Risk Management Guidelines
For
Banks and Financial Institutions

Nepal Rastra Bank
Bank Supervision Department
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Contents

I - Risk Management Guidelines

1.1 Overview

Taking risk is an integral part of financial intermediation and banking business. Failure to adequately assess and manage risks may lead to losses endangering the soundness of individual financial institutions and affecting the stability of the overall financial system.

In recent years, following the global financial crisis, risk management issues have received increasing attention of international supervisory bodies. While weak risk management has not been seen as a specific trigger for the financial crisis, it has been identified along with weak internal governance as an underlying factor. The risk management framework was often not sufficiently integrated within institutions, there was not a uniform methodology and the holistic view of all risks did not exist. Equally, where they existed, sound risk management practices helped institutions to weather financial crisis significantly better than others.

The setting of an appropriate strategy and risk tolerance/appetite levels, a holistic risk management approach and effective reporting lines to the management body in its management and supervisory functions, enable managers of financial institutions to take risks knowingly and treat risks where appropriate.

Risk management is a part of internal governance involving all areas of financial institutions. There is a strong link between good corporate governance and sound risk management. Without proper risk management, the various functions in a financial institution cannot work together to achieve the institution's objectives. It is an essential part of helping the financial institution grow and promote sustainability and resilience.

Following the financial crisis, risk management in financial institutions moved from a compliance-driven function toward a top level comprehensive activity relevant at the highest levels of decision making and strategy setting. While the extent of risk management function performed and structure kept in place depend on the size and complexity of individual financial institutions, risk management is most effective when basic principles and elements of risk management are applied consistently throughout the financial institution.

Risk management is a discipline at the core of every enterprise and encompasses all activities that affect its risk profile. However, this function needs not be uniform across all financial institutions. Risk management practices considered suitable for one institution may be inadequate for another. The definition of a sound or adequate risk management system is ever changing, as new technology accommodates innovation and better information and as market efficiency grows. Each financial institution should put in place a comprehensive risk management program tailored to its needs and the circumstances under which it operates.

1.2 Scope and Objectives of the Guidelines

1.2.1 Scope

Nepal Rastra Bank has issued forward these Guidelines to provide guidance to all financial institutions on minimum standards for risk management. These Guidelines are not intended to be so comprehensive as to cover each aspect of a financial institution's risk management activity. A financial institution may, depending on its size and complexity, establish a more sophisticated framework than outlined in this document. Financial institutions are in fact encouraged to self-assess their risk profile and operational context, and customize their risk management architecture and approach to attain organizational goals while meeting the minimum requirements standards set out in these Guidelines.

This Risk Management Guidelines contains details on management of six major risks: Credit Risk, Liquidity Risk, Operational Risk, Market Risk, Foreign Exchange Risk and Interest Rate Risk. Market Risk and Foreign Exchange Risk Management are included in the same section as foreign exchange risk is the only major market risk in the context of Nepalese banking industry.

1.2.2 Objectives

In publishing these guidelines, the objectives of the Nepal Rastra Bank are:

- To promote better risk culture at all levels of the financial institution.
- To provide minimum standards for risk management practices.
- To improve financial soundness of individual financial institutions and stability of the overall financial sector.
- To encourage financial institutions to adopt and implement a sound risk management framework.
- To introduce important risk management tools and techniques for assessment and necessary treatment of various risks.

1.3 Dimensions of Risk Management

1.3.1 Risk Culture

Every financial institution should develop an integrated and institution-wide risk culture, based on a full understanding of the risks it faces and how they are managed, considering risk tolerance and appetite. Since the business of financial institutions involves risk taking, it is fundamental that risks are appropriately managed. **A sound and consistent risk culture throughout a financial institution is a key element of effective risk management.** An institution will develop its risk culture through policies, examples, communication, and training of staff regarding their responsibilities for risk. Every member of the financial institution should be fully aware of his or her responsibility regarding risk management. Risk management should not be confined to risk specialists or to control functions. Business and operational units, under the oversight of the management body, should be primarily responsible for managing risk on day-to-day basis, considering risk tolerance and risk appetite, and in line with the financial institution's risk policies and procedures.

Risk culture and its impact on effective risk management must be a major concern for the board and senior management. A sound risk culture encourages effective risk management, promotes sound risk-taking and ensures that risk-taking activities beyond the institution's risk appetite are recognized, assessed, reported, and addressed in a timely manner. Weaknesses in risk culture are often the root cause for occurrence of significant risk events, financial institution failures, and financial crisis.

The top level of the institution sets the tone for the desired risk culture. The risk culture can be strengthened through:

- Enabling an open and respectful atmosphere in which employees feel encouraged to speak up when observing new or excessive risks;
- Clarifying the range of acceptable risks using an embedded risk appetite statement and various forms of communication and training; and,
- Aligning incentives with objectives and clarifying how breaches in policies/procedures will be addressed.

1.3.2 Risk Strategy and Risk Appetite

Risk tolerance and risk appetite are terms often used interchangeably: risk appetite describes the absolute risks a financial institution is *a priori* open to take; while risk tolerance relates to the actual limits within its risk appetite that a financial institution pursues.

A financial institution's strategy details the long-term, and in some cases, short-term goals and objectives, as well as how progress toward their achievement is measured. Along with business goals, the financial institution must have risk goals and risk strategies which enable them to achieve the desired risk profile.

The board of directors sets the strategies and the senior management is responsible for implementing those strategies and communicating them throughout the organization. Risk appetite statement plays an important role in cascading the risk strategy down through the institution. It includes metrics and indicators in relation to specific risk types. The risk-appetite statement should be well-embedded and be consistent with the firm's capacity to take risk, taking into consideration the capital constraints, and potential profit and loss consequences.

A good practice includes the following:

- Regular review of risk appetite statement as a formal process;
- Top-down and bottom up processes to define risk metrics and risk appetite; and,
- Limit systems that are aligned with overall governance so that breaches are quickly flagged and appropriate counter-measures are taken.

1.3.3 Risk Governance and Organization

Risk governance refers to the structure, rules, processes, and mechanisms by which decisions about risks are taken and implemented. It covers the questions about what risk management responsibilities lie at what levels and the ways the board influences risk-related decisions; and the role, structure, and staffing of risk organization. A good practice in this dimension is where the board has regular involvement on key risk issues, and risk management responsibilities are proportionate to the risks assumed at a particular level or unit.

Risk governance should follow the three-lines-of-defense-model. The first line of defense provides that the business and operation units of the institution have in place effective processes to identify, assess, measure, monitor, mitigate, and report on their risks. Each unit operates in accordance with the risk policies and delegated mandates. The units are responsible for having skills, operating procedures, systems, and controls in place to ensure their compliance with risk policies and mandates.

The second line of defense relates to the appropriate Internal Control framework put in place to ensure effective and efficient operations, including the following;

- Adequate control of risks;
- Prudent conduct of business;
- Reliability of financial and non-financial information reported or disclosed (both internally and externally); and,
- Compliance with laws, regulations, supervisory requirements, and the institution's internal policies and procedures.

The Internal Control framework encompasses risk control function and compliance function, and should cover the whole organization, including the activities of all business, support, and control units. The risk management unit, generally headed by a Chief Risk Officer has the responsibility for recommending and monitoring the financial institution's risk appetite and policies, and for following up and reporting on risk related issues across all risk types.

The third line of defense consists of the financial institution's internal audit which performs independent periodic reviews of the first two lines of defense, provides assurance and informs the two first lines of strengths and potential weaknesses.

1.3.4 Risk Assessment and Treatment

The ultimate responsibility for risk assessment lies solely with a financial institution: **it should evaluate its risks critically and not rely on external assessments**.

Risk management process is the systematic application of management policies, procedures and practices to the assessment, treatment, controlling, and monitoring of risk. The process should be an integral part of management, be embedded in the culture and practices, and should be tailored to the business processes of the organization.

Regardless of types of structure kept in place or strategies formulated by the financial institution, the risk management process should include proper risk assessment and treatment as described below.

<u>Risk Assessment</u>

Risk assessment is the overall process of risk identification, analysis, and evaluation.

Risk identification is the starting point for understanding and managing risks and/or crucial activities. Institutions should identify the nature of risk, sources of risk, cost of risk, areas of impacts, events, their causes, and their potential consequences. They must recognize and understand risks that may arise from both existing and new business initiatives. They should put in place adequate tools and techniques to identify risk because risks not identified at this stage will not be included in further analysis.

Risk analysis involves developing an understanding of the risk. It provides an input to risk evaluation and to decisions on the most appropriate strategies and techniques for risk treatment. The institution's risk analysis involves measuring risk by considering consequences of an unfavorable event and likelihood of such event occurring. Factors that affect consequences and likelihood should also be identified. Risk analysis can be undertaken with varying degrees of detail, depending on the nature of risk, severity of risk; and the information, data and resources available. **Analysis should be quantitative and qualitative in nature**. To the maximum possible extent, financial institutions should establish systems/models that quantify their risks; however, in some risk categories, such as reputational and operational risks, quantification may be difficult and complex. When it is not possible to quantify risks, qualitative measures should be adopted to capture those risks.

Risk evaluation is undertaken to assist in making decisions, based upon the outcomes of risk analysis, about which risks need treatment and the priority for treatment implementation. Some risks need to be immediately addressed and should be brought to the attention of the management body promptly. Risk evaluation mainly involves comparing the level of risk found during the analysis process with the financial institution’s risk appetite, risk tolerance level and regulatory limits. Based on this comparison, the need for appropriate treatment should be considered.

<u>Risk Treatment</u>

After the exposed risks are assessed, financial institutions should choose the best option to eliminate or mitigate unacceptable risks. Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. The options can include the following and can be applied either individually or in combination:

- Avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk.
- Accepting and retaining the risk by making informed decision and having plans for managing and funding the consequences of the risk if it occurs.
- Reducing the likelihood of the risk through staff training, changing procedures, or by reducing the impact through diversifying credit portfolio, setting up off-site data backup etc.
- Sharing the risk with another party or parties through insurance, consortium financing, etc.

Selecting the most appropriate risk treatment option involves balancing the costs and efforts of implementation against the benefits derived, regarding legal, regulatory, and other requirements.

One of the most important ways for financial institutions to address risks is to put in place adequate risk control mechanisms. The institution should establish and communicate risk limits through policies, standards and procedures that define responsibilities and authority. These limits will help the concerned parties know when the risk becomes unacceptable and align their actions and behaviors with the institution’s set risk appetite, risk tolerance, and strategy.

Monitoring and review need to be integral parts of the risk treatment plan to ensure that measures remain effective. The institution’s monitoring and review processes should encompass all aspects of risk management process for the purposes of:

- Detection of changing risk sources and factors within and outside the institution,
- Obtaining further information to improve risk assessment,
- Ensuring that controls are effective and efficient in both design and operation,
- Analyzing and learning lessons from events, trends etc., and
- Identifying emerging risks.

1.4 Risk Management Framework

A financial institution's risk management framework shall include in its foundation policies, procedures, limits, and controls. This foundation provides adequate, timely, and continuous identification, assessment, measurement, monitoring, mitigation, and reporting of risks posed by its activities at the business line and institution-wide levels.

The success of risk management in financial institutions will depend on the effectiveness of the risk management framework providing the foundation and arrangements that are put in place throughout the organization at all levels. The framework should be comprehensive enough to capture all the material risks to which the institution is exposed. It should facilitate processes for assessment and necessary treatment of these risks. The minimum standards of a sound risk management system include the following elements.

1.4.1 Active Board and Senior Management Oversight

The introduction of risk management and ensuring its ongoing effectiveness must come from the top level of the institution. As the board of directors has the ultimate responsibility for the risks taken by the financial institution, **it must define the risk appetite and risk tolerance, and set risk strategies.** It is responsible for understanding the nature of risks significant to the institution and for ensuring that management is taking necessary steps to implement those strategies and manage accompanying risks.

While the overall responsibility for risk management is recognized to rest with the board of directors, **it is the duty of senior management to transform the strategies into operational policies, procedures, and processes for effective risk management.** The senior management should be fully aware of the activities undertaken by the institution that could expose it to various risks. It should possess necessary knowledge and skills to be able to align the risk levels with the board's strategies through risk assessment and treatment. Top management should be aware of the financial institution's risk profile on an ongoing basis and should regularly report it to the board or a board level committee for review.

1.4.2 Risk Management Department(s) and Various Committees

Financial institutions must have an independent risk management department. As necessary, it may have separate risk management divisions or units within the risk department for overseeing each key risk area. The main functions of the department/units include the following:

- managing the process for developing risk policies and procedures,
- coordinating with business users to prepare functional specifications,
- preparing and forwarding risk reports, and
- assisting in the implementation of all aspects of the risk function.

The risk management function should be functionally and hierarchically independent from business and other operation functions. The officials who take and own risks should not be given responsibility for monitoring and evaluating their risks. The Chief Risk Officer leading the independent risk management department should have sufficient stature, authority and seniority. He or she should have direct access to the board of directors and should make direct reports to the board or its Risk Management Committee. Safeguards against conflict of interest should be put in place to maintain independence of the risk management function.

The risk management function should be provided with sufficient resources. The risk management department should have sufficient number of personnel who possess the needed experience and qualifications, including market and product knowledge and command of risk discipline. Likewise, adequate budget should be allocated to this function to enable it carry out its crucial function effectively.

Depending upon the size and complexity of the financial institution, various committees and sub-committees may be set up for monitoring and controlling risks. These include board's Risk Management Committee and management committees such as Credit Risk Management Committee, Asset Liability Management Committee (ALCO), Compensation Committee, etc.

1.4.3 Policies and Procedures

The board of directors and senior management must formulate and implement risk management policies and procedures to deal with various risks that arise from the financial institution's business and operational activities. The financial institution's policies and more detailed procedures should provide guidance for the day-to-day implementation of broad risk strategies, and generally should include limits designed to shield the institution from imprudent and unwarranted risks. These policies and procedures include not only those relevant to specific risk areas like Credit Policy, Liquidity Management Policy, and Operational Risk Management Policy, but also those related to the overall risk management.

The management body should review risk policies, procedures, and limits in a timely manner and update them when necessary. Further, independent assurance from internal audit about the efficacy of these policies should also be obtained.

1.4.4 Appropriate Management Information System (MIS)

Effective MIS is necessary for adequate risk monitoring and reporting. When MIS can generate key risk indicators in the form of accessible reports in a timely manner, then risk managers can monitor the risk levels continuously and inform senior management and board as necessary or as required. These reports may include daily or weekly liquidity gap reports, list of loans of significance (troubled, large, maturing, etc.), etc. The MIS should be able to produce reports in accordance with regulatory requirements.

In addition to regular reporting, there should be a system to address any exceptions observed. Further, there should be an explicit procedure regarding measures to be taken to address such deviations.

1.4.5 Comprehensive Internal Controls and Limits

Internal control plays a critical role in managing risks of a financial institution. With comprehensive internal control structure in place, management will be better able to contain risks within the level commensurate with the institution's risk appetite, risk tolerance, and strategy. An effective internal control system enforces the official lines of authority and provides for appropriate separation of duties. A major part of the internal control structure is the establishment of limits such as limits on liquidity, officer limits, and limits on non-performing assets. These limits ensure that the financial institution's management does not take excessive risks while pursuing business targets.

The financial institution's internal control system should be adequately tested and reviewed by its internal audit. The coverage, procedures, and findings of the audit regarding the internal controls should be adequately reviewed by the Audit Committee and any material weakness found should be addressed promptly and appropriately.

II – Credit Risk Management

2.1 Overview

Credit risk is the risk that a borrower or counterparty will fail to meet their obligations according to the agreed terms, resulting in economic loss to the financial institution. While loans are the largest source of credit risk, other sources of credit risk exist throughout the activities of a financial institution, including in the trading book, and both on and off the balance sheet.

Given the significant weight of the credit risk in the risk profile of banks and other credit institutions, robust arrangements to manage and control this risk should be put in place. The effective management of credit risk is a critical component of a comprehensive approach to risk management. Appropriate governance, processes, and internal controls should exist for accepting, managing and monitoring credit risk, on a group and solo basis, in a manner commensurate with the nature, scale and complexity of the financial institution’s activities. Financial institutions must have sound procedures for valuing their credit exposures, which requires the existence of consistent provisioning policies. They should have a forward-looking perspective to evaluate if the arrangements in place are adequate to cope with the credit risk they might be exposed to in the foreseeable future.

In this section, we will discuss the components of an appropriate credit risk management: organizational structure; credit strategies, policies, and procedures; limits and indicators; credit granting process; credit administration, measurement and monitoring processes; credit risk mitigation techniques; and controls of credit risk.

2.2 Appropriate Organizational Structure

- Organizational structures vary according to the size, complexity and diversification of financial institutions’ activities. However, whatever the structure in place, it is important that it facilitates effective management oversight and proper execution of credit risk management and control processes.
- There should be segregation of duties regarding various credit-related functions, such as credit assessment, analysis, approval, disbursement, administration, and monitoring. For large banks, different units should be established to perform each function. However, in smaller banks where it may not be possible to adequately staff different units, the structure in place should ensure that conflict of interests between these functions are identified and managed and that sufficient checks and balances are in place even if they are within the same unit.
- Bank should have a Credit Risk Management Function independent of the risk-taking units. This Credit Risk Management Function should have the power to challenge and, if necessary, escalate its concerns to senior management, in relation to development of the credit risk management framework. This function should be separated from other credit related functions and must be kept under the Chief Risk Officer, or similar authority or person (second line of defense).

2.3 Credit Risk Strategies, Policies and Procedures

- Credit risk strategy should include an assessment of the credit risk profile of the bank and a statement of the bank's appetite to take credit risk for each activity type, product type (such as working capital, consumer loan, fixed-term, etc.), economic sector (such as real estate, construction, retail), geographical location, etc. The credit risk strategy should be communicated through the organization and periodically reviewed at board or management level.
- Credit strategy should include the identification of target markets and overall characteristics that the bank would want to achieve in its credit portfolio, including levels of diversification and concentration tolerances. The strategy should not consider only target markets but be developed based on the internal strength of the organization. Finally, the credit risk strategy should provide continuity in approach and consider cyclical aspects of the country's economy and the resulting shifts in composition and quality of overall credit portfolio.
- There should be policies in place regarding the information and documentation needed to approve new loans, renew existing ones and/or change the terms and conditions of previously approved credits.
- For each type of loan, credit policies and procedures should define criteria for granting loans in a safe and sound manner including, but not limited to:
  - Purpose of credit and source of repayment,
  - Collection of relevant information based on the different client risk profiles,
  - Use of adequate tools such as scoring or internal rating systems,
  - Analysis of borrower's repayment history (including, when possible, that in other banks), as well as current and future capacity to repay, based on historical financial trends and future cash flow projections,
  - For commercial credits, the borrower's business expertise and the condition of the borrower's economic sector and its position within that sector
  - Net worth of the borrower and personal guarantors,
  - The proposed terms, conditions, and covenants of the credit agreement,
  - Collateral and its sensitivity to economic and market developments,
  - Adequacy, enforceability, and liquidity status of collaterals, as well as the practical aspects of their mobilization.
- Credit policies must address credit risk in all the bank's activities, at both individual and portfolio levels. Such policies should be clearly defined, consistent with the credit strategy, comply with regulatory requirements, international standards and banking practices, and be adequate for the nature and complexity of the bank's activities.
- Policies and procedures should clearly specify for the diverse types of loans the actions the concerned staff of various functions involved must take to evaluate and approve the credit proposals, and monitor credit relationships.
- Credit policies must include clear provisions regarding credit approving authority, defining delegations and exceptions or waivers, and their implementation. Delegation of authority must always be clearly spell out, considering knowledge and experience.
- Bank must have a well-defined policy regarding collateral, including types of collaterals accepted, haircuts, and maximum loan to value (LTV) for each type of products in relation to the collateral.

2.4 Credit Limits and Indicators

- To ensure diversification of risks and limit concentration risk, limits on credit exposures should be set for all relevant activities. They may include:
    - ➢ Limits on exposure to specific activities or type of products, including off-balance sheet products;
    - ➢ Limits on single counterparties and groups of connected counterparties, including other banks and financial institutions, domestic and foreign;
    - ➢ Limits on specific industries and/or economic sectors/ sub-sectors;
    - ➢ Limits on exposure to types of collateral;
    - ➢ Limits on exposures to related parties;
    - ➢ Limits on branches and/or exposures to geographic regions, including other countries;
    - ➢ Limits on the credit that may be granted by approving managers.
- These limits should be reviewed and updated periodically, and at least once a year. In addition, banks should consider the results of stress testing in the overall limit setting and monitoring process.
- In addition to setting limits, banks should use early warning indicators to signal at an early stage where there is increased exposure to specific components of credit risk, and should respond to these indicators by assessing whether they point to potential problems in credit quality.

2.5 Credit Granting Processes

Granting of credit should follow predetermined processes:

- <u>Assessment</u>: credit proposal assessments should be performed at relevant level according to the bank's organization and structure. Credit assessment should follow procedures, methodology and operating guidelines describing the necessary nature and extent of due diligence and collection of relevant supporting documents and information based on their risk profiles.
- <u>Review</u>: before submitting them to the approval person, unit and/or committee, the bank should undertake a review and analysis of loan proposals by a person independent from the initial assessment. While the credit risk management department/unit should generally be given responsibility to organize such review, in smaller organizations an independent review could be done by any appropriate official not involved in credit appraisal and approval process.
- <u>Approval</u>: the designated level of approving authority takes the approval decision, including the approval of specific terms and conditions, based on the initial credit assessment, independent review and analysis.
- <u>Disbursement</u>: following the notification of the approval decision, disbursement is made by the designated unit/person, following procedures to ensure that all terms and conditions are verified and guarantees, if any, are taken.
- <u>Administration</u>: the credit administration function is responsible for maintaining credit files and ensuring they are kept up to date, and for follow-up on necessary actions (renewal notices, updating information, etc.).

2.6 Credit Risk Monitoring

- Monitoring of credit risk should be performed by the Credit Risk Management Function without any influence of the risk-taking units.
- Banks should have in place a methodology to adequately classify their credit risk, at bank, portfolio and borrower level. The classification of the credit risk should use quantitative and

qualitative criteria, follow a graduation of the different level of inherent risk and with appropriate actions consistent with the level of risk identified.

- A valuable tool in monitoring the quality of individual loans, as well as the total portfolio, is the use of internal rating systems (IRR) which help the financial institution to differentiate between the different credit exposures in its portfolio, determine the portfolio's characteristics (concentration, problem loan, etc.) and verify the accuracy of the provisions.
- Banks should monitor quality of the credit relationships on an on-going basis and keep updated information on their credit portfolios, and on the risk profiles and situation of the borrowers. This includes timely collection and regular review of financial information, including audited annual financial statements.
- Business borrowers should also be monitored through on-site visits, while repayment capacities of individual customers should be updated regularly for early identification of any adverse developments that may affect repayment of loans.

2.7 Remedial actions

- Banks should have effective processes and procedures in place for the early implementation of remedial actions on deteriorating credits and management of problem loans, including assessing the appropriate legal actions.
- Appropriate remedial measures should be taken without delay, including requiring additional or increased guarantees.
- Rescheduling may be appropriate. It involves changing the tenure of loans, repayment schedules, and interest rates and is generally to be agreed when the loan is performing but the borrower's needs have changed; where used as a remedial action, it must follow a specific approval process that includes a justification for how it will improve repayment prospects.
- Restructuring includes all aspects of rescheduling and looking at the relationship with completely new dimension requiring additional documents and fresh credit assessment. Where used as a remedial action, it must follow a specific approval process.
- Neither rescheduling nor restructuring should be used by way of forbearance.

2.8 Recovery process

- When rescheduling and restructuring are not options or fail to improve the situation, problem loans should be dealt by a **specialized recovery unit**. This unit should make proactive efforts in dealing with problem borrowers.
- When all efforts fail, banks should write-off loans and liquidate collateral to minimize cost.
- Such process should be strictly monitored, require specific level of approval, and specific information to the board and the NRB.

2.9 Provisioning Process

Banks should have and document a sound loss methodology, including credit risk assessment policies, procedures and controls, to identify troubled exposures and determine loss provisioning in a timely manner.

III – Liquidity and Funding Risk Management

3.1 Overview

Liquidity risk is the risk that a financial institution loses its ability to fund its assets or to meet its obligations as they come due without incurring unacceptable cost or losses.
Liquidity risk encompasses various aspects:

- Intraday liquidity risk is the risk the financial institution becomes unable to settle its financial obligations in due time during the day;
- Funding liquidity risk is the risk that the financial institution is unable to settle obligations when due without seriously affecting either its daily operations or financial condition. Funding liquidity risk derives from a maturity gap between assets and funding, resulting from the maturity transformation embedded in commercial banking business.
- Market liquidity risk is the risk that a financial institution cannot easily cover its liquidity needs by liquidating a position through securities lending or selling at the market price because of inadequate market depth, price deterioration or market disruption. Market liquidity risk materializes in asset and derivative markets;
- Funding cost risk is the risk that a financial institution can replace maturing funding only at higher costs to fund its assets.

Virtually every financial transaction or commitment has implications for a bank's liquidity risk. Unstable deposits or unexpected withdrawal of deposits is a major cause of liquidity risk. Unplanned expansion of credit may also be a source of such risk. Further, off-balance sheet commitments and other contingent liabilities including undrawn loan commitments may have serious impact on a bank's liquidity risk.

From a management point of view, under the oversight of the Asset-Liability Committee (ALCO), the funding liquidity risk is split between short-term liquidity risk (up to one year with a strong focus on the period up to one month) which is generally managed by the treasury department and/or the treasury committee of the financial institution, and long-term liquidity risk (beyond one year) which is generally managed by the asset liquidity management (ALM) department.

There are no specific ratios covering the periods under one month, between one month and one year, or intraday liquidity but financial institutions should monitor their liquidity and funding position over the whole spectrum of maturities from the shortest to the longest.

For effective liquidity risk management, a financial institution needs an appropriate organizational structure; strategies, policies, and procedures; limits and indicators; and monitoring and reporting mechanisms. In addition, it will need an adequate information system to ensure effective monitoring of its liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both secured and unsecured funding sources.

3.2 Organizational Structure

- The liquidity risk management and control functions should be part of an organizational framework with clearly defined tasks and responsibilities, including those units or committees which are integrated in the monitoring and decision processes in charge of reviewing the risk profile and approving the risk strategy and appetite.

- To establish a robust liquidity risk management framework, a bank should put in place organizational structure that is well integrated into bank-wide risk management process and is based on the three lines of defense approach.
- The Liquidity Risk Management function is involved in daily monitoring of liquidity risk levels, timely reporting of important liquidity risk related information, and plays crucial part in the development liquidity risk management policies. It should be independent and directly report to the Chief Risk Officer.
- The Asset-Liability Committee (ALCO), usually a senior management committee that comprises the managers of the liquidity risk taking units and oversights both the short-term and long-term liquidity risks, should periodically report to the board.

3.3 Strategies, Policies and Procedures

- Considering its risk profile, a financial institution should establish a liquidity risk management strategy that is customized to its institutional structure, organization, activities, products, and customers. The strategy should outline the targeted mix of assets and liabilities with clear implications for liquidity risk. Banks relying more on wholesale funding should maintain a relatively higher proportion of unencumbered, highly liquid assets than those banks that rely primarily on retail funding. If significant, the intra-day liquidity risk management requires specific attention.
- The assessment of its own liquidity risk position and profile by the financial institution is the first step for defining the liquidity risk strategy and risk appetite and to build up a consistent liquidity management and liquidity risk management system. This assessment of the risk profile, risk strategy and risk appetite should be formalized in qualitative and quantitative terms, taking into account forward-looking aspects with regard to potential risks as well as changes in business strategies.
- The liquidity risk strategy could in particular include the actual and targeted liquidity position, for example a maximum loan-to-deposit ratio or a maximum liquidity (and funding) market dependence. The liquidity risk appetite should at least take the form of minimum survival periods (with and without access to the NRB liquidity) under different stress scenarios.
- As a part of liquidity risk management strategy, a bank should have funding strategy that provides effective diversification in the sources and tenure of funding. Besides an ongoing presence in its chosen funding markets, financial institutions should maintain strong relationships with funds providers to promote effective diversification of funding sources. Medium to long-term funding plans should be aligned with the bank's strategy and annual budgets. Likewise, it should have strategy for uses of funds by considering the liquidity risk implications.
- A bank needs to study its deposit base in relation to diversification, maturity, and structure. It should also identify alternative sources of funding that strengthen its capacity to withstand a variety of severe institution-specific and market-wide liquidity shocks. Potential alternative sources of funding may include:
  - New issues of short-term and long-term debt instruments,
  - Drawing down line of credit with other banks,
  - Borrowing from the central bank,
  - Lengthening of maturities of liabilities,
  - Repo of unencumbered, highly liquid assets,
  - New capital issuance, sale of subsidiaries.

- Policies and procedures should clearly define and describe risk management tools that the financial institution plans to use for assessment, monitoring and control of its liquidity risk. The steps involved in these tools should be documented and communicated throughout the organization. The policies should also include measurements of liquidity risk. In the future, financial institutions may use metrics such as Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR).
- Policies should include clear definition of roles and responsibilities of individuals and teams performing liquidity risk management functions, including structural balance sheet management, pricing, marketing, management reporting, lines of authority and responsibility for liquidity decisions.

3.4 Limits and Early Indicators

- To control its liquidity risk exposure and vulnerabilities, a financial institution should set limits on concentration of funding by counterparty, product type, currency, geographic market, etc.
- Limits should be used for managing day-to-day liquidity within and across the business lines both under normal and stress conditions. While assessing how limits would perform under stressed conditions, a financial institution should include measures aimed at ensuring that it can continue to operate in a period of market stress, institution-specific stress and/or a combination of two.
- A financial institution should also design a set of indicators to aid this process to identify the emergence of increased risk or vulnerabilities in its liquidity risk position or potential funding needs. Such early warning indicators should identify any negative trend and cause an assessment and potential response by management in order to mitigate the bank's exposure to the emerging risk.
- Early warnings can be qualitative or quantitative in nature and may include (but not be limited to):
  - Rapid asset growth funded by unstable large deposits,
  - Growing concentrations in either assets or liabilities,
  - Deterioration in quality of credit portfolio,
  - Significant deterioration in earnings performance or projections,
  - Increasing retail deposit outflows,
  - A large off-balance sheet exposure,
  - Deteriorating third party evaluation (negative rating) about the financial institution and negative publicity,
  - Unwarranted competitive pricing that potentially stresses the financial institutions.

3.5 Measurement and Monitoring

- A financial institution should employ a range of customized measurement tools, or metrics, as there is no single metric that can comprehensively quantify liquidity risk. To obtain a forward-looking view of liquidity risk exposures, a bank should use metrics that assess the structure of the balance sheet, as well as metrics that project cash flows and future liquidity positions, taking into account off-balance sheet risks.
- The risk measurement tools should include vulnerabilities across normal and stressed conditions over various time horizons. Under normal conditions, prospective measures should identify needs that may arise from projected outflows relative to routine sources of funding. Under stress conditions, prospective measures should be able to identify funding gaps at various horizons.

- Liquidity gap analysis involves a critical role for assumptions in projecting future cash flows. A financial institution should take steps to ensure that its assumptions are reasonable and appropriate, documented and periodically reviewed, tested and approved. The assumptions of duration of demand deposits, revolving type loans, and other off-balance sheet items with uncertain cash flows and the availability of alternative sources of funds during times of liquidity stress are of particular importance.
- A financial institution should have a reliable management information system designed to provide the board of directors, senior management and other appropriate officials with timely and forward-looking information on the liquidity position of the bank. Further, the banks should have a set of reporting criteria, specifying the scope, manner, and frequency of reporting for various recipients (such as the board, senior management, ALCO) and the parties responsible for preparing the reports.

3.6 Reporting

- Timely and adequate reporting of risk-related information is especially important for effective liquidity risk management. The top-level management should be able to easily look at the flash reports related to liquidity risk from the financial institution's MIS itself. The management must decide on the different reports (including regulatory reports) that are to be forwarded to the board and/or senior management and the frequency of such reporting. Further, the major issues discussed and decisions made in the ALCO meetings should also be forwarded the board-level risk management committee.

3.7 Contingency Funding Plan

- A Contingency Funding Plan is a set of predefined processes, actions and measures to be taken in case liquidity risks materialize. Contingency plans are designed for addressing short-term liquidity shortfalls in emergency situations such as those envisaged in stress scenarios. Therefore, they only have a real value if they are anchored in the liquidity management and operational framework of the group, are regularly tested and reviewed, and define responsibilities and contain a set of practical actions. They must be regularly reviewed and updated to reflect changing market conditions and the business and risk profile of the bank.
- Financial institutions must design and implement a Contingency Funding Plan (CFP) to meet funding needs under stress scenarios. Normally reliable funding can be seriously disrupted when put under stress. Hence, such funding plan is crucial for the financial institution's sustainability. CFPs should be commensurate with the financial institution's complexity, risk profile, scope of operations and role in the financial systems in which it operates. CFPs should include a clear description of a diversified set of viable, readily available and flexibly deployable potential contingency funding measures for preserving liquidity and making up cash flow shortfalls in various adverse situations.
- When developing a liquidity contingency plan, financial institutions should consider two types of liquidity crises: idiosyncratic, related to a liquidity problem in the financial institution itself, and market-wide, related to a liquidity crisis involving the whole financial system.

IV – Operational Risk Management

4.1 Overview

Operational Risk is the risk of direct or indirect loss, or damaged reputation resulting from inadequate or failed internal processes, people and systems or external events. Operational risk has always been inherent to financial institutions and exists in all their activities.
Operational risk is a broad field and can be sorted into numerous sub-categories, such as ITrisk, outsourcing risk and operational risk in market activities.

The major sources for operational risk are:

- Inadequate procedures and controls,
- External and Internal frauds,
- IT related activities and system failures,
- Damage to physical assets,
- Execution, delivery, and process management

Effectively managing operational risk requires:

- Identification and assessment of the operational risk inherent in all material products, activities, processes and systems,
- A governance structure, effective governance in practice and a decision-making process for operational risk issues,
- A definition of operational risk appetite which is consistent with the risk strategy,
- A documented and effective organizational framework for operational risk management with an adequate segregation of functions between risk-taking units and operational risk controls units and clear assignment of tasks and responsibilities,
- An independent Operational Risk Management function,
- Adequate and effective human and technical resources available for the functions involved in operational risk management and control,
- An effective reporting system,
- Contingency planning for addressing failures due to operational risks.

4.2 Organizational Structure

- Financial institutions should develop a clear operational risk governance structure with well defined, transparent and consistent lines of responsibility. The governance structure should be commensurate with the nature, size, and complexity of the activities undertaken by the financial institution. However, in all cases, the operational risk governance function should be fully integrated into the financial institution's overall risk management governance structure.
- A sound operational risk management structure should rely on three lines of defense: the business line management, an independent Operational Risk Management function, and internal audit. How these three lines of defense are implemented in practice will vary according to the size, business and risk profile of the financial institution.
- The business line should be responsible for identifying and managing risks inherent in the products, activities, process, and systems for which it is accountable. The Operational Risk Management (ORM) function is mainly responsible for independent review of processes put in

place to control operational risk, and for measurement and reporting of the operational risk. In larger financial institutions, the ORM function will also be responsible for design, maintenance, and ongoing development of the operational risk framework. This function should directly report to the chief risk officer of the financial institution.

4.3 Strategies, Policies and Procedures

- Based on the financial institution's risk profile, the operational risk strategy must clearly articulate the nature, types, and levels of risk that the institution is willing to take (risk appetite). While formulating the strategy, the board must understand not only the level and complexity of risks inherent in the financial institution's activities, products, services, and systems, but also the expected outcome of not undertaking certain activities or systems. The operational risk strategy should take into account forward-looking aspects with regard to potential risks as well as changes in business strategies.
- Operational risk policies and procedures should include all the relevant operational risk areas and establish a minimum set of operating instructions to have an effective risk management. They should be adequately documented, regularly updated, and available to all relevant staff. These policies and procedures should be aligned to the overall strategy and should support continuous improvement of risk management. They should be periodically reviewed by the senior management.
- Policies should clearly define operational risk and related losses.Financial institutions that do not adequately describe and classify operational risk and loss exposure may significantly reduce the effectiveness of their framework.
- These policies and procedures should describe the risk assessment tools and how they are used. Further, they must provide for a common taxonomy of operational risk terms to ensure consistency of risk assessment, measurement, and reporting.
- There must be different policies and procedures for undertaking existing and new activities. There should be tests and more rigorous assessments before undertaking new activities such as launching a new product or opening a new branch.
- The operational risk policies should include clearly assigned authority, responsibility, and reporting relationships to encourage and maintain accountability.

4.4 Assessment and Measurement

- Financial institutions must identify and assess the operational risk inherent in all products, activities, processes, and systems. The business line should assess for itself the relevant operational risks in their operations considering both internal and external factors. The second line of defense should challenge the business line's inputs to and outputs from, the financial institution's risk management systems.
- To ensure an adequate risk management framework based on their specific situation, historical observations and internal assumptions, financial institutions should quantify their operational risks and not only rely on standard calculation.
- The financial institutions must systematically track and record all relevant operational risk data, such as frequency, severity, operational risk losses, and other information on individual loss events or near misses. Analysis of loss events and near misses provide insight into the causes of

large losses and information on whether control failures are isolated or systematic. It is also useful to monitor operational risk events affecting other financial institution, as far as available and relevant. Such data may be helpful for predicting future events and losses.

- Business Process Mapping tools should be used for operational risk assessment: identification of key steps in business processes, activities and organizational functions, can reveal individual risks, risk interdependencies, and areas of control or risk management weaknesses.
- Scenario analysis are also useful tools to assess operational risk, by obtaining expert opinion of business lines and risk managers to identify potential operational risk events and assess their potential outcome.
- Specific attention should be devoted to low-frequency high-severity operational risk events (e.g. major fraud, bribery, etc.) which could deserve a specific process, in particular with regard to the timely information of the top management.

4.5 Monitoring and Reporting

- Senior management should implement a process to regularly monitor operational risk profiles and material exposures to losses. Regular monitoring enables timely detection and correction of deficiencies in procedures, controls, and systems thereby substantially reducing the frequency and severity of risk events.
- Operational risk management and monitoring require an adequate internal reporting framework for making regular reports to the appropriate levels of the institution, to inform the senior management and the board on the implementation of the risk strategy and the extent to which the risk appetite is reflected in actual risks being taken by the financial institution. The reports should be comprehensive, accurate, consistent and actionable across business lines and products.
- The reporting on operational risk should be adequately structured to meet the needs of the appropriate management levels and of business and control units.
- Operational risk reports may contain internal financial, operational, and compliance indicators, as well as external market or environmental information about events and conditions that are relevant to decision making.
- Operational risk reports should include:
  - Monitoring indicators;
  - Breaches of the bank's risk tolerance level, as well as thresholds and limits;
  - Details of recent significant internal operational risk events and losses; and,
  - Relevant external events and any potential impact on the financial institution and operational risk capital.

4.6 Contingency Planning

- The partial or complete failure of one or several critical business processes or products represents a material operational, as well as reputational risk, for any institution. Planning is required for the actions which the bank may take in response to failures.
- Contingency Planning refers to the set of predefined processes, actions and measures to be taken in case significant operational risks materialize, to enable the financial institution to face emergency situations. It should be implemented especially for all high-severity operational risks, which have the potential to disrupt the daily business or threaten the existence of the institution.

- Business Continuity Management relates to the measures to ensure that critical business processes can be continued in the event of an emergency and the activities necessary to return to business as usual levels. IT continuity management is an integral part of the Business Continuity Management.
- Business Continuity Plans (BCP) describe plans that allow an organizational unit's time-critical activities and business processes to restore operational status in the event of an emergency. A Business Continuity Plan defines strategies and options for various scenarios relating to a specific area and its processes. The BCP should identify all time-critical activities, business processes or resources and determines their maximum tolerable downtimes.
- Plan should be tested periodically to ensure that they are likely to be effective in case of need.

V – Market Risk Management

5.1 Overview

Market risk is defined as the risk of losses resulting from movements in market prices that adversely affect the value of on- and off-balance-sheet positions of financial institutions. Financial institutions may be exposed to market risk in a variety of ways. Market risk takes various forms:

- Foreign exchange risk, commodities risk throughout the institution,
- Position risks arising from interest rate related financial instruments and equities (both cash and derivatives),
- Concentration risk in the trading book as well as in the banking book.

Foreign exchange risk is the risk of losses arising from the movement of foreign currency exchange rates. While foreign exchange risk is categorized separately from other types of market risk in the NRB Directive, its management should follow the same structure and mechanisms.

Commodities risk is the risk of losses due to positions in commodities and trading in commodities-related financial instruments. It includes basis risk, interest rate risk, forward gap risk etc. It incorporates variations in the "convenience yield" between derivatives positions, such as forwards and swaps, and cash positions in the commodity.

Position risk is the risk of loss on debt or equity instruments held in the trading book. A distinction should be made between debt instruments and equity instruments. Debt instruments are subject to general interest rate risk (related to maturity or duration of an instrument) as well as to specific interest rate risk (risk of losses resulting from changes in the creditworthiness of the single issuer). Equity instruments are subject to a general market risk component (i.e. the risk of losses caused by changes in the whole market) and specific market risk component (i.e. the risk of losses caused by price movements related to a single issuer).

Concentration risk relates to concentration and correlation factors in market transactions (not captured throughout the broader analysis of credit concentration risk). Financial institutions should assess if there is a concentration of instruments that may react in the same manner to a specific market event. It should also be pointed out that net positions may potentially conceal large gross underlying positions that can give rise to significant concentration risk.

Adequate market risk management practices vary widely across financial institutions depending on the nature, complexity and diversity of their market activities. Financial institutions should have robust governance arrangements, including a clear organizational structure with well-defined, transparent and consistent lines of responsibility and effective processes to identify, measure, manage, monitor and report the risk they are or might be exposed to.

5.2 Organization Structure

- The organization of the market risk management varies depending on the nature, size and scope of business activities of the financial institution. It should be aligned with the risk profile of the financial institution and the overall risk strategy set by the board, with clear lines of authority. The risk-taker units should be aware of the organization's risk profile, products and limits assigned to them. The market risk management function should be independent with clear reporting lines. For proper management of market risk, financial institutions should set up committees at various level including a Risk Management Committee, and an Asset-Liability Management Committee (ALCO).

- The Risk Management Committee (RMC) involves board members and supervises overall risk management functions of the financial institution. The RMC should ensure that the bank has complete, clear, comprehensive, well-documented policies and procedural guidelines regarding the management of market risk. Policies and procedural guidelines should be approved by the board and after that disseminated downward the hierarchy. It must assess the strength of management information system for adequate risk reporting and ensure robustness of financials models in the management of market risk.
- The Asset-Liability Management Committee (ALCO) is responsible for the supervision/management of Market Risk. It may monitor maturity mismatch, gap identification, market risk inherent to new products, structure and composition of the financial institution's assets.
- The first line of risk management functions in the business units (i.e. *Middle office*), where market risk arises, monitors, measures, and analyzes risks inherent to market operations and prepares reports for senior management and ALCO. Depending on the size, complexity and diversity of their activities, financial institutions must select various methods and methodologies, ranging from simple gap analysis to computerized modeling techniques.

5.3 Strategy Policies, and Procedures

- Based on its risk profile and the level of market risk it is willing and/or able to take, the financial institution should develop a strategy to manage its market risk. The market risk strategy should be aligned with the institution's objectives, risk appetite and risk tolerance. Approved by the board, the market risk management strategy should be well communicated within the financial institution. The market risk strategy should be periodically updated (at least once a year and immediately in case of change in market activity), and regularly reviewed to accommodate changes in business/strategic plan and significant developments in the external operational environment.
- Policies and procedures should clearly define and describe risk management tools that the financial institution plans to use to effectively identify, measure, manage, monitor and report the market risk to which it is exposed. The various steps should be documented and communicated throughout the organization.
- Policies should include clear definitions of roles and responsibilities of individuals and teams performing market risk management functions, including structural balance sheet management, pricing, marketing, management reporting, lines of authority and responsibility for market related decisions.
- Specific policies and procedures should be put in place for new products and activities.

5.4 Limits and indicators

- An important dimension of the market risk management framework is the quantification of market risk which the financial institution faces, taking into account the institution's current portfolio and a forward-looking perspective based on budget figures as well as on behavioral approaches of on- and off-balance sheet items that can broadly differ with the contractual approach.

- To control its market risk exposure and vulnerabilities, a financial institution should set limits. The limit system should be established, taking into account the institution's risk appetite, in order to mitigate market risk, taking due account of risk concentrations.
- Financial institutions must set limits based on portfolio, type of activity, product and strategy. Risk-taking units must have procedures for activities, which aid risk-takers to understand their limits and to ensure they operate within the approved limits. Limit breaches should be immediately escalated to senior management as and when they occur.
- Different sets of limits should be put in place to cover intraday and overnight exposures. While assessing how limits would perform under stressed conditions, a financial institution should include measures aimed at ensuring that it can continue to operate in a period of market stress, institution-specific stress and/or a combination of two.
- Common approaches to measuring and limiting market risk are:
  - Formulate detailed structure of market risk limits that are consistent with the institution's risk appetite, risk profile and capital strength,
  - Set limit on open positions in each type of product, limit may be based on nominal size or /and percentage of position,
  - Set limit on concentration and identify areas of diversification of investment,
  - Use appropriate quantitative techniques, such as Value-at-Risk, to identify and measure market risk.
- In addition, financial institutions should design a set of indicators to identify the emergence of increased risk or vulnerabilities in their market exposures.

5.5 Measurement and Monitoring

- Measuring market risk is crucial for estimating potential losses to the financial institutions in event of any loss. It also helps them to ensure that potential losses resulting from market risk fall within their risk appetite and would not substantially erode capital and earnings.
- Financial institutions should ensure they have in place appropriate management information system (MIS) for accurate and timely identification, aggregation, monitoring, controlling, and reporting of market risk and aid it developing market risk reports to board and senior management.
- Financial institutions should monitor their market risk by using different techniques and models. They should ensure that at any time their exposures fall within their market risk tolerance. To strengthen the monitoring, financial institutions may conduct stress testing to assess the vulnerability of their strategies and positions. The selection of stress test scenarios must suit the size, complexity and diversity of activities. While considering stress test, emphasis should be placed on concentration of instruments and markets, when positions are difficult to liquidate under stressful situations.
- Internal audit plays a vital role in the monitoring and control of market risk by reviewing and validating the market risk measurement process regularly; it also contributes to ensuring the accuracy of data entered in risk models, validity of risk models and risk measurement calculations, reasonableness of scenarios and assumptions.

5.6 Control of market risk

- To reduce their market risk exposure, financial institutions should ensure adequate training and segregation of duties among front, middle and back office.
- The FI's management information system should generate periodic reports that depict the actual size, return, risk, potential profit or loss etc. of the exposure and such report should be forwarded to board and senior management for review
- Financial institutions should have adequate internal controls to ensure proper risk management process. These internal controls should be an integral part of the institution's overall risk management system. They should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with regulatory requirements.
- Appropriate contingency plans should be put in place.

VI – Interest Rate Risk Management

6.1 Overview

Interest rate risk is the exposure of a financial institution's condition to the adverse movement in interest rate. Changes in interest rates affect an institution's earnings and also affect the underlying value of the institution's assets, liabilities and off-balance-sheet instruments. Interest rate risk encompasses:

- Risks related to mismatches in the timing of repricing of assets and liabilities and off-balance sheet positions (repricing risk); exposures will vary according to the nature of the change in interest rates: there are particular risks arise from changes in the slope and the shape of the yield curve (yield curve risk);
- Risks arising from hedging exposure to one interest rate with exposure to a rate which reprices under slightly different conditions (basis risk), and
- Risks arising from options, including embedded options.

When assessing interest rate risk, two different, but complementary, perspectives have to be considered. The earnings perspective focuses on the sensitivity of earnings in the short-term to interest rate movements. The economic value perspective focuses on the sensitivity of the economic values of on- and off-balance sheet positions. It provides a more comprehensive view of the potential long-term effects of changes in interest rates than is offered by the earnings perspective.

Financial institutions should have in place robust governance arrangements, including a clear organizational structure with well-defined, transparent and consistent lines of responsibility, effective processes to identify, manage, monitor and report the risk they are or might be exposed to. They should have adequate internal control mechanisms and systems for the identification, evaluation and management of the risk arising from potential changes in interest rates that affect their non-trading activities.

6.2 Organization Structure

- The organization of the interest risk management depends on the nature size and scope of activities of the financial institution, the complexity and nature of its business, as well as on the level of interest rate risk exposure.
- Risk management function should be engaged in monitoring interest rate risk levels, setting out interest rate risk indicators, timely and accurate reporting of important interest risk related information, and in the development interest risk management policies. This head of this function should directly report to the Chief Risk Officer.
- Financial institutions should clearly define the individuals and/or committees responsible for managing interest rate risk and should ensure that there is adequate separation of duties in key elements of the risk management process to avoid potential conflicts of interest.
- Depending on the size, risk exposure, and diversity of activities, financial institutions may establish an Asset Liability Committee (ALCO) to oversee the management of interest rate risks as well as the financial institution's funding, balance sheet management etc.
- An appropriate Management Information System (MIS) should be implemented to identify, measure, monitor, control and report interest rate risk related reports to senior management and the board.

6.3 Strategies, Policies and Procedures

- Based on their risk profile, financial institutions should establish an appropriate interest rate risk strategy, taking into account composition, tenure and diversification of loans, deposit and investment. As interest rate risk strategy taken by financial institutions has a significant impact on profitability and capital. The strategy should therefore reflect a proper alignment between interest rate risk profile and business plans and should have proper risk management system in place.
- Financial institutions must have appropriate strategies, policies and procedures in place to perform effective risk management that maintains interest rate risk within prudent levels, as is essential for the safety and soundness of the institution.
- Interest rate risk policies and procedures should be clearly defined and consistent with the nature and complexity of their activities. They should delineate a clear set of institutional procedures for acquiring specific instruments, managing portfolios, and controlling the total interest rate risk exposure. All interest rate risk policies should include specific procedures and approvals necessary for exceptions to policies. They should be reviewed periodically and revised as needed.

6.4 Limits

- Interest rate risk policies should identify quantitative parameters that define the acceptable level of interest rate risk for the bank. Financial institutions must establish and enforce operating limits and other practices that maintain exposures within levels consistent with the internal policies.
- Based on the size, complexity and diversity of activities, limits should be further specified for certain types of instruments, portfolios, and activities. Further specific procedures and approvals necessary for exceptions to limits, and authorizations.

6.5 Measurement and Monitoring

- Financial institutions should set up appropriate interest rate risk measurement systems that capture all material sources of interest rate risk and that assess the effect of interest rate changes consistent with the scope of their activities. In measuring interest rate risk, financial institution can consider:
  - Re-pricing risk,
  - Yield curve risk,
  - Basis risk,
  - Optionality risks,
  - Fee-based and any other income sensitive to changes in interest rates.
- The assumptions underlying the system should be reasonable and clearly understood by those engaged in the management of interest rate risk. Financial institutions must have an integrated view of interest rate risk across activity, products and business lines.
- Risk measurement systems should evaluate concentrations of positions taken and ensure interest-sensitive positions are commensurate with the complexity and risk inherent in those positions. Financial institutions may use quantitative techniques to capture interest rate risk but techniques used for measuring and reporting interest rate risks should be independently validated and regularly reviewed.
- Financial institutions should:
  - Assess all material interest rate risk they are exposed to,
  - Adopt internationally accepted financial concepts and risk measurement techniques; and

- Have well documented and validated assumptions and parameters.
- Review at least annually, key assumptions recognized by senior management and risk managers.

- To ensure proper monitoring, financial institutions should have in place adequate information systems for measuring, monitoring, controlling, and reporting interest rate exposures on a timely basis to board, senior management and concerned parties.
- Stress tests should be undertaken to assess vulnerability to interest rate changes. Financial institutions should develop their own scenarios as appropriate, taking into consideration their risk profile. Scenarios should be used to assess vulnerability to losses under stressful market conditions. Results from stress testing should be considered when reviewing their policies and limits for interest rate risk.

6.6 Internal Control

- Adequate system of internal controls requiring regular independent reviews and evaluations of the effectiveness of the interest rate risk management process with appropriate revisions or enhancements to internal controls. These internal controls should be an integral part of the institution's overall system of internal control and be consistent with regulatory requirement and policies of the financial institution.

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