market data, credit ratings, published analyses, etc.;
- f) Banks must test their valuations of assets by occasionally selling seized collateral, loans, and non-traded securities;
- g) Treasury functions must be aligned with risk management - Treasury must create internal pricing by charging business lines not only for the cost of funds, but also for the cost of hedging and the costs of maintaining enough liquidity. For example, banks should always have enough liquidity on hand to settle commercial letters of credit. The cost of maintaining that liquidity - in terms of foregone earnings - should be passed onto the business line that issues letters of credit, who, in turn, will pass it on to the customer in the form of a higher fee;
- h) Banks must actively manage contingent liabilities - such as the unfunded portion of lines of credit and the requirements of settling commercial letters of credit - in liquidity management;
- i) Banks, for liquidity management, must use both firm-specific and market-wide stress scenarios;
- j) Banks must also analyze deposits thoroughly to better understand which deposits are likely to be withdrawn from the bank in times of a firm-specific or generalized run on the banks. Banks should conduct "focus groups" of various categories of depositors to gauge their confidence in deposit insurance, the lender-of-last-resort function of BB, and other drivers of mass depositor behavior;
- k) The Board and senior management must be accepting, and not dismissive, of stress testing, and must give credibility to extreme scenarios. They should understand the adverse scenarios and the assumptions that relate the adverse scenarios to the impact on the bank's profitability or capital, but they should not unduly reject the scenarios;

- l) The risk management function must be
  - i. Independent;
  - ii. Have sufficient authority within the organization;
  - iii. Engage in continuous dialogue with business lines; that is, not be remote; and
  - iv. There must be both a forum and a commitment for this dialogue.
- m) The Chief Risk Officer position, for best results, should be strengthened, and risk management personnel in the business lines should report to the CRO;
- n) Compensation and other incentives must be aligned with the risk appetite, including short-run vs. long-run considerations, and business line vs. firm-wide objectives;
- o) Balance sheet limits must be enforced;
- p) There must be a range of experience and expertise in the senior management of the bank;
- q) Committees involved in risk management (such as the All Risk Committee) must:
  - i. Meet frequently;
  - ii. Discuss all significant risks; and
  - iii. Include both Risk Management Department personnel and business line managers; and
- r) The bank must have a culture where managers can escalate concerns to senior management, and senior management is required to take up the challenges and not dismiss them. Banks must avoid hierarchical structures that could block or delay the upward flow of information.

## 11.2 Characterization of sound risk management

When assessing the adequacy of a bank's risk management systems for identified functions or activities, the BB will place primary consideration on findings related to the key elements contributing to sound risk management, such as:

- a) Active Board of directors and senior management oversight;
- b) Adequate policies, procedures, and limits;
- c) Adequate risk management, monitoring and management and information systems; and
- d) Comprehensive internal controls.

The BB will consider these elements and assess the relative strength of the risk management process and controls for each identified function or activity. Relative strength will be characterized as "Strong", "Acceptable" or "Weak" based on the following criteria:

### 11.2.1 Strong risk management

It indicates that:

- a) Management effectively controls all major types of risk posed by the relevant activity or function;

- b) The Board of directors and senior management participate in managing risks and ensure that appropriate policies and limits are in place, and the Board of directors understands, reviews, and approves them;
- c) Policies and limits are supported by risk monitoring procedures, reports and appropriate management information systems;
- d) Internal controls and audit procedures are appropriate to the size and activities of the licensed financial institution; and
- e) There are few exceptions to established policies and procedures, and none of these exceptions are likely to lead to a significant loss to the licensed financial institution or deterioration in its overall risk profile.

### 11.2.2 Acceptable risk management

It indicates that:

- a) The bank's risk management system although largely effective, may be lacking in some modest degrees;
- b) The bank's risk management system reflects an ability to cope successfully with existing and foreseeable exposure that may arise in executing the bank's business plan;
- c) While the banks may have some minor risk management weaknesses, these problems have been recognized and are being addressed;
- d) Overall, board of director and senior management oversight, policies and limits, risk monitoring procedures and management information systems are considered effective in maintaining a safe and bank; and
- e) Generally, risks are being controlled in a manner that does not require more than normal supervisory attention.

### 11.2.3 Weak risk management

It indicates that:

- a) Risk management systems are lacking in significant ways, resulting in the need for more than normal supervisory attention;
- b) Internal controls may be lacking in significant respects as evidenced by continued control exceptions or failure to adhere to written policies and procedures; and
- c) The deficiencies associated with these systems could have adverse effects on the safety and soundness of the bank or could lead to material misstatement of its financial statements if prompt corrective actions are not taken.

## Glossary

**Basis risk:** The risk that the interest rate relationships between an asset and its underlying liability will change, even if the timing of asset and liability repricing is matched. This can occur, for example, when interest rates on loans are based on one index (such as the 1-month repo rate) while borrowing costs are based on another (such as 1-month LIBOR).

**Credit administration:** Credit administration is basically a back office activity that supports and controls extension and maintenance of credit.

**Credit concentration risk:** Credit concentration risk is a single exposure or group of exposures with potential to produce a 'risk level' large enough, in relation to total risk or total assets or total capital, to threaten bank's health or viability. Credit concentration risk may arise from exposure to a single entity/group and/or exposures in the same economic or geographic sector and/or specific foreign currency and/or credit concentration in dependent industries.

**Credit risk monitoring:** Credit risk monitoring refers to the incessant monitoring of individual credits inclusive of off-balance sheet exposures to obligors as well as overall credit portfolio of the bank.

**Foreign currency translation gain/loss:** The unrealized gain or loss that is recorded when assets and liabilities, both on- and off-balance sheet, denominated in foreign currencies, are translated into Bangladeshi Taka on a reporting date and the exchange rates on that date differ from the corresponding rates on the previous reporting date.

**Foreign exchange contract:** A commitment to buy or sell a specified amount of foreign currency at a set time and rate of exchange.

**Foreign exchange forward position:** The extent to which forward or future purchases and inflows or a currency exceed future sales and outflows. That is, the net foreign exchange position of the bank's future foreign exchange transactions.

**Foreign exchange overnight position:** The net foreign exchange position (i.e. holdings of any commitments in foreign currencies) of the bank at the close of each business day.

**Foreign exchange transactional position:** Foreign exchange exposures that arise from daily foreign currency dealing or trading activities.

**Foreign exchange translational or structural position:** Foreign exchange exposures that arise from a bank's overall asset/liability infrastructure, both on- and off-balance sheet.

**Hedging:** A risk management technique to reduce or eliminate price, interest rate or foreign exchange risk exposures. The elimination or reduction of such exposures is accomplished by entering into transactions that create offsetting risk positions. The concept is that when a bank has an open position, which entails a risk that it wishes to avoid or minimize, the bank can undertake a further transaction which compensates for the risk and acts as a hedge. If the hedge is effective, any gain or loss on the hedged risk position will be offset by a loss or gain on the hedge itself.

## Glossary

*(Contd.)*

**Matched position:** In the context of interest rate risk management, a matched position occurs when a bank's principal and interest cash flows (including final maturities), both on- and off-balance sheet, have matched re-pricing dates.

**Mismatch position:** Also referred to as interest rate gap or interest rate sensitive positions. In the context of interest rate risk management, the position that arises when a bank's principal and interest cash flows (including final maturities), both on- and off-balance sheet, have differing re-pricing dates. A negative or liability-sensitive gap occurs when interest-bearing liabilities exceed interest-earning assets for a specific maturity, that is, liabilities re-price before assets. A positive or asset-sensitive gap occurs when interest-earning assets exceed interest-bearing liabilities for a specific maturity, that is, assets re-price before liabilities.

**VAR:** Value-at-risk, in relation to a portfolio of market risk exposures, means a measure of the worst expected loss on the portfolio resulting from market movements over a period of time within a given confidence interval.

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