

INTEGRATED RISK MANAGEMENT SYSTEMS IN BANKS

A. Integrated Risk Management

1. Introduction

- 1.1. Banks are exposed to various risks during their business operations. Under the Basel II framework, the major categories of risks are credit, market and operational risks. However, the banks are also facing other risks such as liquidity, interest rate, foreign exchange rate, legal, regulatory, reputational etc. All these risks are highly interdependent.
- 1.2. Risk management is a complex function, which requires specialised skills and expertise. Internationally, banks have been moving towards the use of sophisticated models for measuring and managing risks in an integrated manner with a view to ensuring a comprehensive Internal Capital Adequacy Assessment Process (ICAAP) under Pillar 2 of the Basel II framework.
- 1.3. The capital adequacy ratio prescribed by the Central Bank of Sri Lanka (CBSL) under the Pillar – I of the Basel II framework is the regulatory minimum level, which addresses only credit, market and operational risks on an average basis. Thus, the need for banks to have their own assessment of various integrated risk exposures and maintain adequate capital as a cushion for such risks has become an urgent necessity.
- 1.4. The objective of these guidelines is to encourage banks to develop integrated risk management techniques for monitoring and managing their risks and to assure CBSL that adequate capital is held to meet various risks to which they are exposed.

2. Integrated Risk Management oversight

- 2.1. **Board and Senior Management** - The responsibility of understanding the risks assumed by the bank and ensuring that the risks are appropriately managed should be vested with the Board of Directors (BOD). The Board should:
 - a) Ensure that the bank has established a robust and pervasive risk culture and clear policies that define risk management as the responsibility of each bank's senior management, subject to the oversight of the Board.
 - b) Establish risk limits based on risk appetite of the bank.
 - c) Ensure that the Senior Management of the bank:
 - i. establishes an integrated framework in order to assess and appropriately manage various risk exposures of the bank;
 - ii. develops a system to monitor the bank's risk exposures and to relate them to the bank's capital;
 - iii. establishes a method to monitor the bank's compliance with internal policies, particularly with regard to risk management; and
 - iv. effectively communicates all relevant policies and procedures throughout the bank.

- d) Adopt and support strong internal controls.
- 2.2 **Integrated Risk Management Committee (IRMC)** - The overall risk management should be assigned to an independent Integrated Risk Management Committee (IRMC) of the BOD, established as per Rules 3(6)(v) of the Banking Act Directions Nos.11&12 of 2007 on Corporate Governance for Licensed Banks in Sri Lanka with the responsibilities stated therein.
- 2.3 **Internal Audit** - Integrated risk management policies and procedures as well as the functionalities at various levels of the risk management function should be reviewed by the internal audit function of banks on an on-going basis while the external audit makes an independent review at least on an annual basis.
- 2.4 **Operational Level** - Risk management in operational areas viz. front office, loan origination function etc. should be confined to the operational procedures and guidelines set forth by the BOD and the Senior Management.
- 3. Integrated Risk management framework priorities and processes**
- 3.1 Given the diversity of balance sheet profile of banks in Sri Lanka, it is neither prudent nor desirable to adopt a uniform framework for management of risks. The architecture of an integrated risk management function should be bank-specific, dictated by the size, complexity of functions, operating environment and technical expertise of staff.
- 3.2 All relevant factors that present a material source of risk should be incorporated in a well-developed integrated risk management system.
- 3.3 All measurements of risk incorporate both quantitative and qualitative elements, but to the extent possible, a quantitative approach should form the foundation of a bank's measurement framework.
- 3.4 Quantitative tools can include the use of large historical databases; when data are scarcer, a bank may choose to rely more heavily on the use of stress testing and scenario analyses.
- 3.5 Banks should understand when measuring risks that measurement error always exists, and in many cases the error itself is difficult to quantify. In general, an increase in uncertainty related to modelling and business complexity should result in a larger capital cushion.
- 3.6 Quantitative approaches that focus on most likely outcomes for budgeting, forecasting, or performance measurement purposes may not be fully applicable for capital adequacy because the ICAAP under Pillar 2 of the Basel II framework should also take less likely events into account.
- 3.7 Stress testing and scenario analysis can be effective in gauging the consequences of outcomes that have low probability of occurrence but would have a considerable impact on safety and soundness of the banks.

- 3.8 To the extent that risks cannot be reliably measured with quantitative tools – for example, where measurements of risk are based on scarce data or unproven quantitative methods – qualitative tools, including experience and judgment, may be more heavily utilised.
- 3.9 Banks should be cognisant that qualitative approaches have their own inherent biases and assumptions that affect risk assessment; accordingly, banks should recognise the biases and assumptions embedded in, and the limitations of the qualitative approaches used.

4. Risk aggregation and diversification effects

- 4.1 An effective risk management system should assess risks across the entire bank. A bank choosing to conduct risk aggregation among various risk types or business lines should understand the challenges in such aggregation.
- 4.2 In addition, when aggregating risks, banks should ensure that any potential concentrations across more than one risk dimension are addressed, recognizing that losses could arise in several risk dimensions at the same time, stemming from the same event or a common set of factors.
- 4.3 In considering the possible effects of diversification, management should be systematic and rigorous in documenting decisions, and in identifying assumptions used in each level of risk aggregation.
- 4.4 Assumptions about diversification should be supported by analysis and evidence. The bank should have systems capable of aggregating risks based on the bank's selected framework. For example, a bank calculating correlations within or among risk types should consider data quality and consistency, and the volatility of correlations over time and under stressed market conditions.

5. Disclosure

CBSL strongly considers that the market discipline could play an important role in maintaining financial system stability. However, market discipline could be achieved only through meaningful disclosures by licensed banks which would also provide a more meaningful picture of the extent and nature of various risks that banks are exposed to and of the efficiency of banks' risk management practices.

B. Credit Risk Management

1. Management Oversight

The BOD should put in place and periodically review the credit risk strategy and significant credit risk policies of the bank.

1.1 The strategy shall include:

- a) a statement of the bank's willingness to grant loans based on the type;
- b) identification of target markets and business sectors;
- c) preferred levels of diversification and concentration;
- d) the cost of capital in granting credit and bad debts; and
- e) the cyclical aspects and the resulting shifts in the composition and quality of the loan portfolio. This strategy should be viable in the long run and across business cycles.

1.2 The credit risk policies and procedures shall be consisted with following elements, at a minimum.

- a) Written policies that define target markets, risk acceptance criteria, credit approval authority, credit origination and maintenance procedures and guidelines for portfolio management and remedial management.
- b) Proactive credit risk management practices such as annual/half yearly industry studies and single borrower reviews, periodic credit calls and customer visits that are documented, and carry out at least quarterly management reviews of troubled exposures/ weak credits.
- c) Vesting accountability with the business managers for managing risk and, in conjunction with the credit risk management framework, for establishing and maintaining appropriate risk limits and risks arrangement procedures.
- d) Delegation of lending powers to individual credit officers based upon a consistent set of standards of experience, judgment and ability.
- e) Requirement for higher level of authority to approve credit limits as risk ratings worsen.
- f) Requirement for every extension of credit, other than small value consumer/retail loans to be approved by at least two authorized credit officers, one of whom must be an officer from business and another invariably from an independent Credit Risk Management Department (CRMD).
- g) Requirement for every obligor and facility to be assigned a risk rating.
- h) Consistent standards for the origination, documentation and maintenance of documents for extensions of credit.
- i) Consistent approach towards early problem recognition, classification of problem exposures, and remedial action.
- j) Emphasis on maintaining a diversified portfolio of risk assets in line with the capital desired to support such a portfolio.

- k) Credit risk limits by obligor, concentration, industry or geography.
- l) Responsibility of the credit function to report the comprehensive set of credit risk data into the independent risk system.

1.3 The credit risk strategy and policy should be approved and periodically reviewed by the BOD. These documents should be effectively disseminated throughout the banking organisation. All relevant personnel should clearly understand the bank's approach to granting credit and should be held accountable for complying with established policies and procedures.

2. Risk Management

2.1 **Structure** - In a well functioning integrated risk management framework, credit risk management is vested with an independent unit and each bank should, depending on the size of the organisation or loan book, constitute a high level Credit Policy Committee (CPC) also called Credit Risk Management Committee or Credit Control Committee with the following responsibilities:

- a) The committee should be headed by the Chief Executive Officer (CEO)/General Manager (GM) and should comprise Heads of Credit Departments, including Consumer Banking, Treasury and CRMD.
- b) The committee should, *inter alia*, formulate clear credit policies including standards on presentation of credit proposals, financial covenants, rating standards and benchmarks, delegation of credit approving powers, prudent limits on large credit exposures, assets concentrations and lending to related parties, standards for loan collateral, portfolio management, loan review mechanism, risk concentrations, risk monitoring and evaluation, pricing of loans, provisioning, regulatory/legal compliance, etc. for BOD's approval.
- c) The committee will be responsible for the setting up of CRMD which should lay down risk assessment systems, monitor quality of loan portfolio and prudential limits set by CPC, identify problems and correct deficiencies, develop management Information System (MIS) and undertake loan review/audit.

2.2 **Prudential limits** - Credit risk can be mitigated to a great extent by stipulating prudential risk limits on various risk parameters. Banks should consider stipulating:

- a) Benchmark financial ratios, with flexibility for deviation in deserving cases. The conditions subject to which deviations are permitted and the authority for permitting such deviations should be clearly spelt out in the Credit Policy.
- b) Single/related party borrower limits, which could even be more stringent than the limits prescribed by CBSL, to provide a filtering mechanism.
- c) Substantial exposure limit, i.e., aggregate of large exposures should not exceed a percentage of the Tier – II capital of the banks, depending upon the degree of concentration risk the bank is exposed to.

- d) Maximum exposure limits to industry, regions, country, etc. There must also be systems in place to evaluate the exposure at reasonable intervals and the limits should be adjusted especially when a particular sector or industry faces a slowdown or other specific problem.
 - e) Maturity and currency profile of the loan book, keeping in mind the market risk inherent in the balance sheet, risk management capability, liquidity etc.
- 2.3 **Risk Rating** – Banks should develop a robust internal credit-risk grading system that serves as a single point indicator of diverse risk factors of counterparty and for taking credit decisions in a consistent manner while communicating the default risk associated with an exposure. The risk rating, in short, should:
- a) reflect the underlying credit risk of the loan book.; and
 - b) be drawn up in a structured manner, incorporating both quantitative (financial ratios) and qualitative standards (industry, payment history, credit reports, management, purpose of the loan, quality of financial information, facility characteristics etc.).
- 2.4 **Risk Pricing** – Risk pricing is a fundamental tenet of credit risk management. Thus, banks should:
- a) evolve scientific systems to price the credit risk, which should have a bearing on the expected Probability of Default (PD); and
 - b) establish the maximum expected loss in each product line and linking the capital to this loss, thus making it possible to compare products of different risk levels.
- 2.5 **Portfolio Management** – The need for credit portfolio management emanates from the potential adverse impact of concentration of exposures and necessity to optimise the benefits associated with diversification. In this regard, banks should consider the following measures to maintain the portfolio quality:
- a) Stipulate quantitative ceilings on aggregate exposure in specified rating categories, i.e., certain percentage of total advances in the rating category 1 to 4 or to 6 etc.
 - b) Evaluate the rating-wise distribution of borrowers in various industries, business, personal segments, etc.
 - c) Exposure to one industry/sector should be evaluated on the basis of overall rating distribution of borrowers within the sector/group. In cases where portfolio exposure to a single industry/segment is performing badly or the concentration of borrowers is in the lower notches of ratings, the bank may increase the quality standards for the specific industry or group.
 - d) Target rating-wise volume of loans, probable defaults and provisioning requirements as a prudent planning exercise. For any deviation/s from the expected parameters, an exercise for restructuring the portfolio may immediately be undertaken and if necessary, the entry-level criteria could prudently be enhanced to insulate the portfolio from further deterioration.

- e) Undertake rapid portfolio reviews, stress tests and scenario analyses when the external environment undergoes rapid changes (rise in oil prices, global/ country specific slowdowns, international/market risk events, extreme liquidity conditions, war situation etc.).
 - f) Introduce discriminatory time schedules for review/renewal of borrower exposures. Lower rated borrowers whose financials show signs of weakness should be subject to renewal control twice/thrice a year.
- 2.6 **Risk models** – Credit risk models offer banks a framework for quantifying, aggregating and managing risk across geographical and product lines in a timely manner. Therefore, banks should evaluate the utility of various models with suitable modifications to the environment in Sri Lanka and build up adequate internal expertise and databases to facilitate the models utilisation.
- 2.7 **Loan Review Mechanism (LRM)** – LRM is an effective tool for constantly evaluating the quality of the loan book and bringing about qualitative improvements in credit administration. In this regard, banks should formulate a loan review policy under the review of BOD, annually. The policy should, *inter alia*, address:
- a) **Qualification and Independence** - Loan Review Officers should be independent in reporting to the BOD and have sound knowledge of the credit appraisal, lending practices and loan policies of the bank.
 - b) **Frequency and Scope of Reviews** - Reviews of high value loans should be undertaken usually within three months of sanction/renewal, or more frequently when factors indicate a potential for deterioration in the credit quality. The scope of the review should cover all performing loans above a cut-off limit. At least 30% – 40% of the loan portfolio should be subjected to LRM each year to provide reasonable assurance that all major credit risks embedded in the balance sheet have been tracked.
 - c) **Depth of Reviews** - Loan reviews should focus on: the approval process, accuracy and timeliness of credit ratings assigned by loan officers, adherence to internal policies and procedures, and applicable laws/regulations, compliance with loan covenants, post-sanction follow-up, sufficiency of documentation, portfolio quality and recommendations for improving portfolio quality.
- 2.8 **Risk in Investment banking** – A significant degree of credit risk, in addition to market risk, is inherent in investment banking. Therefore, banks should stipulate entry level minimum ratings/quality standards, industry, maturity, duration, issuer-wise, etc. limits in investment proposals as well, to mitigate the adverse impacts of concentration and risk of illiquidity.
- 2.9 **Inter-Bank Exposure** - A suitable framework should be evolved to provide a centralised overview on the aggregate exposure to other banks. Bank-wise exposure limits could be set on the basis of external or internal ratings.

- 2.10 **Risk in Off-balance sheet exposure** - Mechanics involved in the assessment of non-funded lines should be similar to the assessment of funded lines. Utmost care must be taken whilst extending these facilities. Banks should, therefore, evolve adequate frameworks for managing their exposure in off-balance sheet products such as Forex forward contracts, forward rate agreements, swaps, options, futures etc. as a part of credit appraisal, limits and monitoring procedures.

C. **Market Risk Management**

1. **Management Oversight**

The BOD should clearly articulate market risk management policies, procedures, prudential risk limits, review mechanisms and reporting and auditing systems.

1.1 policies should address the following:

- a) assessment of bank's exposure on a consolidated basis, considering issues related to interest rate, currency, equity price and liquidity risks; and
- b) risk measurement systems capture all material sources of market risk and assess the effects on bank's capital.

- 1.2 The BOD should ensure that bank's overall market risk exposure is maintained at prudent levels and consistent with the available capital. The operating prudential limits and the accountability of line management should also be clearly defined.

2. **Risk Management**

- 2.1 **Structure** - Each bank should establish an organizational set up for market risk management, including the following:

- a) **Asset-Liability Management Committee (ALCO)** - The ALCO, consisting of the bank's senior management, including the CEO/GM must function as the top-end operational unit for managing the balance sheet within the performance/risk parameters laid down by the BOD. The ALCO should also articulate the bank's view on various market variables and base its decisions for future business strategy.
- b) **Middle Office** - The banks should set up an independent Middle Office to track the magnitude of market risk on a real time basis. The Middle Office should:
 - i. consist of experts in market risk management, economists, statisticians and general bankers and may be functionally placed directly under the ALCO; and
 - ii. be separated from the Treasury Department and should not be involved in the day-to-day management of the treasury;
 - iii. apprise the top management/ALCO/Treasury about adherence to prudential/risk parameters and also aggregate the total market risk exposures assumed by the bank at any point of time.

2.2 **Foreign Exchange (Forex) Risk** – Forex risk could be mitigated through fixing appropriate limits on open positions, gaps, adopting risk measurement methods and monitoring exposures. In this regard, the banks are encouraged to adopt the following measures:

- a) Fix appropriate limits (even less than the limits set by CBSL) depending upon the capital position, overall risk profile and risk management capabilities.
- b) Fix appropriate limits on individual and aggregate gaps on major currencies, linked to capital.
- c) Adopt the Value at Risk (VaR) technique to measure the risk associated with exposures.
- d) Monitor Forex risk exposures with the preparation of the statement of Maturity of Assets and Liabilities (MAL) (Attachment -1), statement of Sensitivity of Assets and Liabilities (SAL) (Attachment – 2) and statement of Forex Position (FXP) (Attachment – 3).
- e) Ensure clear-cut and well-defined division of responsibility between front, middle and back offices.

2.3 **Foreign currency liquidity risk management** - In running multi currency balance sheets, and particularly when domestic currency assets are funded with foreign currency liabilities, banks are exposed to another layer of complexity to liquidity management. Banks should, therefore, be vigilant in creating understandable currency mismatches to avoid liquidity crises.

D. Operational Risk Management

1. Management Oversight

An effective operational risk management strategy requires that BOD should recognise that operational risk is distinct and controllable, and should put in place appropriate risk management policies, procedures and practices and an independent audit and review mechanism.

- 1.1 BOD should put in place well defined policies on operational risk management. These policies and procedures should be based on common elements across business lines or risks. The policy should address:
 - a) product review processes;
 - b) business involved;
 - c) risk management; and
 - d) internal control functions.

2. Risk Management

- 2.1 **Structure** – Taking into account institution-specific factors, banks should consider establishing an independent bank-wide Operational Risk Committee or Unit under Integrated Risk Management Committee (IRMC) or Chief Risk Officer, with the following responsibilities:

- a) Establish consistent definitions for operational risk across business units.
- b) Develop policies, procedures and practices.
- c) Report and review risk exposures.
- d) Oversee and ensure the integrity of risk management procedures.
- e) Allocate and maintain economic capital.
- f) Develop strategies for risk mitigation techniques.

2.2 **Risk measurement** – Since, there is no uniformity of approach in measuring operational risk in the banking system, and a number of breakdowns in internal controls and corporate governance evidenced lately, need for more advanced techniques for allocating capital in this regard has become an important issue. Therefore, during the measurement of operational risks, banks should:

- a) Consider both internal factors (such as complexity of structure, nature of activities, quality of personnel, organisational changes and employee turnover) and external factors (such as fluctuating economic conditions, changes in the industry and technological advances) that could adversely affect the banks' stated objectives.
- b) Make clear distinction between controllable and uncontrollable operational risk events.
- c) Assess their operational activities against a menu of operational risk events (i.e., internal and external frauds, employment practices and work place safety, clients, products and business practices, damage to physical assets, business distribution and system failures, execution, delivery and process management, etc.).
- d) Review key risk indicators such as failed trades, staff turnover rates, frequency and/or severity of errors and omission to track the magnitude of risk concerns, with thresholds or limits set on key risk indicators.
- e) Develop simple benchmarks based on an aggregate measure of business activity such as gross revenue, fee income, operating costs, total assets adjusted for off-balance sheet exposures or a combination of these variables, in the event the bank does not have so far evolved any scientific methods for quantifying the risk.
- f) Carry out Business Impact Analysis (BIA) with its Recovery Time Objectives (RTO) under the proposed Business Continuity and Disaster Recovery Plan.

2.3 **Risk Monitoring** – The operational risk monitoring system should:

- a) Focus on operational performance measures such as volume, turnover, settlement facts, delays and errors.
- b) Monitor operational loss directly with an analysis of each occurrence and description of the nature and causes of the loss.
- c) Integrate internal controls into the bank's operations and produce regular reports to the Senior Management.
- d) Undertake compliance reviews by the Internal Audit and the Risk Management Department, separately.

2.4 **Internal Control** – Banks should adopt well-established internal control systems, which include segregation of duties, clear management reporting lines and adequate operating procedures in order to mitigate operational risks. As per Directions Nos. 3(8)(ii)(b)&(c) of the Banking Act Direction Nos. 11 & 12 of 2007 on Corporate Governance for licensed banks:

- a) a report by the Board should be included in the Annual Report on the bank's internal control mechanism that confirms that the financial reporting system has been designed to provide reasonable assurance regarding the reliability of financial reporting and that the preparation of financial statements for external purposes has been done in accordance with relevant accounting principles and regulatory requirements; and
- b) the external auditor's certification on the effectiveness of the internal control mechanism referred to in (a) above, in respect of any statements prepared or published.

A proper internal control system should:

- a) promote effective and efficient operation;
- b) provide reliable financial information;
- c) safeguard assets;
- d) minimise the operating risk of loss from irregularities, fraud and errors;
- e) ensure effective risk management systems; and
- f) ensure compliance with relevant laws, regulations and internal policies.

2.5 **Risk mitigation techniques** – Risk mitigation techniques or tools should be used to contain the severity of operational risk events. Investment in appropriate information technology under Business Continuity and Disaster Recovery Plan is also important for risk mitigation.

2.6 **Insurance policies** – Innovative insurance policies could be used to externalise the risk of 'low frequency and high severity losses', which may occur as a result of events such as errors and omissions, physical loss of securities, frauds and natural disasters.

2.7 **Outsourcing** - Banks should establish sound policies for managing risks associated with outsourcing activities in line with the Banking Act Directions Nos. 7 & 8 of 2010 on Outsourcing of Business Operations.

2.8 **Contingency Plan** – An enterprise-wide contingency plan should be in place to handle failures and switch to alternative service providers at short notice.

E. Liquidity Risk Management

1. Management Oversight

- a) Managing liquidity is no longer purely the responsibility of the treasury function. Effective oversight by the BOD and the Senior Management is a critical element of the liquidity risk management process.
- b) The ALCO should be mandated to execute liquidity management policies, procedures and practices approved by the BOD, effectively.
- c) The BOD should, however, periodically monitor the liquidity profile to assess the liquidity risk more frequently where significant funding concentrations have been observed.

2. Risk Management

2.1 **Structure** - Liquidity risk management could either be centralized or decentralized, or a combination of the two. The structure should be commensurate with the size and complexity of the bank's operations. It should be flexible while ensuring that the liquidity strategy approved by the BOD can be effectively implemented.

2.2 **Liquidity Measurement** – Liquidity measurement is a difficult task and can be measured through stock or flow approaches.

- a) **Stock approach** – Under the stock approach, liquidity is measured in terms of key ratios which portray the liquidity stored in the balance sheet. Banks should calculate and analyse following ratios during their risk management process:
 - i. Net loans to total assets
 - ii. Loans to customer deposits
 - iii. Liquid assets to short-term liabilities
 - iv. Large liabilities (minus) temporary investments to earning assets (minus) temporary investments, where large liabilities represent wholesale deposits which are market sensitive *and* temporary investments which are those maturing within one year and those investments which are held in the trading book and are readily sold in the market.
 - v. Purchased funds to total assets, where purchased funds include the entire inter-bank and other money market borrowings, including certificates of deposits and institutional deposits.
 - vi. Commitments to total loans, where the commitment in the nature of Letter of Credits (LCs), guarantees and acceptances.
- b) **Flow approach** - Banks should prepare a statement of Maturities of Assets and Liabilities (MAL) placing all cash inflows and outflows in the time bands according to the residual time to maturity. A format for the MAL is attached. (Attachment – 1). The time bands may be distributed as under:

- i. Up to one month
- ii. Over one month and up to 3 months
- iii. Over 3 months and up to 6 months
- iv. Over 6 months and up to 9 months
- v. Over 9 months and up to 1 year
- vi. Over 1 year and up to 3 years
- vii. Over 3 years and up to 5 years
- viii. Over 5 years

(Assumptions to be made - Some of the assets and liability items like overdraft, savings and current deposits etc. lack any definite contractual maturity. Similarly, a part of time deposits are also rolled over on maturity while the consumer loans are topped-up at frequent intervals. Thus, while determining the likely cash inflows/outflows, banks should make a number of assumptions according to the behaviour of assets and liabilities. At least, assumptions should be validated, bi-annually. Such assumptions may be fine-tuned, over a period, to facilitate near reality predictions about future behaviour of on/off-balance sheet positions).

c) Net funding requirement –

- i. The difference between cash inflows and outflows in each time band, the excess or deficit of funds, becomes a starting point for a measure of a bank's future liquidity surplus or deficit, at a series of points in time.
- ii. While the mismatches up to one year would be relevant as these provide early warning signals of impending liquidity problems, the main focus should be on mismatches up to three months.
- iii. Banks, however, are expected to fix prudential mismatch limits appropriate to the size, complexity and financial conditions across all time bands.
- iv. The liquidity position should be measured in all major currencies in which banks deal at both individual and aggregate levels. Banks which are reliant on short-term funding should, however, concentrate primarily on managing their liquidity in the very short-term horizons and preferably on a day-to-day basis.

d) Alternate Scenarios –

- i. Banks should evaluate liquidity profile under different stress situations, viz. normal situation, bank specific crisis and market crisis scenarios.
- ii. Under each scenario, banks should account for any significant positive or negative liquidity swings that could occur on account of factors that are both internal (bank specific) and external (market-related).

- iii. In this regard, banks must assign the timing of cash flows for each type of asset and liability by assessing the probability of the behaviour of those cash flows under alternative scenarios.
- iv. For each funding source, banks would have to decide whether a liability would be (a) repaid in full at maturity, (b) gradually run off over the next few weeks or (c) virtually certain to be rolled over or available, if tapped.

c) Contingency Plan –

- i. Banks should prepare liquidity contingency plans to measure their ability to withstand bank-specific or market crisis scenarios.
- ii. The blue-print for assets sales, market access, capacity to restructure the maturity and composition of assets and liabilities should be clearly documented and alternative options of funding in the event of the bank's failure to raise liquidity from existing sources should be clearly articulated.
- iii. Liquidity from CBSL, as the lender of last resort, should not be reckoned for contingency plans.
- iv. Availability of back-up liquidity support in the form of committed lines of credit, reciprocal arrangements, liquidity support from other external sources, liquidity of assets etc. should also be clearly established.

F. Interest Rate Risk Management

1. Management Oversight

Management of interest rate risk should be one of the critical components of market risk management of banks. The BOD should clearly articulate interest rate risk management policies, procedures, review mechanisms and reporting systems.

Policies and prudential limits should include the following.

- a) Clear policies with regard to volume, maximum maturity, holding period, duration, position limits, stop loss, rating standards, etc. for classifying securities in the trading book.
- b) Bank-wide VaR exposure limits to the trading portfolio (including Forex derivatives and commodities, if any, etc.).
- c) Loss making tolerance limits for trading book.

2. Risk Management

2.1 Forms of Risk - The Net Interest Income (NII) or Net Interest Margin (NIM) of banks are dependent on the movements of interest rates. Any mismatches in the cash flows (fixed rate assets or liabilities) or re-pricing dates (floating rate assets or

liabilities) expose banks' NII or NIM to variations. As financial intermediaries, banks encounter interest rate risk in many forms:

- a) Gap or Mismatch Risk
- b) Basis Risk
- c) Embedded Option Risk
- d) Yield Curve Risk
- e) Price Risk
- f) Reinvestment Risk
- g) Net Interest Position Risk

2.2 **Measuring Risk** – Before the interest rate risk (IRR) is to be managed, same should be indentified and quantified. In this regard, banks need to adopt an IRR measurement system which should:

- a) Address all material sources of interest rate risk including gap or mismatch, basis, embedded option, yield curve, price, reinvestment and net interest position risks, exposures associated with assets, liabilities and off-balance sheet positions.
- b) Take into account the specific characteristics of each individual interest rate sensitive position.
- c) Capture the full range of potential movements in interest rates, in detail.
- d) Use different techniques, ranging from the traditional maturity Gap Analysis (to measure the interest rate sensitivity of earnings), Duration (to measure interest rate sensitivity of capital), Simulation and VaR.
- e) Match on a daily basis the potential loss in Present Value Basis Points (PVBP) vis-à-vis prudential limits for trading book.
- f) Undertake scenario analysis with specific possible stress situations by linking hypothetical, simultaneous and related changes in multiple risk factors present in the trading portfolio to determine the impact of moves on the rest of the portfolio.
- g) Adopt VaR as an analytical tool for measuring and managing currency risk in the Banking Book.

2.3 **Measuring Techniques** –

- a) **Maturity Gap Analysis** - The simplest analytical technique for calculating IRR exposure begins with Maturity Gap analysis that distributes interest rate sensitive assets, liabilities and off-balance sheet positions into a number of pre-defined time-bands according to their residual term to maturity (fixed rate) or residual term for their next re-pricing (floating rate). Gaps may be identified in the following time bands:
 - i. Up to one month
 - ii. Over one month and up to 3 months
 - iii. Over 3 months and up to 6 months
 - iv. Over 6 months and up to 1 year
 - v. Over 1 year and up to 2 years

- vi. Over 2 years and up to 3 years
- vii. Over 3 years and up to 4 years
- viii. Over 4 years and up to 5 years
- ix. Over 5 years and up to 7 years
- x. Over 7 years and up to 10 years
- xi. Over 10 years and up to 15 years
- xii. Over 15 years and up to 20 years
- xiii. Over 20 years
- xiv. Non-sensitive

Various items of rate sensitive assets and liabilities and off-balance sheet positions may be classified in line with their sensitivity to interest rates. A reporting format for Sensitivity of Assets and Liabilities (SAL) for interest rate sensitive assets and liabilities is also attached. (Attachment – 2)

- b) **Duration Gap Analysis** - Matching the duration of assets and liabilities, instead of matching the maturity or re-pricing dates, is a more effective way to protect the economic values of banks from exposure to IRR than the simple gap model.
- c) **Simulation** - Simulation is a popular tool among banks to gauge the effect of market interest rate variations on reported earnings/economic values over different time zones. Simulation techniques attempt to overcome the limitation of gap analysis and duration approach by computer modelling the bank's interest rate sensitivity.

G. Stress Testing

1. Management Oversight

- a) BOD or a committee formed under the Board with delegated authority should put in place a 'Stress Testing Framework' as a part of integrated risk management system with approved 'Stress Testing Policy', procedures to be followed and the methodology to be adopted.
- b) BOD and the Senior Management should regularly review the results of stress tests, including major assumptions that underpin them.
- c) BOD and Senior Management should put in place appropriate fall-back mechanisms for mitigating tail-end risks, considering an organised approach to manage extreme systemic risks.

1.1 Stress Testing Policy should include the following aspects:

- a) Frequency and procedure for identifying the principal risk factors, which affect the bank's portfolio and required to be stressed.
- b) Methodology for constructing stress tests.
- c) Procedure for setting the stress tolerance limits.
- d) Process of monitoring the stress loss limits.
- e) Necessary remedial/trigger actions to be taken at various risk levels as revealed by the stress tests.

- f) Delegation of authority to ensure timely execution of remedial/trigger action.
- 1.2 Roles and responsibilities of the persons involved in the exercise must be defined by well constituted organisational structure and they should be independent.
- 1.3 An effective Management Information System (MIS) is necessary to ensure flow of information to take necessary measures to avoid certain difficult conditions by the Senior Management.

2. Frequency of Stress Testing

Banks may apply stress tests at varying frequencies dictated by their respective business requirements, relevance and cost. In general, stress tests on market-sensitive portfolios should be run more frequently (eg: daily, weekly). These may include trading portfolios in marketable securities, foreign exchange and interest rate exposures. Other portfolios which are less volatile in nature could be stress-tested at longer intervals (eg: monthly, quarterly). Further, ad-hoc stress tests may be warranted when there are any special circumstances.

3. Scope of Stress Tests

Stress testing can and should be applied to the full range of material risks that a bank runs both at business unit level and on an aggregated group basis. Stress testing can be commonly used for interest rate, equity, liquidity, foreign exchange, credit and market instruments. Further, it is also important to introduce stress testing for operational risk. There are three different hypothetical scenarios that can be used in stress testing:

- (a) Major Level Shocks: It involves large shocks to all the risk factors and is also defined separately for each risk factor.
- (b) Moderate Level Shocks: It involves medium level shocks and the level is defined each risk factor separately.
- (c) Minor Level Shocks: It involves small shocks to risk factors.

4. Methodology and Calibration of Shocks

4.1 Credit Risk

Stress test for credit risk assesses the impact of increase in the level of non-performing loans of the bank on Capital Adequacy Ratio (CAR). This involves three types of shocks, namely;

- a) Type One deals with the increase in the Non-Performing Loans (NPLs) and the respective provisioning.
- b) Type Two deals with the negative shift in the NPL categories and hence the increase in respective provisioning.
- c) Type Three deals with the fall in the Forced Sale Value (FSV) of mortgaged collateral.

4.2 Liquidity Risk

Stress test for liquidity risk evaluates the resilience of the banks towards the fall in liquid liabilities. The ratio “liquid assets to liquid liabilities” should be calculated before and after the shocks by dividing the liquid assets with liquid liabilities. They include cash and balances with banks, call money lending, lending under repo and investment in government securities. Liquid liabilities include deposits and borrowings.

4.3 Equity Price Shock

Stress test for equity price risk assesses the impact of the fall in the stock market index. The impact of resultant loss should be calculated after shocks on current market value of all the on-balance sheet and off-balance sheet securities listed on stock exchanges including shares, mutual funds, etc. and it should be calibrated in terms of the CAR.

4.4 Exchange Rate Risk

Stress test for exchange rate assesses the impact of change in exchange rate on the value of equity. To model direct foreign exchange risk, only, the overall Net Open Position (NOP) of the bank including the on-balance sheet and off-balance sheet exposures should be given an adverse shocks. The overall NOP is measured by aggregating the sum of net short positions or the sum of net long positions, whichever is greater regardless of sign. The impact of the respective shocks should be calibrated in terms of the CAR. The revised CAR should be calculated after adjusting total loss from the risk-weighted assets of the bank.

4.5 Interest Rate Risk

Interest rate risk is the potential that the value of the on-balance sheet and the off-balance sheet positions of the bank would be negatively affected with the change in the interest rates. The vulnerability of an institution towards the adverse movements of the interest rate can be gauged by using duration gap analysis. Banks should follow the under mentioned steps in carrying out the interest rate stress tests.

- a) Estimate the market value of all on-balance sheet rate sensitive assets and liabilities of the bank to arrive at market value of equity.
- b) Calculate the durations of each class of asset and the liability of the on-balance sheet portfolio.
- c) Arrive at the aggregate weighted average duration of assets and liabilities.
- d) Calculate the duration gap by subtracting aggregate duration of liabilities from that of assets.
- e) Estimate the changes in the economic value of equity due to change in interest rates on on-balance sheet positions along the three interest rate changes.
- f) Calculate surplus/(deficit) on off-balance sheet items under the assumption of three different interest rate changes, i.e., 1%, 2%, and 5%.

- g) Estimate the impact of the net change (both for on-balance sheet and off-balance sheet) in the market value of equity on the CAR.
- h) Market value of the assets or liabilities should be assessed, by calculating its present value discounted at the prevailing interest rate. The outstanding balances of assets and liabilities should be taken along with their respective maturity or reprising period, whichever is earlier.

4.6 Interpretation of Stress Testing Results

- a) Before interpretation of stress testing results, it is important to the banks to be aware of its limitations as stress testing is influenced by the judgment and experience of the risk managers designing the stress tests. Therefore, the effectiveness of the stress tests will depend upon whether banks have identified their major risks and they have chosen the right level of stress/ stress scenarios.
- b) Senior Management should review the results of the various stress tests and report to the Board. It is important to document the results of each of the sensitivity tests and scenario analysis undertaken and should also document, as part of the details of those tests and analyses, the key assumptions including the aggregation of the results. These should be preserved for a considerable period as mentioned in the policy document.

4.7 Review & Update

- a) Regular review and updating is important to ensure effectiveness of the stress testing programme of the bank.
- b) Such review should be done at least once a year or more frequently if the portfolio or the environment changes are significant. Following should be covered in the review process.
 - i. The integrity of the management information system.
 - ii. Completeness and accuracy of the data used.
 - iii. Consistency, timeliness and reliability of data sources.
 - iv. The approval process for the stress testing programme.
 - v. Integration of stress testing into risk management.
 - vi. Interpretation of stress testing results.

H. Disclosure Requirements

1. Principles

- 1.1 Banks should adopt a formal disclosure policy approved by the BOD that addresses the bank's approach for determining what disclosures to be made and internal controls over the disclosure process.
- 1.2 Banks should implement a process for assessing the appropriateness of their disclosures, including validation and frequency of them.
- 1.3 In order to enhance the role of market discipline, banks should take into account the following norms to improve their disclosure practices.
 - a) A balance between quantitative and qualitative disclosures - Disclosures should be consistent with banks' own risk management practices.
 - b) Banks should endeavour to disclose information about inter-period exposures – particularly in the form of high, median and low observations – which could provide a more meaningful view of licensed banks' risk profile than period end data alone.
- 1.4 Banks should decide relevant disclosures based on the materiality concept.
- 1.5 Qualitative disclosures such as bank's risk management objectives and policies, reporting systems and definitions set out here should be made at least bi-annually.

2. Disclosure requirements

2.1 Risk exposure and assessment

(a) General qualitative disclosure requirement

For each separate risk area viz. credit, market, operational, liquidity etc. Licensed banks should describe their risk management objectives and policies, including:

- strategies and policies;
- structure and nature of the relevant risk management function;
- scope and nature of risk reporting and/or management system;
- policies for hedging and/or mitigating risk and strategies and processes for monitoring the continuing effectiveness of hedges / mitigants.

Table - 1
Credit Risk – General Disclosures

Qualitative Disclosures	(a) Definition of past due and impaired (for LKAS 32 & 39 purposes). (b) Description of approaches followed for specific and general loan loss provisioning and statistical methods. (c) Discussion of the bank's credit risk management policy.
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	<p>(d) Policies and processes for, and an indication of the extent to which the bank makes use of, on-balance sheet and off-balance sheet netting.</p> <p>(e) Policies and processes for collateral valuation and management.</p> <p>(f) A description of the main types of collateral taken by the bank.</p> <p>(g) Main types of guarantor/credit derivative counterparty and their creditworthiness.</p> <p>(h) Information about (market or credit) risk concentrations within the mitigation taken.</p>
Quantitative Disclosures	<p>(a) Total gross credit risk exposures, plus average gross exposure over the period broken down by major types of credit exposure.</p> <p>(b) Geographic distribution of exposures, broken down in significant areas by types of credit exposure.</p> <p>(c) Industry or counter-party type distribution of exposures, broken down by major types of credit exposure.</p> <p>(d) Residual contractual maturity breakdown of the whole credit portfolio, by major types of credit exposure.</p> <p>(e) By major industry or counterparty types:</p> <ul style="list-style-type: none"> - Amount of past due loans and if available impaired loans, provided separately, - Specific and general loan loss provisioning, and - Charges for specific loan loss provisions and charges-offs during the reporting period. <p>(f) Amount of past due loans and , if available, impaired loans provided separately broken down by significant geographic area including the amount of specific and general loan loss provisions related to each geographical area.</p> <p>(g) Reconciliation of changes in the provisions for loan losses/impairment.</p>

Table - 2
Market Risk – General Disclosures

Qualitative Disclosures	<p>(a) The general qualitative disclosure requirement described in Para 2.1 (a) above.</p> <p>(b) Differentiation between holdings on which capital gains are expected and those taken under other objectives including for relationship and strategic reasons.</p> <p>(c) Discussion of important policies covering the valuation and accounting of equity holdings in the Banking Book.</p>
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	<p>This includes the accounting techniques and valuation methodologies used, including key assumptions and practices affecting valuation as well as significant changes in these practices.</p>
Quantitative Disclosures	<p>(a) Interest rate risk, including Interest Rate Sensitivity Gap Analysis of local and foreign currency denominated assets and liabilities in the format given in Attachment – 1&2.</p> <p>(b) Equity position risk –</p> <ul style="list-style-type: none"> • Value disclosed in the balance sheet of investments, as well as the fair value of those investments; for quoted securities, a comparison to publicly quoted share value where the share price is materially different from fair value. • Types and nature of investments, including the amount that can be classified as: <ul style="list-style-type: none"> - Publicly traded; and - Privately held. • The cumulative realised gains (losses) arising from sales and liquidations in the reporting period. • Total unrealised gains (losses). • Total latent revaluation gains (losses). • Any amounts of the above included in Tier 1 and/or Tier 2 capital. <p>(c) Foreign exchange risk, including statements of foreign exchange position (Attachment – 3), Maturity Gap Analysis of foreign currency denominated assets and liabilities.</p> <p>(d) Commodity risk.</p>

Table - 3
Operational Risk – General Disclosures

Qualitative Disclosures	<p>(a) The general qualitative disclosure requirement described in Para 2.1 (a) above.</p> <p>(b) Description of the use of insurance for the purpose of mitigating operational risk.</p> <p>(c) Details of activities that have been outsourced together with parties and basis for payment for such services.</p> <p>(d) Details of investment in appropriate information technology, if any, and other risk mitigation techniques taken during the reporting period.</p> <p>(e) Details of due diligence tests of third party service providers.</p>
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	(f) Details of a contingency plan in place to handle failure situations.
Quantitative Disclosures	(a) Major operational viz. system or human, failures and financial losses incurred by the bank due to such failures during the reporting period.

Table - 4
Liquidity Risk – General Disclosures

Qualitative Disclosures	<p>(a) The general qualitative disclosure requirement described in Para 2.1 (a) above.</p> <p>(b) Details of a liquidity contingency plan in place to bridge unforeseen liquidity difficulties.</p>
Quantitative Disclosures	<p>(a) Trends in the following indicators:</p> <ul style="list-style-type: none"> • Net loans to total assets • Loans to customer deposits • Liquid assets to short term liabilities • Large liabilities (minus) temporary investments to earning assets (minus) temporary investments • Purchased funds to total assets. • Commitments to total loans. <p>(Please refer to Section 1.4 of Appendix for definitions)</p> <p>(b) Maturities of Assets and Liabilities (MAL) in the format given in Attachment-1.</p>