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ANNEX 1: GUIDELINES ON LIQUIDITY RISK MANAGEMENT
FOR BANKS



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1. INTRODUCTION

- 1.1. Liquidity risk is the potential loss to a bank arising from their inability either to meet their obligations or to fund increases in assets as they fall due, without incurring unacceptable costs or losses.
- 1.2. These Guidelines focus primarily on funding liquidity risk. Liquidity risk can be categorised into two major types: funding and market liquidity risk.
 - (a) Funding liquidity risk is the risk that a bank will not be able to meet efficiently both its expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the bank.
 - (b) Market liquidity risk is the risk that a bank cannot easily offset or eliminate a position at the market price because of inadequate market depth or market disruption.
- 1.3. Liquidity risk can arise due to funding or market risk, or various factors arising due to a combination of these risks, which might be linked to changes in institutional or systemic behaviour. The fundamental role of banks in the maturity transformation of short-term deposits into long-term assets makes banks inherently vulnerable to liquidity risk, both of a bank-specific nature and that which affects markets as a whole. Virtually, every financial transaction or commitment has implications for a bank's **liquidity**.
- 1.4. Effective liquidity risk management helps ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by external events and other agents' behaviour. Liquidity risk management is of paramount importance because a liquidity shortfall at a single bank can have system-wide repercussions.



2. GOVERNANCE

2.1. BOARD

2.1.1. The Board should review and approve, at least on an annual basis, the **bank's** Liquidity Risk Management Framework (LRMF), and ensure that senior management translates the Board's decisions into clear guidance and operating processes for effective implementation.

2.1.2. Specifically, the Board should be:

- (a) Ensuring the competence of senior management and appropriate personnel in measuring, monitoring and controlling liquidity risk in terms of expertise, systems and resources, and in taking appropriate and prompt remedial actions to address concerns when necessary;
- (b) Reviewing regular reports and stress testing results on the bank's liquidity positions and becoming fully aware of the bank's performance and overall liquidity risk profile;
- (c) Understanding, supported by senior management of the bank, how other risks (e.g. credit, market, operational and reputation risks) interact with liquidity risk and affect the overall LRMF, ensuring that the interaction of these risks is considered and taken into account by the relevant Board-level committees and Risk Management function within the bank; and
- (d) The Board should be informed immediately of new or emerging liquidity concern, and should ensure that senior management takes appropriate remedial actions to address the concerns. These concerns include:
 - increasing funding costs or concentrations
 - the growing size of a funding gap
 - the drying up of alternative sources of liquidity
 - material and/or persistent breaches of limits
 - a significant decline in the cushion of unencumbered, high quality liquid assets
 - changes in external market conditions which could signal future difficulties.



LIQUIDITY RISK TOLERANCE

- 2.1.3. The Board should be ultimately responsible for determining the types and magnitude of liquidity risk that the bank can tolerate according to the liquidity risk management strategy, and for ensuring that there is an appropriate organisation structure for managing liquidity risk.
- 2.1.4. The risk tolerance should be set in a way that:
- (a) Defines clearly the level of liquidity risk that the bank is willing to assume, under normal and stressed business conditions¹;
 - (b) Is appropriate for the business strategy of the bank and its role in the financial system and should reflect the bank's financial condition and funding capacity;
 - (c) Can be easily communicated, understood and monitored by relevant personnel of the bank involved in the liquidity risk management process; and
 - (d) Reflects the bank's assessment of the sources of liquidity risk it faces, as well as the trade-off between risks and profits.
- 2.1.5. The risk tolerance level should be adequately documented and articulated, preferably with a combination of qualitative and quantitative factors².

¹ For example, a bank may quantify its liquidity risk tolerance in terms of the level of unmitigated funding liquidity risk the bank decides to take under normal and stressed business conditions.

² For example, the specification of a minimum survival period under a range of sufficiently severe, but plausible, stress scenarios. Other quantitative measures may, for example, relate to controls over areas such as liquid asset holdings, maturity or currency mismatches, concentration of funding and contingent liquidity obligations, and other limits on liquidity indicators used for controlling different aspects of liquidity risk.



2.2. SENIOR MANAGEMENT

- 2.2.1. Senior management is responsible for developing and implementing the bank's LRMF in accordance with its risk tolerance established by the Board, and ensuring that the bank maintains sufficient liquidity.
- 2.2.2. Senior management is also responsible for:
- (a) Determining the structure, responsibilities and controls for managing liquidity risk and for overseeing the liquidity positions of all legal entities, branches and subsidiaries in the jurisdictions in which a bank is active, and outlining these **elements clearly in the bank's liquidity policies**;
 - (b) Communicating the liquidity risk management strategy, key policies and procedures, liquidity pricing framework and liquidity risk management structure to all relevant business units and personnel throughout the organisation, that conduct activities with an impact on liquidity;
 - (c) **Continuously reviewing information on the bank's liquidity developments and reporting to the Board on a regular basis**;
 - (d) Ensuring that there are close communication links between treasury, liquidity risk managers and other business and risk managers having access to critical information that affects liquidity;
 - (e) Ensuring that liquidity risk managers have sufficient authority and independence from risk-taking units to discharge their function effectively;
 - (f) Ensuring that adequate internal controls are executed by independent personnel with the necessary skills and competence to safeguard the integrity of the bank's liquidity risk management process;
 - (g) Closely monitoring the current trends and potential market developments that may require timely changes or updates to the liquidity risk management strategy, systems and internal controls to address any significant challenges;



- (h) Defining the specific process for handling exceptions to policies and limits, including the procedures for escalation, reporting and consideration of follow-up actions;
 - (i) Ensuring the effectiveness of stress tests and contingency funding plans, as well as the appropriateness of the liquidity cushion maintained; and
 - (j) Informing the Board of any new and emerging liquidity concerns, through regular and ad hoc submission of risk management reports and risk analysis, in a timely manner.
- 2.2.3. In addition, senior management should have a thorough understanding of the close links between funding liquidity risk and market liquidity risk, as well as how other risks, **including credit, market, operational and reputation risks affect the bank's overall liquidity risk strategy.**

ALLOCATION OF LIQUIDITY COSTS, BENEFITS AND RISKS

- 2.2.4. Senior management should appropriately incorporate liquidity costs, benefits and risks in the internal pricing, performance measurement and new product approval processes, thereby aligning the risk-taking incentives of individual business lines with the liquidity risk tolerance established by the Board.
- 2.2.5. Senior management should ensure that the liquidity pricing framework involves the charging of a liquidity premium to activities that consume liquidity (e.g. granting new advances) and the assignment of a liquidity value to those that generate liquidity (e.g. obtaining new deposits), based on a predetermined mechanism for attributing liquidity costs, benefits and risks to these activities. The following considerations, at a minimum, should be factored into the framework:
- (a) The framework should reflect the level of liquidity risk inherent in a business activity;
 - (b) The framework should cover all significant business activities, including those involving the creation of contingent exposures which may not immediately have a direct balance sheet impact;



- (c) The framework should incorporate the measurement and allocation process factors related to the anticipated holding periods of assets and liabilities, their market liquidity risk characteristics and any other relevant factors, including the benefits from having access to relatively stable sources of funding, such as some types of retail deposits;
 - (d) The framework should take account of both contractual maturity, as well as behavioural patterns in estimating the length of tenor of any relevant asset or liability item for the determination of the liquidity value or premium to be allocated;
 - (e) The framework should provide an explicit and transparent process, at the line management level for quantifying and attributing liquidity costs, benefits and risks; and
 - (f) The framework should include consideration on how liquidity would be affected under stressed conditions.
- 2.2.6. Senior management should periodically review the liquidity pricing framework, taking into account changes in business and financial market conditions.



2.3. LIQUIDITY RISK MANAGEMENT OVERSIGHT STRUCTURE

- 2.3.1. A bank should establish a liquidity risk management oversight structure that is commensurate with its **nature, scale and complexity of the bank's business activities**.
- 2.3.2. In the case of a domestic banking group with overseas operations (whether in the form of a branch or subsidiary), the Board should determine the appropriate LRMF for overseeing all such overseas operations, taking into account the differences in their liquidity risk characteristics and the transferability of funds between them in light of any potential legal, regulatory or operational restrictions.
- 2.3.3. In the case of foreign bank branches in Brunei Darussalam, the head office of the bank may, where appropriate, delegate certain tasks for liquidity risk management to the domestic branch management, provided that adequate oversight is exercised by the bank's Board (or a delegated risk governance function at the head office or regional level) in approving the branch policies and monitoring the branch's compliance with such policies.

ASSET AND LIABILITY MANAGEMENT COMMITTEE (ALCO)

- 2.3.4. As part of forming a robust LRMF, banks should establish asset and liability management committee (ALCO). The framework should describe the role of ALCO and its relationship with the risk management function, and articulate the delineation of powers, responsibilities and reporting lines for different departments and levels of management, so that the LRMF is implemented effectively.
- 2.3.1. The Board should ensure that any authority that is delegated to the bank's ALCO to carry out some of its responsibilities for liquidity risk management is adequately executed. However, such delegation of authority does not absolve the Board and its members from their risk management responsibilities and the need to oversee the work of any such committee(s) exercising delegated authority.
- 2.3.2. For the ALCO, or any similar committee, to perform a liquidity risk governance function on behalf of the Board effectively, its membership should be extended to comprise personnel from the treasury function, the risk management function, the financial control function and other principal business areas that affect the bank's liquidity risk



profile. It should also be supported by competent risk managers with a dedicated responsibility for liquidity risk management.

3. LIQUIDITY RISK MANAGEMENT FRAMEWORK (LRMF)

3.1. OVERVIEW

- 3.1.1. A bank is responsible for the sound management of liquidity risk. A bank should establish a robust LRMF that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources.
- 3.1.2. A bank should establish a robust LRMF that is well integrated into the bank-wide risk management process.
- 3.1.3. A primary objective of the LRMF should be to ensure with a high degree of confidence that the bank is in a position to both address its daily liquidity obligations and withstand a period of liquidity stress affecting both secured and unsecured funding, the source of which could be bank-specific or market-wide.
- 3.1.4. A bank's LRMF should cover, at a minimum, the following key aspects:
- (a) Liquidity risk appetite and tolerance established by the Board;
 - (b) Liquidity risk management strategy, including the goals and objectives underlying the strategy;
 - (c) Liquidity risk management responsibilities, with clearly defined lines of authority, responsibilities and reporting structure;
 - (d) Liquidity risk management systems and tools for identifying, measuring, monitoring, controlling and reporting liquidity risk;
 - (e) The funding strategy, including the level of diversity and stability of funding targeted by the bank;



- (f) The approach to intraday liquidity management;
- (g) The approach to collateral management;
- (h) The maintenance of liquidity cushion;
- (i) The approach to intragroup liquidity management;
- (j) The framework for conducting liquidity stress testing; and
- (k) Contingency funding plan.

INDEPENDENT REVIEWS

- 3.1.5. The daily oversight function, management committees (such as ALCO) and/or independent risk management functions, should be operationally independent and **staffed with personnel who have the skills and authority to challenge the bank's treasury and other liquidity risk management businesses.**
- 3.1.6. The LRMF should be subject to effective and comprehensive independent review. Such review should be undertaken on a periodic basis by the internal audit or a third party, and the results of such audits should be reported to the Board and senior management. Any deficiencies identified should be promptly addressed.

3.2. LIQUIDITY RISK IDENTIFICATION, MEASUREMENT, MONITORING AND CONTROL

- 3.2.1. A bank should have a sound process for identifying, measuring, monitoring and controlling liquidity risk. This process should include a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off-balance sheet items over an appropriate set of time horizons.
- 3.2.2. A bank should use a range of liquidity metrics for identifying, measuring and analysing liquidity risk. These metrics should enable the management to understand its day-to-day liquidity positions and structural liquidity mismatches, as well as its resilience under stressed conditions. In particular, these metrics should perform the functions of:



- (a) Ensuring compliance with statutory liquidity requirements;
- (b) Projecting the bank's future cash flows and identifying potential funding gaps and mismatches under both normal and stressed conditions over different time horizons;
- (c) Evaluating potential liquidity risks inherent in the bank's balance sheet structure and business activities, including the liquidity risks that may arise from any embedded options and other contingent exposures or events;
- (d) Assessing the bank's capability to generate funding, as well as its vulnerability to, or concentration on, any major source of funding;
- (e) Identifying the bank's vulnerabilities to foreign currency movements; and
- (f) Identifying market related information.

In addition, the metrics should take into account all assets, liabilities, off-balance sheet positions and activities of the bank, across business lines, legal entities and overseas operations in a timely and effective manner.

3.2.3. A bank should use metrics and tools that are appropriate for their business mix, complexity and risk profile. The following liquidity indicators should be monitored:

- (a) Maturity mismatch analysis, based on contractual maturities, as well as behavioural assumptions of cash inflows and outflows. Such metrics provide insight into the extent to which a bank engages in maturity transformation and identify potential funding needs that may need to be bridged;
- (b) Information on the level of concentration of funding from major counterparties (including retail and wholesale fund providers);
- (c) Major funding instruments (e.g. by issuing various types of securities);



- (d) Information on the size, composition and characteristics of unencumbered assets included in a bank's liquidity cushion for assessing the bank's potential capacity to obtain liquidity, through sale or secured borrowing, at short notice from private markets or BDCB in times of stress; and
- (e) Liquidity Coverage Ratio³ (LCR) in individual currencies.
- (f) Medium-term funding ratio, stable or core deposit ratio, or any similar ratio that reflects the stability of a bank's funding;
- (g) Loan-to-deposit ratio, or any similar ratio that reflects the extent to which a major category of asset is funded by a major category of funding; and
- (h) Metrics tracking intragroup lending and borrowing.

RISK CONTROL LIMITS

- 3.2.4. A bank should, where appropriate, set limits for the liquidity metrics they employ in monitoring and controlling their liquidity risk exposures. The limits set should be relevant to a bank's business activities and consistent with its liquidity risk tolerance.
- 3.2.5. The limits should be used for managing day-to-day liquidity within and across business lines and entities. A typical example is the setting of maturity mismatch limits over different time horizons in order to ensure that a bank can continue to operate in a period of market stress.
- 3.2.6. The limit framework also should include measures aimed at ensuring that the bank can continue to operate in a period of market stress, bank-specific stress and a combination of the two. Simply stated, the objective of such measures is to ensure that, under stress conditions, available liquidity exceeds liquidity needs. This is discussed further in the section on liquidity cushions.
- 3.2.7. A bank should ensure compliance with the established limits, and define the procedures for escalation and reporting of exceptions or breaches which can be early

³ Of which BDCB will determine the requirements, and as revised from time to time



indicators of excessive risk or inadequate liquidity risk management. The limits set, and the corresponding escalation and reporting procedures, should be regularly reviewed.

- 3.2.8. A bank should consider setting stricter internal limits on intrabank funding denominated in foreign currencies where the convertibility and transferability of such funding is not certain, particularly in stressed situations.

EARLY WARNING INDICATORS

- 3.2.9. To complement liquidity metrics, a bank should adopt a set of indicators that are more readily available, either internally or from the market, to help in identifying at an early stage emerging risks in their liquidity risk positions or potential funding needs, so that management review and where necessary, mitigating measures can be undertaken promptly.

- 3.2.10. Such early warning indicators can be qualitative or quantitative in nature and may include, but are not limited to, the following:

- (a) Rapid asset growth, especially when funded with potentially volatile liabilities;
- (b) Growing concentrations on certain assets or liabilities or funding sources;
- (c) Increasing currency mismatches;
- (d) Increasing overall funding costs;
- (e) Worsening cash-flow or structural liquidity positions as evidenced by widening negative maturity mismatches, especially in the short-term time bands (e.g. up to 1 month);
- (f) A decrease in weighted average maturity of liabilities;
- (g) Repeated incidents of positions approaching or breaching internal or regulatory limits;
- (h) Negative trends or heightened risk, such as rising delinquencies or losses, associated with a particular business, product or activity;
- (i) Significant deterioration in earnings, asset quality, and overall financial condition;
- (j) Negative publicity;
- (k) A credit rating downgrade;
- (l) Stock price declines;



- (m) Widening spreads on credit default swaps or senior and subordinated debt;
- (n) Counterparties beginning to request additional collateral for credit exposures or to resist entering into new transactions to provide unsecured or longer dated funding;
- (o) Reduction in available credit lines from correspondent banks;
- (p) Increasing trends of retail deposit withdrawals;
- (q) Increasing redemptions of certificates of deposit before maturity; and
- (r) Difficulty in accessing longer-term funding or placing short-term liabilities (e.g. commercial paper).

MANAGEMENT INFORMATION SYSTEMS

- 3.2.11. A bank should have reliable management information systems ('MIS') that provide the Board, senior management and other appropriate personnel with timely and forward-looking information on its liquidity positions, including in identifying emerging concerns on liquidity, as well as in managing liquidity stress events.
- 3.2.12. The MIS should be appropriate for the purpose of supporting the bank's day-to-day liquidity risk management and continuous monitoring of compliance with established policies, procedures and limits.
- 3.2.13. A bank's MIS should encompass information in respect of the bank's liquidity cushion, major sources of funding and all significant sources of liquidity risk, including contingent risks and the related triggers and those arising from new activities. Moreover, a bank's MIS should have the ability to calculate risk measures to monitor liquidity positions:
 - (a) In all currencies, both individually and on an aggregate basis;
 - (b) Under normal business conditions and during stress events, with the ability to deliver more granular and time-sensitive information for the latter;
 - (c) For different time horizons; and
 - (d) At appropriate intervals (in times of stress, the MIS reports should be capable of being produced at more frequent intervals such as daily, or even intraday if necessary).



- 3.2.14. To facilitate liquidity risk monitoring, there should be reporting criteria specifying the scope, manner and frequency of reporting liquidity information for various recipients (e.g. daily/weekly and monthly for those responsible for managing liquidity risk, and at each meeting convened by the Board or its relevant delegated committee(s) during normal times, with increased reporting frequency in times of stress) and the parties responsible for preparing the reports.
- 3.2.15. In particular, the reporting should compare current liquidity exposures to established limits (both for internal liquidity risk management and statutory compliance purposes) to identify any limit breaches. Breaches in liquidity risk limits should be reported to the appropriate level of management. Thresholds and reporting guidelines should be specified for escalation of the reporting of breaches to higher levels of management and the Board.

CASH-FLOW APPROACH TO MANAGING LIQUIDITY RISK: OVERALL

- 3.2.16. Banks should adopt a cash-flow approach to managing liquidity risk, under which they should have in place a robust framework for projecting comprehensively future cash flows arising from assets, liabilities and off-balance sheet items over an appropriate set of time horizons. The framework should be used for:
- (a) Monitoring on a daily basis their net funding gaps under normal business conditions; and
 - (b) Conducting regular cash-flow analysis based on a range of assumptions and techniques.
- 3.2.17. Cash-flow projections involve the estimation of a bank's cash inflows against its outflows and the liquidity value of its assets to identify the potential for future net funding shortfalls. The projections should be forward-looking and based on reasonable assumptions and techniques, covering liquidity risks stemming from:
- (a) On-balance sheet assets and liabilities;
 - (b) Off-balance sheet positions and derivative transactions (including sources contingent liquidity demand and related triggering events associated with such positions);



- (c) Special Purpose Vehicles: a bank should have a detailed understanding of its contingent liquidity risk exposure and event triggers arising from any contractual and non-contractual relationships with special purpose vehicles; and
- (d) Core business lines and activities (for example, correspondent, custodian and settlement activities).

3.2.18. Cash-flow projections should address a variety of factors over different time horizons, including:

- (a) Vulnerabilities to changes in liquidity needs and funding capacity on an intraday basis;
- (b) Day-to-day liquidity needs in, say, 5 to 7 days ahead;
- (c) Funding capacity over short and medium-term horizons (e.g. 14 day, 1, 2, 3, 6 and 9 months) of up to 1 year;
- (d) Longer-term liquidity needs over 1, 2, 3, 4 and beyond 5 years; and
- (e) Vulnerabilities to events, activities and strategies that can put a significant strain on a bank's capacity for generating liquidity.

3.2.19. Cash-flow projections should cover positions in Brunei dollar (BND) where appropriate and in all significant currencies⁴ in aggregate. Separate cash-flow projections should also be performed for individual foreign currencies in which a bank has significant positions.

CASH-FLOW APPROACH TO MANAGING LIQUIDITY RISK: NET FUNDING GAPS

3.2.20. In order to meet their obligations as they fall due and thereby stay in business, a bank needs to ensure:

⁴ A currency may be considered 'significant' if the aggregate liabilities (both on and off-balance sheet) in that currency amount to 5 percent or more of the bank's aggregate liabilities.



- (a) Positive cash-flow position is maintained;
- (b) Sufficient cash can be generated from their assets; or
- (c) Adequate funding sources are available to cover their funding gaps promptly.

3.2.21. Net funding gaps can be assessed through the construction of a maturity profile, supplemented where relevant with additional analysis of the funding capacity of specific on- or off-balance sheet items.

3.2.22. A bank's maturity profile should encompass adequate time bands so that the bank can monitor its liquidity needs for various time horizons. For example, daily time bands in the very short term (say for a period of 5 to 7 days ahead) should be considered, which may be followed by wider and less granular time bands for other periods.

3.2.23. A bank should set internal limits to control the size of their cumulative net mismatch positions (i.e. where cumulative cash inflows are exceeded by cumulative cash outflows). At a minimum, a bank should consider setting limits for the short and medium-term time bands (e.g. next day, 5 to 7 days ahead, 14 days, 1, 2, 3, 6 and 9 months). Such limits should be in line with the established liquidity risk tolerance, and should take into account the potential impact of adverse market conditions on the bank's funding capacity. Maturity mismatch limits should also be imposed for individual foreign currencies in which a bank has significant positions.

3.2.24. The maturity mismatch limits should be properly documented. A bank should regularly review the suitability of such limits.

CASH-FLOW APPROACH TO MANAGING LIQUIDITY RISK: CASH FLOW PROJECTION ASSUMPTIONS AND TECHNIQUES

3.2.25. While certain cash flows can be projected based on contractual maturities, some cash flows may need to be estimated based on certain assumptions. In these circumstances, a bank should make realistic assumptions (with a reasonable degree of prudence) to reflect the characteristics of their businesses and products, as well as economic and market conditions. The following factors are examples that a bank could consider in setting the assumptions for cash flow projection:



- (a) Expected future growth or contractions in the balance sheet;
 - (b) The proportion of maturing assets and liabilities that a bank reasonably expect to roll-over or renew;
 - (c) The quality and proportion of liquid assets or other marketable securities that can be used as collateral to obtain secured funding;
 - (d) The behaviour of assets and liabilities with no clearly specified maturity dates, such as repayment of overdrafts and demand deposits as well as sticky deposits;
 - (e) The potential cash flows arising from off-balance sheet activities, e.g., drawdown under loan commitments and contingent liabilities (including all potential draws from contractual or non-contractual commitments);
 - (f) The behaviour of cash flows under different service delivery channels (e.g. branches vs e-banking channels);
 - (g) The convertibility of foreign currencies;
 - (h) The lead time required for the monetization of marketable debt securities; and
 - (i) Access to wholesale markets, standby facilities and intragroup funding.
- 3.2.26. Techniques employed by a bank for designing cash flow assumptions should be commensurate with the nature and complexity of their business activities.
- 3.2.27. In deriving behavioural cash flow assumptions, a bank may analyse historical observations on cash flow patterns. While there is no standard methodology for making such assumptions, it is important that the assumptions used are consistent and reasonable and they should be supported by sufficient historical or empirical evidence.
- 3.2.28. A bank should document the underlying assumptions used for estimating cash flow projections and the rationale behind them. The assumptions and their justifications



should be approved, and subject to regular review, by the ALCO to take account of available statistical evidence and changing business environment.

FOREIGN CURRENCY LIQUIDITY MANAGEMENT

- 3.2.29. A bank should assess its aggregate foreign currency liquidity needs and determine acceptable currency mismatches. A bank should undertake a separate analysis of its strategy for each currency in which it has significant activity, considering potential constraints in times of stress. The size of foreign currency mismatches should take into account:
- (a) **the bank's** ability to raise funds in foreign currency markets;
 - (b) the likely extent of foreign currency back-up facilities available in its domestic market;
 - (c) the ability to transfer a liquidity surplus from one currency to another, and across jurisdictions and legal entities; and
 - (d) the likely convertibility of currencies in which the bank is active, including the potential for impairment or complete closure of foreign exchange swap markets for particular currency pairs.
- 3.2.30. A bank should be aware of, and have the capacity to manage, liquidity risk exposures arising from the use of foreign currency deposits and short-term credit lines to fund domestic currency assets as well as the funding of foreign currency assets with domestic currency.
- 3.2.31. A bank should take account of the risks of sudden changes in foreign exchange rates or market liquidity, or both, which could sharply widen liquidity mismatches and alter the effectiveness of foreign exchange hedges and hedging strategies.
- 3.2.32. Moreover, a bank should assess the likelihood of loss of access to the foreign exchange markets as well as the likely convertibility of the currencies in which the bank carries out its activities.



- 3.2.33. A bank should negotiate a liquidity back-stop facility⁵ for a specific currency, or develop a broader contingency strategy, if the bank runs significant liquidity risk positions in that currency.

3.3. FUNDING STRATEGY

- 3.3.1. A bank should establish a funding strategy that provides effective diversification in the sources and tenor of funding. It should maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers to promote effective diversification of funding sources.
- 3.3.2. A bank should periodically gauge its capacity to raise funds quickly from each source. It should identify the main factors that affect its ability to raise funds and monitor those factors closely to ensure that estimates of fund raising capacity remain valid.

FUNDING DIVERSIFICATION

- 3.3.3. A bank should establish an effective funding strategy to achieve sufficient diversification, both of their funding sources and in the composition of their liquid assets. A bank's funding strategy should consider correlations between sources of funds and market conditions.
- 3.3.4. A bank should put in place concentration limits on liquid assets and funding sources, as appropriate, with reference to such characteristics:
- (a) type of asset, product, market or instrument;
 - (b) nature of issuer, counterparty or fund provider;
 - (c) maturity;
 - (d) currency;
 - (e) geographical location; and
 - (f) economic sector.

⁵ A bank needs to carefully manage market access to ensure that liquidity sources – including credit lines – can be accessed when needed.



- 3.3.5. A bank should maintain an appropriate mix of liquid assets (including the type and quality of assets, and level of such holdings) as a source of liquidity for day-to-day operational needs (e.g. for settlement and clearing purposes), as well as for meeting emergency funding needs.

ALTERNATIVE FUNDING SOURCES

- 3.3.6. A bank should assess their exposure to significant funding providers (or depositors) on an ongoing basis. For this purpose, a bank should have in place, as part of their MIS, regular reports on the funding received from significant funding providers to facilitate monitoring. Such reports should consolidate all funding that a bank obtains from each significant funding provider (including a group of related funding providers which, when aggregated, amount to a significant funding provider).

- (a) The historical amount of funds provided by these funding providers, e.g. in terms of the maximum, minimum and average balances over the previous 12 months, should also be monitored.
- (b) Trigger ratios should be established to identify any funding concentration for management review. In the case of a retail bank, a funding concentration may exist if a significant percentage of its total deposit base is from a limited number of the top-ranking depositors or a single depositor (or group of related depositors). A bank should consider appropriate actions to diversify the deposit base.

- 3.3.7. A bank should avoid any potential concentration in their reliance on particular funding markets and sources. A bank should take into account the following major factors in assessing the degree of funding concentration:

- (a) The maturity profile and credit-sensitivity of the liabilities;
- (b) The mix of secured funding and unsecured funding;
- (c) The extent of reliance on a single fund provider or a group of related fund providers; particular markets, instruments or products (e.g. interbank



borrowing, retail versus wholesale deposits, and repo agreements and swaps); and intragroup funding;

- (d) Geographical location, industry or economic sector of fund providers; and
- (e) The currency of funding sources.

3.3.8. A bank with a large deposit base should, in particular, conduct more granular analysis on the stability of different types of deposits taking into account the relevant contractual and behavioural characteristics of such deposits (e.g. in terms of deposit insurance coverage, currency denomination, nature of depositors, such as retail, wholesale or private banking customers, etc.). They should monitor the trends and levels of their stable deposits regularly.

3.3.9. A bank needs to identify alternative sources of funding that strengthen its capacity to withstand a variety of severe yet plausible bank-specific and market-wide liquidity shocks. Depending on the nature, severity and duration of the liquidity shock, potential sources of funding include the following:

- (a) deposit growth;
- (b) the lengthening of maturities of liabilities;
- (c) new issues of short- and long-term debt instruments;
- (d) intra-group fund transfers, new capital issues, the sale of subsidiaries or lines of business;
- (e) asset securitization;
- (f) the sale or repo of unencumbered, high quality liquid assets;
- (g) drawing-down committed facilities; and
- (h) **borrowing from the central bank's marginal lending facilities.**

3.3.10. As a general liquidity management practice, a bank should limit concentration in any one particular funding source or tenor. Some banks are increasingly reliant on wholesale funding, which tends to be more volatile than retail funding. Consequently, these banks should:

- (a) ensure that wholesale funding sources are sufficiently diversified to maintain timely availability of funds at the right maturities and at reasonable costs.



- (b) maintain a relatively higher proportion of unencumbered, high quality liquid assets than banks that rely primarily on retail funding.

3.3.11. For banks active in multiple currencies, banks should have access to diverse sources of liquidity in each currency, since banks are not always able to swap liquidity easily from one currency to another.

MARKET ACCESS

3.3.12. A bank should maintain an active presence in markets relevant to their funding strategy. This entails an ongoing commitment and investment in adequate and appropriate infrastructures, processes and information systems.

3.3.13. To ensure their access to funding markets in a timely manner, a bank should periodically utilise the established systems, documentation and arrangements for accessing those markets to confirm whether willing counterparties are readily available.

3.3.14. The ability to obtain funds in the interbank market is an important source of liquidity for a bank. A bank should be in a position to estimate their 'normal' borrowing capacity, based on past experience, and aim to limit their wholesale funding needs for both local and foreign currencies.

3.3.15. A bank should identify and build strong relationships with funding providers. In particular, a bank should maintain a solid and close relationship with its 25 largest depositors on an ongoing basis, to ensure that the bank has the ability to obtain funds in case of need (e.g. during events of stress), to prevent and/or limit a bank runoff and to safeguard its major sources of funding.

3.3.16. Nevertheless, a bank should take a prudent view of how such relationships may be strained in times of stress. In the formulation of stress scenarios and contingency funding plans, a bank should take into account possible situations where funding sources, including its 10 largest depositors, may dry up and markets may close, and where market perceptions of a bank's financial position may change.



- 3.3.17. Additionally, increased uncertainty about a bank's repayment ability can cause significant deterioration in the willingness of counterparties to provide funding. In such situations the quality and strength of a bank's capital cushion can positively influence the willingness of counterparties to maintain funding relationships. Stress test scenarios and contingency funding plans should consider the effects that losses and the resulting reduction in capital can have on the bank's ability to maintain funding relationships.

3.4. INTRADAY LIQUIDITY MANAGEMENT

- 3.4.1. A bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems.
- 3.4.2. Aside from direct participation in payment and settlement systems, a bank may incur intraday liquidity risk through their provision of correspondent and custodian banking services. Where a bank relies on other correspondent or custodian banks to conduct payment and settlement activities, operational or financial disruptions at those banks will also affect the bank's own liquidity position and should have alternate arrangements in place to ensure it is able to meet its obligations.
- 3.4.3. A key challenge in intraday liquidity risk management lies in the uncertainty in both the amount and timing of a bank's gross cash inflows and outflows during the day, in part because such cash flows may reflect the activities of its customers or counterparties which are beyond the bank's control, especially where the bank provides correspondent or custodian services. Moreover, the timing of the cash flows may be dictated by the rules governing payment and settlement systems (e.g. payment obligations may be due by specific times during the day).
- (a) Because a bank's daily gross cash outflows can often far exceed the bank's gross cash inflows at different points of time during a day, or its net overnight balances even under normal circumstances, differences in the timing of its inflows and outflows could result in significant intraday liquidity shortfalls.



- (b) These shortfalls may necessitate the bank borrowing funds on an intraday basis, prioritizing its outflows to meet critical payments, or borrowing additional overnight funds (if certain expected cash inflows are not received before the end of the working day).

RISK MANAGEMENT CONTROLS

3.4.4. A bank should have effective policies, procedures, systems and controls for managing their intraday liquidity risks in all of the financial markets and currencies in which they have significant payment and settlement activities. Such systems and controls should, among other things, ensure a bank's capacity to:

- (a) Measure expected daily gross cash inflows and outflows, anticipate the intraday timing of these cash flows where possible, and, as such, forecast the range of potential net funding shortfalls at different time points during the day;
- (b) Monitor intraday liquidity positions against expected activities and available resources (including liquidity balances, remaining intraday credit capacity, and available collateral) and prioritise payments, if necessary;
- (c) Manage intraday liquidity positions so that there is always sufficient intraday funding to meet the bank's intraday liquidity needs;
- (d) Manage and mobilise collateral as necessary to obtain intraday funds. A bank should have sufficient collateral available to acquire the level of intraday liquidity needed to meet its intraday objectives;
- (e) Manage the timing of its liquidity outflows in line with its intraday objectives. A bank should have the ability to manage the payment outflows of key customers and, if customers are provided with intraday credit, that credit procedures should be capable of supporting timely decisions; and
- (f) Manage unexpected disruptions to its intraday liquidity flows. A bank's stress testing and contingency funding plans should reflect intraday considerations. A bank also should understand the level and timing of liquidity needs that may arise as a result of the failure to settle procedures of payment and settlement



systems in which it is a direct participant. Robust operational risk management and business continuity arrangements are also critical to the effectiveness of a bank's intraday liquidity management.

- 3.4.5. Intraday liquidity risk management demands cooperation between the front and back offices, as it typically involves close monitoring of expected payments and direct contacts with customers, where necessary, to quickly verify the reasons for delayed payments. A clear assignment of tasks and responsibilities to personnel involved is, therefore, important, particularly as time-critical decisions need to be made, for instance, to meet the settlement cut-off times.
- 3.4.6. The tools and resources applied by a bank in managing intraday liquidity risks should be tailored to the bank's business model and role in the financial system. This relates to, for example:
- (a) whether the bank participates in a payment or settlement system directly or through correspondent or custodian banks, and
 - (b) whether it provides correspondent or custodian services and intraday credit facilities to other banks, firms or systems.

If a bank relies heavily on secured funding markets, the bank should have adequate systems and procedures in place to monitor positions in securities settlement systems.

3.5. COLLATERAL MANAGEMENT

- 3.5.1. A bank should actively manage its collateral positions, differentiating between encumbered and unencumbered assets. A bank should monitor the legal entity and physical location where collateral is held and how it may be mobilised in a timely manner.
- 3.5.2. The ready availability of assets that a bank can use as collateral to obtain funding by means of secured borrowing (e.g. repo) mitigates liquidity risk. Therefore, a bank should allocate sufficient resources to ensure efficient and effective management of collateral in their liquidity risk management process.



- 3.5.3. Collateral management should aim at optimising the allocation of collateral available for different operational needs, across products, business units, locations and currencies. It should be based on a prioritisation of needs and an awareness of the opportunity cost of its use, in both normal and stressed times.

MANAGEMENT OF COLLATERAL POSITIONS

- 3.5.4. A bank should have the ability to calculate all of their collateral positions, including assets currently deployed for use as collateral relative to amount of collateral required, and unencumbered assets available to be used as collateral.
- 3.5.5. Bank's level of available collateral should be monitored by legal entity, jurisdiction and currency exposure. A bank should be able to track precisely the legal entity and the physical location (i.e. the custodian or securities settlement system) at which each of the assets is held, and monitor how such assets may be mobilised in a timely manner in case of need.
- 3.5.6. A bank should have sufficient collateral to meet the following situations:
- (a) expected and unexpected borrowing needs; and
 - (b) potential increases in margin requirements for pledged assets over different timeframes, including intraday, short-term and longer-term structural liquidity requirements
- 3.5.7. A bank should have adequate systems for monitoring the time shifts between intraday, overnight and term collateral usage.
- 3.5.8. In determining the required collateral to be allocated for intraday liquidity needs, a bank should consider the potential for significant uncertainty around the timing of payment flows during the day, as well as the potential for operational and liquidity disruptions that could necessitate the pledging or delivery of additional intraday collateral.
- 3.5.9. A bank should assess the eligibility of each major asset class for pledging as collateral with relevant central banks (for intraday, overnight and term credit or secured borrowing under standing facilities, as the case may be), as well as the acceptability of assets to major counterparties and fund providers in secured funding markets. They



should also ensure that there is proper legal documentation for each asset class to be effectively pledged for liquidity.

- 3.5.10. A bank should diversify their sources of collateral to avoid excessive concentration on any particular funding provider or market, taking into account of the following considerations:
- (a) capacity constraints, sensitivity of prices, haircuts and collateral requirements under conditions of bank-specific and market-wide stress, and
 - (b) the availability of funds from private sector counterparties in various market stress scenarios.

OPERATIONAL ISSUES

- 3.5.11. A bank should address various operational issues relating to the use of collateral for obtaining liquidity. These include, but are not limited to:
- (a) Awareness of the operational and timing requirements associated with accessing the collateral given its physical location;
 - (b) Understanding the liquidity risks associated with different types of payment and settlement systems (e.g. 'net' systems versus 'gross' systems) and their implications for collateral management; and
 - (c) Taking into account the implications of obligations embedded in the contractual terms of certain transactions which, when triggered, may reduce the availability of collateral for liquidity risk management. These refer to, for example, margin requirements and triggering events that require a bank to:
 - i. Provide additional collateral as a result of changes in the market valuation of the transactions or in the bank's credit rating or financial position (in the case of derivative transactions), or;



- ii. Hypothecate or deliver additional assets to the pool of underlying assets when the embedded triggering events occur (in the case of securitisation transactions).
- 3.5.12. A bank should test on a periodic basis, the ability to use its source of collateral in repo operations, to ensure its capability of using the securities to obtain the required liquidity, if needed, and assess the market appetite for a particular security, including the related haircut applied to put the operation in place. A bank should also ensure that there are no operational issues that could have an impact on the timing and the feasibility of the operation (e.g. limits to the transferability of the security, in case this is held in a local and foreign branch portfolio).
- 3.5.13. For collateralised borrowing, a bank should maintain all documentation related to the agreement with the counterparties.

3.6. MAINTENANCE OF LIQUIDITY CUSHION

- 3.6.1. A bank should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding.
- 3.6.2. The size of the liquidity cushion should reflect a bank's established risk tolerance, and should be sufficient to meet the bank's liquidity needs in the initial phase of liquidity stress, which is most critical to the bank's survival, taking into account the monetization or borrowing values of the assets included in the cushion under the relevant stressed conditions.
- 3.6.3. The liquidity cushion should be sized to enable a bank to continue to meet its daily payment and settlement obligations on a timely basis for the period of stress. In doing so, the bank should take into account other available tools and resources to manage intraday liquidity risks.



- 3.6.4. In addition, the liquidity cushion should at least be sufficient to enable a bank to reach its regulatory LCR.

COMPOSITION OF LIQUIDITY CUSHION

- 3.6.5. The liquidity cushion should be largely made up of high quality liquid assets (the most liquid, unencumbered and readily marketable assets such as cash, other high quality government debt securities, etc.) or similar instruments, that can be easily or immediately monetised with little or no loss or discount at all times, irrespective of the bank's own condition.
- 3.6.6. To cater for any extension or deterioration of any stress situation, a bank may widen the composition of its liquidity cushion by holding other liquid and marketable assets which can be used to cater for the longer end of the stress period (e.g. 1 month or beyond) without resulting in excessive losses or discounts.
- 3.6.7. The marketability of individual assets may differ depending on the stress scenario and time-frame involved. Nevertheless, there are some general characteristics which tend to increase the liquidity of a given asset including:
- (a) transparency of its structure and risk characteristics;
 - (b) ease and certainty of valuation;
 - (c) central bank eligibility (though that in and of itself does not confer ready market liquidity);
 - (d) depth of the market for the asset, including holdings of the bank relative to normal market turnover; and
 - (e) **the bank's presence in the relevant markets.**
- 3.6.8. A bank should not assume that a liquid market will exist for a given asset in all stress scenarios simply because such a market exists in normal times. There should be no legal, regulatory or operational impediment to the use of these assets to obtain funding, as these assets should be available at all times to meet liquidity needs as and when they arise. The bank should be ready and prepared to use these assets in the event of severe stress. The cushion should, however, provide a backstop rather than the first line of defence.



- 3.6.9. A bank should be realistic about how much cash it will be able to obtain from the relevant central bank against eligible assets. Moreover, a bank should not rely on the central bank altering the amount of or the terms on which it provides liquidity.
- 3.6.10. A bank should document its policies and criteria for defining the liquid assets to be included in its liquidity cushion and distinguishing their relative levels of quality in terms of their ability to generate liquidity swiftly, with little loss or discount. MIS reports should be in place to facilitate continuous management of a bank's liquidity cushion.

3.7. INTRAGROUP LIQUIDITY MANAGEMENT

- 3.7.1. A bank should actively monitor and control liquidity risk exposures and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to the transferability of liquidity.
- 3.7.2. Where a bank is part of a banking group (local or foreign), the bank should be able to monitor and control liquidity risks arising from intragroup transactions (including cross-border transactions where applicable) with other legal entities in the group, taking into account any legal, regulatory, operational or other constraints on the transferability of liquidity and collateral to and from those entities.
- 3.7.3. In managing intragroup liquidity risks, a bank should understand how their liquidity positions may be affected by liquidity problems faced by other group entities.
- 3.7.4. In the case of a domestic systemic stress event, a bank should have processes in place to allow for allocation of liquidity and collateral resources to affected entities, to the extent that transferability is permitted. A bank should also consider the possibility that a local event could lead to a liquidity strain across the whole group due to reputational contagion (i.e. when market counterparties assume that a problem at one entity implies a problem for the group as a whole). The group as a whole, and individual legal entities, should be resilient to such shocks to a degree consistent with the Board's defined risk tolerance.



- 3.7.5. To mitigate the potential for reputational contagion, effective communication with counterparties, credit rating agencies and other stakeholders when liquidity problems arise is of vital importance. In addition, group-wide contingency funding plans, liquidity cushions and multiple sources of funding are mechanisms that may mitigate reputational contagion.

TREATMENT OF INTRAGROUP TRANSACTIONS

- 3.7.6. A bank should specify in their liquidity risk management strategy the treatment of intragroup liquidity, and assumptions on intragroup dependencies for the purposes of making cash flow projections.
- 3.7.7. In assessing funding needs (especially under stressed situations), a bank should account for any funding or liquidity commitment provided to group entities (e.g. in the form of explicit guarantees or funding lines to be drawn in times of need) and prepare for any withdrawal of funding provided by group entities.
- 3.7.8. A bank should also analyse how the liquidity positions of group entities may affect their own liquidity, either through direct financial impact or through contagion when those entities encounter liquidity strain. Where there is reliance on funding support from group entities, a bank should take steps to identify the existence of and take into account any legal, regulatory or other limitations that may restrict their access to liquidity from those entities in case of need.
- 3.7.9. A bank that has entered into 'back-to-back' transactions⁶ with its group entities should exclude such transactions from cash flow or liquidity calculations, as such transactions usually involve no actual movement of funds and, as such, cannot effectively improve the bank's liquidity.

INTRAGROUP LIQUIDITY LIMITS

- 3.7.10. A bank should establish internal limits on intragroup liquidity risk to mitigate the risk of contagion from other group entities when those entities are under liquidity stress. Moreover, a bank should consider setting stricter internal limits on intragroup funding

⁶ These transactions refer to interoffice or intragroup transactions which typically involve two legs, one borrowing long (say, with maturity of more than 1 month) and the other lending short (say, with maturity of 1 month or less). Both legs are for the same or similar amount and at the same or similar rate of interest, and are, in most cases, rolled forward continuously.



denominated in foreign currencies where the convertibility and transferability of such funding is not certain, particularly in stressed situations.

CONSTRAINTS ON INTRAGROUP LIQUIDITY TRANSFERS

- 3.7.11. A bank should understand potential constraints that may affect intragroup liquidity movements, and specify their assumptions regarding the transferability of funds and collateral in liquidity risk management policies. These assumptions should fully consider regulatory, legal, accounting, credit, tax and internal constraints on the effective movement of liquidity and collateral. Assumptions regarding the transferability of funds and collateral should be transparent in liquidity risk management plans that are available for supervisory review.
- 3.7.12. A bank should also consider the operational arrangements needed to transfer funds and collateral across entities and the time required to complete such transfers under these arrangements.
- 3.7.13. For each country in which it is active, a bank should ensure that it has the necessary expertise about country-specific features of the legal and regulatory regime that influence liquidity risk management, including arrangements for dealing with failed banks, deposit insurance, and central bank operational frameworks and collateral policies. This knowledge should be reflected in liquidity risk management processes.
- (a) It is important for the head office to have appropriate information flow from foreign subsidiaries to identify problem spots in order to mobilise injection of liquidity if a subsidiary is unable to manage by itself.
 - (b) It would be quite appropriate for the parent bank to have a formalised liquidity support arrangement with subsidiaries when the need arises. Such arrangements should take into account potential transferability constraints imposed by host regulators.
 - (c) The specific market characteristics and liquidity risks of positions in foreign currencies should be taken into account, particularly where fully developed foreign exchange markets do not exist. For currencies trading in well-developed foreign exchange markets, a more global approach to



management of the currency may be taken, including the use of swaps. However, the bank should critically assess the risk that the ability to swap currencies may erode rapidly under stressed conditions.

3.8. STRESS TESTING AND SCENARIO ANALYSIS

- 3.8.1. In addition to conducting cash flow projections to monitor its liquidity positions under normal business conditions, a bank should conduct stress tests on a regular basis for a variety of short-term and prolonged bank-specific and market-wide stress scenarios (individually and in combination) to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with a **bank's established** liquidity risk tolerance. A bank should use stress test outcomes to adjust its liquidity risk management strategies, policies and positions and to develop effective contingency plans.
- 3.8.2. A bank should conduct stress tests based on sufficiently severe, but plausible scenarios and assumptions that are commensurate with the bank's business nature, size and complexity. The stress testing scenarios and assumptions adopted by a bank should reflect the current market conditions and address the bank's actual experiences in stressed situations.
- 3.8.3. The active involvement of senior management is vital to the stress testing process. The scenarios and assumptions should be reviewed regularly by the senior management, with any major changes endorsed by the bank's Board or its relevant delegated committee(s). Senior management should sufficiently review the severity of the stress scenarios.
- 3.8.4. Stress tests should enable a bank to analyse the impact of stress scenarios on its consolidated group-wide liquidity position, as well as on the liquidity position of individual entities and business lines in order to understand where risks could arise. For the purposes of consolidated liquidity positions, the banks may use a proportionate or component approach.
- 3.8.5. Stress tests should be performed for all significant currencies individually and on an aggregate basis.



- 3.8.6. The design and frequency of stress testing should be commensurate with the size and complexity of a bank and its liquidity risk exposures.
- 3.8.7. When conducting stress tests on their liquidity position, a bank should also consider the insights and results of stress tests performed for other risks, including possible interaction with these other risks.

SCENARIOS AND ASSUMPTIONS

- 3.8.8. It is important for banks to construct sufficiently severe, but plausible stress scenarios and examine the resultant cash flow needs. While a bank should aim to cover different stress events and levels of adversity, they should, at a minimum, include the following types of scenarios in their stress testing exercise:
 - (a) A bank-specific stress scenario;
 - (b) A general market stress scenario; and
 - (c) A combination of both, including possible interaction with other risks.
- 3.8.9. A bank will need to assign the timing of cash flows for each type of asset and liability, as well as off-balance sheet and contingent items, by assessing the probability of the behaviour of those cash flows under the scenario being examined. The timing of cash inflows and outflows on the maturity ladder can vary among scenarios and the assumptions may differ quite sharply. In estimating liquidity needs, both contractual and non-contractual cash flows should be considered.
- 3.8.10. In designing stress scenarios, a bank should take into account, specific risks associated with its business activities, products or funding sources. These include, for example, heavy reliance on specific funding markets or significant exposures to complex financial instruments. The stress scenarios should be able to evaluate the potential adverse impact of these factors on the bank's liquidity position.
- 3.8.11. A bank should take a reasonably conservative approach when setting stress assumptions. There are a number of possible areas that the assumptions should cover. For illustrative purposes, these areas include, but are not limited to, the following:



- (a) The run-off for retail funding;
- (b) Asset market illiquidity and erosion in the value of liquid assets;
- (c) The loss or impairment of secured and unsecured wholesale funding sources;
- (d) The correlation between funding markets and effectiveness of diversification across available sources of funding;
- (e) The availability of contingent lines extended to the banks;
- (f) The availability of funding in different tenors;
- (g) Contingent claims, including potential draws on committed lines extended to third parties or the bank's connected parties (such as its overseas branches, head office or associates in its consolidated group);
- (h) Liquidity drains associated with contractual obligations or non-contractual obligations involving off-balance sheet vehicles and activities, as well as complex products or transactions;
- (i) Additional margin calls and collateral requirements (e.g. in derivative or other contracts with embedded trigger clauses);
- (j) Estimates of future balance sheet growth;
- (k) Currency convertibility and access to foreign exchange markets;
- (l) The transferability of liquidity across entities, sectors and jurisdictions, taking into account legal, regulatory, operational and time zone restrictions and constraints;
- (m) Access to the payment and settlement systems which are imperative to a bank;
- (n) The impact of credit rating triggers;
- (o) The access to central bank facilities;
- (p) The operational ability of the bank to monetise assets; and
- (q) The bank's remedial actions and the availability of the necessary documentation and operational expertise and experience to execute them, taking into account the potential reputational impact when executing these actions.

3.8.12. All stress scenarios and their underlying assumptions should be properly defined and documented.

BANK-SPECIFIC STRESS SCENARIOS

3.8.13. A bank-specific stress scenario should cover situations that could arise from a bank experiencing either real or perceived problems (e.g. asset quality problems, solvency



concerns, credit rating downgrade, rumours relating to the bank's credibility or management fraud, etc.) which affect public confidence in the bank and its group-wide operations. It should represent the bank's view of the behaviour of its cash flows in a sufficiently severe stress scenario. A key assumption is that many of the bank's liabilities cannot be rolled-over or replaced, resulting in the need to utilise its liquidity cushion.

- 3.8.14. This scenario will likely entail an acute deposit run. Such a scenario would typically include the following characteristics:
- (a) Significant daily run-off rates for deposits particularly at the initial stage of the stress scenario, with increasing requests from customers to redeem their time deposits before maturity;
 - (b) Interbank deposits repaid at maturity;
 - (c) No new unsecured or secured funding obtainable from the market; and
 - (d)** Forced sale of marketable securities at discounted prices.

GENERAL MARKET STRESS SCENARIOS

- 3.8.15. A general market stress scenario is one where liquidity, at a large number of banks in one or more markets, is affected. Characteristics of this scenario may include:
- (a) A market-wide liquidity squeeze, with severe contraction in the availability of secured and unsecured funding sources, and a simultaneous drying up of market liquidity in some previously high liquidity markets;
 - (b) Substantial discounts needed to sell or repo assets and wide differences in funding access among banks, due to the occurrence of a severe worsening of their perceived credit quality (i.e. flight to quality);
 - (c) Restrictions on currency convertibility; and
 - (d) Severe operational or settlement disruptions affecting one or more payment or settlement systems.

COMBINED STRESS SCENARIOS

- 3.8.16. A bank should incorporate a stress scenario into their stress test framework that has the key characteristics of both a bank-specific stress scenario and a general market



stress scenario combined ('combined stress scenario'), with appropriate modification of the underlying assumptions, as necessary, to reflect a set of adverse circumstances that could plausibly happen.

3.8.17. The following are some relevant factors that could be considered in formulating a bank's 'combined stress scenario':

- (a) As a greater number of banks in the market will be affected under a combined stress scenario, this may change the way in which some bank-specific stress elements are to be structured. For example, instead of a quick but severe bank run, there may be a less acute, but more persistent and prolonged run-off of customer deposits; and
- (b) Even lower realizable values of assets may result as the bank concerned seeks to sell or repo large quantities of assets when the relevant asset markets become less liquid and market participants are generally in need of liquidity.

MINIMUM STRESS PERIOD

3.8.18. A bank should assume the minimum stress period for a bank-specific stress scenario to last for no less than 5 working days, and that for a general market stress scenario and a combined stress scenario to last for no less than one calendar month. However, a bank should adopt a longer minimum stress period for the purposes of liquidity stress-testing if its liquidity risk profile warrants this. To gauge a bank's survival period under stress, it is also generally expected that, in addition to the minimum stress period, the bank's stress test should also include sufficiently granular time-bands to assess the bank's ability to meet its obligations in the near to medium-term.

UTILISATION OF STRESS TEST RESULTS

3.8.19. The stress testing results should be linked to the overall liquidity risk management process of a bank, including the setting of the liquidity risk tolerance and the internal liquidity risk limits. To this end, senior management should:

- (a) Ensure proper documentation of the stress scenarios and related assumptions, and review the scenarios and assumptions periodically;



- (b) Evaluate the stress testing results and consider any possible need for remedial or mitigating actions. Remedial or mitigating actions may include actions such as:
- limiting the bank's liquidity risk exposures,
 - obtaining more long-term funding;
 - restructuring the composition of assets;
 - increasing the size of the bank's liquidity cushion; or
 - adopting of any other measures to adjust the bank's liquidity profile to fit its risk tolerance.
- (c) Where such actions are not considered necessary to address stress test results indicating potential liquidity strains or shortfalls, senior management should document the justifications for their view.
- (d) Report the stress testing results and vulnerabilities identified to the Board (or its relevant delegated committee(s)), with recommendations for any resulting actions. Where appropriate BDCB should be informed of the results and anticipated actions if they are material to the bank (i.e. in addition to normal stress testing reporting arrangements); and
- (e) Integrate the stress-testing results into the bank's strategic business planning and Contingency Funding Plan ('CFP').

3.9. CONTINGENCY FUNDING PLAN

- 3.9.1. A bank should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust.
- 3.9.2. A bank should have a CFP that clearly sets out its strategies for addressing liquidity and funding shortfalls to the extent beyond the level estimated from the stress tests



performed by the bank under bank-specific, market-wide and combined stress scenarios and beyond the level covered by the bank's liquidity cushion.

- 3.9.3. The CFP should be approved by the Board and regularly tested and updated to ensure that it is operationally robust.
- 3.9.4. The CFP should be commensurate with the bank's complexity, risk profile, scope of operations and role in the financial system. The design of a CFP, including its action plans and procedures, should be closely integrated with the bank's ongoing analysis of liquidity risk. The CFP should address liquidity issues over a range of different time horizons.

ROLES AND RESPONSIBILITIES

- 3.9.5. The CFP should contain clear policies and procedures enabling a bank's management to make timely and well-informed decisions, communicate the decisions effectively, and execute contingency measures swiftly and proficiently. To achieve this, the roles and responsibilities, and internal procedures for liquidity stress management should be clearly established. These should cover:
 - (a) The authority to invoke the CFP and the establishment of a formal 'crisis management team' to facilitate internal coordination and communication across different business lines and locations and decision-making by senior management in a stress situation;
 - (b) Clear escalation and prioritisation procedures detailing what actions to take, who can take them, and when and how each of the actions can and should be activated;
 - (c) Names and contact details of members of the team responsible for implementing the CFP and the locations of team members; and
 - (d) The designation of alternates for key roles.



CONTINGENCY FUNDING MEASURES AND SOURCES

- 3.9.6. The CFP should provide a bank's management with a diversified set of viable, readily deployable potential contingency funding measures for preserving and making up liquidity shortfalls in emergency situations. All available potential sources of funding should be outlined, along with the estimated amount of funds that can be derived from these sources, their expected degree of reliability, under what conditions these sources should be used, and the lead time needed to access additional funds from each of the sources.
- 3.9.7. A bank should analyse the viability and likely impact on market perception of adopting different contingency funding measures. Some of the factors that should be considered include:
- (a) The impact of stressed market conditions on a bank's ability to raise funding through different sources;
 - (b) The interaction between asset markets and funding liquidity, especially in situations where there is an extensive or complete loss of typically available market funding options;
 - (c) Any second-round effects, as well as reputation, legal, regulatory and operational constraints, related to the execution of such measures;
 - (d) Any peculiarities (including special terms and conditions) associated with particular funding sources; and
 - (e) For example, a bank should generally refrain from excessive reliance on back-up credit lines (even if committed) and need to understand various conditions, such as notice periods, that could affect a bank's ability to access such lines quickly.
- 3.9.8. In developing contingency funding measures, a bank should also be aware of the operational procedures needed to transfer liquidity and collateral across group entities, borders and business lines, taking into account legal, regulatory, operational and time zone restrictions and controls governing such transfers. The CFP should



incorporate relevant operational procedures and realistic timelines for such transfers. Assets intended to be pledged as collateral in the event that backup funding sources are utilised, should be held by a legal entity and in a location consistent with management's funding plans.

EARLY WARNING SIGNALS AND TRIGGERING EVENTS

- 3.9.9. The CFP should clearly mention a set of triggering events that will activate the plan, as well as the mechanisms for identification, monitoring and reporting of such events at an early stage. A bank may consider the various early warning indicators highlighted in paragraph 3.2.10. in relation to this.

INTRADAY LIQUIDITY CONSIDERATIONS

- 3.9.10. The CFP should include potential steps to meet intraday critical payments. In situations where intraday liquidity resources become scarce, a bank should have the ability to identify critical payments and to sequence or schedule payments based on priority.

COMMUNICATIONS AND PUBLIC DISCLOSURE

- 3.9.11. As part of the CFP, a bank should develop a communication plan to deliver, on a timely basis, clear and consistent communication to internal and external parties, in a time of stress, to support general confidence in the bank. Internal communication should cover employees and encompass different business lines and locations of the bank. External parties should include the BDCB, other relevant local or overseas public authorities, clients and creditors.
- 3.9.12. The plan should, in particular, address communication with shareholders and other external stakeholders, such as market participants, correspondents, custodians and major counterparties and customers to whom assurance about the bank is extremely important, as their actions could significantly affect the bank's reputation and liquidity position.

TESTING, UPDATE AND MAINTENANCE

- 3.9.13. The CFP should be subject to regular testing to ensure its effectiveness and operational feasibility, particularly in respect of the availability of the contingency sources of funding listed in it.



- 3.9.14. The testing of the CFP should cover:
- (a) Verifying key assumptions, such as the ability to sell or repo certain assets or periodically draw down credit lines;
 - (b) Ensuring that roles and responsibilities are appropriate and understood;
 - (c) Confirming that contact information is up-to-date, with reporting lines clearly stated and synchronized with the latest organisation chart;
 - (d) Proving the transferability of cash and collateral (especially across borders and entities); and
 - (e) Reviewing that the necessary legal and operational documentation is in place to execute the plan at short notice.
- 3.9.15. The ALCO should review all aspects of the CFP following each testing exercise and ensure that follow-up actions are delivered.
- 3.9.16. The ALCO should review and update the CFP on a periodic basis, as warranted by changes in business or market circumstances, to ensure that the CFP remains robust over time. Any changes to the CFP should be properly documented and approved by the Board (or its relevant delegated committee).
- 3.9.17. The CFP should be consistent with the bank's business continuity plans and should be operational under situations where business continuity arrangements have been invoked. As such, a bank should ensure effective coordination between teams managing issues surrounding liquidity crisis and business continuity.



4. PUBLIC DISCLOSURE

- 4.1. A bank should publicly disclose information on a periodic basis that enables market participants to make an informed judgement about the soundness of its LRMF and liquidity position.
- 4.2. Public disclosure improves transparency, facilitates valuation, reduces uncertainty in the markets and strengthens market discipline. A bank should disclose sufficient information regarding its liquidity risk management to enable relevant stakeholders to make an informed judgement about the ability of the bank to meet its liquidity needs.
- 4.3. A bank should disclose its organisational structure and framework for the management of liquidity risk. In particular, the disclosure should explain the roles and responsibilities of the **relevant committees, as well as those of different functional and business units**. A bank's description of its LRMF should indicate the degree to which the treasury function and liquidity risk management is centralised or decentralised. A bank should describe this structure with regard to its funding activities, to its limit setting systems, and to its intra-group lending strategies. Where centralised treasury and risk management functions are in place, the interaction between **the group's units should be described**. The objective for the business units in the organisation should also be indicated, for instance, the extent to which they are expected to manage their own liquidity risk.
- 4.4. As part of its periodic financial reporting, a bank should provide quantitative and qualitative information about its liquidity position that enables market participants to form a view of its liquidity risk.

Examples of quantitative disclosures include:

- (a) **the size and composition of the bank's liquidity cushion,**
- (b) additional collateral requirements as the result of a credit rating downgrade,
- (c) the values of internal ratios and other key metrics that management monitors (including **regulatory metrics that may exist in the bank's jurisdiction**),
- (d) the limits placed on the values of those metrics, and
- (e) balance sheet and off-balance sheet items broken down into a number of short-term maturity bands and the resultant cumulative liquidity gaps.



Examples of qualitative disclosures include:

- (a) The aspects of liquidity risk to which the bank is exposed and that it monitors,
- (b) **The diversification of the bank's funding sources,**
- (c) Other techniques used to mitigate liquidity risk,
- (d) The concepts utilised in measuring its liquidity position and liquidity risk, including additional metrics for which the bank is not disclosing data,
- (e) **An explanation of how asset market liquidity risk is reflected in the bank's framework for managing funding liquidity,**
- (f) An explanation of how stress testing is used,
- (g) A description of the stress testing scenarios modelled,
- (h) **An outline of the bank's contingency funding plans and an indication of how the plan relates to stress testing,**
- (i) **The bank's policy on maintaining liquidity reserves,**
- (j) Regulatory restrictions on the transfer of liquidity among group entities,
- (k) The frequency and type of internal liquidity reporting, and
- (l) The organisational level to which the metric applies (group, bank or non-bank subsidiary).



GLOSSARY

For the purpose of this Guideline, the following terms, unless the context require otherwise, have the following meanings:

Term	Meaning
“bank”	: Means a bank licensed under section 4 Banking Order or section 4 Islamic Banking Order, as the case may be.
“board”	: board of directors (for banks incorporated in Brunei Darussalam) or by its group/regional office or equivalent oversight function for the operations in Brunei Darussalam (for banks registered in Brunei Darussalam)
“group”	: includes the bank’s Head Office or parent company, subsidiaries ⁷ , affiliates ⁸ , and any entity (including their subsidiaries, affiliates and special purpose entities ⁹) that the bank exerts control over or that exerts control over the bank.
“risk appetite”	: The aggregate level and types of risk a bank is willing to assume, decided in advance and within its risk capacity, to achieve its strategic objectives and business plan.
“risk tolerance”	: The variation around the prescribed risk appetite that the bank is willing to tolerate.
“senior management”	: The CEO and other persons having authority and responsibility for planning, directing and controlling the activities of the bank.

- END -

⁷ As defined in the Notice on Bank’s Recovery plan

⁸ As defined in the Notice on Bank’s Recovery plan

⁹ As defined in the Notice on Pillar 3 - Public Disclosure Requirements, as may be revised from time to time