

POLICY PAPER ON LIQUIDITY RISK MANAGEMENT

Policy paper on liquidity risk management based upon Section 15 of the State Ordinance on the Supervision of the Credit System (AB 1998 no. 16) (SOSCS) for credit institutions licensed by the Central Bank of Aruba

1. INTRODUCTION

This policy paper aims to provide guidance to banks in relation to the CBA's expectations in the area of liquidity risk management practices.

Banks which attract short-term deposits and make comparatively long-term loans face liquidity risk, i.e., the risk that they may not be able to fund increases in assets or meet obligations as they fall due, without incurring unacceptable losses. This may be caused by a bank's inability to liquidate assets or to obtain funding to meet its liquidity needs, whether in normal or stressful conditions.

Liquidity problems can adversely impact a bank's earnings and capital and, in extreme circumstances, can lead to the collapse of an otherwise solvent bank. Such an event can have systemic consequences. Maintenance of liquid funds to meet liabilities as they become due, or liabilities that may become due earlier than expected, is therefore pivotal to the financial viability of every bank and overall economic stability.

This policy paper, which is based on the principles outlined by the Basel Committee¹, provides a framework of policies and procedures that each bank should have in place within its liquidity risk management programme. It is meant to provide a general best practice approach, but the level of formality and sophistication of a liquidity risk management programme will depend on the size, nature and complexity of each bank's activities. Each bank is therefore expected to adopt liquidity management practices that are applicable and appropriate for the type and complexity of its operations. This policy paper also forms the basis upon which the quality and effectiveness of the liquidity risk management framework of a bank is assessed by the CBA.

2. LIQUIDITY MANAGEMENT

The foundation of effective liquidity risk management includes an informed and capable Senior Management and staff, all having relevant expertise, and established well-documented efficient systems and procedures and proper oversight by the Supervisory Board.

2.1 Board oversight

The Supervisory Board of each bank must, inter alia,

- i. Approve the strategy towards daily and long-term liquidity management, including quantitative and qualitative targets, the significant policies related to the day-to-day management of liquidity risk, and the approach for dealing with temporary and long-term liquidity disruptions.
- ii. Review policies and procedures periodically, but at least annually.
- iii. Approve a structure for the management of liquidity risk.

¹ Basel Committee (2008) "Principles for Sound Liquidity Risk Management and Supervision".

² See Section 3.1 for a summary of the policy framework.

- iv. Understand the liquidity risk profile of the bank and the tools used by Senior Management to manage, monitor and control liquidity risk.
- v. Ensure appropriate information systems are in place to facilitate the identification, measurement, monitoring and controlling of liquidity risk.
- vi. Monitor on a regular basis the performance and liquidity risk profile of the bank through periodic and timely reporting by Senior Management and internal auditors, and
- vii. Review the Contingency Plan for handling disruptions to funding.

2.2 Role of Senior Management

Each bank must have a management structure in place to effectively execute the liquidity strategy. Senior Management is responsible for overseeing the development, establishment and implementation of sound policies and procedures in keeping with the bank's strategic direction and risk appetite as approved by the Supervisory Board. Senior Management should:

- i. Ensure that policies and procedures are well understood by personnel and are consistent with the strategic policy and risk appetite and that there is adherence to the lines of authority approved by the Supervisory Board;
- ii. Establish, where necessary, an Asset Liability Committee to oversee the bank's operations relating to liquidity risk and, in particular, to ensure that the bank has adequate funds to meet its obligations;
- iii. Ensure the development, implementation, and maintenance of management information and other systems that identify, measure, monitor, and control the institution's liquidity risk;
- iv. Oversee the establishment of effective internal controls over the liquidity risk management process, including review and assessment of the liquidity management programme by the internal audit function;
- v. Report on the status of the liquidity management programme to the Supervisory Board at least once a year or as warranted by the complexity of the institution; and
- vi. Notify the CBA forthwith of any breaches of the prudential liquidity requirements.

3. INTERNAL CONTROLS

Each bank should have an effective system of control for liquidity risk, including:

- i. Documented policies and procedures for controlling risk;
- ii. Processes for identifying and evaluating risk;
- iii. Adequate information systems for monitoring risk; and
- iv. Regular independent reviews of adherence to established policies and procedures.

3.1 Policies

Each bank must document and implement domestic and foreign currency liquidity policies and procedures appropriate to the nature and complexity of its business. The policy should address the bank's goal of protecting financial strength even for stressful events. All business units that conduct activities which affect liquidity should be aware of the liquidity policy framework and Senior Management should be aware of how other banking risks impact liquidity risk.

POLICY PAPER ON LIQUIDITY RISK MANAGEMENT

A bank's liquidity management policy should at a minimum:

- i. Provide clear guidance on the composition and role of the Asset Liability Committee or other group responsible for managing liquidity;
- ii. Establish procedures to ensure adherence to liquidity risk management processes;
- iii. Require periodic calculations to determine the extent to which the institution is funding long-term assets with short-term liabilities;
- iv. Establish liquidity ratio benchmarks with due regard of the requirements set by the CBA in this area; and
- v. Establish limits on the degree of concentration that are deemed acceptable.
This should:
 - a) Ensure diversification of funding by origin and term structure by, for example, guarding against concentration by individuals or groups of depositors, types of deposit instruments, market sources of deposit, geographical sources and term to maturity. Where concentrations occur, banks need to manage their assets and liquidity profile to mitigate the risks: and
 - b) Set procedures for the orderly restoration of the liquidity position in the event of loss of funding where such concentrations are unavoidable. In addition, the bank should conduct an impact analysis on its dependency on any such concentration. See section 4 for details on contingency planning.
- vi. Provide for periodic review of the deposit structure. The review should include the volume and trend of various types of deposits offered, maturity distributions of time deposits, interest rate paid on each type of deposit, prevailing market interest rate, limits on large time deposits, public funds, and non-resident deposits;
- vii. Provide for the review of alternate funding sources including stand-by facilities and lines of credit;
- viii. Active management of the collateral positions, differentiating between encumbered and unencumbered assets;
- ix. Monitor of the legal entity and physical location where collateral is held and how it may be mobilized in a timely manner;
- x. Establish a framework for the composition of assets;
- xi. Maintain and establish 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 (refer also to paragraph 3.4 for the scenario testing)'
- xii. Assess the acceptable mismatch in combination with currency commitments. Banks should also undertake separate analyses of their strategy for each currency individually. A bank should, where appropriate, set and regularly review limits on the size of its cash flow mismatches over particular time horizons for foreign currencies in aggregate, and for each significant currency in which the institution operates;
- xiii. Detail procedures for effectively managing domestic and foreign currency liquidity; and
- xiv. Establish procedures to be followed in the event of internal control breaches.

3.2 Identification of Liquidity Risk

To manage liquidity risk, each bank should:

- i. Understand how its exposures to other risks may affect liquidity as liquidity risk and other inherent risks (e.g. credit, market, interest rate, operational, reputation and strategic) faced by it are not mutually exclusive and should not be considered in isolation. In fact, liquidity risk often arises as a consequence of these other risks. Any real or perceived problem associated with a bank in relation to these risks may prevent it from obtaining funds at reasonable prices and thus increase its liquidity risk;
- ii. Consider how existing activities may impact the liquidity risk profile in the future;
- iii. Consider the implications of new products and services; and
- iv. Be aware of how external influences may affect its liquidity position.

Sources of risk include where:

- i. Inflows from the realisation of assets (either upon maturity or at the time of sale) are less than anticipated because of default risk or price volatility;
- ii. There are significant concentrations within the asset portfolio (e.g. in relation to the distribution of exposures by counterparty, instrument type, geographical location or economic sector);
- iii. There are concentrations in funding sources or changing market conditions on the funding structure;
- iv. Access to standby or committed facilities given by other financial institutions to banks is impeded by any covenant included in the facility agreement. Banks should, if possible, regularly test access to the funds so as to determine the extent to which such facilities can be relied upon under stressed conditions;
- v. Loan commitments given by banks to their customer draw on liquidity. Banks should be able to estimate and incorporate in their cash-flow projections the amount and timing of unused commitments (including those arising from mortgage loans, retail overdrafts and credit cards) that will possibly be drawn;
- vi. The direction and amount of cash flows for derivatives, options and other contingent items are affected by market interest rates, exchange rates and other special terms under the contract. Banks should estimate such cash flows with care, having regard to the nature of individual transactions and market conditions; and
- vii. The unpredictable cash flow of the contingent liability embedded credit derivatives gives rise to liquidity demands. It is expected that banks will undertake some scenario analysis to better establish the impact if the contingent liability is called upon.

3.3 Measurement of Liquidity Risk

Each bank must establish and maintain robust consistent methods for measuring liquidity risk. Also, it must calculate its liquidity position (in all of the major currencies in which it deals, both individually and on an aggregated basis), on a day to day basis for the shorter time horizons and over a series of specified time periods thereafter, including for more distant periods, in order to enable to effectively manage and monitor its net funding requirements. All banks are required to

submit on a quarterly basis the Maturity Gap Analysis form set out in Appendix 1, which represents a simple technique for the measurement of liquidity risk. A brief summary of this type of technique for monitoring net funding requirements may be found in Appendix 2, which also includes a note on the behavioural maturity of savings portfolios and its influence on maturity gap analysis.

The CBA will assess each bank's liquidity by monitoring the net (cumulative) mismatches. The CBA recognizes that the size of mismatches will vary among banks. While the maximum mismatch for sight to eight days must not exceed zero, each bank is required to develop internal guidelines on mismatches at varying maturities (in relation to its deposit and savings base). Each bank is also required to report breaches of these limits immediately to the Supervisory Board, with an explanation of the cause and the remedy to avoid future breaches. In case of a significant breach, with possible significant consequences for the liquidity position of a bank and its compliance with the prudential liquidity requirements, also the CBA should be notified immediately.

3.4 Scenario Testing

Evaluating whether a bank is sufficiently liquid depends greatly on the behaviour of cash flows under different conditions. Analyzing liquidity thus entails laying out "what if" scenarios. Scenarios should take into account factors that are both internal (institution specific) and external (market related). Scenario testing should also be among the measurement techniques used as part of its contingency planning process.

Each bank should test at least two scenarios, first in a going concern environment, i.e., in the ordinary course of business, and second, as if there is a "bank specific crisis". However, where conditions are volatile, banks are expected to test more than two types of scenarios.

The going concern scenario establishes a benchmark for the 'normal' behaviour of balance sheet related cash flows in the ordinary course of business. The "bank specific crisis" remains confined to the bank itself and provides one type of 'worst case' benchmark.

Under each scenario, a bank should try to account for significant positive or negative liquidity swings in cash flows and funding requirements that could occur.

3.5 Monitoring of Liquidity Risk

Each bank must establish and maintain appropriate systems for monitoring liquidity risk. Systems that produce liquidity reports should be linked to the bank core system and the data should reconcile with the banks' financial data. The liquidity management framework should provide the Supervisory Board, Senior Management and other appropriate personnel with timely information on the liquidity position. These reports should indicate breaches of limits or when the bank is approaching the limit and general compliance with the bank's established policies and procedures. Such systems need to be flexible enough to deal with various contingencies that may arise.

3.6 Internal Audit

Each bank must use an independent review process to:

- i. Ensure that established policies and procedures are being followed;
- ii. Ensure that procedures are achieving their objectives;

POLICY PAPER ON LIQUIDITY RISK MANAGEMENT

- iii. Review the liquidity management process to identify any weaknesses; and
- v. Ensure prompt corrective actions are taken.

4. CONTINGENCY PLANNING

A bank's ability to withstand both temporary and longer-term liquidity crises can depend on the adequacy of its formal contingency plans. Each bank should, therefore, have in place an approved contingency plan that addresses the strategy for handling liquidity crises, including procedures for making up cash flow shortfalls in emergency situations. Effective contingency plans should include:

- i. Specific procedures to ensure timely and uninterrupted information flows to senior management;
- ii. Clear divisions of responsibility within management in a crisis;
- iii. Action plans for altering the composition of assets and liabilities (i.e., market assets more aggressively, sell assets intended to be held, raise interest on deposits, et cetera.);
- iv. An identification of back-up sources of funding, including unused credit lines, the circumstances in which they can be accessed, the amount expected, and the priority attached to each alternative source of funds (i.e., designate primary and secondary sources of liquidity);
- v. A classification of borrowers and trading customers according to their importance to the institution in order to maintain customer relationships; and
- vi. Plans and procedures for communicating with the media.

A bank must be careful not to rely excessively on back-up lines and need to understand the various conditions, such as notice periods, that could affect its ability to access such lines quickly. It should have contingency plans for times when its back-up lines become unavailable.

5. REPORTING REQUIREMENTS

The CBA will monitor banks on an ongoing basis to ensure that liquidity risk is being managed appropriately based on the nature and complexity of their business activities and operating environment. The CBA will encourage regular dialogue with banks to further understand their liquidity management practices. As part of this process, banks are required to:

- i. Submit a copy of their liquidity management policy;
- ii. Submit on a quarterly basis the attached regulatory form - Maturity Gap Analysis; and
- iii. Immediately advise the CBA of significant breaches in internal limits or of concerns about their current or future liquidity position and the strategies to address such concerns;
- iv. Publicly disclose information on a regular basis that enables market participants to make an informed judgment about the soundness of their liquidity risk management framework and liquidity position.

POLICY PAPER ON LIQUIDITY RISK MANAGEMENT

Appendix 1

Only for the use by the
Centrale Bank van Aruba

Appendix:1
page 1

App. 6 to the statement of
as of:

AMOUNTS in Afl. 1,000

MATURITY GAP ANALYSIS
On a quarterly basis

| | Assets | Sight- 8 days | 8 days- 1month | 1- 3 months | 3-6 months | 6-12 months | 1- 2 year | 2-5 years | Over 5 years | Non-interest sensitivity Assets and Liabilities | Total |
|---|--|---------------|-------------------|-------------|------------|-------------|-----------|-----------|--------------|--|-------|
| | | | | | | | | | | | |
| 1 | Cash | | | | | | | | | | |
| 2 | Centrale Bank van Aruba: | | | | | | | | | | |
| | .Time deposit | | | | | | | | | | |
| | .Current Account | | | | | | | | | | |
| | .Reserve requirement | | | | | | | | | | |
| 3 | Due from deposit money banks: | | | | | | | | | | |
| | .Time deposits | | | | | | | | | | |
| | -residents | | | | | | | | | | |
| | -non-residents | | | | | | | | | | |
| 4 | Investments: | | | | | | | | | | |
| | .Treasury bills | | | | | | | | | | |
| | .Government bonds | | | | | | | | | | |
| | .Other marketable securities | | | | | | | | | | |
| | .Non-marketable securities | | | | | | | | | | |
| | .Bills of exchange, acceptances, and promissory notes | | | | | | | | | | |
| 5 | Loans: | | | | | | | | | | |
| | .Commercial | | | | | | | | | | |
| | -residents | | | | | | | | | | |
| | -non-residents | | | | | | | | | | |
| | .Individuals | | | | | | | | | | |
| | -residents | | | | | | | | | | |
| | -non-residents | | | | | | | | | | |
| | .Government | | | | | | | | | | |
| 6 | Fixed assets | | | | | | | | | | |
| 7 | Other assets | | | | | | | | | | |
| | Total interest bearing assets or | | | | | | | | | | |
| 8 | Risk Sensitive Assets (RSA) | | | | | | | | | | |

Signature (s):

POLICY PAPER ON LIQUIDITY RISK MANAGEMENT

MATURITY GAP ANALYSIS (Continued)

Appendix: 1

page 2

AMOUNTS in Afl. 1,000

| Liabilities & Equity | Sight- 8 days | 8 days- 1month | 1- 3 months | 3-6 months | 6-12 months | 1- 2 year | 2-5 years | Over 5 years | Non-interest sensitivity Assets and Liabilities | Total |
|--|---------------|----------------|-------------|------------|-------------|-----------|-----------|--------------|---|-------|
| 9 Demand Deposits: | | | | | | | | | | |
| -residents | | | | | | | | | | |
| -non-residents | | | | | | | | | | |
| 10 Time Deposits: | | | | | | | | | | |
| .Private sector: | | | | | | | | | | |
| -residents | | | | | | | | | | |
| -non-residents | | | | | | | | | | |
| .Government | | | | | | | | | | |
| .Deposit money banks: | | | | | | | | | | |
| -residents | | | | | | | | | | |
| -non-residents | | | | | | | | | | |
| 11 Savings Deposits: | | | | | | | | | | |
| -residents | | | | | | | | | | |
| -non-residents | | | | | | | | | | |
| 12 Borrowings: | | | | | | | | | | |
| .Centrale Bank van Aruba | | | | | | | | | | |
| .Deposit money banks | | | | | | | | | | |
| .Bonds | | | | | | | | | | |
| .Other | | | | | | | | | | |
| 13 Other Liabilities | | | | | | | | | | |
| 14 Shareholders' equity | | | | | | | | | | |
| 15 Subordinated debt | | | | | | | | | | |
| Total interest bearing liabilities or Risk Sensitive | | | | | | | | | | |
| 16 Liabilities (RSA) | | | | | | | | | | |
| 17 Off-balance sheet liabilities | | | | | | | | | | |
| | | | | | | | | | | |
| GAP MEASURES | | | | | | | | | | |
| RSA minus RSL | | | | | | | | | | |
| RSA minus RSL (cumulative) | | | | | | | | | | |

Signature(s):

Maturity Mismatch Approach

A bank may utilize a maturity mismatch approach to measure liquidity risk. This approach calculates the net mismatch between inflows and outflows in various time bands. Mismatches are measured on a net cumulative basis by adding the net mismatches in each successive time band as illustrated in the table below.

Table

| Sight – 8 days | Sight – <1 month | Sight to < 3- months | Sight to < 6- months | Sight to < 12 months | Sight – 5 years | Sight- Over 5 years |
|-------------------|---------------------|-------------------------|-------------------------|-------------------------|--------------------|---------------------------|
|-------------------|---------------------|-------------------------|-------------------------|-------------------------|--------------------|---------------------------|

In making an estimate of cash flows, a bank should consider:

- i. The behavioural maturity and not only the contractual maturity of cash flows, as many cash flows associated with various products are influenced by interest rates and/or customer behaviour;
- ii. The seasonality or cyclical nature of cash flows; and
- iii. The impact of the economic and business cycle on liquidity.

Each bank is required to submit the regulatory form included as Appendix 1 to the CBA on a quarterly basis. A bank should:

- i. Allocate each cash inflow or outflow to a given calendar date from a starting point, usually the next day. Each bank is required to disclose all assumptions about the starting point and clearing and settlement conventions;
- ii. Stratify all of a bank’s assets, liabilities and off-balance sheet instruments into time bands based on their next re-pricing or maturity date, whichever is shorter;
- iii. Enter certain non-interest bearing liabilities, such as demand deposit accounts, under the appropriate column even though such deposits do not bear an explicit rate of interest or maturity;³
- iv. Use conservative estimates of when credit lines can be drawn down. Similarly, cash outflows can be ranked by the earliest date a liability holder could exercise an early repayment option, or the earliest date contingencies can be called;
- v. Disclose assumptions that are based on past experience; and
- vi. Report assets and liabilities with embedded options that grant the right, but not the obligation to sell an asset or repay a liability under the time band in accordance with their contractual maturity or next re-pricing date. For instance, an investment in a debt security maturing in 5 years with a put option (option to sell) in 1 year should be reported under the 5-year time band except where management has firmly decided that it will exercise its option in 1 year. In such circumstances, the investment should be reported

³ The “maturity” or run-off of such deposits may require replacement with interest-bearing funds and hence exposes a bank to interest rate risk.

under the 1-year time band.

The difference between cash inflows and cash outflows in each time band produces an excess or deficit of funds/net gap position or (re-pricing imbalance) for each time band. This gap serves as a starting point for a measure of a bank's future liquidity position

Non-Interest Sensitive (Assets and Liabilities)

Balances for all non-interest sensitive assets and liabilities, i.e., those that are not directly responsive to changes in interest rates, should be reported under this column. For instance, balances relating to all non-financial assets and impaired loans ("nonperforming" & "non-accrual" assets) are to be entered in this column. A bank's shareholders' equity should also be reported in this column.

Behavioural Maturity

Many cash flows associated with various products offered by financial institutions are influenced by customer behaviour. This is especially relevant with bank's savings portfolio, which in most cases is contractually available at call and therefore considered to be very volatile liabilities.

However, experience has shown that a portion of a banks' savings portfolio may be stable/sticky with a low probability of withdrawal. Determination as to how much of a deposit portfolio is "stable" must be estimated by, inter alia, reviewing historical behaviour of customer deposits while paying attention to prevailing economic conditions at the time under review. Such data would help to inform:

- i. How to appropriately classify certain deposits into the maturity buckets of the gap analysis; and
- ii. Estimates of future behaviour and sensitivity of a bank's savings deposits to changes in market variables.