



## Risk Management

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Guidelines for Commercial Banks & DFIs.

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## Introduction

### Defining Risk:

- 1.1.1 For the purpose of these guidelines financial risk in a banking organization is possibility that the outcome of an action or event could bring up adverse impacts. Such outcomes could either result in a direct loss of earnings / capital or may result in imposition of constraints on bank's ability to meet its business objectives. Such constraints pose a risk as these could hinder a bank's ability to conduct its ongoing business or to take benefit of opportunities to enhance its business.
- 1.1.2 Regardless of the sophistication of the measures, banks often distinguish between expected and unexpected losses. **Expected losses** are those that the bank knows with reasonable certainty will occur (**e.g.**, the expected default rate of corporate loan portfolio or credit card portfolio) and are typically reserved for in some manner. **Unexpected losses** are those associated with unforeseen events (e.g. losses experienced by banks in the aftermath of nuclear tests, Losses due to a sudden down turn in economy or falling interest rates). Banks rely on their capital as a buffer to absorb such losses.
- 1.1.3 Risks are usually defined by the adverse impact on profitability of several distinct sources of uncertainty. While 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, it is believed that generally the banks face Credit, Market, Liquidity, Operational, Compliance / legal / regulatory and reputation risks. Before overarching these risk categories, given below are some basics about risk Management and some guiding principles to manage risks in banking organization.

### Risk Management.

- 1.2.1 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 Board of Directors.
  - c) Risk taking Decisions are in line with the business strategy and objectives set by BOD.
  - d) The expected payoffs compensate for the risks taken
  - e) Risk taking decisions are explicit and clear.
  - f) Sufficient capital as a buffer is available to take risk
- 1.2.2 The acceptance and management of financial risk is inherent to the business of banking and banks' roles as financial intermediaries. Risk management as commonly perceived does not mean minimizing risk; rather the goal of risk management is to optimize risk-reward trade-off. Notwithstanding the fact that banks are in the business of taking risk, it should be recognized that an institution need not engage in business in a manner that unnecessarily imposes risk upon it: nor it should absorb risk that can be transferred to other

- participants. Rather it should accept those risks that are uniquely part of the array of bank's services.
- 1.2.3 In every financial institution, risk management activities broadly take place simultaneously at following different hierarchy levels.
- a) **Strategic level:** It encompasses risk management functions performed by senior management and BOD. For instance definition of risks, ascertaining institutions risk appetite, formulating strategy and policies for managing risks and establish adequate systems and controls to ensure that overall risk remain within acceptable level and the reward compensate for the risk taken.
  - b) **Macro Level:** It encompasses risk management within a business area or across business lines. Generally the risk management activities performed by middle management or units devoted to risk reviews fall into this category.
  - c) **Micro Level:** It involves 'On-the-line' risk management where risks are actually created. This is the risk management activities performed by individuals who take risk on organization's behalf such as front office and loan origination functions. The risk management in those areas is confined to following operational procedures and guidelines set by management.
- 1.3.1 Expanding business arenas, deregulation and globalization of financial activities emergence of new financial products and increased level of competition has necessitated a need for an effective and structured risk management in financial institutions. A bank's ability to measure, monitor, and steer risks comprehensively is becoming a decisive parameter for its strategic positioning. The risk management framework and sophistication of the process, and internal controls, used to manage risks, depends on the nature, size and complexity of institutions activities. Nevertheless, there are some basic principles that apply to all financial institutions irrespective of their size and complexity of business and are reflective of the strength of an individual bank's risk management practices.
- 1.3.2 **Board and senior Management oversight.**
- a) To be effective, the concern and tone for risk management must start at the top. While the overall responsibility of risk management rests with the BOD, it is the duty of senior management to transform strategic direction set by board in the shape of policies and procedures and to institute an effective hierarchy to execute and implement those policies. To ensure that the policies are consistent with the risk tolerances of shareholders the same should be approved from board.
  - b) The formulation of policies relating to risk management only would not solve the purpose unless these are clear and communicated down the line. Senior management has to ensure that these policies are embedded in the culture of organization. Risk tolerances relating to quantifiable risks are generally communicated as limits or sub-limits to those who accept risks on behalf of organization. However not all risks are quantifiable. Qualitative risk measures could be communicated as guidelines and inferred from management business decisions.
  - c) To ensure that risk taking remains within limits set by senior management/BOD, any material exception to the risk management policies

and tolerances should be reported to the senior management/board who in turn must trigger appropriate corrective measures. These exceptions also serve as an input to judge the appropriateness of systems and procedures relating to risk management.

- d) To keep these policies in line with significant changes in internal and external environment, BOD is expected to review these policies and make appropriate changes as and when deemed necessary. While a major change in internal or external factor may require frequent review, in absence of any uneven circumstances it is expected that BOD re-evaluate these policies every year.

#### **Risk Management framework.**

1.3.3 A risk management framework encompasses the scope of risks to be managed, the process/systems and procedures to manage risk and the roles and responsibilities of individuals involved in risk management. The framework should be comprehensive enough to capture all risks a bank is exposed to and have flexibility to accommodate any change in business activities. An effective risk management framework includes

- a) Clearly defined risk management policies and procedures covering risk identification, acceptance, measurement, monitoring, reporting and control.
- b) A well constituted organizational structure defining clearly roles and responsibilities of individuals involved in risk taking as well as managing it. Banks, in addition to risk management functions for various risk categories may institute a setup that supervises overall risk management at the bank. Such a setup could be in the form of a separate department or bank's Risk Management Committee (RMC) could perform such function\*. The structure should be such that ensures effective monitoring and control over risks being taken. The individuals responsible for review function (Risk review, internal audit, compliance etc) should be independent from risk taking units and report directly to board or senior management who are also not involved in risk taking.
- c) There should be an effective management information system that ensures flow of information from operational level to top management and a system to address any exceptions observed. There should be an explicit procedure regarding measures to be taken to address such deviations.
- d) The framework should have a mechanism to ensure an ongoing review of systems, policies and procedures for risk management and procedure to adopt changes.

#### **Integration of Risk Management**

1.3.4 Risks must not be viewed and assessed in isolation, not only because a single transaction might have a number of risks but also one type of risk can trigger other risks. Since interaction of various risks could result in diminution or increase in risk, the risk management process should recognize and reflect risk interactions in all business activities as appropriate. While assessing and managing risk the management should have an overall view of risks the

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\* A recent concept in this regard is Enterprise Risk Management (ERM)

institution is exposed to. This requires having a structure in place to look at risk interrelationships across the organization.

**Business Line Accountability.**

- 1.3.5 In every banking organization there are people who are dedicated to risk management activities, such as risk review, internal audit etc. It must not be construed that risk management is something to be performed by a few individuals or a department. Business lines are equally responsible for the risks they are taking. Because line personnel, more than anyone else, understand the risks of the business, such a lack of accountability can lead to problems.

**Risk Evaluation/Measurement.**

- 1.3.6 Until and unless risks are not assessed and measured it will not be possible to control risks. Further a true assessment of risk gives management a clear view of institution's standing and helps in deciding future action plan. To adequately capture institutions risk exposure, risk measurement should represent aggregate exposure of institution both risk type and business line and encompass short run as well as long run impact on institution. To the maximum possible extent institutions should establish systems / models that quantify their risk profile, however, in some risk categories such as operational risk, quantification is quite difficult and complex. Wherever it is not possible to quantify risks, qualitative measures should be adopted to capture those risks. Whilst quantitative measurement systems support effective decision-making, better measurement does not obviate the need for well-informed, qualitative judgment. Consequently the importance of staff having relevant knowledge and expertise cannot be undermined. Finally any risk measurement framework, especially those which employ quantitative techniques/model, is only as good as its underlying assumptions, the rigor and robustness of its analytical methodologies, the controls surrounding data inputs and its appropriate application

**Independent review.**

- 1.3.7 One of the most important aspects in risk management philosophy is to make sure that those who take or accept risk on behalf of the institution are not the ones who measure, monitor and evaluate the risks. Again the managerial structure and hierarchy of risk review function may vary across banks depending upon their size and nature of the business, the key is independence. To be effective the review functions should have sufficient authority, expertise and corporate stature so that the identification and reporting of their findings could be accomplished without any hindrance. The findings of their reviews should be reported to business units, Senior Management and, where appropriate, the Board.

**Contingency planning.**

- 1.3.8 Institutions should have a mechanism to identify stress situations ahead of time and plans to deal with such unusual situations in a timely and effective manner. Stress situations to which this principle applies include all risks of all types. For instance contingency planning activities include disaster recovery planning, public relations damage control, litigation strategy, responding to regulatory criticism etc. Contingency plans should be reviewed regularly to ensure they encompass reasonably probable events that could impact the organization. Plans should be tested as to the appropriateness of responses, escalation and communication channels and the impact on other parts of the institution.

## *Managing credit risk*

***Credit risk arises from the potential that an obligor is either unwilling to perform on an obligation or its ability to perform such obligation is impaired resulting in economic loss to the bank.***

- 2.1.1 In a bank's portfolio, losses stem from outright default due to inability or unwillingness of a customer or counter party to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively losses may result from reduction in portfolio value due to actual or perceived deterioration in credit quality. Credit risk emanates from a bank's dealing with individuals, corporate, financial institutions or a sovereign. For most banks, loans are the largest and most obvious source of credit risk; however, credit risk could stem from activities both on and off balance sheet.
- 2.1.2 In addition to direct accounting loss, credit risk should be viewed in the context of economic exposures. This encompasses opportunity costs, transaction costs and expenses associated with a non-performing asset over and above the accounting loss.
- 2.1.3 Credit risk can be further sub-categorized on the basis of reasons of default. For instance the default could be due to country in which there is exposure or problems in settlement of a transaction.
- 2.1.4 Credit risk not necessarily occurs in isolation. The same source that endangers credit risk for the institution may also expose it to other risk. For instance a bad portfolio may attract liquidity problem.

### **Components of credit risk management**

- 2.2.1 A typical Credit risk management framework in a financial institution may be broadly categorized into following main components.
  - a) Board and senior Management's Oversight
  - b) Organizational structure
  - c) Systems and procedures for identification, acceptance, measurement, monitoring and control risks.

#### **Board and Senior Management's Oversight**

- 2.2.2 It is the overall responsibility of bank's Board to approve bank's credit risk strategy and significant policies relating to credit risk and its management which should be based on the bank's overall business strategy. To keep it current, the overall strategy has to be reviewed by the board, preferably annually. The responsibilities of the Board with regard to credit risk management shall, inter alia, include:

- a) Delineate bank's overall risk tolerance in relation to credit risk.

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<sup>†</sup> For the purpose of these guidelines the term Obligor means any party that has a direct or indirect obligation under a contract.

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- b) Ensure that bank's overall credit risk exposure is maintained at prudent levels and consistent with the available capital
  - c) Ensure that top management as well as individuals responsible for credit risk management possess 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 credit risk.
  - e) Ensure that appropriate plans and procedures for credit risk management are in place.
- 2.2.3 The very first purpose of bank's credit strategy is to determine the risk appetite of the bank. Once it is determined the bank could develop a plan to optimize return while keeping credit risk within predetermined limits. The bank's credit risk strategy thus should spell out
- a) The institution'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, preferred level of diversification/concentration.
  - c) Pricing strategy.
- 2.2.4 It is essential that banks give due consideration to their target market while devising credit risk strategy. The credit procedures should aim to obtain an in-depth understanding of the bank's clients, their credentials & their businesses in order to fully know their customers.
- 2.2.5 The strategy should provide continuity in approach and take into account cyclic aspect of country's economy and the resulting shifts in composition and quality of overall credit portfolio. While the strategy would be reviewed periodically and amended, as deemed necessary, it should be viable in long term and through various economic cycles.
- 2.2.6 The senior management of the bank should develop and establish credit policies and credit administration procedures as a part of overall credit risk management framework and get those approved from board. Such policies and procedures shall provide guidance to the staff on various types of lending including corporate, SME, consumer, agriculture, etc. At minimum the policy should include
- a) Detailed and formalized credit evaluation/ appraisal process.
  - b) Credit approval authority at various hierarchy levels including authority for approving exceptions.
  - c) Risk identification, measurement, monitoring and control
  - d) Risk acceptance criteria
  - e) Credit origination and credit administration and loan documentation procedures
  - f) Roles and responsibilities of units/staff involved in origination and management of credit.
  - g) Guidelines on management of problem loans.
- 2.2.7 In order to be effective these policies must be clear and communicated down the line. Further any significant deviation/exception to these policies must be communicated to the top management/board and corrective measures should

be taken. It is the responsibility of senior management to ensure effective implementation of these policies.

### **Organizational Structure.**

- 2.3.1 To maintain bank's overall credit risk exposure within the parameters set by the board of directors, the importance of a sound risk management structure is second to none. While the banks may choose different structures, it is important that such structure should be commensurate with institution's size, complexity and diversification of its activities. It must facilitate effective management oversight and proper execution of credit risk management and control processes.
- 2.3.2 Each bank, depending upon its size, should constitute a Credit Risk Management Committee (CRMC), ideally comprising of head of credit risk management Department, credit department and treasury. This committee reporting to bank's risk management committee should be empowered to oversee credit risk taking activities and overall credit risk management function. The CRMC should be mainly responsible for
- a) The implementation of the credit risk policy / strategy approved by the Board.
  - b) Monitor credit risk on a bank-wide basis and ensure compliance with limits approved by the Board.
  - c) Recommend to the Board, for its approval, clear policies on standards for presentation of credit proposals, financial covenants, rating standards and benchmarks.
  - d) Decide delegation of credit approving powers, prudential limits on large credit exposures, standards for loan collateral, portfolio management, loan review mechanism, risk concentrations, risk monitoring and evaluation, pricing of loans, provisioning, regulatory/legal compliance, etc.
- 2.3.3 Further, to maintain credit discipline and to enunciate credit risk management and control process there should be a separate function independent of loan origination function. Credit policy formulation, credit limit setting, monitoring of credit exceptions / exposures and review / monitoring of documentation are functions that should be performed independently of the loan origination function. For small banks where it might not be feasible to establish such structural hierarchy, there should be adequate compensating measures to maintain credit discipline introduce adequate checks and balances and standards to address potential conflicts of interest. Ideally, the banks should institute a Credit Risk Management Department (CRMD). Typical functions of CRMD include:
- a) To follow a holistic approach in management of risks inherent in banks portfolio and ensure the risks remain within the boundaries established by the Board or Credit Risk Management Committee.
  - b) The department also ensures that business lines comply with risk parameters and prudential limits established by the Board or CRMC.
  - c) Establish systems and procedures relating to risk identification, Management Information System, monitoring of loan / investment portfolio quality and early warning. The department would work out remedial measure when deficiencies/problems are identified.

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

2.3.4 Notwithstanding the need for a separate or independent oversight, the front office or loan origination function should be cognizant of credit risk, and maintain high level of credit discipline and standards in pursuit of business opportunities.

## **Systems and Procedures**

### **Credit Origination.**

2.4.1 Banks must operate within a sound and well-defined criteria for new credits as well as the expansion of existing credits. Credits should be extended within the target markets and lending strategy of the institution. Before allowing a credit facility, the bank must make an assessment of risk profile of the customer/transaction. This may include

- a)* Credit assessment of the borrower's industry, and macro economic factors.
- b)* The purpose of credit and source of repayment.
- c)* The track record / repayment history of borrower.
- d)* Assess/evaluate the repayment capacity of the borrower.
- e)* The Proposed terms and conditions and covenants.
- f)* Adequacy and enforceability of collaterals.
- g)* Approval from appropriate authority

2.4.2 In case of new relationships consideration should be given to the integrity and repute of the borrowers or counter party 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 or counter party and be confident that they are dealing with individual or organization of sound repute and credit worthiness. However, a bank must not grant credit simply on the basis of the fact that the borrower is perceived to be highly reputable i.e. name lending should be discouraged.

2.4.3 While structuring credit facilities institutions should appraise the amount and timing of the cash flows as well as the financial position of the borrower and intended purpose of the funds. It is utmost 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 institution's interest.

2.4.4 Institutions have to make sure that the credit is used for the purpose it was borrowed. Where the obligor has utilized funds for purposes not shown in the original proposal, institutions should take steps to determine the implications on creditworthiness. In case of corporate loans where borrower own group of companies such diligence becomes more important. Institutions should classify such connected companies and conduct credit assessment on consolidated/group basis.

2.4.5 In loan syndication, generally most of the credit assessment and analysis is done by the lead institution. While such information is important, institutions should not over rely on that. All syndicate participants should perform their own independent analysis and review of syndicate terms.

- 2.4.6 Institution should not over rely on collaterals / covenant. Although the importance of collaterals held against loan is beyond any doubt, yet these should be considered as a buffer providing protection in case of default, primary focus should be on obligor's debt servicing ability and reputation in the market.

**Limit setting**

- 2.4.7 An important element of credit risk management is to establish exposure limits for single obligors and group of connected obligors. Institutions are expected to develop their own limit structure while remaining within the exposure limits set by State Bank of Pakistan. The size of the limits should be based on the credit strength of the obligor, genuine requirement of credit, economic conditions and the institution's risk tolerance. Appropriate limits should be set for respective products and activities. Institutions may establish limits for a specific industry, economic sector or geographic regions to avoid concentration risk.
- 2.4.8 Some times, the obligor may want to share its facility limits with its related companies. Institutions should review such arrangements and impose necessary limits if the transactions are frequent and significant
- 2.4.9 Credit limits should be reviewed regularly at least annually or more frequently if obligor's credit quality deteriorates. All requests of increase in credit limits should be substantiated.

**Credit Administration.**

- 2.5.1 Ongoing administration of the credit portfolio is an essential part of the credit process. Credit administration function is basically a back office activity that support and control extension and maintenance of credit. A typical credit administration unit performs 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 function should ensure that the loan 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 loan is approved and draw down allowed, the loan should be continuously watched over. These include keeping track of borrowers' compliance with credit terms, identifying early signs of irregularity, conducting periodic valuation of collateral and monitoring timely repayments.
  - d. **Loan Repayment.** The obligors 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 financial health of the borrower and its repayment performance. It need not mention that information should

be filed in organized way so that external / internal auditors or SBP inspector could review it easily.

- f. **Collateral and Security Documents.** Institutions should ensure that all security documents are kept in a fireproof safe under dual control. Registers for documents should be maintained to keep track of their movement. Procedures should also be established to track and review relevant insurance coverage for certain facilities/collateral. Physical checks on security documents should be conducted on a regular basis.
- 2.5.2 While in small Institutions it may not be cost effective to institute a separate credit administrative set-up, it is important that in such institutions individuals performing sensitive functions such as custody of key documents, wiring out funds, entering limits into system, etc., should report to managers who are independent of business origination and credit approval process.

### **Measuring credit risk.**

- 2.6.1 The measurement of credit risk is of vital importance in credit risk management. A number of qualitative and quantitative techniques to measure risk inherent in credit portfolio are evolving. 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

- o Industry Characteristics
- o Competitive Position (e.g. marketing/technological edge)
- o Management

#### Financial Risk

- o Financial condition
- o Profitability
- o Capital Structure
- o Present and future Cash flows

### **Internal Risk Rating.**

- 2.6.2 Credit risk rating is summary indicator of a bank's individual credit exposure. An internal rating system categorizes all credits into various classes on the basis of underlying credit quality. A well-structured credit rating framework is an important tool for monitoring and controlling risk inherent in individual credits as well as in credit portfolios of a bank or a business line. The importance of internal credit rating framework becomes more eminent due to the fact that historically major losses to banks stemmed from default in loan portfolios. While a number of banks already have a system for rating individual credits in addition to the risk categories prescribed by SBP, all banks are encouraged to devise an internal rating framework. An internal rating framework would facilitate banks in a number of ways such as

- a) Credit selection
- b) Amount of exposure
- c) Tenure and price of facility
- d) Frequency or intensity of monitoring
- e) Analysis of migration of deteriorating credits and more accurate computation of future loan loss provision
- f) Deciding the level of Approving authority of loan.

### **The Architecture of internal rating system.**

2.6.3 The decision to deploy any risk rating architecture for credits depends upon two basic aspects

- a) The Loss Concept and the number and meaning of grades on the rating continuum corresponding to each loss concept\*.
- b) Whether to rate a borrower on the basis of 'point in time philosophy' or 'through the cycle approach'†.

Besides there are other issues such as whether to include statutory grades in the scale, the type of rating scale i.e. alphabetical numerical or alpha-numeric etc. SBP does not advocate any particular credit risk rating system; it should be banks own choice. However the system should commensurate with the size, nature and complexity of their business as well as possess flexibility to accommodate present and future risk profile of the bank, the anticipated level of diversification and sophistication in lending activities.

2.6.4 A rating system with large number of grades on rating scale becomes more expensive due to the fact that the cost of obtaining and analyzing additional information for fine gradation increase sharply. However, it is important that there should be sufficient gradations to permit accurate characterization of the underlying risk profile of a loan or a portfolio of loans

### **The operating Design of Rating System.**

2.6.5 As with the decision to grant credit, the assignment of ratings always involve element of human judgment. Even sophisticated rating models do not replicate experience and judgment rather these techniques help and reinforce subjective judgment. Banks thus design the operating flow of the rating process in a way that is aimed promoting the accuracy and consistency of the rating system while not unduly restricting the exercise of judgment. Key issues relating to the operating design of a rating system include what exposures to rate; the organization's division of responsibility for grading; the nature of ratings review; the formality of the process and specificity of formal rating definitions.

### **What Exposures are rated?**

2.6.6 Ideally all the credit exposures of the bank should be assigned a risk rating. However given the element of cost, it might not be feasible for all banks to follow. The banks may decide on their own which exposure needs to be rated. The decision to rate a particular loan could be based on factors such as exposure amount, business line or both. Generally corporate and commercial exposures are subject to internal ratings and banks use scoring models for consumer / retail loans.

### **The rating process in relation to credit approval and review.**

2.6.7 Ratings are generally assigned /reaffirmed at the time of origination of a loan or its renewal /enhancement. The analysis supporting the ratings is inseparable from that required for credit appraisal. In addition the rating and loan analysis process while being separate are intertwined. The process of assigning a rating and its approval / confirmation goes along with the initiation of a credit proposal and its approval. Generally loan origination function (whether a relationship

\* The credit risk exposure involves both the probability of Default (PD) and loss in the event of default or loss given default (LGD). The former is specific to borrower while the later corresponds to the facility. The product of PD and LGD is the expected loss.

† Point in time means to grade a borrower according to its current condition while through the cycle approach grades a borrower under stress conditions.

manager or credit staff) \* initiates a loan proposal and also allocates a specific rating. This proposal passes through the credit approval process and the rating is also approved or recalibrated simultaneously by approving authority. The revision in the ratings can be used to upgrade the rating system and related guidelines.

### **How to arrive at ratings**

2.6.8 The assignment of a particular rating to an exposure is basically an abbreviation of its overall risk profile. Theoretically ratings are based upon the major risk factors and their intensity inherent in the business of the borrower as well as key parameters and their intensity to those risk factors. Major risk factors include borrowers financial condition, size, industry and position in the industry; the reliability of financial statements of the borrower; quality of management; elements of transaction structure such as covenants etc. A more detail on the subject would be beyond the scope of these guidelines, however a few important aspects are

- a) Banks may vary somewhat in the particular factors they consider and the weight they give to each factor.
- b) Since the rater and reviewer of rating should be following the same basic thought, to ensure uniformity in the assignment and review of risk grades, the credit policy should explicitly define each risk grade; lay down criteria to be fulfilled while assigning a particular grade, as well as the circumstances under which deviations from criteria can take place.
- c) The credit policy should also explicitly narrate the roles of different parties involved in the rating process.
- d) The institution must ensure that adequate training is imparted to staff to ensure uniform ratings
- e) Assigning a Rating is basically a judgmental exercise and the models, external ratings and written guidelines/benchmarks serve as input.
- f) Institutions should take adequate measures to test and develop a risk rating system prior to adopting one. Adequate validation testing should be conducted during the design phase as well as over the life of the system to ascertain the applicability of the system to the institution's portfolio.

2.6.9 Institutions that use sophisticated statistical models to assign ratings or to calculate probabilities of default, must ascertain the applicability of these models to their portfolios. Even when such statistical models are found to be satisfactory, institutions should not use the output of such models as the sole criteria for assigning ratings or determining the probabilities of default. It would be advisable to consider other relevant inputs as well.

### **Ratings review**

2.6.10 The rating review can be two-fold:

- a) Continuous monitoring by those who assigned the rating. The Relationship Managers (RMs) generally have a close contact with the borrower and are expected to keep an eye on the financial stability of the borrower. In the event of any deterioration the ratings are immediately revised /reviewed.

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\* The organizational setup may vary across the banks depending upon their business mix. Generally in banks targeted at middle market, RMs assign ratings which in turn approved by credit staff, whereas in banks having substantial presence in large corporate market separate credit staff assigns the ratings

b) Secondly the risk review functions of the bank or business lines also conduct periodical review of ratings at the time of risk review of credit portfolio.

2.6.11 Risk ratings should be assigned at the inception of lending, and updated at least annually. Institutions should, however, review ratings as and when adverse events occur. A separate function independent of loan origination should review Risk ratings. As part of portfolio monitoring, institutions should generate reports on credit exposure by risk grade. Adequate trend and migration analysis should also be conducted to identify any deterioration in credit quality. Institutions may establish limits for risk grades to highlight concentration in particular rating bands. It is important that the consistency and accuracy of ratings is examined periodically by a function such as an independent credit review group

2.6.12 For consumer lending, institutions may adopt credit-scoring models for processing loan applications and monitoring credit quality. Institutions should apply the above principles in the management of scoring models. Where the model is relatively new, institutions should continue to subject credit applications to rigorous review until the model has stabilized.

### **Credit Risk Monitoring & Control**

2.7.1 Credit risk monitoring refers to incessant monitoring of individual credits inclusive of Off-Balance sheet exposures to obligors as well as overall credit portfolio of the bank. 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, the adequacy of provisions, the overall risk profile is within limits established by management and compliance of regulatory limits. 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. Consequently the management could fine tune or reassess its 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 loan covenants
- e) The frequency of site visits
- f) The identification of any deterioration in any loan

Given below are some key indicators that depict the credit quality of a loan:

**a. Financial Position and Business Conditions.** The most important aspect about an obligor is its financial health, as it would determine its repayment capacity. Consequently institutions need carefully watch financial standing of obligor. The Key financial performance indicators on 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, 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).

**b. Conduct of Accounts.** In case of existing obligor the operation in the account would give a fair idea about the quality of credit facility. Institutions should monitor the obligor's account activity, repayment history and instances of excesses over credit limits. For trade financing, institutions should monitor cases of repeat extensions of due dates for trust receipts and bills.

**c. Loan Covenants.** The obligor's ability to adhere to negative pledges and financial covenants stated in the loan agreement should be assessed, and any breach detected should be addressed promptly.

**d. Collateral valuation.** Since the value of collateral could deteriorate resulting in unsecured lending, banks need to reassess value of collaterals on periodic basis. The frequency of such valuation is very subjective and depends upon nature of collaterals. For instance loan 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. And if such goods are perishable or such that their value diminish rapidly (e.g. electronic parts/equipments), additional precautionary measures should be taken.

- 2.7.2 External Rating and Market Price of securities such as TFCs purchased as a form of lending or long-term investment should be monitored for any deterioration in credit rating of the issuer, as well as large decline in market price. Adverse changes should trigger additional effort to review the creditworthiness of the issuer.

#### **Risk review**

- 2.8.1 The institutions must establish a mechanism of independent, ongoing assessment of credit risk management process. All facilities except those managed on a portfolio basis should be subjected to individual risk review at least once in a year. The results of such review should be properly documented and reported directly to board, or its sub committee or senior management without 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.
- 2.8.2 Institutions should conduct credit review with updated information on the obligor'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 obligor'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.
- 2.8.3 As stated earlier, credit review should be performed on an annual basis, however more frequent review should be conducted for new accounts where institutions may not be familiar with the obligor, and for classified or adverse rated accounts that have higher probability of default.

- 2.8.4 For consumer loans, institutions may dispense with the need to perform credit review for certain products. However, they should monitor and report credit exceptions and deterioration.

**Delegation of Authority.**

- 2.9.1 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 banks 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 the experience, ability and personal character. It would be better if institutions develop risk-based authority structure where lending power is tied to the risk ratings of the obligor. Large banks may adopt multiple credit approvers for sanctioning such as credit ratings, risk approvals etc to institute 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 SBP limits), approvals of disbursements excess over limits and other exceptions to credit policy.
- 2.9.2 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.

**Managing problem credits**

- 2.10.1 The institution should establish a system that helps identify problem loan ahead of time when there may be more options available for remedial measures. Once the loan is identified as problem, it should be managed under a dedicated remedial process.
- 2.10.2 A bank's credit risk policies should clearly set out how the bank will manage problem credits. Banks differ on the methods and organization they use to manage problem credits. Responsibility for such credits may be assigned to the originating business function, a specialized workout section, or a combination of the two, 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.
- 2.10.3 A problem loan management process encompass following basic elements.
- a. Negotiation and follow-up.** Proactive effort should be taken in dealing with obligors to implement remedial plans, by maintaining frequent contact and internal records of follow-up actions. Often rigorous efforts made at an early stage prevent institutions from litigations and loan losses
  - b. Workout remedial strategies.** Some times appropriate remedial strategies such as restructuring of loan facility, enhancement in credit limits or reduction in interest rates help improve obligor's repayment capacity. However it depends upon business condition, the nature of problems being faced and most importantly obligor's commitment and willingness to repay the loan. While such remedial strategies often bring up positive results, institutions need to exercise

great caution in adopting such measures and ensure that such a policy must not encourage obligors to default intentionally. The institution's interest should be the primary consideration in case of such workout plans. It needs not mention here that competent authority, before their implementation, should approve such workout plan.

c. **Review of collateral and security document.** Institutions have to ascertain the loan recoverable amount by updating the values of available collateral with formal valuation. Security documents should also be reviewed to ensure the completeness and enforceability of contracts and collateral/guarantee.

d. **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 loan accounts and progress of the remedial plans. Progress made on problem loan should be reported to the senior management

## Managing Market Risk

*It is the risk that the value of on and off-balance sheet positions of a financial institution will be adversely affected by movements in market rates or prices such as interest rates, foreign exchange rates, equity prices, credit spreads and/or commodity prices resulting in a loss to earnings and capital.*

- 3.1.1 Financial institutions may be exposed to Market Risk in variety of ways. Market risk exposure may be explicit in portfolios of securities / equities and instruments that are actively traded. Conversely it may be implicit such as interest rate risk due to mismatch of loans and deposits. Besides, market risk may also arise from activities categorized as off-balance sheet item. Therefore market risk is potential for loss resulting from adverse movement in market risk factors such as interest rates, forex rates, equity and commodity prices. The risk arising from these factors have been discussed on following pages.

### **Interest rate risk:**

- 3.2.1 Interest rate risk arises when there is a mismatch between positions, which are subject to interest rate adjustment within a specified period. The bank's lending, funding and investment activities give rise to interest rate risk. The immediate impact of variation in interest rate is on bank's net interest income, while a long term impact is on 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 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) or Net Interest Margin (NIM) i.e. the difference between the total interest income and the total interest expense.
- b) **Economic Value perspective:** It reflects the impact of fluctuation in the interest rates on economic value of a financial institution. Economic value of the bank can be viewed as the present value of future cash flows. In this respect economic value is affected both by changes in future cash flows and discount rate used for determining present value. Economic value perspective considers the potential longer-term impact of interest rates on an institution.

### **Sources of interest rate risks:**

- 3.2.2 Interest rate risk occurs due to (1) differences between the timing of rate changes and the timing of cash flows (**re-pricing risk**); (2) changing rate relationships among different yield curves effecting bank activities (**basis risk**); (3) changing rate relationships across the range of maturities (**yield curve risk**); and (4) interest-related options embedded in bank products (**options risk**).

### **Foreign Exchange Risk:**

- 3.3.1 It is the current or prospective risk to earnings and capital arising from adverse movements in currency exchange rates. It refers to the impact of adverse movement in currency exchange rates on the value of open foreign currency

position. The banks are also exposed to interest rate risk, which arises from the maturity mismatching of foreign currency positions. Even in cases where spot and forward positions in individual currencies are balanced, the maturity pattern of forward transactions may produce mismatches. As a result, banks may suffer losses due to changes in discounts of the currencies concerned. In the foreign exchange business, banks also face the risk of default of the counter parties or settlement risk. While such type of risk crystallization does not cause principal loss, banks may have to undertake fresh transactions in the cash/spot market for replacing the failed transactions. 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 forex transactions with counter parties situated outside Pakistan also involve sovereign or country risk.

**Equity price risk:**

- 3.4.1 It is risk to earnings or capital that results from adverse changes in the value of equity related portfolios of a financial institution. 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.

### Elements of Market Risk management

**Board and senior Management Oversight.**

- 3.5.1 Likewise other risks, the concern for management of Market risk must start from the top management. Effective board and senior management oversight of the bank's overall market risk exposure is cornerstone of risk management process. For its part, the board of directors has following responsibilities.
- a) Delineate banks overall risk tolerance 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 top management as well as individuals responsible for market risk management possess 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.
- 3.5.2 The first element of risk strategy is to determine the level of market risk the institution is prepared to assume. The risk appetite in relation to market risk should be assessed keeping in view the capital of the institution as well as exposure to other risks. Once the market risk appetite is determined, the institution 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. While articulating market risk strategy the board needs to consider economic and market conditions, and the resulting effects on market risk; expertise available to profit in specific markets and their ability to identify, monitor and control the market risk in those markets; the institution's portfolio mix and diversification. Finally the market risk strategy should be periodically reviewed and effectively communicated to the relevant staff. There should be a

process to identify any shifts from the approved market risk strategy and target markets, and to evaluate the resulting impact. The Board of Directors should periodically review the financial results of the institution and, based on these results, determine if changes need to be made to the strategy.

3.5.3 While the board gives a strategic direction and goals, it is the responsibility of top management to transform those directions into procedural guidelines and policy document and ensure proper implementation of those policies. Accordingly, senior management is responsible to:

- a) 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.
- b) Ensure adherence to the lines of authority and responsibility that board has established for measuring, managing, and reporting market risk.
- c) Oversee the implementation and maintenance of Management Information System that identify, measure, monitor, and control bank's market risk.
- d) Establish effective internal controls to monitor and control market risk.

3.5.4 The institutions should formulate market risk management policies which are approved by board. The policy should clearly delineate the lines of authority and the responsibilities of the Board of Directors, 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 for market risk control limit setting and limit Excesses.

### **Organizational Structure .**

3.6.1 The organizational structure used to manage market risk vary depending upon the nature size and scope of business activities of the institution, however, any structure does not absolve the directors of their fiduciary responsibilities of ensuring safety and soundness of institution. While the structure varies depending upon the size, scope and complexity of business, at a minimum it should take into account following aspect.

- a) The structure should conform to the overall strategy and risk policy set by the BOD.
- b) Those who take risk (front office) must know the organization's risk profile, products that they are allowed to trade, and the approved limits.
- c) The risk management function should be independent, reporting directly to senior management or BOD.
- d) The structure should be reinforced by a strong MIS for controlling, monitoring and reporting market risk, including transactions between an institution and its affiliates.

3.6.2 Besides the role of Board as discussed earlier a typical organization set up for Market Risk Management should include: -

- o The Risk Management Committee
- o The Asset-Liability Management Committee (ALCO)
- o The Middle Office.

3.6.3 **Risk Management Committee:** It is generally a board level subcommittee constituted to supervise overall risk management functions of the bank. The structure of the committee may vary in banks depending upon the size and volume of the business. Generally it could include heads of Credit, Market and operational risk Management Committees. It will decide the policy and strategy for integrated risk management containing various risk exposures of the bank including the market risk. The responsibilities of Risk Management Committee with regard to market risk management aspects include:

- a) Devise policies and guidelines for identification, measurement, monitoring and control for all major risk categories.
- b) The committee also ensures that resources allocated for risk management are adequate given the size nature and volume of the business and the managers and staff that take, monitor and control risk possess sufficient knowledge and expertise.
- c) The bank has clear, comprehensive and well-documented policies and procedural guidelines relating to risk management and the relevant staff fully understands those policies.
- d) Reviewing and approving market risk limits, including triggers or stop-losses for traded and accrual portfolios.
- e) Ensuring robustness of financial models, and the effectiveness of all systems used to calculate market risk.
- f) The bank has robust Management information system relating to risk reporting.

**Asset-Liability Committee**

3.6.4 Popularly known as ALCO, is 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 and liquidity risks. The CEO or some senior person nominated by CEO should be head of the committee. The size as well as composition of ALCO could depend on the size of each institution, business mix and organizational complexity. To be effective ALCO should have members from each area of the bank that significantly influences liquidity risk. 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 the committee include:

- a) To keep an eye on the structure /composition of bank's assets and liabilities and decide about product pricing for deposits and advances.
- b) Decide on required maturity profile and mix of incremental assets and liabilities.
- c) Articulate interest rate view of the bank and deciding on the future business strategy.
- d) Review and articulate funding policy.
- e) Decide the transfer pricing policy of the bank.
- f) Evaluate market risk involved in launching of new products.

ALCO should ensure that risk management is not confined to collection of data. 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.

**Middle Office.**

- 3.6.5 The risk management functions relating to treasury operations are mainly performed by middle office. The concept of middle office has recently been introduced so as to independently monitor, measure and analyze risks inherent in treasury operations of banks. Besides the unit also prepares reports for the information of senior management as well as bank's ALCO. Basically the middle office performs risk review function of day-to-day activities. Being a highly specialized function, it should be staffed by people who have relevant expertise and knowledge. The methodology of analysis and reporting may vary from bank to bank depending on their degree of sophistication and exposure to market risks. These same criteria will govern the reporting requirements demanded of the Middle Office, which may vary from simple gap analysis to computerized VaR modeling. Middle Office staff may prepare forecasts (simulations) showing the effects of various possible changes in market conditions related to risk exposures. Banks using VaR or modeling methodologies should ensure that its ALCO is aware of and understand the nature of the output, how it is derived, assumptions and variables used in generating the outcome and any shortcomings of the methodology employed. Segregation of duties should be evident in the middle office, which must report to ALCO independently of the treasury function. In respect of banks without a formal Middle Office, it should be ensured that risk control and analysis should rest with a department with clear reporting independence from Treasury or risk taking units, until normal Middle Office framework is established.

**Risk measurement**

- 3.7.1 Accurate and timely measurement of market risk is necessary for proper risk management and control. Market risk factors that affect the value of traded portfolios and the income stream or value of non-traded portfolio and other business activities should be identified and quantified using data that can be directly observed in markets or implied from observation or history. While there is a wide range of risk measurement techniques ranging from static measurement techniques (Gap analysis) to highly sophisticated dynamic modeling (Monte Carlo Simulation), the banks may employ any technique depending upon the nature size and complexity of the business and most important the availability and integrity of data. Banks may adopt multiple risk measurement methodologies to capture market risk in various business activities; however management should have an integrated view of overall market risk across products and business lines. The measurement system ideally should

- a) Assess all material risk factors associated with a bank's assets, liabilities, and Off Balance sheet positions.
- b) Utilize generally accepted financial concepts and risk measurement techniques.
- c) Have well documented assumptions and parameters. It is important that the assumptions underlying the system are clearly understood by risk managers and top management.

**Repricing Gap Models.**

- 3.7.2 At the most basic level banks may use repricing gap schedules to measure their interest rate risk. A gap report is a static model wherein interest sensitive assets (ISA), Interest Sensitive liabilities (ISL) and off-balance sheet items are stratified into various time bands according to their maturity (if fixed rate) or time remaining to their next re-pricing (if floating rate). The size of the gap for a given time band - that is, assets minus liabilities plus OBS exposures that re-price or

mature within that time band gives an indication of the bank's re-pricing risk exposure. If ISA of a bank exceed ISL in a certain time band, the bank is said to have a positive GAP for that particular period and vice versa. 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.

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

### 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 could 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:

$$\text{(Periodic gap)} \times \text{(change in rate)} \times \text{(time over which the periodic gap is in effect)} = \text{change in NII}$$

While such GAP measurement 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.

### Measure of risk to Economic Value

- 3.7.3 The stratification of Assets and liabilities into various time bands in a gap analyses can also be extended to measure change in economic value of bank's assets due to change in interest rates. This can be accomplished by applying sensitivity weights to each time band. Typically, such weights are based on estimates of the *duration*\* of the assets and liabilities that fall into each time-band, where duration is a measure of the percent change in the economic value of a position that will occur given a small change in the level of interest rates. 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.

### Earnings at Risk and Economic Value of Equity Models.

- 3.7.4 Many bank, especially those using complex financial instruments or otherwise having complex risk profiles, employ more sophisticated interest rate risk measurement systems than those used on simple maturity/re-pricing schedules. These *simulation techniques attempt to overcome the limitation of*

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\* Duration is the weighted average term to maturity of a security's cash flow. For instance a Rs 100 5 year 8% (semi Annual) coupon bond having yield of 8% will have a duration of 4.217 years. This could be derived by following formula

$$\text{Duration} = \frac{t_1 \times \text{PVCF}_1 + t_2 \times \text{PVCF}_2 + \dots + t_n \times \text{PVCF}_n}{K \times \text{Price}}$$

Where PVCF = present value of cash flow  
n= Total number of payments

K = Number of payments per annum.

Duration however works for small change in interest rate due to convexity of yield curve. The estimation can be improved by introducing convexity measure of a bond.

- static gap schedules and* typically involve detailed assessments of the potential effects of changes in interest rates on earnings or economic value by simulating the future path of interest rates and their impact on cash flows. In *static simulations*, the cash flows arising solely from the bank's current on- 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. These more sophisticated techniques allow for dynamic interaction of payments streams and interest rates, and better capture the effect of embedded or explicit options.
- 3.7.5 Banks may use present value scenario analysis to have a longer-term view of interest rate risk. Economic Value of Equity models show how the interest rate risk profile of the bank may impact its capital adequacy.
- 3.7.6 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.
- 3.7.7 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 institution has positions. The institutions 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.
- 3.7.8 In designing interest rate risk measurement systems, banks should ensure that the degree of detail about the nature of their interest-sensitive positions commensurate with the complexity and risk inherent in those positions. For instance, using gap analysis, the precision of interest rate risk measurement depends in part on the number of time bands into which positions are aggregated. Clearly, aggregation of positions/cash flows into broad time bands implies some loss of precision. In practice, the bank must assess the significance of the potential loss of precision in determining the extent of aggregation and simplification to be built into the measurement approach
- 3.7.9 When measuring interest rate risk exposure, two further aspects call for more specific comment: the treatment of those positions where behavioral maturity differs from contractual maturity and the treatment of positions denominated in different currencies. Positions such as savings and sight deposits may have contractual maturities or may be open-ended, but in either case, depositors generally have the option to make withdrawals at any time. In addition, banks often choose not to move rates paid on these deposits in line with changes in market rates. These factors complicate the measurement of interest rate risk exposure, since not only the value of the positions but also the timing of their cash flows can change when interest rates vary. With respect to banks' assets, prepayment features of loans also introduce uncertainty about the timing of cash flows on these positions.

**Value at Risk**

- 3.7.10 Value at Risk (VAR) is generally accepted and widely used tool for measuring market risk inherent in trading portfolios. It follows the concept that reasonable expectation of loss can be deduced by evaluating market rates, prices observed volatility and correlation. VAR summarizes the predicted maximum loss (or worst loss) over a target horizon within a given confidence level. The well-known proprietary models that use VAR approaches are JP Morgan's Risk metrics, Banker's trust Risk Adjusted Return on Capital, and Chase's Value at risk.

Generally there are three ways of computing VAR

- o Parametric method or Variance covariance approach
- o Historical Simulation
- o Monte Carlo method

- 3.7.11 Banks are encouraged to calculate their risk profile using VAR models. At the minimum banks are expected to adopt relatively simple risk measurement methodologies such as maturity mismatches, sensitivity analysis etc.

**Risk Monitoring.**

- 3.8.1. Risk monitoring processes are established to evaluate the performance of bank's risk strategies/policies and procedures in achieving overall goals. Whether the monitoring function is performed by middle-office or it is a part of banks internal audit it is important that the monitoring function should be independent of units taking risk and report directly to the top management/board.

- 3.8.2. Banks should have an information system that is accurate, informative and timely to ensure dissemination of information to management to support compliance with board policy. Reporting of risk measures should be regular and should clearly compare current exposures to policy limits. Further past forecast or risk estimates should be compared with actual results to identify any shortcomings in risk measurement techniques. The board on regular basis should review these reports. While the types of reports for board and senior management could vary depending upon overall market risk profile of the bank, at a minimum following reports should be prepared.

- a) Summaries of bank's aggregate market risk exposure
- b) Reports demonstrating bank's compliance with policies and limits
- c) Summaries of finding of risk reviews of market risk policies, procedures and the adequacy of risk measurement system including any findings of internal/external auditors or consultants

**Risk Control.**

- 3.9.1 Bank's internal control structure ensures the effectiveness of process relating to market risk management. Establishing and maintaining an effective system of controls including the enforcement of official lines of authority and appropriate segregation of duties, is one of the management's most important responsibilities. Persons responsible for risk monitoring and control procedures should be independent of the functions they review. Key elements of internal control process include internal audit and review and an effective risk limit structure.

### Audit

3.9.2 Banks need to review and validate each step of market risk measurement process. This review function can be performed by a number of units in the organization including internal audit/control department or ALCO support staff. In small banks, external auditors or consultants can perform the function. The audit or review should take into account.

- a) The appropriateness of bank's risk measurement system given the nature, scope and complexity of bank's activities
- b) The accuracy or integrity of data being used in risk models.
- c) The reasonableness of scenarios and assumptions
- d) The validity of risk measurement calculations.

### Risk limits

3.9.3 As stated earlier it is the board that has to determine bank's overall risk appetite and exposure limit in relation to its market risk strategy. Based on these tolerances the senior management should establish appropriate risk limits. Risk limits for business units, should be compatible with the institution's strategies, risk management systems and risk tolerance. The limits should be approved and periodically reviewed by the Board of Directors and/or senior management, with changes in market Conditions or resources prompting a reassessment of limits. Institutions need to ensure consistency between the different types of limits.

- a) **Gap Limits:** The gap limits expressed in terms of interest sensitive ratio for a given time band aims at managing potential exposure to a bank's earnings / capital due to changes in interest rates. Setting such limits is useful way to limit the volume of a bank's repricing exposures and is an adequate and effective method of communicating the risk profile of the bank to senior management.  
Such gap limits can be set on a net notional basis (net of asset / liability amounts for both on and off balance sheet items) or a duration-weighted basis, in each time band. (Duration is the weighted average term to maturity of a security's cash flow. For instance a Rs 100 5 year 8% (semi Annual) coupon bond having yield of 8% will have a duration of 4.217 years as already explained in the footnotes).
- b) **Factor Sensitivity Limits:** The factor sensitivity of interest rate position is calculated by discounting the position using current market interest rate and then using the current market interest rate increase or decrease by one basis point. The difference in the two values known as factor sensitivity is the potential for loss given one basis point change in interest rate. Banks may introduce such limits for each time band as well as total exposure across all time bands. The factor sensitivity limit or PV01 limit measures the change in portfolio present value given one basis point fluctuation in underlying interest rate.

3.9.4 Banks also need to set limits, including operational limits, for the different trading desks and/or traders which may trade different products, instruments and in different markets, such as different industries and regions. Limits need to be clearly understood, and any changes clearly communicated to all relevant parties. Risk Taking Units must have procedures that monitor activity to ensure that they remain within approved limits at all times.

- 3.9.5 Limit breaches or exceptions should be made known to appropriate senior management without delay. There should be explicit policy as to how such breaches are to be reported to top management and the actions to be taken.

## Managing Liquidity Risk

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

- 4.1.1 Liquidity risk is considered a major risk for banks. It arises when the cushion provided by the liquid assets are not sufficient enough to meet its obligation. In such a situation banks often meet their liquidity requirements from market. However conditions of funding through market depend upon liquidity in the market and borrowing institution's liquidity. Accordingly an institution short of liquidity may have to undertake transaction at heavy cost resulting in a loss of earning or in worst case scenario the liquidity risk could result in bankruptcy of the institution if it is unable to undertake transaction even at current market prices.
- 4.1.2 Banks with large off-balance sheet exposures or the banks, which rely heavily on large corporate deposit, have relatively high level of liquidity risk. Further the banks experiencing a rapid growth in assets should have major concern for liquidity.
- 4.1.3 Liquidity risk may not be seen in isolation, because financial risk are not mutually exclusive and liquidity risk often triggered by consequence of these other financial risks such as credit risk, market risk etc. For instance, a bank increasing its credit risk through asset concentration etc may be increasing its liquidity risk as well. Similarly a large loan default or changes in interest rate can adversely impact a bank's liquidity position. Further if management misjudges the impact on liquidity of entering into a new business or product line, the bank's strategic risk would increase.

### **Early Warning indicators of liquidity risk.**

- 4.2.1 An incipient liquidity problem may initially reveal in the bank's financial monitoring system as a downward trend with potential long-term consequences for earnings or capital. Given below are some early warning indicators that not necessarily always lead to liquidity problem for a bank; however these have potential to ignite such a problem. Consequently management needs to watch carefully such indicators and exercise further scrutiny/analysis 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 about the bank
- 4.2.2 A 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.

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

#### **Board and Senior Management Oversight**

- 4.3.1 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 bank is capable of confronting uneven liquidity scenarios. Generally speaking the board of a bank is responsible:
- a) To position bank's strategic direction and tolerance level for liquidity risk.
  - b) To appoint senior managers who have ability to manage liquidity risk and delegate them the required authority to accomplish the job.
  - c) To continuously monitors the bank's performance and overall liquidity risk profile.
  - d) To ensure that liquidity risk is identified, measured, monitored, and controlled.

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

- a) Develop and implement procedures and practices that translate the board's goals, objectives, and risk tolerances 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 established 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) Establish effective internal controls over the liquidity risk management process.

#### **Liquidity Risk Strategy:**

- 4.3.2 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 steep 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 of Directors and senior management

should specify guidance relating to funding sources and ensure that the bank have a diversified sources of funding day-to-day liquidity requirements. An institution 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 the bank need to identify:

- Liabilities that would stay with the institution under any circumstances;
- Liabilities that run-off gradually if problems arise; and
- That run-off immediately at the first sign of problems.

c. **Access to Inter-bank Market.** The inter-bank market can be important source of liquidity. However, the strategies should take into account the fact that in crisis situations access to inter bank market could be difficult as well as costly.

4.3.3 The liquidity strategy must be documented in a liquidity policy, and communicated throughout the institution. The strategy should be evaluated periodically to ensure that it remains valid.

4.3.4 The institutions should formulate liquidity policies, which are recommended by senior management/ALCO and approved by the Board of Directors (or head office). While specific details vary across institutions according to the nature of their business, the key elements of any liquidity policy include:

- 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 institution it is approved;
- 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;
- Liquidity risk management structure for monitoring, reporting and reviewing liquidity;
- 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);
- Contingency plan for handling liquidity crises.

4.3.5 To be effective the liquidity policy must be communicated down the line throughout in the organization. It is important that the Board and senior management/ALCO review these policies at least annually and when there are any material changes in the institution'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 institution's liquidity policies in light of the institution'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 banks liquidity risk profile.

4.3.6 Institutions should establish appropriate procedures and processes 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.

#### **ALCO/Investment Committee**

- 4.4.1 The responsibility for managing the overall liquidity of the bank should be delegated to a specific, identified group within the bank. This might be in the form of an Asset Liability Committee (ALCO) comprised of senior management, the treasury function or the risk management department. However, usually the liquidity risk management is performed by an ALCO. Ideally, the ALCO should comprise of senior management from each key area of the institution that assumes and/or manages liquidity risk. It is important that these members have clear authority over the units responsible for executing liquidity-related transactions so that ALCO directives reach these line units unimpeded. The ALCO should meet monthly, if not on a more frequent basis. Generally responsibilities of ALCO include developing and maintaining appropriate risk management policies and procedures, MIS reporting, limits, and oversight programs. ALCO usually delegates day-to-day operating responsibilities to the bank's treasury department. However, ALCO should establish specific procedures and limits governing treasury operations before making such delegation.
- 4.4.2 Since liquidity risk management is a technical job requiring specialized knowledge and expertise, it is important that senior management/ALCO not only have relevant expertise but also have a good understanding of the nature and level of liquidity risk assumed by the institution and the means to manage that risk.
- 4.4.3 To ensure that ALCO can control the liquidity risk arising from new products and future business activities, the committee members should interact regularly with the bank's risk managers and strategic planners.

#### **Liquidity Risk Management Process**

- 4.5.1 Besides the organizational structure discussed earlier, an effective liquidity risk management 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 institution can be exposed to. Management should always be alert for new sources of liquidity risk at both the transaction and portfolio levels.
- 4.5.2 Key elements of an effective risk management process include an efficient MIS, systems to measure, monitor and control existing as well as future liquidity risks and reporting them to senior management.

#### **Management Information System.**

- 4.6.1 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

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.

- 4.6.2 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 include:

- a) Asset quality and its trends.
- b) Earnings projections.
- c) The 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.
- 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 & risk management cell/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.

### **Liquidity Risk Measurement and Monitoring**

- 4.7.1 An effective measurement and monitoring system is essential for adequate management of liquidity risk. Consequently 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. It needs not mention that banks vary in relation to their liquidity risk (depending upon their size and complexity of business) and require liquidity risk measurement techniques accordingly. For instance banks having large networks may have access to low cost stable deposit, while small banks have significant reliance on large size institution deposits. However, abundant liquidity does not obviate the need for a mechanism to measure and monitor liquidity profile of the bank. An effective liquidity risk measurement and monitoring system not only helps in managing liquidity in times of crisis but also optimize return through efficient utilization of available funds. Discussed below are some (but not all) commonly used liquidity measurement and monitoring techniques that may be adopted by the banks.

### **Contingency Funding Plans**

- 4.7.2 In order to develop a comprehensive liquidity risk management framework, institutions should have way out plans for stress scenarios. Such a plan commonly known as Contingency Funding Plan (CFP) is a set of policies and procedures that serves as a blue print 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 financial institution can prudently and efficiently manage routine and extraordinary fluctuations in liquidity. The scope of the CFP is discussed in more detail below.

#### **Use of CFP for Routine Liquidity Management**

4.7.3 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.
- c) Management of access to funding sources.

#### **Use of CFP for Emergency and Distress Environments**

4.7.4 Not necessarily 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 company'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.

#### **Scope of CFP**

4.7.5 The sophistication of a CFP depends upon the size, nature, 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 funds flows and their related effects.
- b) Matching potential cash flow sources and uses of funds.
- c) Establishing indicators that alert management to a predetermined level of potential risks.

4.7.6 The CFP should project 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:

- a) Reducing assets.
- b) Modification or increasing liability structure.
- c) Using other alternatives for controlling balance sheet changes.

- 4.7.7 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 SBP discount window etc. A CFP should also chalk out roles and responsibilities of various individuals at the time of liquidity crises and the management information system between management, ALCO, traders, and others.
- 4.7.8 This outline of the scope of a good CFP is by no means exhaustive. Banks should devote significant time and consideration to scenarios that are most likely given their activities.

### **Cash Flow Projections**

- 4.8.1 At the basic level banks may utilize flow measures to determine their cash position. A cash flow projection estimates a bank's inflows and outflows and thus net deficit or surplus (GAP) over a time horizon. The contingency funding plan discussed previously is one example of a cash flow projection. Not to be confused with the re-pricing gap report that measures interest rate risk, a behavioral gap report takes into account bank's funding requirement arising out of distinct sources on different time frames. A maturity ladder is a useful device to compare cash inflows and outflows both on a day-to-day basis and over a series of specified time periods. The number of time frames in such maturity ladder is of significant importance and up to some extent depends upon nature of bank's liability or sources of funds. Banks, which rely on short term funding, will concentrate primarily on managing liquidity on very short term. Whereas, other banks might actively manage their net funding requirement over a slightly longer period. In the short term, 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. It is suggested that banks calculate daily GAP for next one or two weeks, monthly Gap for next six month or a year and quarterly thereafter. While making an estimate of cash flows, following aspect needs attention
- 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 instead of contractual maturity. In this respect past experiences could give important guidance to make any assumption.
  - c) Some cash flows may be seasonal or cyclical.
  - d) Management should also consider increases or decreases in liquidity that typically occur during various phases of an economic cycle.
- 4.8.2 While the banks should have liquidity sufficient enough 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.

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### **Liquidity Ratios and Limits**

- 4.9.1 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 institutions or even comparisons of periods at a single institution can be misleading.
- i. **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.
  - ii. **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 as either a percentage of liquid assets or an absolute amount. Sometimes they are more indirectly expressed as a percentage of deposits, purchased funds, or total liabilities.
  - iii. **Other Balance Sheet Ratios.** Total loans/total deposits, total loans/total equity capital, borrowed funds/total assets etc are examples of common ratios used by financial institutions to monitor current and potential funding levels.
- 4.9.2 In addition to the statutory limits of liquid assets 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 tolerance for risk. 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.

### **Internal Controls**

- 4.9.3 In order to have effective implementation of policies and procedures, banks should institute review process that should ensure the compliance of various procedures and limits prescribed by senior management. Persons independent of the funding areas should perform such reviews regularly. The bigger and more complex the bank, the more thorough should be the review. Reviewers should verify the level of liquidity risk and management's compliance with limits and operating procedures. Any exception to that should be reported immediately to senior management / board and necessary actions should be taken.

**Monitoring and Reporting Risk Exposures**

- 4.9.4 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. A recent trend in liquidity monitoring is incremental reporting, which monitors liquidity through a series of basic liquidity reports during stable funding periods but ratchets up both the frequency and detail included in the reports produced during periods of liquidity stress. 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 tolerance. The sophistication or detail of the reports should be commensurate with the complexity of the bank.

## *Managing Operational Risk*

*Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and system or from external events.*

- 5.1.1 Operational risk is associated with human error, system failures and inadequate procedures and controls. It is the risk of loss arising from the potential that inadequate information system; technology failures, breaches in internal controls, fraud, unforeseen catastrophes, or other operational problems may result in unexpected losses or reputation problems. Operational risk exists in all products and business activities.
- 5.1.2 Operational risk event types that have the potential to result in substantial losses includes Internal fraud, External fraud, employment practices and workplace safety, clients, products and business practices, business disruption and system failures, damage to physical assets, and finally execution, delivery and process management.
- 5.1.3 The objective of operational risk management is the same as for credit, market and liquidity risks that is to find out the extent of the financial institution's operational risk exposure; to understand what drives it, to allocate capital against it and identify trends internally and externally that would help predicting it. The management of specific operational risks is not a new practice; it has always been important for banks to try to prevent fraud, maintain the integrity of internal controls, and reduce errors in transactions processing, and so on. However, what is relatively new is the view of operational risk management as a comprehensive practice comparable to the management of credit and market risks in principles. Failure to understand and manage operational risk, which is present in virtually all banking transactions and activities, may greatly increase the likelihood that some risks will go unrecognized and uncontrolled.

### **Operational Risk Management Principles.**

- 5.2.1 There are 6 fundamental principles that all institutions, 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 executive 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) Board and executive management should recognize, understand and have defined all categories of operational risk applicable to the institution. 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 institution.
- 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 institution, easy to implement, operate consistently over time and support an organizational view of operational risks and material failures.

#### **Board and senior management's oversight**

5.3.1 Likewise other risks, the ultimate responsibility of operational risk management rests with the board of directors. Both the board and senior management should establish an organizational culture that places a high priority on effective operational risk management and adherence to sound operating controls. The board should 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 institution.

5.3.2 Senior management should transform the strategic direction given by the board through operational risk management policy. Although the Board may delegate the management of this process, it must ensure that its requirements are being executed. The policy should include:

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

5.3.3 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 going online. It should be approved by the board and documented. The management should ensure that it is communicated and understood throughout in the institution. The 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 institution operates.

#### **Operational Risk Function**

5.4.1 A separate function independent of internal audit should be established for effective management of operational risks in the bank. Such a functional set up would assist management to understand and effectively manage operational risk. The function would assess, monitor and report operational risks as a whole and ensure that the management of operational risk in the bank is carried out as per strategy and policy.

5.4.2 To accomplish the task the function would help establish policies and standards and coordinate various risk management activities. Besides, it should also provide guidance relating to various risk management tools, monitors and handle incidents and prepare reports for management and BOD.

### **Risk Assessment and Quantification**

- 5.5.1 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 a data could provide a meaningful information for assessing the bank's exposure to operational risk and developing a policy to mitigate / control that risk.

### **Risk Management and Mitigation of Risks**

- 5.6.1 Management need to evaluate the adequacy of countermeasures, both in terms of their effectiveness in reducing the probability of a given operational risk, and of their effectiveness in reducing the impact should it occur. Where necessary, steps should be taken to design and implement cost-effective solutions to reduce the operational risk to an acceptable level. It is essential that ownership for these actions be assigned to ensure that they are initiated. Risk management and internal control procedures should be established by the business units, though guidance from the risk function may be required, to address operational risks. While the extent and nature of the controls adopted by each institution will be different, very often such measures encompass areas such as Code of Conduct, Delegation of authority, Segregation of duties, audit coverage, compliance, succession planning, mandatory leave, staff compensation, recruitment and training, dealing with customers, complaint handling, record keeping, MIS, physical controls, etc

### **Risk Monitoring.**

- 5.7.1 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. There should be regular reporting of pertinent information to senior management and the board of directors that supports the proactive management of operational risk. Senior Management should establish a programme to:

- a) Monitor assessment of the exposure to all types of operational risk faced by the institution;
- b) Assess the quality and appropriateness of mitigating actions, including the extent to which identifiable risks can be transferred outside the institution; 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 it is designed and implemented; and

- iii) This mechanism should be appropriate to the scale of risk and activity undertaken.

5.7.2 Operational risk metrics or “Key Risk Indicators” (KRIs) should be established for operational risks to ensure the escalation of significant risk issues to appropriate management levels. KRIs are most easily established during the risk assessment phase. 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.

**Risk Reporting**

- 5.8.1 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:
  - o The critical operational risks facing, or potentially facing, the institution;
  - o Risk events and issues together with intended remedial actions;
  - o The effectiveness of actions taken;
  - o Details of plans formulated to address any exposures where appropriate;
  - o Areas of stress where crystallization of operational risks is imminent; and
  - o The status of steps taken to address operational risk.

**Establishing Control Mechanism.**

5.9.1 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. Banks should have policies, processes and procedures to control or mitigate material operational risks. Banks should assess the feasibility of alternative risk limitation and control strategies and should adjust their operational risk profile using appropriate strategies, in light of their overall risk appetite and profile. To be effective, control activities should be an integral part of the regular activities of a bank.

**Contingency planning**

5.10.1 Banks should have in place contingency and business continuity plans to ensure their ability to operate as going concerns and minimize losses in the event of severe business disruption.

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