RESCINDED

Liquidity Risk Management

Introduction

This document and any attachments are superseded by OCC 2012-17.

A savings association's fa[illegible]nd risks can lead to its demi[illegible]on § 563.161, Management a[illegible] to maintain sufficient liquidity to ensure its safe and sound operation. Therefore, associations must maintain and follow sound liquidity risk management plans, policies, procedures, and practices to ensure their ability to fund all arising financial obligations and commitments in a timely manner.

Liquidity risk management requires careful and deliberate planning for managing and operating under both normal and stressful conditions. Plans, policies, procedures, practices, and systems should be commensurate with an association's scope and complexity of operations and overall risk profile and tolerances. Liquidity risk management should also be robust with analysis and metrics that allow an association to project its liquidity position and evaluate its options under various market conditions, such as times of economic stress, crisis, and collapse. A contingency funding plan should be an integral aspect of any association's liquidity risk management. Further, sound liquidity risk management ensures that the association will maintain necessary liquidity levels at reasonable or acceptable costs.

LINKS
Program
Appendix A
Appendix B

An association's failure to meet deposit withdrawal demands has dire consequences, up to and including closure. When liquidity risk is high, reputation risk is also high. One adverse story in the media can cause a major run on an association's deposit base. There are several different definitions of liquidity and liquidity risk:

- *Liquidity* is the ability to fund assets and meet obligations as they come due.
- *Liquidity* is the amount an association holds in cash and other assets that are quickly convertible into cash without significant loss.
- *Liquidity* is an association's capacity to meet its financial obligations and commitments at reasonable or acceptable costs.
- The essence of *liquidity* is having cash when you need it.

Types of Liquidity Risk

There are different kinds of liquidity risk:

- Funding liquidity risk – the potential that an association will be unable to meet its obligations as they become due because of an inability to liquidate assets or obtain adequate funding. Funding risk is the risk of being unable to maintain or acquire funds at a reasonable or acceptable price when needed, or in crisis and collapse scenarios, simply being unable to maintain or acquire funds.

- Market liquidity risk – the risk that an association cannot easily unwind or offset specific exposures without significantly lowering market prices because of inadequate market depth or market disruptions. This can be cyclical in nature or a result of market disruption.

- Mismatch or structural risk – the gap between maturing assets and liabilities. Associations borrow short and lend long. The maturity mismatch, such as the one between a residential mortgage and a retail deposit, gives rise to this kind of liquidity risk.

- Contingency Risk – risk that future events will create a greater need for cash than management projected. Commitments to lend are uncertain, both in probability as well as in amount. Contingency risk also describes the risk of finding new liabilities, or replacing liabilities under difficult market conditions.

Sound Practices for Risk Management

Liquidity management includes evaluating various funding sources and the associated costs. Effective liquidity management does not necessarily mean that management should use the cheapest funding source available. Instead, effective liquidity management means that funding sources are diverse and management can maintain the following:

- Access to different funding sources.

- Flexibility.

- Relationships with the various funding sources.

Management should also consider the following issues in its liquidity plan:

- Maturity and re-pricing balance sheet mismatches.

- Anticipated funding needs.

- Economic/market forecasting.

Contingency Plan

Management must have an effective contingency plan that identifies maximum and minimum liquidity needs and weighs alternative courses of action designed to address these needs. Factors to consider include:

- Decline in earnings.
- Increase in nonperforming assets.
- Deposit concentrations (hot money).
- Downgrading by a rating agency.
- Expanding business horizon.
- Acquisitions.
- Tax implications.

When formulating a contingency plan it is important to forecast the types, probability of occurrence, and severity of impact of any potential liquidity event.

EVENT PROBABILITY – IMPACT MATRIX			
		Impact Potential	
		Low	High
Event Probability	High	High Probability Low Impact	High Probability High Impact
	Low	Low Probability Low Impact	Low Probability High Impact

Associations can rank the probability of occurrence and effect of potential liquidity events using the matrix. Association management should consider liquidity events with the following combinations of probability and effect:

- Low probability and high effect potential.
- High probability and high effect potential.
- High probability and low effect potential.

Management should assess responses to the events identified in the context of the association's short-, intermediate-, and long-term liquidity positions. A fundamental principle of designing an adequate contingency plan is to ensure adequate diversification of potential funding sources. Funding diversification focuses on:

- The number of fund providers.
- The underlying stability, availability, and flexibility of the sources of funds.
- The liquidity event addressed.

Trends in Liquidity

In addition to the recent market disruption of 2008 and early 2009, three recent trends have affected liquidity risk:

- Growth in off-balance-sheet obligations.
- Increased reliance on wholesale funding, not retail deposits.
- Increased sensitivity of wholesale term-funding costs.

Financial institutions have become more dependent on wholesale funds and have increased off-balance-sheet obligations. As associations have become more dependent on wholesale funding to meet liquidity needs, liquidity risk has become largely synonymous with funding risk.

2008 Market Events

In 2008, The Federal Reserve implemented a series of actions aimed at restoring the normal functioning of financial markets and restarting the flow of credit, including the following:

- Providing liquidity to a range of financial service providers.
- Working with the Treasury and the Federal Deposit Insurance Corporation (FDIC) to help stabilize the banking system.

- Providing backup liquidity to the commercial paper market.

Temporary Liquidity Guarantee Program

The FDIC initiated a Temporary Liquidity Guarantee Program (TLGP) aimed to strengthen confidence in the banking system by guaranteeing newly issued senior unsecured debt of banks, thrifts, and certain holding companies. Although financial markets have improved significantly since the fall of 2008, portions of the industry are still suffering from recent economic turmoil. To facilitate the orderly phase-out of the TLGP, and to continue access to FDIC guarantees where they are needed, the FDIC Board of Directors (Board) extended both the Transaction Account Guarantee Program which fully guarantees non-interest-bearing transaction deposit accounts above $250,000, regardless of dollar amount, and the Debt Guarantee Program (DGP), which guarantees eligible senior unsecured debt issued by eligible institutions.

> The FDIC initiated a Temporary Liquidity Guarantee Program (TLGP) aimed to strengthen confidence in the banking system.

On March 17, 2009, the FDIC extended the deadline for issuance of guaranteed debt from June 30, 2009, to October 31, 2009, and extended the expiration date of the guarantee to the earlier of maturity of the debt or December 31, 2012, from June 30, 2012. The FDIC imposed a surcharge on debt issued with a maturity of one year or more beginning in the second quarter of 2009.

The FDIC adopted a final rule extending the program six months, to June 30, 2010, on August 26, 2009.

The FDIC adopted a final rule on October 20, 2009, that allows the DGP to expire on October 31, 2009. The rule also establishes a limited, six-month guarantee facility upon expiration of the DGP.

Term Asset-Backed Securities Loan Facility

One of the programs the Federal Reserve has implemented is the Term Asset-Backed Securities Loan Facility (TALF). This credit facility is authorized under section 13(3) of the Federal Reserve Act. The main goal in forming the TALF is to bring to life the asset-backed securities market that effectively subsidizes loans to consumers and businesses to buy cars, pay for their educations, buy farm equipment, or use credit cards. The Federal Reserve later expanded the set of permissible underlying credit to include commercial mortgages. The anticipated expiration dates for the TALF remain set at June 30, 2010, for loans backed by new-issue commercial mortgage-backed securities and March 31, 2010, for loans backed by all other types of collateral. The Federal Reserve noted that all of these plans are subject to change if market conditions worsen.

Background

The TED Spread

The spread between three-month LIBOR and the yield on the three-month Treasury bill, or the TED spread, fell from 218 basis points (bps) at the end of November 2008 to 123 bps at the end of

December 2008. [illegible] represented a dramatic reduction from the all time high of 464 bps on October 10, 2008. TED is an acronym formed from T-Bill and ED, the ticker symbol for the Eurodollar futures contract. The size of the spread is usually denominated in bps. The TED spread fluctuates over time, but historically remained within a range of 10 and 50 bps until 2007. A rising TED spread often means a downturn in the U.S. stock market because it is an indicator of perceived credit risk in the general economy. Investors consider T-bills to be risk-free while LIBOR reflects the credit risk of lending to commercial banks. When the TED spread increases, lenders believe the risk of default on interbank loans is increasing. Interbank lenders therefore demand a higher rate of interest, or accept lower returns on safe investments, such as T-bills. When the risk of bank defaults is decreasing, the TED spread decreases. The inverse relationship between the TED spread and the willingness of banks to extend credit means that the narrowing in the spread is an encouraging sign.

LIBOR OIS Spread

Another credit market indicator is the spread between one-month LIBOR and the one-month Overnight Index Swap rate, or the LIBOR OIS spread. The LIBOR OIS spread fell from 151 bps at the end of November 2008 to 26 bps at the end of December 2008. There is an inverse relationship between the LIBOR OIS spread and the amount of cash available for lending. A decrease in both spreads indicates that banks are less risk averse and that more cash is available for lending.

In response to liquidity events in 2008 and international liquidity risk management concerns, the BASEL Committee issued guidance in September 2008 that focuses on the following areas:

- Importance of the establishment of a liquidity risk tolerance.
- Maintenance of an adequate level of liquidity including a cushion of liquid assets.
- Allocation of liquidity costs, benefits, and risks.
- Identification and measurement of liquidity risks including contingent liquidity risks.
- Design and use of severe stress test scenarios.
- Robust and operational contingency funding plans.
- Management of intraday risk and collateral.

Association-specific problems or systemic disturbances can trigger liquidity problems.

How Savings Associations Manage Liquidity

Asset and Liability Management Banking

When an association holds assets that it can readily turn into cash when needed, we refer to it as asset management banking. When an association makes short-term borrowings that it must continually roll over, we refer to it as liability management banking.

Association Specific or Systemic Effect

Association-specific problems or systemic disturbances can trigger liquidity problems. Association-specific liquidity problems are usually the result of other problems within an association including:

- Poor asset quality.
- Excessive interest rate risk.
- Inadequate capital or earnings.
- Operational problems including fraud.
- Weak or deficient management.
- Inadequate cash flow planning.

Systemic liquidity problems may result from:

- Major financial debacles such as the failure of one or more large financial organizations involved in banking, securities, and/or insurance.
- Crisis in or collapse of the domestic or foreign financial markets.
- Shortages of commodities, goods, and services, such as energy or food.
- Widespread failure of information or communication systems and capabilities including the Internet.
- Catastrophic events such as those arising from war, terrorism, weather, or a pandemic situation.

Regardless of whether the liquidity problems are association-specific or systemic, the association may find that traditional and primary sources of liquidity are unavailable to ease liquidity problems. For example, the Federal Home Loan Bank System and the Federal Reserve System might restrict the availability or terms of additional borrowings and brokered deposits may no longer be available or even permissible. Borrowing lines with private lenders such as commercial banks may be restricted or unavailable. Associations must plan for such low-probability occurrences, and contingency funding plans should provide management with appropriate guidance on how to approach and deal with such issues and situations.

Liquidity risk management involves balancing the trade-off between profitability and the risk of illiquidity. Although a high degree of liquidity may be a positive sign since it indicates a capacity to meet obligations, fund commitments, and take advantage of business opportunities, too much liquidity in the form of cash and low-earning assets or expensive borrowings can reduce profitability. Conversely, an association may rely on contingent funding sources as a means to reduce borrowing costs and limit unnecessary leverage; however, stress environments may restrict accessibility to these sources. The key

is to find the right balance between liquidity and profitability. That balance will change over time as economic and business conditions change. An association's business model and balance sheet structure, including the associated cash flows, are primary liquidity factor determinates. Finding the right balance depends, in part, on management's ability to estimate and manage future cash flows. To manage liquidity, effective managers typically employ the following analytical techniques:

- Financial ratio analysis – Analysis of a company's financial performance using selected financial ratios.

- Intraday liquidity position analysis – Analysis of funds that associations can access during the business day, usually to enable associations to finalize payments in real time.

- Collateral position analysis – Associations should be aware of the different types of collateral, manage the effects of various covenants related to triggers, pledging documentation, and netting agreements.

- Maturity gap and funding mismatch analysis – A liquidity gap schedule provides an analytical framework for measuring future funding needs by comparing the amount of assets and liabilities maturing over specific time intervals.

- Cash flow/forecasting analysis – This analysis should include off-balance sheet items, such as draw downs on committed credit lines or collateral agreements in ISDA (international swaps and derivatives association) derivative contracts.

- Liquidity stress testing and scenario analysis – Stress testing analyzes the effect of changes in the association's liquidity position. Scenario analysis considers possible future events by analyzing alternative possible scenarios. The analysis allows for improved decision making by consideration of different outcomes.

Liquidity Management

The liquidity strategy should define the association's general approach to managing liquidity, including various quantitative and qualitative targets.

Effective liquidity risk management starts with the development of written plans, policies, and procedures, and the establishment of risk tolerances and minimum acceptable levels of liquidity. Together, these documents should clearly define an association's strategy for managing liquidity risk, delineate areas of management responsibility, and establish a process for measuring, monitoring, reporting, and managing liquidity. Each association should also have contingency plans for dealing with unanticipated cash flow disruptions or cash flow needs.

Effective liquidity risk management practices are necessary for associations of all sizes and complexities. While targeted toward medium and larger financial institutions, the principle-based guidance on sound liquidity risk management issued by the Basel Committee on Banking Supervision in September 2008 is also broadly applicable to all associations. Among other things, the guidance emphasizes the

importance of the regulator's assessments of the adequacy of an association's liquidity risk management framework and its level of liquidity.

Each association should have a written strategy for the overall strategic liquidity policy, the day-to-day management of liquidity, and contingency plans in the case of a liquidity crisis. Board approved policies must effectively communicate guidelines for liquidity risk management and designate responsibility.

The liquidity strategy should define the association's general approach to managing liquidity, including various quantitative and qualitative targets. The liquidity strategy should cover specific policies on the composition of assets and liabilities, the use of wholesale funding, and strategies for addressing temporary and longer-term liquidity disruptions.

The sophistication of an association's policies, procedures, and information systems for managing liquidity should relate to the following items:

- Size and complexity of the association.
- Strength and stability of the association's core deposit base.
- The association's dependence on wholesale funding.
- The association's reliance on assets sales/securitizations for funding.
- Variability of the association's cash flows.
- Financial condition of the association.

Associations with a challenging financial environment should be especially attentive to liquidity management long before their condition deteriorates or examination ratings decline.

Board and Senior Management Oversight

Effective oversight is an integral part of an effective liquidity management program. The board and senior management should understand their oversight responsibilities.

Board of Directors

The board of directors should establish the association's tolerance for liquidity risk, set liquidity requirements, and approve significant policies related to liquidity management. The board should also ensure senior management takes the necessary steps to monitor and control liquidity risk. The board should understand the nature and level of the association's liquidity risk, and management should inform the board regularly of the liquidity position of the association. The association's board of directors usually delegates responsibility for managing the association's overall liquidity to a specific committee of senior managers. This group may be the finance committee, a treasury unit, the Asset/Liability Committee, or another group.

Senior Management

Senior management should establish policies, procedures, and information systems for managing and monitoring liquidity to ensure adequate liquidity at all times. Policies should include internal controls.

In addition, senior management should periodically review the association's liquidity position and monitor internal and external factors and events that could have a bearing on the association's liquidity. Senior management should also ensure sound forecasting and analysis, thoughtful contingency planning, and diversification and management of funding sources.

Senior management should periodically review the association's liquidity strategies, policies, and procedures. It is critical that senior management fully understand the association's borrowing programs with and rating system under the Federal Home Loan Bank System and the Federal Reserve System. Borrowing programs can vary greatly from bank to bank. Senior management should review borrowing agreements on a periodic basis and fully understand all embedded triggers and parameters. Lenders are likely to curtail or halt borrowing when its funding needs are most critical. The association should clearly reflect this reality in contingency funding plans.

Policies and Procedures

An association should have clearly defined policies and procedures for managing liquidity. The board of directors has ultimate responsibility for the adequacy of policies and procedures; senior management has responsibility for their design and implementation. Policies and procedures should include the following:

- Delineated lines of responsibility. Identification of individuals or committees responsible for managing and monitoring liquidity risk.

- An overall liquidity strategy. The liquidity strategy should define the general approach the association will follow in managing liquidity, including various quantitative and qualitative targets. The liquidity strategy should cover specific policies on the composition of assets and liabilities, including policies on investment in illiquid securities and the use of wholesale funding. There should also be a written strategy for addressing temporary and long-term liquidity disruptions.

- A process for measuring and monitoring liquidity. Although associations can use a number of procedures for measuring and monitoring liquidity, the most effective procedures involve pro-forma cash flow projections. These range from simple calculations to complex models for projecting cash inflows and outflows over different planning periods (time bands) to identify cash shortfalls and surpluses in future periods. While liquidity measures based on balance sheet ratios are useful in measuring an association's current liquidity position and in monitoring trends in liquidity, management should focus its attention on forward looking, pro-forma measures of liquidity.

- Quantitative guidelines and limits to ensure adequate liquidity. Guidelines and limits will vary depending on the nature of an association's operations and circumstances.

Associations may set guidelines, for example, on the size of cash flow mismatches over specified time horizons. Because of the subjective nature of the numbers in pro-forma cash flow projections, associations may find it impractical to establish precise risk limits or precise rules for addressing cash flow mismatches projected to occur in future periods. Nevertheless, an association should make an effort to define its tolerance for cash flow mismatches and should establish strategies for addressing them. Associations can also tie limits to balance sheet ratios keeping in mind that ratio analysis is inherently simplistic and nondynamic. Examples include the following ratios:

— Maximum projected cash flow shortfall tolerated for a specified time (for example, one week ahead, one month ahead, one quarter ahead) as a percentage of liquid assets and unused borrowing facilities.

— Minimum ratio of liquid assets to total assets.

— Maximum overnight borrowings to total assets.

— Maximum ratio of FHLB advances to total assets.

— Maximum ratio of brokered deposits to total assets.

— Maximum ratio of total wholesale borrowings to total assets.

— Maximum ratio of pledged assets to total assets.

— Maximum ratio of loans to deposits.

— Maximum ratio of managed assets to total assets if the association securitizes assets.

- Internal control procedures to ensure adherence to policies and procedures that address the integrity of the liquidity risk management process. An effective system of internal control should promote effective operations, reliable financial and regulatory reporting, and compliance with relevant laws and association policies. Internal control systems should provide appropriate approval processes, limits, and ensure regular and independent evaluation and review of the liquidity risk management process. Such reviews should address any significant changes in the nature of the instruments acquired, limits, and controls since the last review. Internal control procedures should include the following activities:

  — Procedures for approvals of exceptions to policies, limits, and authorizations. Positions that exceed established limits should receive the prompt attention of appropriate management who should resolve the issue according to the process described in approved policies.

  — A schedule for the periodic review of the liquidity policies and procedures. Periodic reviews of the liquidity management process and related procedures should address any significant

changes in liquidity risk limits, liquidity strategy, information systems, and internal controls since the last review.

— Contingency planning. Management should assess its anticipated responses to liquidity events in the context of their implications for an association's short-term, intermediate-term, and long-term liquidity profile.

Contingency Funding Plan

Each association should have a contingency funding plan for handling unanticipated stressful scenarios that could result in a significant erosion of association-specific or general-market liquidity. The plan should be robust and management should update the plan on a regular basis. A contingency funding plan should accomplish the following:

- Identify and assess the adequacy of financial resources (sources of funds) for contingent needs. The plan should identify all back-up facilities (equity lines of credit), the conditions related to their use, and the circumstances where the association might use them. Periodically, management should test all sources of its contingency funding plan with the goal of ensuring that there are no unexpected impediments or complications in case the association needs to use its contingency lines. Management should understand the various conditions, such as notification periods, that could affect access to back-up funding sources.

- Define responsibilities and decision-making authority so that all personnel understand their role during a problem situation.

- Identify the sequence that the association will mobilize and commit key sources of funds for contingent needs. The degree of uncertainty as to the magnitude, timing, and availability of resources may call for different priorities in different situations.

- Address implementation issues such as procedures the association should use to obtain emergency funds or release funds from one use to transfer to another. Ensure that there are no constraints, such as blanket liens on all collateral, which may limit availability of other liquidity sources.

- Identify other actions necessary in the event of an unexpected contingency.

- Assess the potential for funding erosion (magnitude and rate of outflow) by source of funds under different scenarios.

- Assess the potential liquidity risk posed by other activities, such as asset sales and securitization programs.

Each association should have adequate information systems for measuring, monitoring, and controlling liquidity risk.

Management Information Systems

Each association should have adequate information systems for measuring, monitoring, and controlling liquidity risk:

- A management information system should provide timely information on the association's current and prospective liquidity position.
- Management should be able to project its liquidity position and liquidity requirements over various time horizons and scenarios.
- Management should clearly define assumptions used in projections so it can evaluate the appropriateness and validity of the projections.
- The information system should provide the data needed by management to determine compliance with the association's liquidity policies, procedures, and limits.

Normally, a sound management information system will provide the following information:

- Liquidity needs and sources to meet them, over various time horizons and scenarios based upon probability of occurrence.
- List of funds providers.
- Asset yields, liability costs, net interest margin, and variance from prior reporting periods or deviation from budget.
- Long-term interest margin trends.
- Exceptions to policy guidelines.
- Economic conditions in the association's trade area, including interest rate projections and anticipated deviations from the original plan or budget.
- Information concerning nonrelationship or higher cost funding programs and their uses and costs.

PRIMARY SOURCES OF LIQUIDITY

Background

Traditionally, depository institutions receive funds from customer deposits. The depository institution then loans funds to customers. Associations generally invest funds not loaned to customers in liquid assets, such as Fed funds and U.S. government securities.

Liquid Assets

The most readily available liquid asset is operating cash flows arising from interest and principal payments from loans. Appropriate management of the timing and maturity of asset and liability cash

flows can e[illegible]and [illegible]idity. Associations can sell assets that are near-term cash equivalents, such as government secu[illegible]ies; h[illegible]we[illegible]r, the assets must be unencumbered (not pledged as collateral for any other transaction) and [illegible]s[illegible]o liquidate under any market conditions.

Associations often meet [illegible]iquidity [illegible]eed through the sale of liquid assets and the planned runoff of loans and investments. While in th[illegible]ry a[illegible] asset can serve as a source of liquidity, associations must consider the length of time it takes to [illegible]se[illegible] an[illegible]sset and the sales price. Unencumbered assets that an association can sell or borrow agains[illegible] with re[illegible]tive ease without appreciable loss are ideal sources of liquidity.

Liquid assets would generally include de[illegible]posit[illegible] w[illegible]h [illegible]her financial institutions, money market instruments, and short-term, high-quality secu[illegible]ies. [illegible]n addit[illegible]on, associations may consider as liquid assets other securities and loans that can easily be [illegible]d o[illegible]r[illegible]e [illegible]out to mature. Because of the time dimension of liquidity, an asset may be a source of liquid[illegible]y if it [illegible]tures or the association can sell the asset when needed. Generally, assets with shorter maturit[illegible] or th[illegible]se [illegible] higher quality are liquid.

Cash and Deposits with Others

While cash is the essence of liquidity, the cash balances reported on an [illegible]sociati[illegible]'s balance sheet are not necessarily available to meet a liquidity shortfall. While an associati[illegible] nee[illegible] a minimum level of operating cash balances for day-to-day transactions (for tellers and ATMs), other cash balances may be in the form of checks or drafts in the process of collection, and are unavailable. Typically, only excess cash balances – balances over and above those needed for daily operations and scheduled payments – are sources of liquidity. However, associations do not generally hold large, excess cash balances that are nonearning assets.

Money Market Instruments and Securities

As a practical matter, most associations view their portfolios of money market instruments and investment securities as a primary source of liquidity. Statement of Financial Accounting Standards (SFAS) No. 115, Accounting for Certain Debt and Equity Securities, requires associations to designate investment securities as either available-for-sale, trading, or held-to-maturity. The association must carry securities designated as available-for-sale or trading on the balance sheet at fair value, with trading securities' changes in value recognized through earnings. The association must carry securities designated as held-to-maturity at amortized cost. Examination Handbook Section 540 discusses accounting for securities.

In general, associations may not sell securities in the held-to-maturity portfolio before maturity without "tainting" the entire portfolio – an event that would cause the entire portfolio of held-to-maturity securities to be reported at fair value. Management should be familiar with SFAS No. 115 and understand the circumstances when they may sell held-to-maturity securities without penalty of tainting. Moreover, management should carefully consider its liquidity needs before designating securities as available-for-sale, trading, or held-to-maturity.

While the designation of a security as available-for-sale, trading, or held-to-maturity has certain consequences for accounting purposes, it has no bearing on whether the security is liquid in an

economic sense. Whether an investment is liquid depends on how easily the holder can sell it in the market. Securities with tight bid-ask spreads are more liquid than those with wide bid-ask spreads.

Asset Securitization

This form of liquidity management relies on asset sales. Securitization transforms portfolios of on-balance-sheet loans, such as mortgages or credit card debt, into securities that the issuer then sells to investors. Associations may use proceeds for ongoing funding or as a way to meet future funding needs. The sharp drop in investor demand for asset-backed securities since August 2007 has made this source of funding more scarce and costly.

> With adequate planning and certain efficiencies, securitizations can create a more liquid balance sheet as well as leverage origination capacity.

With adequate planning and certain efficiencies, securitizations can create a more liquid balance sheet, as well as leverage origination capacity. However, peculiarities related to certain transactions, as well as excessive reliance on securitizations as a single funding vehicle, may increase liquidity risk. For example, a concentration or over-reliance on securitizations as a funding source may increase liquidity risk if there are disruptions in the market.

Management should consider how securitizations affect its day-to-day liquidity management and its contingency funding plan. Management should analyze the potential effect of securitizations on liquidity from an individual transaction perspective and on an aggregate basis. Associations should make the following determinations when contemplating a securitization transaction:

- The type of security. The agency securitization market remains active, but the nonagency securitization market is not.
- The volume of securities scheduled to amortize during any particular period.
- The plans for meeting future funding requirements (including when such requirements may arise).
- The existence of early amortization or increased collateralization triggers.
- The alternatives available for obtaining substantial amounts of liquidity quickly.
- The operational concerns associated with re-issuing securities.

In particular, associations that use securitizations to fund credit cards and other revolving credit receivables should prepare for the possible return of receivable balances to the balance sheet because of scheduled or early amortization. Return of receivable balances because of scheduled or early amortization may result in large asset pools that require balance sheet funding at unexpected or inopportune times. Management should also factor the maturity and potential funding needs of the receivables into short-, intermediate-, and long-term liquidity planning.

Exposure may also increase if an association minimizes securitization costs by structuring transactions at maturities offering the lowest cost, without regard to maturity concentrations or potential long-term funding requirements. Correlating maturities of incidental securitized transactions with overall planned balance sheet growth may somewhat mitigate this risk.

Associations that originate assets for securitizations may depend heavily on securitization markets to absorb its asset-backed securities. If the association allocates only enough capital to support a "flow" of assets to the securitization market, it may experience funding difficulties if circumstances in the markets or at a specific financial institution were to force the association to hold assets on its books.

Associations should have adequate monitoring systems in place and should limit dependence on any single source of liquidity.

Mortgage Loans

As noted above, many associations view mortgage loans and other receivables that can easily be sold or are about to mature as liquid assets. In addition, associations with active loan securitization programs generally treat loans that they are about to sell as liquid assets. Because of the time dimension of liquidity, associations may consider an asset that matures or that the associations can easily sell at a fair price within the time necessary as a liquid asset. It is important to consider the potential impact of market disruptions on the relative liquidity of assets, particularly mortgage loans.

Liquidity Liabilities

As an alternative to liquid assets to satisfy liquidity needs, the association may use liability sources, such as wholesale borrowings and deposits. An association's ability to borrow or attract deposits in the markets is generally a function of its size, reputation, creditworthiness, and capital levels. Access to money markets also depends on prevailing market conditions.

Many associations have increased their use of wholesale funding, replacing lost retail deposits with funds provided by professional money managers. These funds, however, are generally more sensitive to credit risk and interest rates than retail funds, causing them to pose a greater liquidity risk to the association.

Retail Deposits

> Management must protect the association's deposit base and should have an effective deposit management program.

Deposits play a critical role in an association's ongoing successful operations. Management must protect the association's deposit base and should have an effective deposit management program. The program should regularly monitor the make-up of accounts to determine the amounts that are stable, fluctuating or seasonal, or volatile. Management should remain knowledgeable of the characteristics of the deposit structure using periodic internal reports. Lack of such knowledge could lead to the unwise use of funds and subsequent problems.

The public, individuals, and small businesses provide retail funding by depositing money in the association. Deposits are generally an association's primary (or core) funding source, and are typically a stable source of funds. These accounts usually maintain balances of $100,000 or less, the traditional amount of deposits insured by the FDIC. On May 20, 2009, the President signed the Helping Families Save Their Homes Act, which extends the temporary increase in the standard maximum deposit insurance amount (SMDIA) to $250,000 per depositor through December 31, 2013. This extension of the temporary $250,000 coverage limit became effective immediately upon the President's signature. The legislation provides that the SMDIA will return to $100,000 on January 1, 2014. These accounts include demand deposit accounts (DDAs), negotiable order of withdrawal accounts (NOWs), money market demand accounts (MMDAs), savings accounts, and time certificates of deposit (CDs). Although historically retail deposit accounts exhibited relative stability, they can be sensitive to adverse changes in an association's financial condition, adverse market events, or negative media coverage. In particular, competition for time deposits can be vigorous and customers have the ability to withdraw funds at their discretion, subject to any early withdrawal penalties.

Sensitivity of retail deposit accounts will depend on factors such as the following:

- Type of deposit account relationship (CD, transaction, etc.).
- Level of a customer's financial expertise.
- Previous experiences.
- Geographic location.
- Rates paid.
- Other investment alternatives.

Generally, retail and wholesale deposits behave differently under stress and changing economic conditions. A liquidity manager should distinguish between the two and track trends separately. In addition, a liquidity manager should track accounts that have balances in excess of FDIC insurance limits since those account owners will generally be more credit-sensitive than those with fully insured accounts.

Brokered Deposits and Other Rate-Sensitive Deposits

Brokered deposits and other rate-sensitive deposits may represent a convenient source of funds for associations that are in good financial condition. These deposits (including Internet, CD listing services, and other automated services) may increase the volatility of the deposit portfolio if they are rate sensitive. Although these deposits are generally not redeemable before contractual maturity, brokers are reluctant to rollover or place new funds with associations if rates are not competitive or if the association is experiencing financial hardship. Section 29 of the Federal Deposit Insurance Act (FDIA) generally prohibits any association that is not well capitalized from accessing the market for brokered or high rate deposits.

High rate deposits are those that pay more than 75 basis points above the prevailing rate paid in the institution's local market at the time of acceptance. Adequately capitalized institutions that wish to accept, renew, or roll over brokered deposits or high-rate deposits must first obtain approval from the FDIC. Undercapitalized associations cannot accept brokered deposits or high rate deposits at all.

Section 29 of the FDIA significantly reduces the availability of brokered deposits as a source of liquidity by mandating restrictions on such deposits. The FDIC's implementing regulations, at 12 CFR § 337.6, set forth the following provisions:

- Well-capitalized institutions may accept brokered deposits without restriction.
- Adequately capitalized institutions must receive prior FDIC approval.
- Undercapitalized institutions may not accept brokered deposits.

Even associations meeting well-capitalized ratios can fall under brokered or high-rate deposit restrictions if OTS takes formal enforcement action relating to the association's capital level. See the discussion in the section under the heading, "Troubled Associations". Further, retail deposits can fall under the brokered deposit pricing restrictions for higher-costing deposits.

Borrowed Funds

Borrowed funds include issuing debt obligations, which range from short-term repos or commercial paper to longer-term bank borrowing or bond issuance and includes access to central bank liquidity facilities. This funding source is highly dependent on the association's financial condition. The association's credit rating is key to this source of liquidity.

Wholesale Funding

Borrowing sources that an association can access immediately, at a reasonable cost, and with a high degree of certainty are ideal sources of liquidity. Wholesale borrowings frequently have attractive features. If the association properly assesses and prudently manages borrowings, they can help the association manage liquidity risks. The initial cost of the borrowing is often low when compared to other liabilities with similar maturities. If the instrument contains embedded options, however, borrowing costs may increase under certain circumstances, and must be properly evaluated and managed.

Management should take the following actions if engaging in wholesale borrowings:

- Manage and monitor borrowing and deposit concentrations. Determine whether an amount of borrowings or deposits from a single source poses an undue risk.
- Review borrowing contracts.

  - Determine whether there are any embedded options or other features that may affect the interest rate, alter the maturity, or otherwise pose liquidity risk.
  - Review collateral agreements for fees, maintenance requirements, credit covenants, blanket liens, and triggers for increases in collateral.
  - Monitor compliance with any credit covenants or triggers contained in the agreements.
- Perform and review liquidity stress tests.
  - Determine how to identify and monitor the risks of the various terms of each contract, including penalties and option features.
  - Perform tests before entering into any significant agreement and periodically thereafter.
  - Ensure that the stress test results depict the potential impact of contractual triggers, credit covenants, and external events (such as interest rate changes that may result in the exercise of embedded options or the termination of the contract) on the association as well as on its overall earnings and liquidity position.
- Ensure that there are management processes in place to adequately measure, monitor, and control liquidity risks, including appropriate contingency funding plans.
- Fully inform the board of directors or the appropriate committee about the risks of wholesale borrowing agreements prior to engaging in the transactions, and on an ongoing basis.
- Ensure that the instruments (especially the use of any structured instruments) are consistent with the association's portfolio objectives and level of sophistication of its risk management practices. Only associations with technical knowledge and risk management systems sufficient to adequately identify, monitor, and control the risks of complex wholesale borrowings should use this type of funding.

Wholesale fund providers are professionals who manage most wholesale funds, and operate under established investment criteria. They may be associated with large commercial and industrial corporations, other financial institutions, governmental units, or wealthy individuals. Because a wholesale fund provider's responsibility is to preserve their client's principal, they are sensitive to changes in the credit quality of the institutions where they invest, as well as to changes in interest rates.

An association can use a variety of instruments to tap the wholesale funding markets. Depending on which side of the transaction an association is on, some of these instruments may be either positive or negative to a savings association's liquidity.

Securities Sold Under Repurchase Agreements

Securities sold under repurchase agreements are a means of financing inventories of securities.

Securities sold under repurchase agreements are a means of financing inventories of securities. Under repurchase agreements, securities are temporarily "loaned out," for periods ranging from overnight to one year in return for borrowed funds. The vast majority of repurchase agreements mature in three months or less. A standard repurchase agreement involves the acquisition of funds through the sale of securities with a simultaneous commitment to repurchase the securities on a specified date at a specified price. The collateral most often used by associations is U.S. government and agency mortgage-backed securities (MBS). The repurchase agreement rate is the interest rate that the borrower pays the lender (investor) for the use of funds.

Dollar Rolls

Dollar rolls (also called dollar repurchase agreements) provide another alternative source of liquidity. Dollar rolls are agreements to sell and repurchase "substantially similar" but not identical securities. To qualify as a financing, these agreements to return "substantially similar" securities cannot exceed 12 months from the initiation of the transaction. Primarily, the dollar roll market consists of agreements that involve mortgage-backed securities.

Federal Home Loan Bank (FHLB) Advances

FHLB advances are an important source of funds for associations. Advance is simply another word for a loan. FHLBs offer a wide range of advance products with maturities ranging up to 10 years or longer. These products are primarily two types: collateralized advances and unsecured advances.

In general, a FHLB establishes a line of credit for each of its members. A FHLB may, however, limit or deny a member's request for an advance if the member is:

- Engaging in any unsafe or unsound practice.
- Inadequately capitalized.
- Sustaining operating losses.
- Deficient with respect to financial or managerial resources.
- Otherwise deficient.

Generally, the FHLB requires that collateral secure advances. Thus, the unused borrowing capacity of an association is a function of both its eligible, unpledged collateral and its unused line of credit with its FHLB. Associations also may need to increase their holdings of FHLB stock in order to access all unused borrowing capacity; FHLBs generally require members to hold stock equal to approximately five percent of outstanding advances.

Some FHLB advances contain embedded options or other features that may increase funding risk. For example, some types of advances provide the FHLB with the option to demand repayment of or increase the interest rate on the advance under specified conditions. See TB 13a-2, Structured Advances, for more of the risks associated with certain FHLB advances.

Sometimes before market information is available to other fund providers a FHLB can react quickly to reduce its exposure to a troubled institution by not rolling over unsecured lines of credit. Depending on the severity of a troubled institution's condition, a FHLB may take the following actions:

- Apply steeper haircuts to existing advances. (A haircut is the margin or difference between the actual market value of a security and the value assessed by the lending side of the transaction.)
- Apply more conservative valuations of underlying collateral.
- Reduce the available line relative to total assets.
- Discontinue or withdraw (at maturity) its collateralized funding programs because of concerns about the quality or reliability of the collateral or other credit-related concerns.

This may create significant liquidity problems for an association, especially if it has large amounts of short-term FHLB funding. Associations should aggregate FHLB funds by type of program to monitor and appropriately limit short-term liability concentrations, just as with any other credit-sensitive funds provider.

For FHLB borrowings, as with all borrowings to meet liquidity needs, an association should evaluate the level of its borrowings from any one source as well as the quality of the source. Management should perform adequate due diligence in selecting funding sources, and periodically review their quality and stability. Significant concentrations of funding from an FHLB are a risk factor and the association should control that risk and have viable contingency plans in place should a need arise for alternative funding sources.

Lines of Credit

An unused portion of a line of credit with another financial institution can be an important source of liquidity. This is particularly true if it represents a binding legal commitment to borrow without major restrictions on its use and the borrowing rate is reasonable. Lines of credit are normally subject to various credit-related covenants that management should closely review and monitor.

Federal Reserve Primary and Secondary Credit

The Federal Reserve Board recently revised Regulation A to provide for primary and secondary credit programs at the discount window. Reserve Banks will extend primary credit at a rate above the target Fed Funds rate on a short-term basis (typically, overnight) to eligible depository institutions. The Federal Reserve Bank bases eligibility for primary credit on an institution's examination rating and capital status. In general, adequately capitalized institutions with composite CAMELS ratings of 1, 2, or

3 are eligible for primary credit unless supplementary information indicates their condition is not generally sound. Other conditions exist to determine eligibility for 4- and 5-rated institutions.

An institution eligible for primary credit need not exhaust other sources of funds before coming to the discount window. Institutions may use primary credit to finance the sale of fed funds. However, because of the above-market price of primary credit, the Board expects institutions to mainly use the discount window as a backup source of liquidity, rather than as a routine source.

Generally, Reserve Banks extend primary credit on an overnight basis with minimal administrative requirements to eligible institutions. Reserve Banks may also extend primary credit to eligible institutions for periods of up to several weeks if funding is not available from other sources. These longer extensions of credit are subject to greater administrative oversight.

The Reserve Banks also offer secondary credit to institutions that do not qualify for primary credit. Secondary credit is typically another short-term backup source of liquidity. Long-term secondary credit would be available for the orderly resolution of a troubled institution. In such a case, there are certain limitations and a higher level of Reserve Bank administration and oversight.

Federal Funds Purchased

Federal funds purchased are excess reserves held at Federal Reserve Banks that depository institutions may lend to one another. The most common type of federal funds transaction is an overnight, unsecured loan. We call transactions that are for a period longer than one day fed funds. In some instances, the Federal Reserve will only make fed funds transactions on a secured basis. If the borrower's creditworthiness is questionable, lenders may require excess collateral or may choose not to lend. Federal funds that an association loans (sells) are assets. Federal funds that associations borrow (purchase) are liabilities.

Eurodollar Time Deposits

Eurodollar Time Deposits are certificates of deposit issued by banks in Europe, with interest and principal paid in dollars. Eurodollar CD interest rates generally use LIBOR as the index rate. These certificates of deposit usually have minimum denominations of $100,000 and have a short-term maturity of less than two years. An association should limit the volume of Euro-dollar CDs to control the liquidity risks associated with the secondary markets in these instruments.

AREAS OF SUPERVISORY CONCERN

Pledged Assets

In assessing liquidity, it is important to know which assets have been pledged to secure borrowings or for other purposes. Pledged assets are not liquid. In addition, it is important to determine which assets are currently unpledged, eligible, and available as collateral to secure borrowings. Associations should carefully review any use of blanket liens for their effect on contingency funding plans.

Diversification

Associations must ensure diversification of funding for liquidity purposes because concentrations can create or exacerbate liquidity problems. Diversification should not only focus on the number and type of potential funds providers and depositors but on the underlying stability, availability, and flexibility of sources. Associations should consider diversification by analyzing the following:

- Type and product – Do not place too much reliance upon one type of funding or product, for instance customer deposits or interbank borrowings.
- Counterparty – No one counterparty should represent more than a small fraction of the total funding of any type, whether depositors, interbank borrowings or securities borrowings.
- Maturity structure – The association should ensure that funding corresponds to the association's needs in terms of maturity and amount of funding for each maturity band.
- Geographic area – The association should seek to diversify its funding sources to limit its dependence on a given market, financial system, or geographical region.

Managing Access to Funding Sources

Associations should carefully manage their access to available sources of funding and understand their funding options:

- An association should build and maintain relationships with a broad range of depositors and other funding sources. An association should understand how much funding might be available from various sources under normal and adverse circumstances.
- Senior management should be aware of the composition, characteristics, and diversification of its funding sources.
- Management should consider developing or expanding markets for asset sales or exploring arrangements for borrowing against assets.

Mortgage Banking and Loan Sale Activities

Associations engaged in mortgage banking activities and loan origination and sale activities must ensure that adequate lines of credit are available to meet warehousing needs and that there are adequate forward commitments to sell the loans in the pipeline. The association's liquidity planning should consider the effect of recourse and other credit enhancements from loans sold. You should review loan sale and servicing agreements to determine how credit enhancements and recourse obligations affect liquidity. Management must have robust contingency planning to address potential disruptions in the secondary market for various product types, which can have severe repercussions on an association's available funding.

Federal Home Loan Bank Membership and Liquidity

Federal associations are no longer required to maintain membership in a FHLB pursuant to Section 5(f) of the Home Owners' Loan Act (12 USC § 1464(f)). An association that voluntarily withdraws from FHLB membership is, however, subject to a prohibition on re-entry into membership for five years.

When examining an association that is not a FHLB member, you should determine if the association's existing liquidity position and its ability to borrow funds adequately address any liquidity concerns. As part of this determination, you should review written plans, analyze the association's access to sources of funds, and assess management's evaluation of near-term and longer-term anticipated funding needs.

If the association is a member of a FHLB, you should determine the size of its line of credit and determine how much unused credit is available. You should also review the credit risk rating that the FHLB assigns to the association and the underwriting guidelines associated with that credit rating. Consider the amount and quality of the collateral the association has available for advances. See also the discussion of FHLB advances in this handbook section.

Troubled Associations

There are restrictions on funding sources for troubled and undercapitalized insured institutions. These restrictions serve to reduce the ability of troubled or undercapitalized associations to obtain credit. The purpose of these restrictions is to:

- Limit a troubled association's ability to potentially leverage risk-taking activities.
- Prevent a troubled association from paying above market rates for deposits or borrowings, thus driving up borrowing costs for healthy institutions.

Two of the restrictions include limited access to brokered deposits (12 CFR § 337.6) and restrictions on the amount of permissible credit exposure to a correspondent association (12 USC § 1831o(f)(2)(G)). In addition, there are certain restrictions on borrowing programs available at the Federal Reserve discount window (12 CFR § 201.4).

Limitations on Interbank Liabilities

Under FRB regulation 12 CFR Part 206, Limitations on Interbank Liabilities (Regulation F), insured institutions must establish and maintain written policies and procedures to prevent excessive exposure to any individual correspondent. The prevention of excessive risk exposure relates to the condition of the correspondent. Specifically, the regulation requires institutions to establish policies and procedures that take into account credit and liquidity risks, including operational risks, in selecting correspondents and terminating those relationships.

Liquidity Support between Affiliates

An association within a holding company structure should be able to rely on liquidity support from other affiliates within the company. Transfers can usually be made quickly and easily, and typically

include buying or selling Fed Funds, granting or repaying debt, or selling or participating in loans or other assets. Limitations on transactions with affiliates are an additional consideration.

Early Warning Signals

OTS requires associations to maintain sufficient liquidity to ensure safe and sound operations (12 CFR § 563.161).

Liquidity problems are often symptomatic of other more fundamental problems at an association such as excessive credit risk, excessive interest rate risk, inadequate capital, or earnings, operational problems, and so forth. Factors that could indicate or precipitate liquidity problems include:

- Deteriorating asset quality.
- Increases in loan delinquencies.
- Rapid asset growth in a business line, especially if funded with brokered deposits.
- Significant acquisitions by the association.
- Decreasing weighted average maturity of liabilities.
- Violation of self-imposed liquidity limits.
- Counterparty requests for collateral.
- Increased collateral required, or shorter terms offered than before.
- Reduction in credit lines from correspondents.
- Over-reliance on wholesale funding.
- A significant increase in the level of wholesale funding.
- Excessive borrowing concentrations.
- Significant concentrations within the asset portfolio or of funding sources.
- Increasing deposit withdrawals.
- A sharp rise in funding costs.
- A sharp decline in earnings and interest margins.

- A decline in the association's stock price.
- A ratings downgrade by a credit rating agency. (Note that rating downgrades are a lagging indicator.)
- Increase in spread paid on deposits, borrowed funds, or asset securitizations between an association and its peers.
- Short interest in an association (or its holding company). A "short" position occurs when a person sells stocks they do not yet own. Investors use this technique when they believe the stock price will drop.
- Pressure on the association to buy back loans or securities the association sold in the secondary market.
- A strategy of granting higher risk loan products such as subprime loans and nontraditional loans, (option ARM loans, interest-only loans, etc.) with a heavy reliance on selling into the secondary markets, particularly when the association funds these originations from wholesale funding sources.
- An increase in nonperforming assets.
- A decline in capital adequacy category.
- Management problems.
- Adverse publicity.
- A sharp increase in put-backs of loans previously sold.

Liquidity measurement involves forecasting cash inflows and outflows over various time horizons to identify potential cash imbalances.

Measuring Liquidity

Each association should have a process for measuring and monitoring its existing liquidity position as well as its net funding requirements. Liquidity measurement involves forecasting cash inflows and outflows over various time horizons to identify potential cash imbalances. A cash flow forecast is a useful device to compare cash inflows and outflows on a daily basis and over future periods. Management should take steps to address projected net funding deficits in a timely manner. Appendix A, Sample Short-Term Liquidity Forecast, and Appendix B, Sample Long-Term Liquidity Forecast, provide examples.

Management and other staff responsible for managing overall liquidity should be aware of any information, such as a pending decline in earnings, an impending legal action, adverse media coverage,

or a downgrade by a rating agency that could have an adverse impact on perceptions about the financial condition of the association.

Measuring Liquidity

The purpose of liquidity analysis is to measure an association's current liquidity position and its ability to meet future funding needs. A traditional analysis of an association's *current liquidity position* generally involves a review of key balance sheet ratios. An analysis of an association's ability to meet *future funding needs* involves an analysis of projected cash inflows and outflows over various time horizons to identify potential cash imbalances.

Financial Ratio Analysis

The measurement of liquidity is an inexact and highly subjective process. This is largely due to the high degree of cash flow uncertainty associated with assets, liabilities, and off-balance-sheet contracts. In practice, analysts use a variety of financial ratios to measure the current liquidity position of an association. Some ratios that measure liquidity include the following:

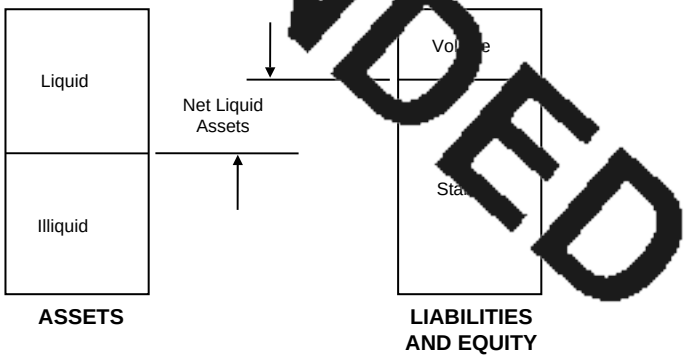
- Loans to deposits.
- Liquid assets to total assets.
- Volatile liabilities to total assets.
- Liquid assets to volatile liabilities.
- Net liquid assets to total assets.
- Unpledged eligible collateral to total assets.
- Net unused FHLB borrowing capacity to total assets.
- Unpledged collateral to net unused FHLB borrowing capacity.
- FHLB advances to FHLB Stock.
- Uninsured deposits to total deposits.

A key issue is defining liquid assets and volatile liabilities. Definitions vary depending on the objective or purpose of the analysis and data limitations. The time horizon of the analysis is particularly important in defining what is and what is not liquid. As a rule, liquid asset definitions include shorter-term assets that are readily saleable and assets that mature over the near-term. Some analysts define liquid assets to include the sum of cash, deposits with other associations, investment securities, and mortgage pool securities.

Volatile liabilities typically include wholesale and rate sensitive deposits and short-term liabilities that are likely to be withdrawn at the first hint of trouble. These forms of "hot money" include brokered deposits, uninsured deposits, federal funds purchased, securities sold under agreements to repurchase, and other borrowings with remaining maturities of less than one year.

The basic model for measuring current liquidity is in Figure 1. That model relates liquid assets to volatile liabilities. The difference between liquid assets and volatile liabilities represents the net liquidity position. (Liquid assets less volatile liabilities equal net liquidity position.)

Figure 1. Static Balance Sheet Model



An association can improve its liquidity position in a number of different ways. For example, it can take the following actions:

- Increase holdings of high-quality liquid assets.
- Shorten the maturities of assets.
- Lengthen the maturities of liabilities.
- Diversify funding sources by maturity, geographic region, and by lender/depositor.
- Expand core deposits and other stable funding sources.
- Make loans that it can easily sell or securitize.

Successful liquidity management requires accurate measurement and control of the daily inflow and outflow of funds. Advance knowledge of liquidity shortfalls makes it possible to explore alternative ways to deal with them. Two useful techniques for monitoring cash flows are liquidity gap analysis and liquidity forecasting.

Liquidity Gap Analysis

A liquidity gap schedule provides an analytical framework for measuring future funding needs by comparing the amounts of assets and liabilities maturing over specific time intervals. Table 1 presents a sample liquidity gap schedule.

Table 1 Liquidity Gap Schedule

	Less than 10 days	Over 10 days but less than 3 months	Over 3 months but less than 6 months	Over 6 months but less than one year	1 to 5 years	Over 5 years and capital	Total
Assets	10	10	10	5	65	0	100
Liabilities & Equity	50	30	15	0	0	5	100
Net outflow (assets minus liabilities)	(40)	(20)	(5)	5	65	(5)	0
Cumulative net outflow	(40)	(60)	(65)	(60)	5	0	0

In the liquidity gap schedule, the association slots assets and liabilities into different time intervals according to their remaining time to maturity. As a rule, the association slots assets and liabilities according to their *effective* maturities rather than their contractual maturities. For example, associations treat nonmaturity deposits as long-term liabilities (based on estimated run-off rates) rather than short-term liabilities. In this example, more liabilities than assets mature in the earlier time intervals, indicating that the association is borrowing short and lending long, which is typical of most associations.

Negative gapping at the shorter end of the schedule (that is, borrowing short and lending long) increases the risk that the association will not be able to rollover maturing liabilities as they come due. While such a position is not favorable to liquidity, it tends to enhance profitability over the long-term – provided the association keeps the gaps within manageable bounds and the yield curve is not inverted.

One shortcoming of the liquidity gap schedule is that it does not capture projected balance sheet changes such as future loan and deposit growth. While it is important to understand the liquidity of an association's existing balance sheet, it is also important to forecast the growth of key balance sheet components, such as deposits and loans, over time, as shown in the illustration.

Liquidity/Cash Flow Forecasting

Cash flow forecasting is a critical element in managing liquidity. The objective of cash flow forecasting is to project cash inflows and outflows over future periods. A common practice is to project net funds deficits for short-term (next 5-10 days), intermediate term, (3-6 months, 6-12 months) and long term (1-5 years). By projecting cash flows for short-, intermediate-, and long-term planning periods management can significantly reduce the risk that sizable net funds deficits go unnoticed and unattended. See samples in Appendix A, Sample Short-Term Liquidity Forecast, and Appendix B, Sample Long-Term Liquidity Forecast.

A sample forecast is in Table 2.

Table 2. Cash Flow Forecast

	Forecast 0-30 days	Forecast 31 –60 days	Forecast 61-90 days	Forecast 91-365 days
Cash Inflows:				
Deposits	$1,200	$1,200	$1,500	$20,000
Maturing loans and investments	600	1,200	1,800	9,000
Loan sales	0	0	0	0
Other	200	0	200	1,500
Total Inflows	$1,800	$2,500	$3,500	$30,500
Cash Outflows:				
Maturing deposits	800	900	1,000	3,500
Maturing debt	0	0	0	1,000
New Loans	900	1,500	1,600	15,000
Other	200	0	0	1,000
Total Outflows	$1,900	$2,400	$2,600	$20,500
Net Surplus (deficit)	($100)	$100	$900	$10,000
Cumulative net surplus (deficit)	($100)	0	$900	$10,900

Liquidity Stress Test and Scenario Analysis

Management should conduct stress test and scenario analysis in estimating liquidity requirements. Liquidity stress and scenario analysis is a critical aspect of liquidity risk management regardless of an association's asset size or complexity of operations. It is especially important after long periods of good economic and financial conditions. It is also very important during periods of expansion, when new products or rapid growth occurs for which no loss data is available. Associations should perform liquidity stress and scenario analysis on a periodic basis to assess exposures, identify weaknesses, and ensure the validity of its liquidity planning relative to occurrences of internal turbulence at the association and/or to occurrences of stress, crisis, and collapse in the financial markets. This analysis should be robust and relevant to an association's current business model, balance sheet composition, and overall operations. The analysis should be capable of addressing a wide range of "what if" scenarios. Liquidity stress and scenario analysis will be highly complex at some associations.

Documentation is important. Written policies and procedures governing the stress and scenario analysis program are necessary. It is also important to periodically maintain and update the program. Associations may be required to rely on external sources and vendors if they do not possess the

necessary capabilities in-house. If the association outsources this aspect of liquidity risk management, the association must thoroughly scrutinize and integrate the results into the liquidity risk management process.

Liquidity stress testing and scenario analysis involve assessing liquidity under a variety of stresses and scenarios considering:

- Short-term, intermediate, and long-term scenarios.
- Association-specific problems and issues.
- Systemic liquidity problems.

Stress testing and scenario analysis should combine several related events and not be limited to a series of isolated instances as model-based analysis tools often fail to account for event correlation. The program should consider all possibilities: price shocks for specific asset categories; evaporation of asset liquidity, significant losses by the association; growth of liquidity needs because of commitments, economic conditions, recourse arrangements, off-balance sheet risks and lack of access to funding markets.

In conducting an analysis of liquidity, management should consider an extreme range of possible future scenarios, such as:

- Optimistic
- Pessimistic
- Most likely

In estimating normal funding needs, some associations use historical data and account for seasonal and other effects believed to determine loan demand and deposit flows. Alternatively, some associations rely on judgmental business projections, or undertake a customer-by-customer assessment for larger customers and apply historical relationships to the remainder. Be sure to include the following possibilities:

- Stressful events such as a loss of wholesale funding, a significant run-off of deposits, a sharp increase in funding costs, a sharp increase in loan demand, or a loss of access to securitization markets.
- No additional borrowing capacity through the FHLB System and/or the Federal Reserve System. Also, consider collateral requirement increases on borrowing lines.
- Deposit runoff due to adverse financial events or media, with special emphasis on concentrations in noninsured, commercial, high-rate, and other potentially sensitive deposits.

- A downgrade in the association's PCA category from less than Well Capitalized (or equivalent triggering events), and the associated impacts on liquidity including brokered and high-rate deposits.

- Cash flow timing differences and the related assumptions among scenarios. For example, in a general market crisis, the ability to sell assets may deteriorate significantly.

- The potential for unanticipated cash outflows and reduced cash inflows associated with embedded options in various asset, liabilities, and off-balance-sheet contacts. Potential cash outflows include loan commitments; calls on loans sold with recourse and financial guarantees; payments on swap contracts and other financial derivatives; margin calls; early termination agreements; and so forth.

Stress testing and scenario analysis should guide management in formulating the association contingency funding plan.

Modeling

Modeling of liquidity risk is an emerging area that still has no hard and fast rules. Models are not precise. We list the concepts that are best practices below:

Modeling of liquidity risk is an emerging area that still has no hard and fast rules.

- The model should base liquidity projection and stress scenarios on well-substantiated assumptions and underlying principles and the model should cover all the association's on-/off-balance sheet activities.

- The model should use projection and stress scenarios that resemble customary methods.

- The model should use projection and stress scenarios that the association frequently updates, evaluates, and validates.

- The model's assumptions and data come from the associations own empirical figures and industry peer data.

- A risk committee or senior management should review results of the liquidity projection and stress scenarios.

REFERENCES

Statutes

12 USC 1831f	Federal Deposit Insurance Act
12 USC 1831o	Prompt Corrective Action

12 USC 1467	Regulation of Holding Companies
12 USC 371c	Banking Affiliates

Code of Federal Regulations (12 CFR)

Part 201	Extension of Credit by Federal Reserve Banks (Regulation A)
Part 206	Limitations on Interbank Liabilities (Regulation F)
§ 337.6	Brokered Deposits
§ 561.31	Nonwithdrawable Account
§ 563.80	Borrowing Limitations
§ 563.140	Capital Distributions
§ 563.161	Management and Financial Policies
§ 563.172	Financial Derivatives
§ 563.176	Interest Rate Risk Management Procedures
§ 563b.520	Post Conversion Dividends
§ 563c.102	Financial Statement Presentation
§ 563d.1	Requirements Under Certain Sections of the Securities Exchange Act of 1934
Part 563g	Securities Offerings

Office of Thrift Supervision Bulletins

RB 34	Examiner Guidance on Wholesale Borrowings
TB 13a	Management of Interest Rate Risk, Investment Securities, and Derivative Activities
TB 13a-2	Structured Advances

Interagency Guidance

CEO Letter No. 141	Joint Agency Advisory on Brokered and Rate-Sensitive Deposits (May 10, 2001)
CEO Letter No 310	Guidance on California Registered Warrants

CEO Letter No. 3[illegible] Risk Management: Asset and Liability Concentrations

Policy Statement on Payment Systems Risk, Federal Register, December 24, 2008

Financial Accounting Standards Board Accounting Standards Codification

No. 320 Debt and Equity Securities (formerly SFAS No. 115)

Other

Final Rule on Temporary Liquidity Guarantee Program, Federal Register, November 26, 2008, 12 CFR Part 370

Basel Committee on Banking

Supervision's Liquidity Risk: Management and Supervisory Challenges 2008

Supervision's Principles for Sound Stress Testing Practices and Supervision, 2009

Committee of European Banking Supervisors

Guidelines on Liquidity Buffers and Survival Periods, December 9, 2009

Second Part of CEBS's Technical Advice to the European Commission on Liquidity Risk Management, September 18, 2008