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Handbook: **Examination Handbook**
Subject: **Liquidity Risk Management**
Investment Securities

Section: 530
Section: 540

Liquidity Risk Management and Investment Securities

Summary: This bulletin transmits revised Examination Handbook Sections 530, Liquidity Risk Management, and 540, Investment Securities. We rescind RB 32-32, Liquidity Management, dated December 9, 2003; and TB 77, Sound Practices for Liquidity Management, dated June 19, 2001, with the issuance of this Bulletin.

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SUMMARY OF CHANGES

OTS is issuing revised Examination Handbook Sections 530, Liquidity Risk Management, and 540, Investment Securities. These sections address a rapidly changing area and we made extensive revisions. Because of the extensive changes, we did not use change bars in the margins of the handbook section to indicate revisions.

We added new information on stress testing and contingency planning to Section 530. We added new information on downgraded securities, recent changes in FASB's guidance on fair value, classification guidance, and information on models to Section 540.

A revised program with new and updated examination procedures accompanies each handbook section. We added one new Appendix to section 540: Appendix C, Glossary of Investment Terms. We combined and revised former Appendices B and C into one appendix: Appendix B, Types of Investment Securities and Associated Risks.

—Thomas Barnes

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Liquidity Risk Management

Introduction

A savings association's failure to maintain sufficient liquidity in relation to its specific operations and risks can lead to its demise in a short time, regardless of capital levels and earnings. OTS regulation § 563.161, Management and Financial Policies, requires each association and service corporation 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.

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 come 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.

<u>EVENT PROBABILITY – IMPACT MATRIX</u>			
<u>Impact Potential</u>			
		Low	High
<u>Event Probability</u>	High	High Probability Low Impact	High Probability High Impact
	Low	Low Probability Low Impact	Low Probability High Impact

Associations can assess 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 position. 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 backstop 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. This 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 the 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 – The 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 make 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, pricing, 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

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.

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

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 could 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 (source 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 notice 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 enhance liquidity. Associations can sell assets that are near-term cash equivalents, such as government securities; however, the assets must be unencumbered (not pledged as collateral for any other transaction) and easy to liquidate under any market conditions.

Associations often meet liquidity needs through the sale of liquid assets and the planned runoff of loans and investments. While in theory any asset can serve as a source of liquidity, associations must consider the length of time it takes to dispose of an asset and the sales price. Unencumbered assets that an association can sell or borrow against with relative ease without appreciable loss are ideal sources of liquidity.

Liquid assets would generally include deposits with other financial institutions, money market instruments, and short-term, high-quality securities. In addition, associations may consider as liquid assets other securities and loans that can easily be sold or are about to mature. Because of the time dimension of liquidity, an asset may be a source of liquidity if it matures or the association can sell the asset when needed. Generally, assets with shorter maturities or those of a higher quality are liquid.

Cash and Deposits with Others

While cash is the essence of liquidity, the cash balances reported on an association's balance sheet are not necessarily available to meet a liquidity shortfall. While an association needs 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 security issues. 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

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.

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

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 rollover 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 if 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. 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.

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

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 on 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 program 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 ensure 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 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. An 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:

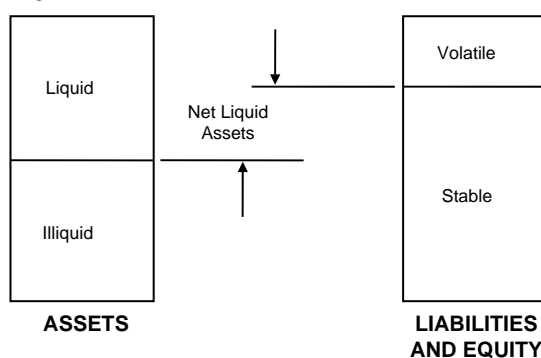
- Loans to deposits.
- Liquid assets to total assets.
- Volatile liabilities to total assets.
- Liquid assets to volatile liabilities.
- Net liquid assets to total assets.
- Unpledged eligible collateral to total assets.
- Net unused FHLB borrowing capacity to total assets.
- Unpledged collateral to 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 generally 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 amount of assets and liabilities maturing over specific time intervals. Table 1 presents a sample liquidity gap schedule.

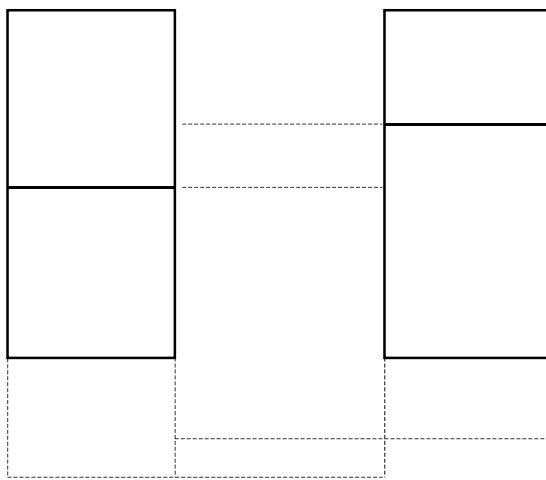
Table 1. Liquidity Gap Schedule

	Less than 10 days	Over 10 days but less than 3 months	Over 3 months but less 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	\$1,000	\$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	100	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 a 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 assets, 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.

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Statutes

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

12 USC 1467a Regulation of Holding Companies

12 USC 371c Banking Affiliates

Code of Federal Regulations (12 CFR)

Part 201 Extensions 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)

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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

Liquidity Risk Management Program

EXAMINATION OBJECTIVES

To determine the adequacy and effectiveness of the savings association's liquidity risk management, strategies, plans, policies, and procedures including its contingency funding plan.

To determine management's ability to measure, monitor, and control the savings association's liquidity position during normal times and during times of stress, crisis, and even collapse.

To determine if the savings association's officers fully understand the savings association's borrowing programs, including those with the Federal Home Loan Bank (FHLB) System and Federal Reserve System as they relate to critical liquidity needs in times of financial stress.

To determine the adequacy of the savings association's liquidity stress tests and scenario analysis.

To determine if the savings association's officers and employees comply with established policies and procedures regarding liquidity management.

To determine the adequacy of the savings association's liquidity.

To determine the availability of assets readily convertible to cash without undue loss.

To determine access to money markets and other sources of funding.

To determine diversification of funding sources.

To determine reliance on short-term, volatile sources of funds, including borrowings and brokered deposits.

To determine the trend and stability of deposits.

To summarize findings and to initiate corrective action as needed.

Exam Date:	
Prepared By:	
Reviewed By:	
Docket #:	

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EXAMINATION PROCEDURES

LEVEL I

1. Review scoping materials applicable to this program. Review liquidity and funding reports, cash flow forecasts, and new borrowing contracts and indentures. Review liquidity ratios and other related metrics.

2. Determine if the savings association corrected previously identified liquidity-related problems or weaknesses. Review:
 - Prior examination report comments and exceptions.
 - Independent audit exceptions.
 - Internal audit exceptions.
 - Any enforcement or supervisory actions and directives.

3. Obtain and review the adequacy of written plans including the liquidity risk management policies and procedures, contingency funding plan policies, procedures, and business strategies governing liquidity risk management. Determine if the savings association's officers and employees are operating in compliance with these procedures.

4. Assess the adequacy of the association's liquidity risk limits, tolerances, or guidelines. These may include items such as:
 - Discrete or cumulative cash flow mismatches or gaps (sources and uses of funds) over specified future short- and long-term time horizons under both expected and adverse business conditions. Often, these are expressed as cash flow coverage ratios or as specific aggregate amounts.

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- Target amounts of unpledged liquid asset reserves expressed as aggregate amounts or as ratios.
 - Asset concentrations, especially with respect to more complex exposures that are illiquid or difficult to value.
 - Funding concentrations that address diversification issues, such as dependency on a few large depositors or sources of borrowed funds.
 - Contingent liability metrics, such as amounts of unfunded loan commitments and lines of credit relative to available funding. The association's procedure to appropriately model and compare to policy limits potential funding of contingent liabilities, such as credit card lines and commercial backstop lending agreements.
-

5. Review the savings association's internal reports applicable to liquidity risk management. Determine whether the reports provide the information needed to effectively measure and control the savings association's liquidity position during normal times and in times of stress. Determine if measurement timeframes (daily, weekly, monthly, quarterly, etc.) are appropriate relative to risks and complexity of operations.
-

6. Verify that management conducts liquidity stress testing and scenario analysis on a periodic basis. Review the tests, analysis, and reports to ensure that they are sufficiently robust and incorporate the results into your findings and conclusions. Also, verify that the association's staff provides senior management and the board of directors the results of the tests and analysis.
-

7. Contingency Funding Plan

- Determine the adequacy of the savings association's contingency funding plan. For instance, determine if the contingency funding plan appropriately considers the possibility of no additional borrowing capacity at FHLB and Federal Reserve Banks and no availability of other types of wholesale funding,

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such as brokered deposits.

- Review the developmental process of the plan as to assumptions, etc. to help determine adequacy.
- Consider how often the association tests the plan and features within the plan, such as contingency borrowing.
- Determine if the plan defines responsibilities and decision-making authority so that all personnel understand their role during a problem-funding situation.

8. Determine the adequacy of liquidity in relation to current and expected cash flow needs:

- Measure the availability of assets readily convertible to cash without undue loss.
- Determine the extent of unencumbered assets on the balance sheet that might reasonably be available as collateral during times of stress or crisis.
- Determine the level of access to, and diversification of, funding sources under various scenarios.
- Determine the degree of reliance on short-term, volatile sources of funds, including wholesale borrowings and brokered deposits.
- Determine the ability of the savings association to fund outstanding commitments and off-balance sheet items.
- For savings associations with mortgage banking operations, determine the ability to fund mortgage loans in the pipeline under various scenarios.
- Determine the impact of higher risk loans on the balance sheet and/or in the mortgage banking pipeline such as nontraditional mortgage loans (interest-only, option ARM, etc) that might become difficult to sell into the secondary markets.
- Determine the degree of reliance on securitizations. Determine if securitization activity is appropriately and sufficiently addressed in liquidity risk planning.

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9. Review the level of the savings association's dependence on FHLB System and Federal Reserve System borrowings and determine the amount of its unused borrowing capacity with each. Determine the amount of unpledged, eligible collateral that is available to secure FHLB and Federal Reserve borrowings.

-
10. Discuss with examiners their findings in the other CAMELS areas, especially Capital Adequacy and Asset Quality. If adverse, determine the impact on funding sources and liquidity planning from asset quality deterioration and/or change in Prompt Corrective Action (PCA) capital category.

-
11. Review Level II procedures and perform those necessary to test, support, and present conclusions derived from performance of Level I procedures.
-

LEVEL II

12. Review the contractual terms of borrowing contracts and indentures to assess any liquidity implications. Determine whether the contracts and indentures contain options and other option-like features that could have adverse liquidity implications.

-
13. Ensure that management is aware of the terms, triggers and parameters of borrowing relationships with the FHLB and FRB, especially as they relate to lending curtailments and nonfunding under various scenarios. Verify that management has appropriately considered and incorporated, as applicable, these features into its stress test and scenario analysis and contingent funding plan. Obtain the results of the most recent FHLB and FRB current ratings and onsite loan reviews from bank management and assess the steps taken by management to address concerns and documentation exceptions.
-

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14. Verify that management periodically tests the availability of funds under its various borrowing relationships especially those involving nongovernment entities, such as other banking organizations. Ensure that such testing becomes more frequent when there is evidence or indications of approaching stressful market conditions.

15. Determine the trend and stability of deposits. Ensure that management is aware that the FDIC is unlikely to grant brokered deposit waivers to savings associations falling below well-capitalized status, and has considered this in its contingent funding plan.

16. Determine the ability of the savings association to securitize and sell certain pools of assets including nontraditional mortgage products, less than prime loans, home equity loans, credit card receivables, automobile loans and commercial real estate loans.

17. Review the adequacy of the savings association's pipeline report for fixed-rate commitments and assess the adequacy of liquidity.

18. Determine the savings association's contingency funding plans for short-, intermediate-, and long-term liquidity needs. Review whether the savings association has adequate diversification in its potential sources of funds it may use.

19. Ensure that your review meets the Objectives of this Handbook Section. Present on the appropriate work papers and report pages your findings, conclusions, and appropriate recommendations for any necessary corrective measures.

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LEVEL III

20. Discuss with the Examiner-in-Charge additional procedures that you are to do when work in Level II is insufficient to draw conclusions on the adequacy of liquidity management performance.
-
21. Estimate the the amount of cash that the savings association could raise by selling unpledged marketable securities. Estimate the unrealized gain or loss on those securities as a percentage of earnings and capital.
-
22. Review cash budget projections for the next year under assumptions of stable, declining, and increasing interest rates.
-
23. Consider and estimate the effects of the following stress events on the association's liquidity position:
- A 10.0 percent and a 25.0 percent deposit run on the savings association.
 - No additional borrowing capacity at FHLB and Federal Reserve Banks.
 - No additional borrowing capacity from other borrowing relationships.
 - No new or rollovers of brokered deposits due to a PCA category of other than Well Capitalized.
 - Inability to sell mortgage loans into the secondary markets and inability to sell mortgage-backed securities.
 - The loss of access to the repurchase and dollar roll markets.
 - A disruption in the capital and credit markets to the extent that financial institutions are no longer lending to other financial institutions (each other).
-

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EXAMINER'S SUMMARY, RECOMMENDATIONS, AND COMMENTS

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SAMPLE SHORT-TERM LIQUIDITY FORECAST

	Day 1	Day 2	Day 3	Day 4	Day 5	Days 6-10
Cash inflows	100	120	130	100	120	620
Cash outflows	90	130	100	150	150	510
Net surplus (deficit)	10	(10)	30	(50)	(30)	110
Cumulative net surplus (deficit)	10	0	30	(20)	(50)	60
Beginning liquid cash surplus ¹	25	35	25	55	5	0
<i>Plus:</i> Net surplus (deficit)	10	(10)	30	(50)	(30)	110
Ending liquid cash surplus	35	25	55	5	(25) ²	110
Net cash shortfall	0	0	0	0	25	0

¹ The liquid cash surplus is the level of cash and cash equivalents in **excess** of transactions balances required for day-to-day operations and any minimum reserve of cash for contingencies.

² The institution would have to close the projected cash shortfall by increasing cash inflows (for instance by borrowing) or by reducing cash outflows on or before day 5 to avoid dipping into the reserve for contingencies. The beginning liquid cash surplus on day 6 of zero (\$0) assumes that management will address the net cash shortfall on day 5 by taking some action. Of course, management may address that shortfall before day 5.

SAMPLE LONG-TERM LIQUIDITY FORECAST**Scenario No. 1: Most Likely Forecast**

Date: _____

	Forecast 0-30 days	Forecast 31 –60 days	Forecast 61-90 days	Forecast 91-365 days
Cash Inflows:				
Deposits	\$1,000	\$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	100	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	\$19,500
Net Surplus (deficit)	(\$100)	\$100	\$900	\$11,000
Cumulative net surplus (deficit)	(\$100)	0	\$1,000	\$12,000

Scenario No. 2: 20% Reduction in Deposit Inflows

Date: _____






	Forecast 0-30 days	Forecast 31 –60 days	Forecast 61-90 days	Forecast 91-365 days
Cash Inflows:				
Deposits	\$800	\$960	\$1,200	\$16,000
Maturing loans and investments	600	1,200	1,800	9,000
Loan sales	0	0	0	0
Other	200	100	200	1,500
Total Inflows	\$1,600	\$2,260	\$3,200	\$26,500
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	\$19,500
Net Surplus (deficit)	(\$300)	(\$140)	\$600	\$11,000
Cumulative net surplus (deficit)	(\$300)	(\$440)	\$160	\$12,000

Investment Securities

Investment securities typically comprise a significant segment of a savings association's portfolios interest-earning assets ([Handbook Section 430](#)) and liquid assets ([Handbook Section 530](#)). As such, savings associations must conduct investment securities activities prudently and within the bounds of clear and well-reasoned policies. Savings associations should have diversified portfolios that achieve an appropriate balance between risk and return.

A sound investment program results from clear policies and objectives, and a sound investment process. The savings association should begin the investment process by determining its objectives for return requirements and risk tolerance. Management should have a clear understanding of how much return they expect the investment portfolio to generate and how much risk they can tolerate. Management should determine risk and return objectives in the context of the various investment constraints faced by the savings association, including those that restrict the list of permissible investments. The savings association's investment objectives and constraints provide the foundation for developing sound investment policies.

LINKS

-  [Program](#)
-  [Questionnaire](#)
-  [Appendix A](#)
-  [Appendix B](#)
-  [Appendix C](#)

In addition, savings associations should establish appropriate risk management systems and controls to monitor and control investment portfolio activity and performance. Savings associations must account for investment securities in accordance with generally accepted accounting principles. The appropriate accounting for investment securities can sometimes be complex especially in times of financial market stress, crisis, or collapse as markets have recently experienced.

Current Financial Crisis

The financial crisis of 2007–2009 began in July 2007. The financial crisis made borrowing and equity raising harder. The financial crisis had many effects, including the following:

- Overall tightening of credit.
- Financial markets experienced steep declines.
- Liquidity problems.
- Devaluation of assets.

The Emergency Economic Stabilization Act of 2008 states it is, “An Act to provide authority for the Federal Government to purchase and insure certain types of troubled assets for the purposes of providing stability to and preventing disruption in the economy and financial system and protecting taxpayers, to amend the Internal Revenue Code of 1986 to provide incentives for energy production and conservation, to extend certain expiring provisions, to provide individual income tax relief, and for other purposes.”

The Act is an attempt to restore liquidity to the credit markets.

Rating Agencies

Many investors relied on credit agencies to do the due diligence necessary when buying the securities discussed in this section, but the credit agencies did not take into account the different underwriting standards used for the underlying products. The performance of many of these securities relies on the performance of the underlying pool of assets. While some securities have high-quality loans or investment securities as collateral, other securities have poor and marginal quality assets as collateral.

Credit risk can result in actual credit losses and write-downs or widening credit spreads, which reduces the market value of the securities. Recently, losses often involved securities considered “investment grade” (sometimes even AAA) by Nationally Recognized Statistical Ratings Organizations (NRSROs), such as Moody’s, Standard & Poor’s, or Fitch. The limitations of the ratings process and the lag between credit deterioration and a ratings downgrade mean that neither associations nor examiners should rely solely on ratings when assessing the credit risk of investment securities, especially those securities with more complex structures.

This section outlines the following areas:

- Role of the Investment Portfolio
- Investment Risks
- TB 13a Requirements
- Board and Senior Management Oversight
- Analyzing Individual Securities
- Use of Investment Consultants
- Reporting and Accounting For Securities
- Evaluating Structured Investment Securities

In addition, this section has four appendices that cover the following areas:

- [Appendix A](#) – Total Return Analysis
- [Appendix B](#) – Types of Investment Securities and Associated Risks
- [Appendix C](#) – Glossary

The Glossary contains background information and includes many terms that you may come across when reviewing the investment area.

ROLE OF THE INVESTMENT PORTFOLIO

A savings association's investment portfolio serves as a source of income and liquidity, as well as a tool for asset/liability management. At many savings associations, the primary influences of loan demand and liquidity needs determine the percentage of assets allocated to the investment portfolio. When loan demand is weak, the savings association deploys excess cash inflows to the investment account, and when loan demand is strong, the savings association draws down the investment account.

Investment and Portfolio Objectives

The investment objectives should be internally consistent and supportive of other efforts such as the interest rate risk policy, funds management, and capital plan. The investment policy should fit into the savings association's overall direction as described in the business plan.

Investment Risk versus Portfolio Risk

While management should understand the risks associated with individual securities, the decision of whether to buy a security should not rest on the risk of a security alone. Management should evaluate how the addition of the security to the portfolio affects the overall risk and return of the portfolio. The addition of a risky security to a portfolio can either raise or lower portfolio risk depending on the characteristics of the security and the portfolio.

Management should have a clear understanding of how changes in the composition of the investment portfolio affect the risk of the investment portfolio and the overall risk of the savings association. In a sense, the investment portfolio is a portfolio within a larger portfolio that includes all the assets, liabilities, and off-balance sheet contracts of the savings association. The overall risk of the savings association should be the primary consideration of management.

Permissible Investments and Other Regulatory Requirements

Savings associations have the responsibility to perform a thorough analysis of the quality of any security they buy. Before buying any investment security, management must first determine that the investment is permissible and meets other applicable regulatory requirements. Section 5 of the Home Owners' Loan Act (HOLA) outlines permissible investments for federal savings associations.

Subject to certain restrictions and limitations, the following types of investments, while not an exhaustive list, are permissible investments for savings associations:

- Bankers' bank stock
- Business development credit corporations
- Commercial paper
- Corporate debt securities
- Community development equity investments
- Deposits in insured depository associations
- U.S. Treasury securities
- Securities and instruments issued by U.S. Government-sponsored enterprises
- Foreign assistance investments
- HUD-insured or guaranteed investments
- Liquid assets such as cash and deposits at Federal Reserve Banks and Federal Home Loan Banks
- Mortgage-backed securities
- Mutual funds (with limitations)
- National Housing Partnerships Corporation and related partnerships and joint ventures
- Open-end management investment companies registered with the SEC
- Small business-related securities
- State and local government obligations (see discussion of municipal bonds in [Appendix B](#))

See [Appendix B](#), Types of Investment Securities and Associated Risks, for information on specific types of investments.

Other applicable regulatory requirements include:

- 12 CFR 560.40, Commercial Paper and Corporate Debt Securities

- 12 CFR 560.32, Pass-Through Investments
- TB 13a, Management of Interest Rate Risk, Investment Securities, and Derivative Activities

Capital Considerations

You must ensure that savings associations are correctly risk weighting downgraded investment securities. The capital implications for downgraded securities can be severe, particularly if the security is in a non-senior position. Refer to [CEO Memo 307](#) entitled “Risk Weighting Downgraded Securities” (dated June 25, 2009).

The capital rules allow institutions the option to risk weight mortgage and asset backed securities under the optional ratings based approach (RBA).

Corporate debt securities are NOT eligible for the RBA.

The RBA allows for a 20% risk weight on AAA or AA rated securities; a 50% risk weight on A rated securities; a 100% risk weight on BBB rated securities; and a 200% risk weight on BB rated securities.

Once a security is rated more than one category below investment grade (B or below) or is unrated, it is no longer eligible for the RBA. The risk weight is then based on the position of the security within the securitization structure:

- If the security is in the most senior position in terms of credit risk and is no longer eligible for the RBA (is rated B or below, or is unrated), savings associations generally must use the risk weight appropriate for the underlying assets. The risk-weight would be 50% if the underlying mortgage loans are qualifying single or multifamily mortgage loans (QML). Otherwise the risk weight is 100% for nonqualifying mortgage loans (NQML) or commercial and consumer collateral.
- Under the general risk-based capital rules, the capital treatment for nonsenior securities is covered in the recourse, direct credit substitute, and residual interest rules. A purchased subordinated (nonsenior) mortgage or asset-backed security would be included in the definition of a direct credit substitute because the risk assumed on the subordinated security exceeds its pro rata share of the credit risk in the securitization structure (refer to the definition of direct credit substitute in section 567.1). Once a nonsenior position is downgraded such that it is no longer eligible for the RBA (B or below, or unrated), then a savings association must use the “gross-up” approach. In that case the savings association must risk weight the face value (i.e., amortized cost basis) of its mezzanine position plus the proportional par value of all of the

more senior positions it supports by the risk weight appropriate for the underlying obligor or collateral (100% for most assets)¹.

Risks Involved with Securities

All investments, even U.S. Treasury securities, carry some elements of risk. The primary risks associated with investments are:

- Market risk (including interest rate risk)
- Credit risk
- Prepayment risk
- Call risk
- Option risk
- Liquidity risk
- Operational risk
- Settlement risk

An association's sole reliance on outside ratings for material purchases of complex securities is an unsafe and unsound practice.

The savings association should clearly state portfolio objectives. The objectives should focus on the trade-off between risk and return. In formulating risk and return objectives, a savings association should consider the following constraints:

Quality of Securities

The association has the responsibility to perform a thorough analysis of a particular security. Risk increases proportionately with the complexity of the security and as the rating of the security moves down the rating scale. Associations should determine the quality and long-term suitability of investments, especially with respect to complex securities with lower investment grades (for example, Moody's BBB) or securities with different ratings from different rating agencies. An association's sole reliance on outside ratings for material purchases of complex securities is an unsafe and unsound practice.

¹ As with senior positions, when determining the appropriate risk weight to apply to the "grossed up" asset, for mortgage backed securities where the underlying assets represent both qualifying and non qualifying mortgage loans, the savings association must risk weight the non qualifying portion at 100%.

Marketability of Securities

One requirement for savings associations that invest in corporate debt securities is that the securities must be able to be sold with reasonable promptness at a price that corresponds reasonably to their fair value (12 CFR 560.40(a)(2)(i)). It is not required that savings associations invest only in securities, including trust preferred securities sold through a public offering. Rather, a savings association must demonstrate that a viable market exists for the securities to satisfy the regulatory marketability requirement.

INVESTMENT RISKS**Risk Factors**

You should assess the overall quality and effectiveness of the savings association's risk management process as it relates to investment activities. In making this assessment, you should review TB 13a, Appendix B, *Sound Practices for Market Risk Management*. This section summarizes the key elements of that Appendix.

Other considerations include:

- Investment horizon
- Taxes
- National, regional, and local economic indicators and conditions

Changes in the economic climate will affect all associations. Effective monitoring of economic and money market trends is key to a sound risk management/risk reduction strategy. Effective risk reduction minimizes the negative impact of these trends, while accentuating the positive impact.

Market Risk

We define market risk as the potential that the market price of a security will fall due to changes in interest rates, exchange rates, commodity prices, credit spreads, liquidity premiums, or other market or political conditions.

A primary market risk faced by investors in fixed-income securities is interest rate risk. Simply put, interest rate risk is the risk that the price of a security will change when interest rates rise or fall. Almost all fixed-income securities decline in price when interest rates rise.

A savings association can control the degree of interest rate risk in its investment portfolio by managing the weighted average maturity of the securities in its portfolio. In general, the longer the weighted average maturity of a portfolio, the greater the interest rate risk. Similarly, a savings association can also

control interest rate risk exposure by managing the duration of the portfolio. Duration is a more precise measure of the interest rate sensitivity of a security or a portfolio of securities than weighted average maturity. Duration is a measure of the average time required to receive all the cash flows (interest and principal) from a security or a portfolio of securities. The higher a portfolio's duration, the greater the losses when interest rates rise. In general, longer maturities and higher durations carry more risk. For more information on interest rate risk, see [Examination Handbook Section 650](#).

Interest Rate Risk

The high-risk nature of certain investment securities stems from their price volatility caused by changes in interest rates, market expectations, and the credit quality of the issuer. [TB 13a](#) establishes policies for savings associations to follow for interest rate risk limits, required systems for measuring and monitoring interest rate risk, stress testing, and recordkeeping. Savings associations should follow the guidance in TB 13a when structuring their portfolios and when investing in complex and interest sensitive investment securities and derivative investment products.

Credit Risk

Holding below-investment grade securities exposes savings associations to risk of loss due to significant credit risk of such securities compared with that of investment quality securities. Associations may not purchase below-investment grade corporate debt securities.

Credit risk is the risk that an issuer may default (fail to pay) on principal or interest payments, or that a collateralized security (Collateralized Mortgage Obligation (CMO), Mortgage Backed Security (MBS), Asset Backed Security (ABS), etc.) has insufficient collateral credit support to maintain full payments of principal and interest. Savings associations can manage the credit risk of an investment portfolio by using the following techniques:

- Portfolio diversification – investing in a variety of securities with differing credit risks.
- Investment selection – managing the quality of securities in the portfolio.

The benefits of portfolio diversification can break down during periods of financial stress. It is especially important that associations consider concentrations in the investment portfolio. Especially relevant to consider are groups of assets exposed to similar macroeconomic or market scenarios such as rising interest rates, widening credit spreads, loss of market liquidity, and weakness in a particular asset category, such as mortgages.

Savings associations can assess the overall quality of individual securities by analyzing the financial condition of the issuer and other related factors. Such factors include the quality of management, competitive conditions in the industry, economic conditions, and so forth. Savings associations should assess data on the performance of the underlying collateral for collateralized securities.

The necessary information to perform a prepurchase analysis to assess corporate bonds and nonagency CMOs and ABSs should be available in the prospectus for newly issued securities. For previously issued

securities, associations should supplement this information with current credit information on the issuer or underlying collateral pool. Reviews and analyses from NRSROs should be available from the seller of the security (if the association lacks a subscription to the NRSRO). Most of the information is available on Bloomberg. Even if the association does not have access to Bloomberg, its broker can send the necessary screen shots; however, it is important that the association not overly rely on obtaining information from the selling broker.

Many investors rely on credit rating agencies to measure the quality of corporate and municipal bonds as well as collateralized securities. The most widely used bond rating agencies are Standard & Poor's Ratings Services and Moody's Investors Service. Other rating agencies include Fitch Ratings, Dominion Bond Ratings Service, A. M. Best U.S., and Egan-Jones Ratings Company.

Associations should not use ratings as a substitute for its own thorough underwriting analyses. Associations should research the underlying collateral pools on CMOs and monitor performance of the collateral.

Associations should not use ratings as a substitute for its own thorough underwriting analyses.

In addition, associations should be aware of the danger of relying solely on credit rating agencies. Be aware that ratings by credit rating agencies can be a lagging indicator of emerging credit problems, particularly for collateralized securities where collateral performance can change significantly over time.

Savings associations may only invest in investment grade bonds. Investment grade bonds are those in one of the four highest rating categories by a NRSRO. Savings associations, by statute, may not invest in noninvestment grade bonds. The table below shows investment-grade and noninvestment grade ratings of these agencies.

Bond-Quality Ratings

Moody's	Standard & Poor's
Investment Grade: Aaa – Highest Quality Aa A Baa	Investment Grade: AAA – Highest Quality AA A BBB
Noninvestment Grade ("Junk Bonds") Ba and below	Noninvestment Grade ("Junk Bonds") BB and below

Savings associations that invest in corporate bonds should obtain current bond ratings before purchase and should review the ratings of their holdings on a regular basis. For detailed information on bond ratings, see [Appendix B](#), Types of Investment Securities and Associated Risks.

Below Investment Grade Securities

Holding below-investment grade securities exposes savings associations to risk of loss due to the significant credit risk of such securities compared with that of investment quality securities. Associations may not purchase below-investment grade securities.

For both rated and nonrated issues, savings associations should develop a system of periodic credit review. Refer to [Examination Handbook Section 260](#), Classification of Assets.

Asset Classification of Distressed Debt Securities

For determining the classification status of distressed debt securities, you should apply the guidelines contained in [Examination Handbook Section 260](#) and the “Uniform Agreement on the Classification of Assets and Appraisal of Securities Held by Banks and Thrifts” ([CEO Memo 200](#) dated June 15, 2004), which uses external credit ratings as a general proxy for adverse classification definitions. The recent Financial Accounting Standards Board accounting rule adjustments for impairment calculations do not change the analysis performed to assign asset classifications. You should continue to review the reasonableness of impairment calculations, which are reflected as “Loss” if taken in the current period.

A “substandard” asset, by definition, has a well-defined weakness, or weaknesses, that jeopardize its timely repayment according to its contractual terms. Such assets are characterized by the distinct possibility that the institution will sustain some loss if the deficiencies are not corrected. Many downgraded asset-backed securities exhibit credit risk and deteriorating collateral performance, and you should weigh such asset quality concerns as contained in external rating downgrades in determining asset classification status. Nonetheless, while giving deference to external ratings, you should review the facts and circumstances of each situation. The Uniform Agreement affords you some flexibility to either pass a subinvestment grade debt security or classify an investment grade debt security, as appropriate.

Generally, investment grade debt securities without an “Other-Than-Temporary Impairment” (OTTI) and with current ratings are not subject to adverse classification. However, rapid deterioration in the performance of the underlying collateral and changes in the structure and allocation of losses in complex structured products may justify departure from the general rules in the Uniform Agreement and allow for adverse classification of an investment grade security.

Generally, subinvestment grade debt securities are classified substandard. Subinvestment quality debt securities are those in which the investment characteristics are distinctly or predominantly speculative. This group includes debt securities rated below the four highest rating categories (i.e., below BBB), unrated debt securities of equivalent quality, and defaulted debt securities.

Under generally accepted accounting principles (GAAP), as discussed earlier, as savings association must assess whether a decline in fair value below amortized cost of a security is a “temporary” or “other than temporary” impairment². For subinvestment quality “Available for Sale” (AFS) debt

² See CEO Memo 320, issued September 3, 2009, “Accounting Considerations Related to Other-Than-Temporary Impairment of Securities,” for a thorough discussion of these issues.

securities with a “temporary” impairment under GAAP, the amortized cost basis of the security rather than fair value (the amount at which the security is carried on the balance sheet) is classified substandard.

For subinvestment quality debt securities with an “other than temporary impairment,” the allocation of the impairment between loss and substandard classifications depends largely on the institution’s intent to sell. In addition, you must also assess if it is “more likely than not” that the institution will be required to sell the security before recovery of its amortized cost basis, less any credit losses. If the institution’s intent is to sell the security or the institution will be required to sell the security, the entire impairment would be classified as loss. If not, the portion of the impairment attributed to credit loss would be classified as loss; the noncredit loss portion of the impairment typically would be classified as substandard unless a more severe classification is warranted by the specific facts and conditions of the particular case.

Prepayment Risk

Prepayment risk is the risk that an issuer may repay all or part of the principal on a bond prior to maturity. Prepayment risk is a particular concern with MBS. Issuers back MBS with mortgages that borrowers can prepay or refinance. Prepayments reduce the principal of the MBS and the issuer returns the cash flows from prepayments to the holders of the MBS. The risk is that the bonds will repay at an inopportune time, such as when interest rates are falling. Periods of falling interest rates usually generate widespread prepayments. If the investor wants to reinvest the proceeds from the prepayments, the prevailing yields on newly issued bonds are generally lower than the investor previously earned on the bond that prepaid. Further, premiums paid for higher coupon MBS that prepay faster than anticipated will be amortized through income over a shorter period of time, thus reducing the yield of the investment.

Call Risk

Call risk is the probability of loss due to redemption of a debt security by its issuer before its maturity date. The adverse effects of call risk are similar to those of prepayment risk, but the reduction in principal is absolute and immediate.

Option Risk

Option risk is the risk that a change in prevailing interest rates will have an adverse impact on earnings or capital because of changes in the timing of cash flows of an investment. The most common option risk is prepayment risk. In many cases, a favorable nominal return is largely the result of excessive option risk. See also, negative convexity in [C](#), Glossary.

Liquidity Risk

Liquidity risk is the risk to a savings association’s earnings and capital that arises from its inability to meet obligations in a timely manner, without incurring unacceptable loss. Management must ensure that sufficient funds are available at a reasonable cost to meet potential funding demands from

depositors and borrowers as well as meeting operational and lending needs. The most common signs of a possible liquidity problem include rising cost of funds, demand by creditors for repayment or additional collateral, ratings downgrades, credit line decreases, and the reduction of availability of long-term funding. On occasion, the liquidity of entire securities markets can seize up due to financial crisis or panic. For instance, nonagency CMOs, mortgage mutual funds, and especially, auction rate securities have recently provided examples. In addition, certain types of securities are inherently illiquid, such as those of small firms and securities with unusual features. With respect to securities, liquidity risk is the risk that a security will be difficult to sell at a reasonable price within a reasonable time. By law, savings associations may not invest in corporate securities that they cannot sell with reasonable promptness at a price that corresponds reasonably to the fair value of the security. See 12 CFR § 541.7.

Also, see [Section 530, Liquidity Risk Management](#).

Operational Risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events. The definition includes legal risk, which is the risk of loss resulting from failure to comply with laws, as well as prudent ethical standards and contractual obligations. Operational risks include natural disasters such as flooding or earthquakes as well as large rogue trading losses.

Settlement Risk

Settlement is an arrangement between parties for payment or receipt of cash or securities. Settlement risk is the possibility that a counterparty will fail to honor its obligation to deliver cash or securities at settlement, and is a key operational risk in managing investment portfolios.

The careful selection of brokers and dealers can mitigate settlement risk. The selection process should include a review of each firm's financial statements and an evaluation of its ability to honor its commitments.

An inquiry into the general reputation of the dealer is also appropriate. This includes review of information from state or federal securities regulators and industry self-regulatory organizations. For example, the National Association of Securities Dealers provides public information concerning any formal enforcement actions against the dealers, their affiliates, and associated personnel.

Associations should also pay attention to documents defining disposition of collateral pledged to a counterparty. Contracts that permit re-pledging of collateral with third parties can be a large problem, especially during times of significant financial disruption.

TB 13A REQUIREMENTS

You should ensure that the savings association conducts its investment activities in accordance with [Thrift Bulletin 13a](#). Part III of TB 13a identifies, in broad terms, the types of analysis a savings

association should undertake before making securities investments. A savings association should exercise diligence in assessing the risks and returns associated with investment securities, including expected total return. For a discussion of total return, see [Appendix A](#), Total Return Analysis. As a matter of sound practice, before taking an investment position, an association should:

- Ensure that the investment is legally permissible. Review the terms and conditions of the investment. Ensure that the investment is allowable under the association's investment policies and is consistent with the association's objectives and liquidity needs. Exercise diligence in assessing the market, liquidity, and credit risk of the investment.
- Conduct a prepurchase portfolio sensitivity analysis for any significant investment (see TB 13a for details).
- Conduct a prepurchase price sensitivity analysis of any complex security before taking a position (see TB 13a for details).

TB 13a states that, "Investments in complex securities and the use of financial derivatives by savings associations that do not have adequate risk measurement, monitoring, and control systems may be viewed as an unsafe and unsound practice."

Complex and Exempt Securities

TB 13a defines exempt securities as noncallable, "plain vanilla" instruments such as mortgage pass-through securities, fixed rate securities, and floating rate securities. Complex securities include any collateralized mortgage obligation, real estate mortgage investment trust, callable mortgage pass-through security, stripped mortgage-backed security, structured note, and any security not meeting the definition of an exempt security. Complex securities also include securities such as collateralized bond obligations or collateralized loan obligations, where the cash flows from the asset pools are divided into several tranches that have different repayment and collateral coverage and investment ratings, or that demonstrate other nonstandard features such as having acceptable investment ratings for part of the investment such as the principal amount, but are unrated as to the payment of interest.

Complex securities require a high degree of technical expertise to understand how they might behave under various interest rate, prepayment, and economic conditions.

Complex securities require a high degree of technical expertise to understand how they might behave under various interest rate, prepayment, and economic conditions. Because the market for many complex securities is thin, it is often difficult to liquidate them at a price that reasonably reflects their fair value.

Risk Reduction

In general, savings associations should limit investments in complex securities with high price sensitivity (see [TB 13a](#)) to transactions and strategies that lower interest rate risk. Any savings association that invests in such securities for a purpose other than that of reducing portfolio risk should do so in accordance with safe and sound practices.

BOARD AND SENIOR MANAGEMENT OVERSIGHT

The board and senior management should understand their oversight responsibilities regarding the management of investment activities. An appropriate subcommittee of the board may carry out board oversight. In particular, the board, or an appropriate subcommittee of board members, should take the following steps:

- Approve broad objectives and strategies and major policies governing investment activities.
- Provide clear guidance to management regarding the board's tolerance for risk.
- Provide guidance on approved securities dealers and counterparties.
- Ensure that senior management takes steps to measure, monitor, and control risk.
- Review periodically information that is sufficient in timeliness and detail to allow the board to understand and assess the association's investment activities.
- Assess periodically compliance with board-approved policies, procedures, and risk limits.
- Review policies, procedures, and risk limits at least annually.

Senior management should ensure the effective management of the association's operations, establish and maintain appropriate risk management policies and procedures, and ensure that resources are available to conduct the association's activities in a safe and sound manner. In particular, senior management should take the following steps:

- Ensure that effective risk management systems are in place and properly maintained.
- Establish and maintain clear lines of authority and responsibility for managing investment activities.
- Ensure that competent staff with technical knowledge and experience consistent with the nature and scope of their activities conducts the association's operations and activities.
- Provide the board of directors with periodic reports and briefings on the association's investment activities and risk exposures.

- Review periodically the association's investment risk management systems, including related policies, procedures, and risk limits.

Adequate Policies and Procedures

Savings associations should have written policies and procedures governing investment activities. Such policies and procedures should be consistent with the association's strategies, financial condition, risk-management systems, and tolerance for risk. An association's policies and procedures (or documentation issued pursuant to such policies) should do the following:

- Identify the staff authorized to conduct investment and derivatives activities, their lines of authority, and their responsibilities.
- Identify the types of authorized investments and investment instruments such as required credit quality and maturity range.
- Specify the required type and scope of prepurchase analysis for various types or classes of investment securities.
- Define, where appropriate, position limits and other constraints on each type of authorized investment, including derivatives. The policy may include specific guidelines on how the association may use such instruments.
- Identify dealers, brokers, and counterparties that the board or a board-designated committee authorizes the association to conduct business with and identify credit exposure limits for each authorized entity.
- Ensure that contracts are legally enforceable and documented correctly.
- Establish a code of ethics and standards of professional conduct applicable to personnel involved in investment and derivatives activities.
- Define procedures and approvals necessary for exceptions to policies, limits, and authorizations. This could include what securities savings associations can pledge for repurchase or use to collateralize public funds on deposit.

Monitoring and Reporting

The board of directors and senior management should monitor investment activities on a regular basis. The types of reports prepared for the board and various levels of management will vary depending on the size and complexity of the savings association's operations.

Savings associations should have accurate, informative, and timely management information systems, both to inform management and to support compliance with investment policy. Report style, contents, and format will vary among associations, depending on size and complexity of the savings association.

Additional reports may be required depending upon the savings association's circumstances. The information system should be commensurate with the size and complexity of the savings association, and adequate to address its operational requirements. The board of directors and senior management should receive reports for monitoring investment risk on a timely basis.

Recordkeeping

Savings associations must maintain accurate and complete records of all securities transactions according to 12 CFR § 562.1. In particular, savings associations should retain any analyses (including pre- and post-purchase analyses) relating to investment transactions. A savings association should make these records available to you upon request.

Internal Controls

Savings associations should have adequate internal controls over investment activities. A fundamental component of the internal control system involves regular independent reviews and evaluations of the effectiveness of the system.

Internal controls should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, and association policies. An effective system of internal control should include the following elements:

- Effective policies, procedures, and risk limits.
- An adequate process for measuring and evaluating risk.
- Adequate risk monitoring and reporting systems.
- A strong control environment.
- Continual review of adherence to established policies and procedures.

Savings associations should review their system of internal controls at least annually. Individuals independent of the function should conduct the review. Reviewers should report results directly to the board. You should consider the following factors when reviewing an association's internal controls:

- Does the savings association maintain risk exposures at prudent levels?
- Does the savings association employ the risk measures that are appropriate to the nature of the portfolio?

- Does the savings association have board and senior management actively involved in the risk management process?
- Does the savings association document policies, controls, and procedures adequately?
- Do savings association personnel follow the established policies and procedures?
- Does the savings association adequately document the assumptions of the risk measurement system?
- Does the savings association accurately process data?
- Is the risk management staff adequate?
- Has the savings association changed risk limits since the last review?
- Have there been any significant changes to the association's system of internal controls since the last review?
- Are internal controls adequate?

ANALYZING INDIVIDUAL SECURITIES

In addition to the initial due diligence review of the investment, management has an ongoing responsibility to monitor the investment, including cash flows, collateral quality, and the performance of the underlying assets of the security at least quarterly to determine the effect of any changes to the association's investment and adjust accordingly, if necessary.

With respect to the purchase of individual securities, management should:

- Determine that the issuer, together with any guarantors, has the financial capacity and willingness to meet the repayment terms of the investment.
- Analyze the legal structure of the investment to determine that the association has the authority to make such an investment.
- Analyze the expected performance of the issuer and any underlying assets. This should include a cash flow analysis prepared by the association or a party engaged by the association other than the seller/broker.
- Analyze the security's expected performance under various loss and interest rate scenarios, its expected effect on the overall interest rate risk profile of the association, and a review of all covenants of any trust agreement that apply to the senior tranches.

- Analyze the entire security. If the security has separate tranches with unequal payments, the analysis should include the effect of the payment priority on the investment purchased. If the security is pre-funded or includes a revolving period, the analysis should include a review of collateral investment parameters.
- Review and analyze the collateral managers, including their historical performance in managing such funds and their ability to make prudent investments, both when the fund is started and during any revolving period.
- Consider the liquidity and price volatility of the security. Base this on a sensitivity analysis that reflects changes in credit quality, interest rates, and prepayment speeds.

Management should fully document all analyses for your review. You should note any failure to document all analyses in the Report of Examination.

Analysis and Stress Testing

Management should thoroughly analyze the various risks associated with investment securities before making an investment. (See [TB 13a](#), Part III.) In addition, management should periodically review the portfolio.

Management should thoroughly analyze the various risks associated with investment securities before making an investment.

Before taking a position in any complex securities, management should analyze how the future direction of interest rates and other changes in market conditions could affect the instrument's cash flows and market value. In particular, management should understand the following elements of the complex security:

- The structure of the instrument.
- The best case and worst-case scenarios in terms of market interest rates, credit losses on the underlying assets, credit and liquidity spreads, and prepayments.
- How the existence of any embedded options or adjustment formulas might affect the instrument's performance under different interest rate scenarios.
- The conditions, if any, under which the instrument's cash flows might be zero or negative.
- The extent to which price quotes for the instrument are available.
- The instrument's universe of potential buyers.
- The potential loss on the instrument (that is, the potential discount from its fair value) if sold prior to maturity.

- That the issuer, together with any guarantors, has the financial capacity and willingness to meet the repayment terms of the investment.
- That analysis of the legal structure of the investment affirms the association's authority to make such investment.
- How the investment is expected to perform under various loss and interest rate scenarios, the impact on the overall risk profile of the association, and how all covenants of any trust agreement apply to the senior tranches.
- The effect of the payment priority should the security be divided into separate tranches with unequal payments.
- That a review and analysis of the collateral managers includes historical performance to document investment prudence.

Evaluation of New Products, Activities, and Financial Instruments

New investment products and activities can entail significant risk. Senior management should evaluate the risks inherent in new products and activities to ensure that they are subject to adequate review procedures and controls. The board, or an appropriate committee, should approve major new initiatives involving new products and activities.

Before authorizing a new initiative, the review committee should review the following items:

- A description of the relevant product, activity, or instrument.
- An analysis of the appropriateness of the proposed initiative in relation to the association's overall financial condition and capital levels and investment expertise.
- Descriptions of the procedures to measure, monitor, and control the risks of the proposed product, activity, or instrument.

Management should ensure that adequate risk management procedures are in place before undertaking any significant new initiatives.

USE OF INVESTMENT CONSULTANTS

Some savings associations use consultants in the investment process. The savings association should limit the role of consultants and brokers to advising management and executing transactions approved by management. The savings association should not delegate investment decision-making authority to third parties, including brokers or consultants. Ceding decision-making power to a consultant or broker represents an unsafe and unsound practice.

Any savings association that engages a consultant must have a formal written contract that covers the following elements:

- The types of assets that the consultant or broker can buy and sell on a preapproved basis.
- The requirement for authorization from the board or senior management for any transactions not pre-approved in the contract.
- The documentation and rationale for each trade made for the savings association.
- The requirement of the consultant or broker to maintain records and submit evidence that they obtain prices from several brokers for all transactions, particularly if the consultant is a broker.
- Compensation programs that do not encourage churning (excessive trading activity) of portfolios or short-term strategies that are not in the savings association's best interest.
- The right of the savings association or its agent to audit the records of transactions executed for the savings association.
- The authority of OTS to examine the records of the consultant or broker that pertains to the transactions for the savings association.

If a savings association uses consultants, it should establish internal policies, controls, and procedures that include the following criteria:

- Establish limitations on the assets managed by consultants with consideration to the types and level of risk of the assets authorized for purchase.
- Monitor compliance with the limitations established by the board.
- Require senior management personnel or an independent agent to periodically audit the consultant or broker to ensure that the firm is buying and selling securities at the most favorable price for the savings association.
- Guarantee that the savings association always has a perfected security interest on securities bought for its account.

The savings association should measure the performance of the consultant against a relevant benchmark (for example, a standard bond index). In measuring the performance (total return) of the consultant against a benchmark, the savings association should factor in fees and expenses charged by the consultant. Savings associations should note that consultants and contractors might be subject to OTS enforcement actions pursuant to Section 8 of the FDIA.

Senior management personnel should supervise the activities of the consultant to ensure conformity to the savings association's investment, liquidity, and interest rate risk management plan. Management

must keep the board of directors informed of the performance of the consultant, through periodic reports.

Senior management should be aware of, and execute its responsibility to perform due diligence on any investment instrument, regardless of the presence or lack of presence of investment consultants. Savings associations have the responsibility to perform a thorough analysis of the quality of any security in which they invest. This is especially true of complex instruments. Prior to committing to the purchase of any investment security, management must first determine that the investment meets applicable regulatory policy requirements, including:

- 12 CFR 560.40, Commercial Paper and Corporate Debt Securities
- 12 CFR 560.32, Pass-Through Investments
- [TB 13a](#), Management of Interest Rate Risk, Investment Securities, and Derivative Activities
- [TB 13a-2](#), Structured Advances

REPORTING AND ACCOUNTING FOR SECURITIES

Part 562 of OTS regulations, require savings associations to record and report their financial condition in accordance with GAAP. This responsibility includes the obligation to properly account for the savings association's securities under GAAP.

Savings associations must categorize each security as trading, available-for-sale (AFS), held-to-maturity consistent with Accounting Standards Codification (ASC) 320 [Investments – Debt and Equity Securities] formerly FASB Statement No. 115 or at fair value if elected under ASC 825-10-25 [Financial Instruments, Overall, Fair Value Option] formerly FASB Statement No. 159. A savings association should determine, at the time it purchases or originates securities, how to categorize the securities. The savings association should not record securities in a suspense account until it determines the appropriate category. Management should periodically reassess its security categorization decisions to ensure they remain appropriate.

Fair Value Accounting

Fair value accounting is a market-based measurement for determining the value of assets and liabilities on a reporting entity's books. In September 2006, the FASB issued FAS 157 to create a uniform definition of fair value and provide guidance for applying the definition of fair value to promote consistency, comparability, and transparency in fair value measurements. ASC 820 [Fair Value Measurements and Disclosures] formerly FAS 157 is effective for financial statements issued for fiscal years after November 15, 2007, or in the case of nonfinancial assets and liabilities, such as goodwill, for fiscal years after November 15, 2008.

ASC 820 defines fair value as “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.”

ASC 820 only applies when another accounting rule requires or permits a fair value measure for that item. ASC 820 does not introduce any new requirements mandating the use of fair value. There are two major changes in approach:

- Fair value is based on the exit price (for an asset, the price at which it would be sold (bid price)) rather than an entry price (for an asset, the price at which it would be bought (ask price)). This is true regardless of whether the entity plans to hold the asset for investment or for resale.
- ASC 820 emphasizes that fair value is market-based rather than entity-specific.

ASC 820 does not require associations to use fair value on any new classes of assets. It does apply to assets and liabilities that the association carries at fair value in accordance with other applicable rules. The accounting rules on fair value are complex. For financial services, providers must carry some asset classes at fair value, such as derivatives and marketable equity securities. For other types of assets, such as loan receivables and debt securities, it depends on whether the association holds the assets for trading or for investment. Associations must carry all trading assets at fair value. Savings associations must carry loans and debt securities held for investment or to maturity at amortized cost, unless they are deemed to be impaired at which time a loss is recognized. If available-for-sale or held-for-sale, the association must carry these assets at fair value or the lower of cost or fair value, respectively. (ASC 948 [Financial Services – Mortgage Banking] formerly FAS 65 and ASC 310 [Receivables] formerly FAS 114 cover the accounting for loans, and ASC 320 [Investments – Debt and Equity Securities] formerly FAS 115 covers the accounting for securities.)

ASC 820 seeks to maximize observable inputs and minimize unobservable inputs. There are three levels of inputs:

Level 1 Inputs	Level 2 Inputs	Level 3 Inputs
Quoted prices for identical assets in active markets, unadjusted for “blockage factor” (unit of measure) (price x quantity)	Quoted prices for similar assets, quoted prices in inactive markets, observable market data (interest rates, yield curves, prepayment speeds)	Unobservable (entity generated) inputs used when observable inputs unavailable
Example:	Example:	Example:
Exchange traded securities, futures or options	Residential mortgage loans held-for-sale	Mortgage servicing rights or retained beneficial interest in securitization

On October 10, 2008, the FASB issued FSP FAS 157-3 – *Determining the Fair Value of a Financial Asset When the Market for That Asset Is Not Active*. The FSP emphasizes even in times of market dislocation, it

is not appropriate to conclude that all market activity represents forced liquidations or distressed sales. However, it is also not appropriate to automatically conclude that any transaction price is determinative of fair value.

Determining fair value in a dislocated market depends on the facts and circumstances and may require the use of significant judgment about whether individual transactions are forced liquidations or distressed sales.

In determining fair value for a financial asset, the use of an associations own assumptions about future cash flows and appropriately risk-adjusted discount rates is acceptable when relevant observable inputs are not available.

In 2008, because associations sold MBS at increasingly reduced prices, it became clear that the value given to some MBS was less than the present value of the expected cash flows from those assets even given the current state of the market.

In an uncertain environment, it is a challenge to obtain market values. Sometimes associations use pricing services. For debt securities, a pricing service may use the mean between quoted bid and asked prices or the last sales price to price securities when such prices are readily available and are representative of the securities' market values. If such prices are not readily available, the pricing service may use yields or prices of securities of comparable quality, coupon, maturity, and type; indications as to values from dealers; and general market conditions.

Due to continuing concerns, however, with what many felt was an overreliance on the "last transaction price," April 9, 2009, the FASB issued FASB Staff Position (FSP) FAS 157-4, Determining Fair Value When the Volume and Level of Activity for the Asset or Liability Have Significantly Decreased and Identifying Transactions That Are Not Orderly. When weighting indications of fair value resulting from the use of multiple valuation techniques, an association shall consider the reasonableness of the range of fair value estimates. The objective is to determine the point within that range that is most representative of fair value under current market conditions.

All the authoritative fair value FASB guidance including FSPs have been codified in ASC 820 [Fair Value Measurements and Disclosures].

Other-than-temporary Impairment

The global financial crisis has seen the fair value³ of many securities decline below their amortized cost basis⁴ and thus those securities are impaired under U.S. GAAP. Consequently, association management must assess whether the fair value decline represents a temporary or other-than-temporary impairment

³ Under GAAP Fair Value Measurements and Disclosures (FASB ASC 820), fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

⁴ Amortized cost basis includes adjustments made to the cost of an investment for accretion, amortization, collection of cash, previous other-than-temporary impairments recognized in earnings (less any cumulative-effect adjustments recognized in accordance with the transition provisions of FASB ASC 320-10-65), and fair value hedge accounting adjustments.

(OTTI). This assessment is important as it can directly affect the accounting treatment, impacting earnings and regulatory capital.

[CEO Memo 320](#) issued September 3, 2009 addresses in detail the process for assessing OTTI of debt securities, supervisory expectations and authoritative references. You should refer to this and FASB guidance, and contact regional accountants with questions.

There are three key steps in assessing OTTI:

Step 1: Determine whether an investment is impaired

Step 2: Evaluate whether impairment is temporary or OTTI

Step 3: If an impairment is OTTI, recognize an impairment loss

Step 1. Determine whether an investment is impaired

If the fair value of the security is less than its amortized cost basis, it is impaired. An association shall determine whether an AFS, Held-to-Maturity (HTM), or cost-method investment is impaired at the end of each quarter (TFR reporting period). An association should not “look through” the form of its investment; for example, an investment in a mutual fund that invests only in debt securities is assessed for OTTI as an equity security, not as a debt security.

Step 2. Determine whether an investment is temporary or OTTI

The impairment is either temporary or other than temporary as determined through evaluation under the two accounting models:

- Investment security model; or
- Beneficial interest model, as appropriate.

Investment security model (Always use this model first)

This is a general model that applies to debt securities, equity securities and cost method investments. For securities that meet the definition of a debt security under GAAP the security is OTTI if:

- Management intends to sell the security, or
- It is “more likely than not” that the savings association will be required to sell the security before recovery of its amortized cost basis, or
- The savings association does not expect to recover its entire amortized cost basis in the investment security (credit loss). Thus, if an association expects a credit loss the impairment is considered OTTI. A credit loss only exists when the fair value is less than the amortized cost

basis. It is possible that a credit loss may exist for a security whose fair value exceeds its amortized cost basis (e.g. securities purchased at a discount). In that case, the security would not be considered “impaired” under Step 1 above and there is no recognition of the credit loss in the income statement.

While each security is assessed based on its individual facts and circumstances, generally the longer the period of time the security has been impaired and the greater the amount of decline in fair value (severity and duration), the more likely a security is OTTI.

Beneficial interest model (Only used for limited securities which are “not OTTI” when evaluated under the Investment security model).

The beneficial interest model is a specialized model that is applied to a subset of debt securities which are beneficial interests⁵ in securitized financial assets. It applies to beneficial interest that: (1) are not “high credit quality” (e.g. AAA or AA), or (2) can be contractually prepaid such that the savings association would not recover substantially all its recorded investment; the securities are OTTI if there has been an adverse change in cash flows expected to be collected, when compared to the cash flows previously projected. Examples include interest-only strips (I/Os) or the residual interest in a securitization. Note that these investments are ALSO subject to the Investment security model.

Step 3. If OTTI, recognize an impairment loss

In certain circumstances for debt securities, OTTI is separated and accounted as two components: (1) the credit loss amount, recognized in earnings; and (2) the amount related to all other factors (noncredit loss) recognized in other comprehensive income (OCI), net of applicable taxes. However in other circumstances the entire amount of impairment shall be recognized in earnings.

Methodology to calculate credit loss

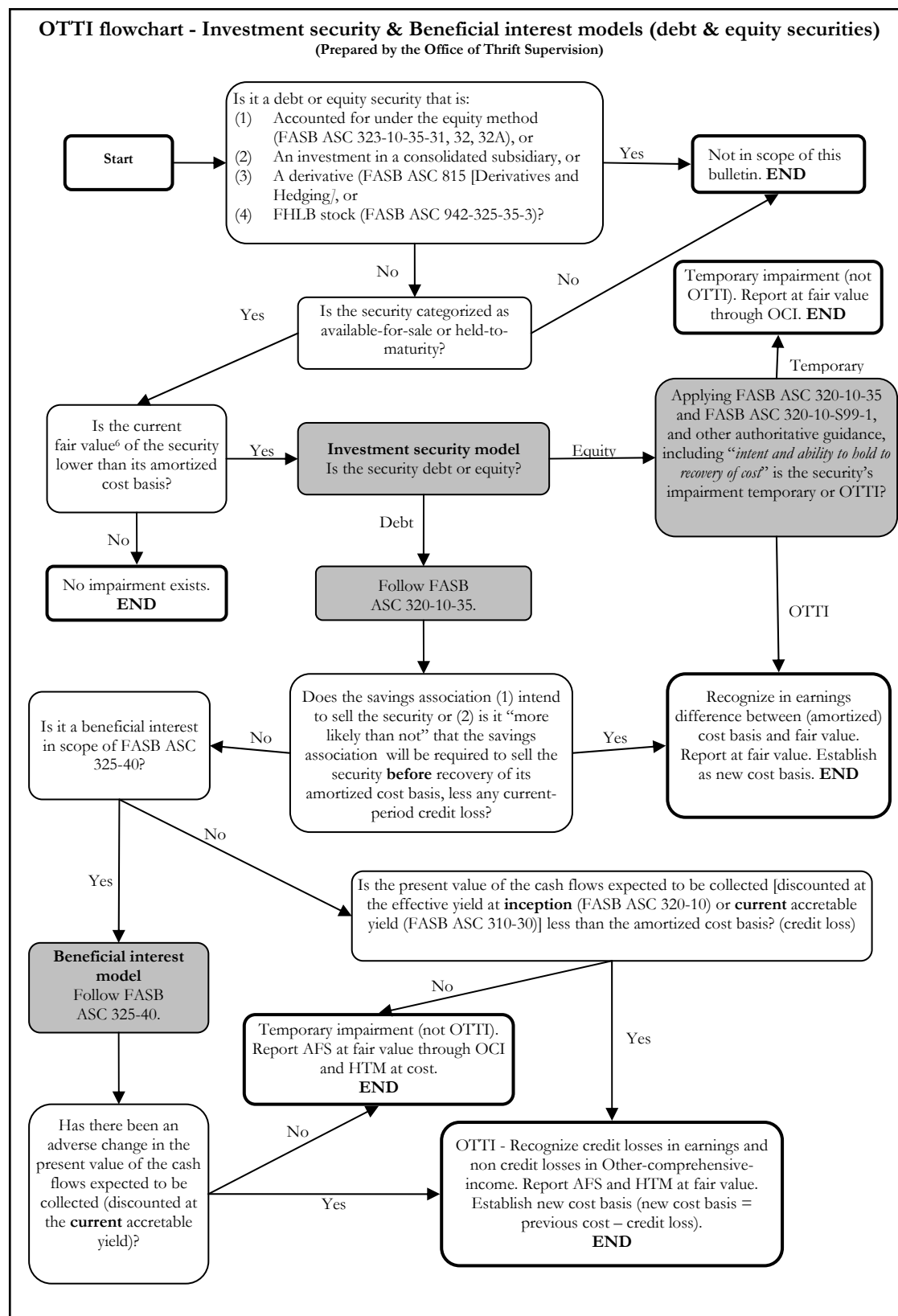
Under the Investment security model, the credit loss amount (the excess cost over the present value of cash flows expected to be collected) shall be recognized in earnings using the appropriate calculated methodology:

- For FASB ASC 320-10 debt securities, discount the cash flows expected to be collected at the original effective interest rate at the date of acquisition.
- For FASB ASC 310-30 debt securities acquired with deteriorated credit quality, discount the cash flows expected to be collected at the current accretable yield.

Under the Beneficial interest model, the credit loss amount is determined based on discounting the cash flows expected to be collected using the yield currently used to accrete the beneficial interest.

⁵ The rights to receive all or portions of specified cash flows to a trust or other entity whether in the form of debt or equity.

Refer to the flow chart which illustrates the process and under what circumstances an OTTI impairment loss is recognized in earnings or both OCI and earnings.



Supervisory Expectations

Management is responsible for assessing and documenting quarterly whether each impaired security is OTTI under GAAP. Reporting systems should be in place to monitor the severity and duration of securities impaired on an instrument by instrument basis. Management should have detailed written policies which state the criteria that lead to a rebuttable presumption that OTTI exists. Savings association management is responsible for ensuring that there are robust processes for ensuring the security valuations are consistent with FASB ASC 820 [Fair Value Measurements and Disclosures] (FASB ASC 820).

You should review and conclude on the adequacy, timeliness, and accuracy of the following practices:

- Management's policies and procedures to identify securities with potential OTTI.
- The fair value methodology used for assessing impairment and compliance with FASB ASC 820.
- The process used to evaluate individual securities in accordance with FASB ASC 320-10-35 (Investment security model) and FASB ASC 325-40 (Beneficial security model), as applicable.
- Documentation supporting temporary or OTTI determinations.

Appropriate documentation to review should include, but not be limited to:

- An analysis of the security's cost basis and fair value
- The severity and duration of the impairment
- Key components in the securities terms or structure that affect its fair value
- OTTI impact on regulatory capital
- Financial performance of issuer and underlying collateral
- Credit rating, as applicable
- Analyst reports
- Internal and external auditor reviews.

The two examples of predetermined parameters below are included for illustration purposes only and are not intended to be either requirements or safe harbors. Securities that fall within the predetermined parameters should be reviewed in greater detail to assess whether based on the facts and circumstances they are OTTI or not OTTI.

- Any security that is impaired by 7 percent or more for two consecutive quarters or any amount for twelve consecutive months.
- Any debt security, other than one backed by the full faith and credit of the U.S. government, that is impaired by greater than 10 percent or impaired by any amount for six consecutive months.

Proper Categorization of Securities

Management should thoroughly analyze the various risks associated with investment securities before making an investment.

The proper categorization of securities ensures that savings associations promptly recognize trading gains and losses in earnings and regulatory capital.

Trading Assets

Savings associations should classify as trading assets securities that the savings association intends to hold principally for selling them in the near term. Trading activity includes active and frequent buying and selling of securities for generating profits on short-term fluctuations in price. Savings associations must report securities held for trading purposes at fair value; and recognize unrealized gains and losses in current earnings and regulatory capital.

Fair Value Option

Permits an association to choose, at specified election dates, to measure eligible items at fair value (the fair value option).

Held-to-Maturity

Held-to-maturity securities are debt securities that the savings association has the positive intent and ability to hold to maturity. Savings associations generally report held-to-maturity securities at amortized cost.

Available-for-Sale

Savings associations must report securities not categorized as trading or held-to-maturity as available-for-sale. Savings associations must report AFS securities at fair value on the balance sheet. Savings associations must exclude unrealized gains and losses from earnings and report them in a separate component of equity capital.

Changes in Categorization

Sales from the held-to-maturity portfolio could call the intent to hold to maturity into question and result in tainting the remaining portfolio. The savings association may need to redesignate the portfolio as AFS and be subject to mark-to-market adjustments. As a result, savings associations normally limit portfolio-restructuring activities to AFS portfolios.

Trading Activity

While designating certain assets for trading can be consistent with prudent investment securities management, you may consider certain practices speculative or otherwise abusive. OTS and the other banking agencies consider the practices listed below to be trading activities.

Gains Trading

Gains trading is the purchase of a security and the subsequent sale of the same security at a profit after a short holding period. Savings associations typically retain securities acquired for this purpose that the savings association cannot sell at a profit in the AFS or held-to-maturity portfolio. Savings associations may use gains trading to defer recognition of losses because unrealized losses on AFS and held-to-maturity debt securities do not directly affect regulatory capital. Generally, savings associations do not report unrealized losses in income until they sell the security. A pattern of selling above-market securities at a gain while retaining below-market securities overstates the association's financial health.

When-Issued Securities Trading

When-issued securities trading is the buying and selling of securities in the period between the announcement of an offering and the issuance and payment date of the securities. A purchaser of a when-issued security acquires the risks and rewards of owning a security and may sell the when-issued security at a profit before having to take delivery and pay for it. Because savings associations intend such transactions to generate profits from short-term price movements, savings associations should categorize such transactions as trading.

Pair-offs

Pair-offs are security purchase transactions that are closed-out or sold at, or prior to, settlement date. In a pair-off, a savings association commits to purchase a security. Then, prior to the predetermined settlement date, the savings association will pair-off the purchase with a sale of the same security. Pair-offs are settled net when one party to the transaction remits the difference between the purchase and sale price to the counter party. Pair-offs may also involve the same sequence of events using swaps, options on swaps, forward commitments, options on forward commitments, or other off-balance sheet derivative contracts.

Extended Settlements

In the U.S. regular-way settlement for federal government and federal agency securities (except mortgage-backed securities and derivative contracts) is one business day after the trade date. Regular-way settlement for corporate and municipal securities is three business days after the trade date. For mortgage-backed securities, it can be up to 60 days or more after the trade date. Securities dealers may offer the use of extended settlements to facilitate speculation on the part of the purchaser, often in connection with pair-off transactions. Savings associations should report as trading assets securities acquired through a settlement period in excess of the regular-way settlement periods to facilitate speculation.

Repositioning Repurchase Agreements

A repositioning repurchase agreement is a funding technique offered by a dealer in an attempt to enable a savings association to avoid recognition of a loss.

A repositioning repurchase agreement occurs when a savings association enters into a when-issued trade or a pair-off (which may include an extended settlement) that the savings association cannot close out at a profit on the payment or settlement date. The dealer provides financing in an effort to fund its speculative position until the security can be sold at a gain. The savings association purchasing the security typically pays the dealer a small margin that approximates the actual loss in the security. The dealer then agrees to fund the purchase of the security, typically by buying it back from the purchaser under a resale agreement. The savings association should report as trading assets any securities acquired through a dealer financing technique such as a repositioning repurchase agreement that the savings association uses to fund the speculative purchase of securities.

Short Sales

A short sale is the sale of a security that the savings association does not own. The purpose of a short sale, generally, is to speculate on a fall in the price of a security.

Adjusted Trading

Adjusted trading is not acceptable under any circumstances. Adjusted trading involves the sale of a security to a broker dealer at a price above the prevailing market value. Simultaneously, the savings association purchases and books a different security, frequently a lower-rated or lower quality issue, or one with a longer maturity, at a price above its market value. Thus, the savings association reimburses the dealer for losses on the purchase from the savings association and ensures the dealer a profit. Such transactions inappropriately defer the recognition of losses on the security sold and establish an excessive cost basis for the newly acquired security. Consequently, the banking agencies prohibit such transactions. In addition, these transactions may be in violation of 18 USC §§ 1001, False Statements or Entries, and 1005, False Entries.

Adjusted trading is not acceptable under any circumstances.

EVALUATING STRUCTURED INVESTMENT SECURITIES

The credit risk of structured, collateralized investment securities, such as CMOs, Collateralized Debt Obligations (CDOs), and ABSs, depends on the structure of the deal and the characteristics and performance of the underlying assets.

Structural Considerations

The seniority of the tranche. If there are losses on the underlying assets, will the security be the first to absorb the loss, the last, or somewhere in-between? The first loss (subordinate) tranches are

obviously the riskiest, but those risks are also easy to understand. The value of subsequent loss (mezzanine) tranches (which are usually rated investment grade, sometimes even AAA) can decline quite quickly once losses reach a certain threshold. Some tranches are labeled as “senior” but do not actually represent the most senior class. These classes are usually known as “senior support” and offer credit protection to the most senior (super senior) tranches.

The level of credit support available. Consider how much is available in credit support (subordinated tranches, excess spread, insurance, overcollateralization) to absorb losses on the underlying assets. Levels of credit support can change over time – for better or worse. This change is often expressed as a percentage of the total deal or as a percentage of the security in question. The type of credit support may be important as well. If a guaranty from a bond insurer represents a significant element of the security’s credit support, then the risk of the bond can increase if the bond insurer experiences financial troubles.

Once credit support is exhausted, whether the tranche absorbs further losses proportionately. If losses are proportional, the security never experiences more losses than the underlying asset. For example, suppose that a deal has a 10% subordinated tranche and the issuer proportions the remaining losses among the remaining senior tranches. If there is a loss on the underlying assets of 10% or less, the senior tranches will not experience a loss. If the underlying assets experience a 20% loss, the loss on the underlying assets will be 10/90 or 11% loss. Only a total loss on the underlying assets will result in a total loss on the tranche. For many mezzanine tranches, however, losses are borne disproportionately. Consider now a 5% first loss tranche, a 5% second loss tranche, and a 90% senior tranches. Loss rates on the three tranches will occur as follows:

Loss on Underlying	Loss on Subordinate	Loss on Mezzanine	Loss on Senior
0	0	0	0
3%	60%	0	0
6%	100%	20%	0
8%	100%	60%	0
10%	100%	100%	0
20%	100%	100%	11.1%
60%	100%	100%	55.6%
100%	100%	100%	100%

The thickness of the tranche. Another consideration is the size of the tranche relative to the more senior securities that it supports, or the tranche’s thickness. In CDO terminology, it equals the difference between the detachment point and the attachment point. The detachment point is the point at which the level of losses on the underlying assets wipe out the tranche, which is the proportional support provided for senior tranches. The attachment point is the level of losses on the underlying assets at which a tranche would first incur a credit loss; comparable to a credit support percentage. . Thinner tranches have more risk for a given level of credit support. Consider the following example. Two tranches have attachment points of 5%. One has a detachment point of 6% while the other has a detachment point of 10%. The first tranche will absorb losses much more quickly, as illustrated below:

Loss on Underlying	Loss on Tranche A	Loss on Tranche B
5%	0	0
5.5%	50%	10%
6%	100%	20%
8%	100%	60%
10%	100%	100%

Evaluating the Underlying Collateral

A bond's structure, by itself, does not necessarily make it safe or risky. A credit support cushion of 10% may be more than sufficient for a diversified portfolio of high quality corporate bonds, but not for a portfolio of subprime mortgages. The experience of CDOs backed by subprime mortgages provides a good example. Many first loss and mezzanine tranches were virtually wiped out. Even super senior tranches can experience losses if the losses on the underlying assets are large enough. It is also important to consider that subprime mortgages did not directly back these CDOs; securities backed by subprime mortgages backed the CDOs. Those underlying securities, in turn, were often mezzanine tranches that bore a disproportionate share of the losses on the underlying mortgages, magnifying the loss on the CDO. Some considerations in evaluating the quality and performance of the collateral include the following:

A bond's structure, by itself, does not necessarily make it safe or risky.

- **Average FICO score and FICO score ranges.** A higher average score indicates a lower risk pool of borrowers. The median FICO score is 723 and most scores fall between 650 and 800.
- **Percentage full doc.** Limited documentation loans, especially those that do not require income verification, tend to be more likely to default.
- **Percentage ARMs.** Adjustable rate mortgages tend to experience higher defaults. Moreover, the low initial payment rates on many ARMs mean that default experience prior to reset can be artificially low.
- **Percentage delinquent (30-59 day, 60-89 day, 90+, in foreclosure, and Real Estate Owned).** Also, consider adverse trends.
- **Loan to value (LTV) ratios.** Higher LTVs mean more risk. LTVs are usually based on the ratio of the amortized loan balance to its original appraised value, so may be understated in markets that have experienced a sharp decline in housing prices.
- **Loan purpose.** Consider, for example, a high percentage of investor loans, which can be more speculative and riskier.

- **Lien status.** Second mortgages tend to experience higher default rates and higher losses given default. Consider the combined LTV or CLTV taking into account the level of equity including the 1st and 2nd lien position relative to appraised value.
- **Geographic concentrations.** Especially consider concentrations in states with volatile real estate markets, such as California, Florida, Nevada, and Arizona. Consider not only the geographic concentration of a particular bond but also the geographical concentration of the association's portfolio as a whole.

Modeling Investment Securities

Large, complex associations with a concentration of investment securities should have an effective risk management program and produce, on a regular basis, internal reports on the actual and expected performance of all investment securities. Smaller associations often rely on third-party firms for analytical support.

At all sized associations management must understand how the reports were produced and must be able to document and support the reasonableness of all assumptions. Below is a description of some information that you may encounter when reviewing risk management reports dealing with nonagency MBS.

Assumptions Used in Models

In order to determine impairment on nonagency MBS, management will be required to make assumptions about the future performance of the security. In general, there are three key assumptions management must make when assessing future performance:

- Voluntary prepayments – typically expressed as a “CPR” estimate. CPR stands for conditional prepayment rate. It is the percentage of loan balances that will be voluntarily prepaid (in full) each year.
- Defaults – typically expressed as a “CDR” estimate. CDR stands for conditional default rate. It is the percentage of loan balances that will default each year.
- Loss severities – the percent of loss the bank expects to incur on a defaulted loan.

Once the association has established these assumptions, they must be entered into systems such as Intex, Bloomberg, or LehmanLive and used to produce cash flows on the underlying collateral and the bond – cash flows that reflect the bond's credit protection and all deal-specific performance triggers. To determine the reasonableness of the association's assumptions, you should contact their regional capital market specialists or the Risk Modeling and Analysis Division in Washington, D.C.

Once the association estimates the expected cash flows the association should use the appropriate discount rate to calculate the present value. In general, there are two discount rates you should be concerned with when reviewing an association's valuation estimates:

- **Fair value** (if level 2 or 3 inputs are being used). Use a risk-adjusted discount rate that market participants would use to determine an exit price. Discount rates may be as high as 12 percent for “prime” bonds, 15 percent for Alt-A bonds and 20 percent or more for subprime securities.
- **Credit loss.** A credit loss only exists for accounting purposes when the fair value of the security is less than the amortized cost basis (book value). (1) For debt securities within the scope of FASB ASC 320-10 [Investments – Debt and Equity Securities, Overall] use the effective interest rate implicit in the security when purchased. The present value calculated can be thought of as the “intrinsic value.” (2) For debt securities within the scope of FASB ASC 310-30 [Receivables, Loans and Debt Securities Acquired with Deteriorated Credit Quality] use the current accretable yield rate. For both (1) and (2) if the bond’s “intrinsic value” is lower than the bond’s book value, the difference is the credit loss on the bond.

REFERENCES

United States Code (12 USC)

§ 1464(c)(1)	Loans for Investments Without Percentage of Asset Limitation
§ 1464(c)(2)	Loans or Investments Limited to Stated Percentage of Assets or Capital
§ 1464(c)(4)	Other Loans and Investments

Code of Federal Regulations (12 CFR)

§ 541.7	Corporate Debt Security
§ 560.30	General Lending and Investment Powers of Federal Savings Associations
§ 560.31	Election Regarding Classification of Loans or Investments
§ 560.32	Pass-Through Investments
§ 560.36	De Minimis Investments
§ 560.40	Commercial Paper and Corporate Debt Securities
§ 560.42	State and Local Government Obligations
§ 560.43	Foreign Assistance Investments
§ 560.93	Lending Limitations
§ 562.1	Regulatory Reporting Requirements

§ 562.2	Regulatory Reports
§ 563.172	Financial Derivatives
§ 567.1	Definitions

Office of Thrift Supervision Guidance

CEO Memos

No. 200	Classification of Assets and Appraisal of Securities
No. 249	Securities Related Activities of Savings Associations
No. 296	Regulation R and Bank Brokerage Activities
No. 307	Risk Weighting Downgraded Securities
No. 320	Accounting Considerations Related to Other-Than-Temporary Impairment of Securities

Regulatory Bulletins

RB 3b	Policy Statement on Growth for Savings Associations
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Thrift Bulletins

TB 13a	Management of Interest Rate Risk, Investment Securities, and Derivative Activities
TB 13a-2	Structured Advances
TB 73a	Investing in Complex Securities
TB 84	Interagency Statement on the Purchase and Risk Management of Life Insurance

Transmittals

TR 423	Regulation R; Final Rule, Technical Amendments
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FFIEC Policy Statement

Supervisory Policy Statement on Investment Securities and End-User Derivatives Activities (April 23, 1998)

Financial Accounting Standards Board Accounting Standards Codification (ASC)

310-20	Receivables, Nonrefundable Fees and Costs (formerly SFAS 91)
825	Financial Instruments (formerly SFAS 107)
320	Debt and Equity Securities (formerly SFAS 115)
860	Transfers and Servicing (formerly SFAS 140)
820	Fair Value Measurements and Disclosures (formerly SFAS 157)
825-10-25	Financial Instruments, Overall, Fair Value Option (formerly SFAS 159)

Other References

Committee on Sponsoring Organizations of the Treadway Commission (COSO), Internal Control Issues in Derivatives Usage: An Information Tool for Considering the COSO Internal Control – Integrated Framework for Derivatives Applications.

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EXAMINATION OBJECTIVES

To determine the prudence of investment risk management strategies through evaluation of the adequacy of the savings association's policies, procedures, and internal controls for investment securities.

To determine if the savings association's investment policy and business plan adequately describe the type and level of authorized investments.

To determine if the savings association documents and describes the rationale for all investments.

To determine if the savings association adequately analyzes its investments prior to purchase.

To determine if these investments are appropriate based on the savings association's current portfolio, interest rate risk structure, and regulatory capital position.

To determine if the savings association's officers and employees are operating in conformance with the established policies and whether these individuals have the necessary expertise to execute the authorized strategies.

To determine the overall quality of the savings association's investments and assess the effect of the portfolio quality on the overall soundness of the savings association.

To determine if the savings association is in compliance with the regulations and whether the savings association records transactions according to generally accepted accounting principles (GAAP).

To determine the scope and adequacy of the internal and external audit functions considering the type and complexity of the savings association's investments.

To determine if the savings association incurred any significant prepayment risk from its investment in mortgage-backed securities or mortgage-derivative products.

To determine if the savings association actively monitors its investments.

To determine if the savings association, at least quarterly, obtains or performs analysis of each complex security purchased with board of director approved guidelines demonstrating that the security reduces overall interest rate risk.

To determine if the savings association engages in speculative trading.

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To evaluate investment and trading activities to determine if the volume and number of transactions have any broad and potentially adverse effect on the savings association's financial health.

To summarize findings and initiate corrective actions when there are deficiencies.

EXAMINATION PROCEDURES

LEVEL I

1. Review scoping materials applicable to this program. If another examiner performed the review of scoping materials, obtain a written or oral summary of the review(s) of items concerning this program.

-
2. Consider the need for completing the [Investment Securities Questionnaire](#). If deemed necessary, complete the questionnaire and summarize findings and conclusions below.

-
3. Determine if the savings association corrected any transactions or policies and procedures subject to any of the following:
 - Previous examination report comments and previous examination exceptions.
 - Independent audit exceptions.
 - Internal audit exceptions.

-
4. Obtain a listing of all investment securities held. The list should contain, at a minimum, the following information:
 - Description of the security.
 - Current Nationally Recognized Statistical Ratings Organizations (NRSRO) rating.

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- Classification as trading, available for sale (AFS), held-to-maturity, or fair value.
 - Committee on Uniform Securities Identification Procedures (CUSIP) number.
 - Purchase price or cost.
 - Date of purchase.
 - Par value and principal amount purchased.
 - Current book value including any unaccreted discounts or unamortized premiums.
 - Maturity date and call provisions, if any.
 - Current market value.
-

5. Review the current written investment policy and business plan (or consult with the examiner who reviews the business plan).
-

6. Judge the adequacy of the guidance in the written investment policy and ascertain if the board adopted any policy revisions since the previous examination.
-

7. Evaluate the objectives of the savings association's investment activities as stated in the investment policy and business plan. Discuss any apparent conflicting objectives with management.
-

8. Evaluate whether management has the expertise necessary to carry out the objectives of the policy. Identify any backup expertise available to management.
-

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9. Determine if the savings association performs a thorough underwriting analysis prior to purchase of securities.
-
10. Ascertain whether management shifted its risk posture. Identify any changes in the portfolio composition from the previous examination by type and rating. Also, determine if the savings association is taking on riskier investments. Obtain a list of securities purchased, sold, and matured between examinations.
- Categorize the securities by type, for example, U.S. Government, agency, private issuer, state and municipal obligations, mutual funds, corporate debt.
 - Review the analysis of securities that are not issued or guaranteed by the U.S. government and agencies. These would include municipal and corporate issues, nonagency mortgage-backed securities (MBSs) and asset-backed securities (ABSs), and many mutual funds, and assets acquired through a redemption-in-kind from mutual funds. Obtain the most recent bond ratings by an NRSRO; for example, Moody's, S&P, Fitch.
 - Determine the total in each rating class, those on watch for a downgrade, and unrated issues.
 - Determine the total of unrated investment securities issued by obligors located outside the savings association's trade area.
 - Identify any credit concentration in the investment portfolio by asset class, geography, or other common risk factors.
-
11. Evaluate, in the aggregate, the credit risk of an investment portfolio and how well the association's management analyzes and monitors that risk.
-
12. Ascertain whether any concentration of credit exists by type, area, or in any one entity.
-

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13. Review management's reports to the board for accuracy and completeness.

14. Review board meeting minutes to determine the following:

- Did the board approve the broad objectives, strategies, and major policies for investment activities?
 - Do the investment strategies contain an adequate amount of detail?
 - Did the board establish appropriate dollar and percentage limits on investment securities?
 - Do the reports to the board accurately and adequately detail the risks and returns from the investment activity?
-

15. Review the securities transactions in the context of the savings association's funds management structure and current interest rate risk profile, profitability, capital, and liquidity positions. Discuss findings with examiners working on liquidity, funds management, earnings, operations, interest rate risk, and capital.

16. Evaluate whether the savings association classifies transactions appropriately in the portfolio as trading, AFS, held-to-maturity, or fair value.

17. Assess policies and procedures for reviewing investment securities for asset classification purposes or coordinate with the examiner reviewing classifications.

18. Examine the documentation of the analysis of investment securities portfolio. This analysis should be commensurate with the level and trend of risk in the portfolio.

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19. Conduct a review, commensurate with the level and trend of risk in the portfolio, and determine, using the information gathered through procedures, observations, and discussions with management and other personnel:

- The adequacy of internal controls.
 - Proper authorization of all trades.
 - Compliance with regulations and conformance with GAAP.
 - Management's level of expertise and conformance by management with the savings association's policies and procedures.
 - The adequacy of the management report and information system used to provide management and the directors with accurate decision-making information and the ability to monitor compliance with established guidelines.
-

20. Determine that investment securities meet applicable regulatory and policy requirements, including:

- 12 CFR 560.30, General Lending and Investment Powers of Federal Savings Associations.
 - 12 CFR 560.32, Pass-Through Investments.
 - 12 CFR 560.40, Commercial Paper and Corporate Debt Securities.
 - 12 CFR 560.42, State and Local Government Obligations
 - [TB 13a](#), Management of Interest Rate Risk, Investment Securities, and Derivatives Securities.
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21. Determine that investment securities are suitable to the savings association's operational and strategic goals and that the securities are safe and sound.

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22. If the association holds MBSs, ABSs, Collateralized Debt Obligations (CDO), pooled trust preferred securities, mortgage-related mutual funds, redemptions-in-kind from mortgage related mutual funds does the association monitor, on an ongoing basis, the following items:
- Changes in the level and ratio of credit support.
 - The performance of the underlying assets. Consider the level and trend of delinquencies and losses.
 - Factors affecting the invocation of bond covenants.
 - The quality of the association's ongoing monitoring of these securities. Consider the extent of stress testing, if any, the association performs.
-
23. If the association holds significant levels of corporate securities, does the association monitor on an ongoing basis the following items:
- Ratings changes and whether the security has been placed on credit watch?
 - Performance of the issuing company. Consider earnings, stock price, etc?
-
24. Working with examiners assigned to review the Capital CAMELS component, ensure that investment securities are risk weighted properly, with particular emphasis on the risk weighting of securities that the NRSROs have downgraded.
-
25. Summarize findings, obtain management responses, and update programs and other regional files, if applicable, with any information that will facilitate future examinations. File exception sheets.
-

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26. Review Level II procedures and perform those necessary to test, support, and present conclusions derived from performance of Level I procedures.
-

LEVEL II

27. Identify methods used to estimate prepayments for investment securities.
- Determine if prepayment assumptions differ markedly from those of securities with similar underlying collateral.
 - Determine the yield and estimated maturity of the investment portfolio.
-
28. Ascertain whether market value depreciation is significant in comparison with capital and total investment portfolio.
-
29. Evaluate the overall effectiveness of investment activities and the portfolio's contribution to the income stream.
- Analyze yields and spreads of the investment portfolio. Ascertain whether investment strategies are effective in maintaining targeted yields and spreads.
 - Review net trading gains/losses, taking into consideration broker/dealer commissions.
-
30. Compare the coupon rates and yields of recently acquired investments with similar instruments. Discuss with management the appearance of any differences where coupon rates or yields may be significantly higher or lower.
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31. Determine if the savings association's trading activity is speculative or excessive. Also determine if the association makes adjusted trades.
-
32. Review any transfers or swaps of securities from the trading or AFS portfolios to the held-to-maturity portfolio.
-
33. Evaluate the adequacy of credit analysis procedures for repurchase agreements and money market instruments.
-
34. Determine if management identifies credit and default risk; and all defaulted issues.
-
35. Ascertain any changes in the credit rating after the savings association purchased the security.
-
36. Review the savings association's classification of securities in accordance with asset classification regulations. Indicators of the extent of credit deterioration include credit rating downgrades or market value depreciation (excluding that caused by interest-rate shifts). The savings association should classify the market value depreciation of defaulted issues as Loss.
-
37. Review the use of outside investment consultants:
- Determine the extent of the capacity in which the consultant serves.
 - Review the consultant's contract.
 - Determine the consultant's background and expertise.

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- Determine the consultant's investment powers and authority.
 - Evaluate the supervision, level of control over, and degree of dependence upon outside consultants.
-

38. Review safekeeping of records to determine location of securities held by third parties. Determine if management has procedures to verify that securities are being held in safekeeping.

39. If the savings association's stock trades publicly, review the applicable reports filed with the Securities and Exchange Commission, including the 10K (Annual) and 10Q (Quarterly) for any mention of investments. Determine the accuracy of these references and report any discrepancies to OTS Washington pursuant to procedures in [Section 110, Capital Stock and Ownership](#).

40. Determine if association management, prior to purchase, assessed the following items for nonagency CMOs and ABSs:

- The rating of the tranche
 - The level and type of credit support
 - How losses are allocated once credit support is exhausted
 - Whether the particular tranche is subordinate (provides credit support) to any other tranches in the deal
 - The thickness of the tranche
 - The presence of bond covenants that could significantly alter cash flows on the deal
 - The riskiness of the underlying assets. Consider loan types, credit score averages, and distribution of credit scores, loan-to-value ratios, documentation, occupancy, and geographic concentrations.
-

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41. Determine if the savings association's investment in MBSs or mortgage derivative products (MDP) exacerbated or caused any deficiencies noted in areas such as:

- The purchase of excessive quantities of low-coupon rate or discount securities that would increase interest rate risk or nonagency securities with potential credit risk exposure.
 - Concentrations, especially of high-coupon or premium securities, that increase prepayment or call risk.
 - Reliance on nonrecurring gains from the sale of MBSs or MDPs to sustain profitability.
 - Inadequate capital to sustain adverse fluctuations in the returns from stripped mortgage-backed securities (SMBs) or the residual interest in multiple-class securities.
-

42. Obtain a detailed listing of the mortgage securities as of the examination date. Determine the following:

- The type, coupon rate, and maturity of the securities in the portfolio.
 - The dollar amount of these investments as a percentage of total assets and, as applicable, as a percentage of capital.
 - If there was a significant increase in the portfolio, identify the funding source and the cause of the increase.
-

43. For MDPs, also ascertain the following:

- The particular class of the security purchased and the terms of that class.
 - The characteristics of the collateral underlying the MDP, for example, the type of security, weighted average coupon (WAC), and maturity.
 - If the savings association performed an analysis of the MDPs.
-

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44. Obtain the contract registers, general and subsidiary ledgers, and trade confirmations from brokers to determine:

- The extent of trading activity by reviewing the amount and composition of the portfolio turnover and existence of margin accounts.
 - If the savings association obtained documented comparative price quotes from brokers/dealers other than the broker/dealer that executed the transaction.
 - If the savings association's contract register and general and subsidiary records correspond to the information detailed on confirmations from brokers.
 - The location of all investment securities in safekeeping with other parties or pledged as collateral for any transaction.
-

45. Review the adjustable-rate MBSs purchased since the previous examination. Determine the following:

- The index, margin, interest rate caps, and any other adjustment features of the adjustable-rate MBS portfolio.
 - The dollar amount of the adjustable-rate MBSs retained in portfolio with a large portion of the underlying collateral having teaser rates.
 - The interest rate risk of this portfolio by comparing the current interest rate with the lifetime cap and the frequency of interest-rate adjustments.
-

46. Determine if the savings association purchased the residual interest in an MDP. If so, determine the following:

- If the board of directors approved the transaction and if management updates the board regularly on the actual yield.
- If, prior to purchase, the thrift analyzed the effect on yield and potential value changes under varying prepayment assumptions.

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- The expected return and prepayment assumptions the savings association based this yield upon.
 - The underlying structure of the MDP.
 - The characteristics of the collateral that underlies the MDP, such as the type of securities (GNMA, Freddie Mac, or Fannie Mae) or whole mortgages, the weighted average remaining maturity (WARM), the coupon rate, and the actual prepayment experience.
 - If the issuer based the security upon real estate mortgage investment conduit (REMIC) authority.
 - If the savings association intended the investment to be a hedging vehicle, and if so, the identity of the matched item and the estimated amount of interest-rate protection provided by the residual.
 - If the savings association classifies a residual interest in securitized assets properly and accounts for them as AFS or trading securities in accordance with FASB Accounting Standards Codification Nos. 860 and 320.
-

47. Determine if the savings association purchased a SMBS or any security with similar characteristics. If so, determine the following:

- If the board of directors approved the investment and if management updates the board regularly on the investments actual yield and market value.
 - If, prior to purchase, the savings association analyzed the expected yield based on various changes in interest and prepayments.
 - If the interest only (IO) or principal only (PO) comprises most of the interest.
 - The expected yield from the investment and the prepayment assumptions used to determine this yield.
 - If the savings association intended to use the SMBS as a hedging vehicle, and if so, the matched item and the estimated amount of interest-rate protection provided by the SMBS.
-

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48. Determine if the savings association purchased MBSs backed by commercial real estate. If so, determine the following:

- The type of property.
 - The rating of the security, if any.
 - If management reviewed the prospectus and supplement with particular attention to the risks of the underlying loans and the nature and quality of credit supports.
-

49. Determine whether the savings association securitized assets and retained a residual interest in those securitized assets or subordinated interests. If so, determine the following:

- If the savings association calculates the gain or loss on the sale in accordance with GAAP.
 - If the savings association bases the fair value assigned to the retained tranche(s) upon reasonable assumptions concerning prepayments and defaults on the underlying loans.
 - Whether the savings association uses a reasonable discount rate that reflects the risk of the securities.
 - The sensitivity of value of the retained tranches to changes in interest rates, prepayments, defaults, or discount rates.
-

50. Ensure that your review meets the Objectives of this Handbook Section. State your findings and conclusions, and appropriate recommendations for any necessary corrective measures, on the appropriate work papers and report pages.

Exam Date:	
Prepared By:	
Reviewed By:	
Docket #:	

Investment Securities Program

WKP. REF.

LEVEL III

51. Reconcile the trial balances to general ledger accounts. Cross check investment trial balances with other schedules or records to determine if securities exist.

52. Verify the accuracy of registers by comparing broker advices with trade tickets. Send confirmation to brokers, if necessary.

53. Review pledged securities reports. Identify securities that may be overpledged or cross-collateralized with other securities.

54. Review the maturity distribution schedule and determine if the association is extending or shortening the portfolio's maturity in line with policy objectives.

55. Test for proper accounting for premiums and discounts.

56. Determine proper accounting for gains and losses.

EXAMINER'S SUMMARY, RECOMMENDATIONS, AND COMMENTS

Exam Date:	
Prepared By:	
Reviewed By:	
Docket #:	

Investment Securities Questionnaire

Yes No

GENERAL QUESTIONNAIRE

- | | | | |
|----|--|--------------------------|--------------------------|
| 1. | Did the board of directors approve a written investment policy? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Does the savings association update its investment policy annually and whenever unanticipated conditions dictate? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Does the investment policy address the assignment of responsibilities and duties? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Do the investment policy and business plan confirm the following requirements: | | |
| | • Safety and soundness? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Regulatory limitations? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • The board of director's requirements? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Does the savings association monitor adherence to the policy? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • How often? [click&type] | | |
| 6. | Is the investment strategy appropriate based upon the savings association's investment portfolio, liquidity risk management, interest rate risk, profitability, and regulatory capital position? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Does the policy define the acceptable level of risk? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Does the savings association take the following considerations into account when building the portfolio: | | |
| | • Investment objectives? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Investment strategy? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Price sensitivity analysis of complex securities? | | |
| | • Results of stress testing and scenario analysis? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Contingency funding plan (CFP)? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Types and level of allowable investments? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • The decision-making process? | <input type="checkbox"/> | <input type="checkbox"/> |
| | • Monitoring of investments? | <input type="checkbox"/> | <input type="checkbox"/> |

Investment Securities Questionnaire

	Yes	No
• Recordkeeping and documentation requirements?	<input type="checkbox"/>	<input type="checkbox"/>
9. Does the savings association engage in speculative trading strategies?	<input type="checkbox"/>	<input type="checkbox"/>
10. Does the savings association engage in any unsuitable investment practices?	<input type="checkbox"/>	<input type="checkbox"/>
11. Is the savings association's trading activity appropriate based on the type and amount of activity?	<input type="checkbox"/>	<input type="checkbox"/>
12. Does the composition of the investment securities portfolio take into consideration the following items:		
• Quality levels?	<input type="checkbox"/>	<input type="checkbox"/>
• Diversification?	<input type="checkbox"/>	<input type="checkbox"/>
• Maturity structure?	<input type="checkbox"/>	<input type="checkbox"/>
• Liquidity?	<input type="checkbox"/>	<input type="checkbox"/>
13. Does the savings association have procedures in place to prevent over-collateralization on securitized transactions?	<input type="checkbox"/>	<input type="checkbox"/>
14. Does the savings association maintain an adequate control register for its investment securities clearly showing the following information? (<i>Note: In a full accrual system the control accounts are a part of the general ledger accounts and the association must establish separate subsidiary records.</i>):		
• Types of securities?	<input type="checkbox"/>	<input type="checkbox"/>
• Outstanding position?	<input type="checkbox"/>	<input type="checkbox"/>
• Volume of purchases and sales?	<input type="checkbox"/>	<input type="checkbox"/>
• Realized and unrealized gains or losses on these positions?	<input type="checkbox"/>	<input type="checkbox"/>
15. Do subsidiary records of investment securities show all pertinent information, including the following items:		
• A description of the security?	<input type="checkbox"/>	<input type="checkbox"/>
• The safekeeping location of the security?	<input type="checkbox"/>	<input type="checkbox"/>
• Pledged or unpledged status of the security?	<input type="checkbox"/>	<input type="checkbox"/>
• Premium amortization?	<input type="checkbox"/>	<input type="checkbox"/>
• Discount accretion?	<input type="checkbox"/>	<input type="checkbox"/>

Investment Securities

Questionnaire

	Yes	No
• Interest earned, collected, or accrued?	<input type="checkbox"/>	<input type="checkbox"/>
17. Does the savings association perform an internal analysis (including interest rate risk, credit and liquidity spreads) of its investment securities at least quarterly?	<input type="checkbox"/>	<input type="checkbox"/>
18. How does the savings association obtain periodic market valuations from a third party for monitoring investment securities? [click&type]		
19. How does the association value thinly traded investments and issues not quoted daily on major markets? [click&type]		
20. Does the association obtain bond ratings from any of the well-known bond rating services? • Which services? [click&type]	<input type="checkbox"/>	<input type="checkbox"/>
21. Does the savings association appropriately classify investment securities?	<input type="checkbox"/>	<input type="checkbox"/>
22. Did the savings association purchase any stripped mortgage-backed securities (SMBSs) or the residual interest in a mortgage derivative product (MDP)? If so:	<input type="checkbox"/>	<input type="checkbox"/>
• Did the board of directors approve the investment?	<input type="checkbox"/>	<input type="checkbox"/>
• Does the savings association analyze the investment prior to purchase, including the estimated yields under various interest-rate and prepayment scenarios?	<input type="checkbox"/>	<input type="checkbox"/>
• Does the savings association document the expected yield and the prepayment assumptions used?	<input type="checkbox"/>	<input type="checkbox"/>
• Are the initial prepayment assumptions reasonable considering the interest rate on the underlying collateral when compared with prevailing mortgage interest rates?	<input type="checkbox"/>	<input type="checkbox"/>
23. Does the savings association periodically adjust the yield or book value of a mortgage-backed security (MBS) or MDP based upon changes in the prepayment experience of the underlying collateral?	<input type="checkbox"/>	<input type="checkbox"/>
24. Does the savings association purchase commercial MBSSs? If so, review the following question:	<input type="checkbox"/>	<input type="checkbox"/>
• Do any of the underlying securities have teaser rates?	<input type="checkbox"/>	<input type="checkbox"/>
• If so, how close was the current interest rate to the lifetime cap: [click&type]		

Investment Securities Questionnaire

		Yes	No
25.	Does the savings association issue collateralized mortgage obligations (CMOs) or MDPs through a subsidiary?	<input type="checkbox"/>	<input type="checkbox"/>
26.	Did the savings association purchase the non-agency securities? If so, answer the following questions:	<input type="checkbox"/>	<input type="checkbox"/>
	• What was the investment rating? [click&type]		
	• What was the underlying collateral? [click&type]		
27.	Did the savings association purchase the subordinated interest in the security?	<input type="checkbox"/>	<input type="checkbox"/>
28.	Is there adequate segregation between the individuals responsible for executing the transactions, accounting for the transactions and transferring funds?	<input type="checkbox"/>	<input type="checkbox"/>
29.	Do trade tickets contain the following information:		
	• Trade date?	<input type="checkbox"/>	<input type="checkbox"/>
	• Settlement date?	<input type="checkbox"/>	<input type="checkbox"/>
	• Purchase or sale transaction?	<input type="checkbox"/>	<input type="checkbox"/>
	• Contract description?	<input type="checkbox"/>	<input type="checkbox"/>
	• Quantity?	<input type="checkbox"/>	<input type="checkbox"/>
	• Price?	<input type="checkbox"/>	<input type="checkbox"/>
	• Reason for trade?	<input type="checkbox"/>	<input type="checkbox"/>
	• Identity of person conducting transaction?	<input type="checkbox"/>	<input type="checkbox"/>
30.	Does someone other than the person who authorizes, executes, or controls the securities record the transaction?	<input type="checkbox"/>	<input type="checkbox"/>
31.	Does someone other than the person with custody or control of securities post transaction records?	<input type="checkbox"/>	<input type="checkbox"/>
32.	Does the savings association reconcile subsidiary records at least monthly?	<input type="checkbox"/>	<input type="checkbox"/>
	• How often? [click&type]		
	• Does the savings association test them for accuracy?	<input type="checkbox"/>	<input type="checkbox"/>
33.	Does an independent party, not connected with the transaction, review commitments and advices?	<input type="checkbox"/>	<input type="checkbox"/>

Investment Securities Questionnaire

	Yes	No
34. Does the savings association verify delivery or safekeeping records?	<input type="checkbox"/>	<input type="checkbox"/>
35. Who has custody or control of securities? [click&type]		
36. Does the savings association obtain comparative price quotes from at least two broker/dealers other than the broker/dealer that executed the transaction?	<input type="checkbox"/>	<input type="checkbox"/>
37. Does the savings association use reputable dealers?	<input type="checkbox"/>	<input type="checkbox"/>
38. Is there a concentration of activity with one broker/dealer?	<input type="checkbox"/>	<input type="checkbox"/>
39. Does the association properly safeguard the physical securities?	<input type="checkbox"/>	<input type="checkbox"/>
40. Does the savings association have procedures in place to ensure proper access and control?	<input type="checkbox"/>	<input type="checkbox"/>
41. Does the savings association review safe keeping records for accuracy?	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

TOTAL RETURN ANALYSIS

This appendix discusses total return analysis and shows how to measure the expected return of fixed-income securities. In evaluating the expected return of an individual fixed-income security or portfolio of fixed-income securities, investors typically use internal rates of return, such as yield to maturity (YTM) or yield to call (YTC), as selection criteria. These two yield measures, however, are unlikely to reflect the correct expected investment return. Instead, total return provides a better measure of prospective investment return. Investment decisions made using YTM or YTC can lead to investments with lower total returns depending on the following variables:

- Changes in reinvestment rates.
- End-of-period required yields.
- Length of the investment horizon.

However, there is an important caveat. In computing total returns based on scenario analysis, investors should be aware that total return estimates will only reflect investment returns if expectations regarding reinvestment rates and end-of-period yields turn out to be correct.

BACKGROUND

Both the Federal Financial Institutions Examination Council (FFIEC) and the Office of Thrift Supervision (OTS) issued policy guidance that recommends institutions conduct a total return analysis in assessing the effects of interest rate changes on the returns associated with investment securities and financial derivatives prior to taking a position in these financial instruments. The 1998 FFIEC policy statement states: “The agencies agree that the concept of total return can be a useful way to analyze the risk and return tradeoffs for an investment. This is because the analysis does not focus exclusively on the stated yield to maturity. Total return analysis, which includes income and price changes over a specified investment horizon, is similar to stress testing securities under various interest rate scenarios. The agencies’ supervisory emphasis on stress testing has, in fact, implicitly considered total return. Therefore, the agencies endorse the use of total return analysis as a useful supplement to price sensitivity analysis for evaluating the returns for an individual security, the investment portfolio, or the entire institution.” In [Thrift Bulletin 13a](#), issued December 1998, OTS states: “Management should exercise diligence in assessing the risks and returns (including expected total return) associated with investment securities and financial derivatives.”

Conventional Measures of Investment Return

The price of a bond is equal to the present value of the bond’s expected cash flows. By definition, the yield, or internal rate of return, is that interest rate that equates the present value of a bond’s cash flows to its current market price. As stated earlier, YTM and YTC are two frequently used measures of return (or yield) on fixed-income securities. Other yield measures include Yield to Put (YTP), and Yield to

Worst (YTW). YTM is used to price and trade non-callable bonds, while YTC is used to price and trade callable bonds. YTM is the interest rate generally discussed by investors when they talk about rates of return. If a savings association purchased a callable bond, and the issuer called the bond, YTM would not be a valid measure of yield. If interest rates decline over time to a point that is below the bond's coupon rate, the likelihood increases that the bond will be called. The Yield to Call is a preferable method of calculating the return.

YTM is the internal rate of return on a non-callable bond that is held until maturity. In using this yield measure, one assumes that the security is held until maturity and that all cash flows can be reinvested at the same constant YTM.

YTC is the internal rate of return on a callable bond that is held until either the first call or first par call date. In using this yield measure, one assumes that the security is held until being called by the issuer and that all cash flows can be reinvested at the same constant YTC.

The price that the issuer must pay to retire the bond is the call price. Call options can follow a call schedule with multiple dates (call dates) and prices (call prices) at which the issuer may exercise the option. When call schedules include multiple call prices, the price at the time of the first call is typically above par value, which is scaled back to par over time.

YTW is simply the smallest yield measure of all the possible yields that can be computed for an issue.

YTM and YTC will be identical when the purchase price of the bond and the call price are par. For bonds callable at par, YTM will be higher for bonds purchased at a premium and lower for bonds purchased at a discount. Consider a ten-year bond with a five percent coupon that is callable at par after two years. Purchase prices of 95, 100, and 105 would have the corresponding YTM, YTC, and YTW:

Price	YTM	YTC	YTW
95	5.66%	7.75%	5.66%
100	5.00%	5.00%	5.00%
105	4.38%	2.42%	2.42%

In some cases, the bondholder has the right to sell the issue back to the issuer at par value on designated dates. This provision gives the bondholder the right to change the maturity of the bond. Bonds with this provision are known as puttable bonds. There may be one put price, or a schedule of put prices, but most puttable bonds have one price. YTP simply measures the bond's yield to its next call date. These various return measures have several important drawbacks:

- Investors often sell fixed-income investments before they mature or are called.
- Interim cash flows cannot be reinvested at the assumed constant yields.

-
- It is not possible to compare the likely returns on investments with different maturities or more complex return/risk profiles.
 - It is important to remember that the YTM calculation does enable the entity to compare bonds with different maturities.

Total Return Analysis in Theory

Total return analysis avoids the shortcomings associated with using the two conventional yield measures, YTM and YTC, and provides an investor with a better measure of the expected return on fixed-income investments. The total return (also known as the horizon or total holding-period return) accounts for the three sources of potential dollar return on a bond:

- Coupon interest payments,
- Capital gain or loss when bond matures, is sold, or called, and
- Income from reinvestment of coupon interest payments (interest-on-interest income).

Therefore, to calculate the total return for a non-callable bond, an investor chooses an investment horizon or holding period, a reinvestment rate, and a selling price for the bond at the end of the investment horizon (that is, end-of-period required return). Based on the values chosen for these parameters, the total return calculation is straightforward. First, calculate total coupon payments plus interest-on-interest income for the assumed reinvestment rate over the given investment horizon using the following expression:

where

$$\text{Coupon plus interest - on - interest} = \text{Coupon} \left[\frac{[(1+r)^h - 1]}{r} \right]$$

h = length of investment horizon, and
 r = assumed reinvestment rate.

Second, calculate the predicted sales price of the bond at the end of the investment horizon. Third, calculate total future dollars derived from the bond over the holding period by summing total coupon payments, reinvestment income, and the predicted sales price. Finally, substitute this value into the following expression to obtain the total return:

$$y_h = \left[\frac{\text{Total future dollars}}{\text{Purchase price of bond}} \right]^{1/h} - 1$$

where r and h are defined as above, and

Total future dollars = Coupon payments + Interest-on-interest income + Sales price.

For example, to obtain the total return on a bond-equivalent basis for a bond with semiannual coupon payments, the semiannual total return calculated using the above expression would be multiplied by a factor of two.¹

Total Return Analysis in Practice

There are three different approaches an investor or portfolio manager can use to calculate total return:

- Subjective forecasts of the reinvestment rate and required yield at the end of the investment horizon.
- Implied forward rates from the yield curve (for instance, U. S. Treasury or LIBOR yield curves) to determine the reinvestment rates and the yield on a bond at the end of the investment horizon. This approach to total return analysis produces *an arbitrage-free total return* because the calculation is based on the market's expectations of the reinvestment rate and end-of-period required yield.
- Scenario analysis. Scenario analysis involves specifying different possible values for the reinvestment rate and the required yield at the end of a given investment horizon, and then calculating the total return associated with each scenario.

Of the three approaches, total return analysis based on scenario analysis is the best approach because it allows an investor, or portfolio manager, to measure how sensitive a bond's expected performance is to differing reinvestment rates and end-of-period required yields. One can also use total return analysis to compare the expected returns of a bond for investment horizons of varying lengths. In the two examples that follow, scenario analysis is used to compare:

- The total returns for a bond using two different investment horizons.
- The total returns for two bonds of different maturities.

Assess the effect on a bond's total return by varying the length of the investment horizon using scenario analysis. Assume Bond A is a 9 percent coupon, 20-year non-callable bond with a current market price of \$109.90 and a yield to maturity of 8 percent. [Tables 1](#) and [1A](#) show scenarios for the reinvestment rate and end of period required yields for Bond A for a three-year and ten-year investment horizon, respectively.

¹ This discussion draws on material from Frank J. Fabozzi, editor, *The Handbook of Fixed Income Securities*, 5th Edition, 1997, Chapter 4. See this chapter for further discussion of the total return concept.

TABLE 1
SCENARIO ANALYSIS FOR BOND A'S TOTAL RETURN

Required Yield at End of 3-Year Investment Horizon (%)			
	<u>6.0</u>	<u>8.0</u>	<u>10.0</u>
Reinvestment Rate (%)			
<u>4.0</u>	<u>13.36</u>	<u>7.78</u>	<u>3.06</u>
<u>5.0</u>	<u>13.44</u>	<u>7.87</u>	<u>3.16</u>
<u>6.0</u>	<u>13.53</u>	<u>7.97</u>	<u>3.26</u>

TABLE 1A
SENSITIVITY OF BOND A'S TOTAL RETURN TO INVESTMENT HORIZON

Required Yield at End of 10-Year Investment Horizon (%)			
	<u>6.0</u>	<u>8.0</u>	<u>10.0</u>
Reinvestment Rate (%)			
<u>4.0</u>	<u>7.59</u>	<u>6.88</u>	<u>6.24</u>
<u>5.0</u>	<u>7.85</u>	<u>7.16</u>	<u>6.53</u>
<u>6.0</u>	<u>8.11</u>	<u>7.43</u>	<u>6.82</u>

As shown in the tables, there are three different reinvestment rates, 4, 5, and 6 percent, and three different end-of-period required yields, 6, 8, and 10 percent. In both tables, for each combination of reinvestment rate and end-of-period yield, there is a total return estimate for Bond A. As shown in the two tables, the total return estimates vary substantially across the two investment horizons. The differences in the total return estimates illustrate the effect that the choice of investment horizon has on a bond's expected return since the relative importance of the reinvestment rate and end-of-period required return change is related to investment horizon. For short investment horizons, reinvestment income is small, but it increases in size as the investment horizon lengthens.

The second example compares the total returns for two bonds of different maturities. The first bond, Bond A, is the same bond used in the previous example. The second bond, Bond B, is a 7.25 percent coupon, 14-year non-callable bond with a current market price of \$94.55 and a yield to maturity of 7.9 percent.² In comparing the total returns for the two bonds below, the investment horizon is set to three

² This example is adapted from Fabozzi, *The Handbook of Fixed Income Securities*, 5th Edition, pages 72-75.

years. Based on yield to maturity, Bond A appears to be a better investment than Bond B because of Bond A's higher yield to maturity. However, as the example shows convincingly, yield to maturity is not a reliable measure of expected investment return.

Table 1 and Table 2 show various scenarios for the reinvestment rate and end of period required yields for Bond A and Bond B, respectively. There are three different reinvestment rates, 4, 5, and 6 percent, and three different end of period required yields, 6, 8, and 10 percent. These are the same values used in the previous example.

TABLE 2
SCENARIO ANALYSIS FOR BOND B'S TOTAL RETURN

Required Yield at End of 3-Year Investment Horizon (%)			
	<u>6.0</u>	<u>8.0</u>	<u>10.0</u>
Reinvestment Rate (%)			
<u>4.0</u>	<u>12.00</u>	<u>7.50</u>	<u>3.48</u>
<u>5.0</u>	<u>12.08</u>	<u>7.58</u>	<u>3.57</u>
<u>6.0</u>	<u>12.16</u>	<u>7.67</u>	<u>3.67</u>

The total return estimates for both bonds vary substantially across the different rate scenarios. For Bond A, these estimates range from a maximum value of 13.53 percent to a minimum value of 3.06 percent. For Bond B, these estimates range from a maximum value of 12.16 percent to a minimum value of 3.48 percent. This example shows the high degree of sensitivity of a bond's expected return to different values for reinvestment rates and end-of-period required yields.

If a portfolio manager currently owned Bond B, the higher yield to maturity on Bond A might induce the manager to swap Bond A for Bond B in a pure yield pickup swap transaction. However, Tables 1 and 2 show that the likely returns on both bonds are sensitive to what happens to interest rates, despite the higher promised yield to maturity for Bond A. To see this more clearly, Table 3 shows the total return for Bond A minus the total return for Bond B in basis points.

TABLE 3
BOND A'S TOTAL RETURN MINUS BOND B'S TOTAL RETURN (IN BASIS POINTS)

Required Yield at End of 3-Year Investment Horizon (%)			
	<u>6.0</u>	<u>8.0</u>	<u>10.0</u>
Reinvestment Rate (%)			
<u>4.0</u>	<u>136</u>	<u>28</u>	<u>-42</u>
<u>5.0</u>	<u>137</u>	<u>29</u>	<u>-41</u>
<u>6.0</u>	<u>137</u>	<u>30</u>	<u>-41</u>

Table 3 shows that for required yields of 6 and 8 percent, Bond A's total return exceeds that of Bond B's for all three reinvestment rates. However, for a required yield of ten percent, the situation reverses dramatically, with Bond B's total return exceeding that of Bond A. These results suggest that investment decisions based only on stated yield to maturity will not produce the best total returns as interest rates change. The results of this simple example demonstrate the importance of conducting a stress test over various interest rate scenarios when evaluating the expected return on investment securities before taking positions in these financial instruments.

TYPES OF INVESTMENT SECURITIES AND ASSOCIATED RISKS

First, investments must be permissible. The primary regulations that set for the permissibility of investments for savings associations are in Part 560. In addition, OTS has some specific guidance relating to particular investments, such as trust preferred securities, outlined below.

There are investment opportunities for savings associations in each of the three major areas that make up the money and capital markets:

- Money Market
- Fixed-Income Market
- Equity Market.

Money Market

The money market is the arena where financial institutions and other businesses adjust their liquidity positions. This primarily consists of debt instruments with a remaining maturity of one year or less. Money market securities generally have a high degree of liquidity and low risk to principal. The money market operates through dealers, money center banks, and the Open Market Trading Desk of the New York Federal Reserve Bank.

Federal Funds

Federal funds are balances at the Federal Reserve that financial institutions lend to one another and are not subject to reserve requirements. The purchasing institution uses these funds to meet reserve requirements or for a special arbitrage funding arrangement. Federal funds sold are subject to default risk, as with any unsecured loan. The shorter the term of the transaction, the less default risk is a primary concern. The majority of federal funds transactions are for overnight or over weekends. Term federal funds, however, are not uncommon. They transact at a fixed rate for a period longer than one day, typically 30, 60, or 90 days. Term federal funds are subject to loans-to-one-borrower and other lending limitations.

Negotiable Certificates of Deposit

Money center or large regional banks usually issue these certificates in denominations of \$1M or more and the issuing institution may issue them at face value with a stated rate of interest, or at a discount similar to U.S. Treasury bills. These certificates are widely traded and offer substantial liquidity.

Eurodollar Time Deposits

Eurodollar time deposits are certificates of deposit issued by banks in Europe, with interest and principal paid in dollars. Such certificates of deposit usually have minimum denominations of \$100,000 and short-term maturities of less than two years. Usually they have interest rates pegged to LIBOR.

Certificates of Deposit

Certificates of deposit are time deposits in banks or savings associations with maturities longer than 30 days. Most certificates of deposit have an original maturity of one to three months. Variable-rate certificates of deposit are also available, typically either six-months with a 30-day roll, or one year with a three-month roll. In general, certificates of deposit have a slightly higher return, are slightly riskier, and are slightly less liquid than Treasury bills. A prudent investment manager should limit holdings in any depository institution to amounts covered by federal deposit insurance.

Repurchase Agreements

In a repurchase transaction, an institution loans funds and, in effect, buys securities from a counterparty. They also commit to resell the same securities back to the counterparty at a later date at a specified price. In a reverse repurchase transaction an institution receives funds from and sells securities to a counterparty. They also promise to repurchase the same securities at a specified price and date. Repurchase agreements are short-term in nature; therefore, the transaction takes place in the money market.

Municipal Notes

Short-term municipal bond with a maturity of one year or less.

Municipal Bonds

Municipal bonds have a fairly simple structure. Municipal bonds are based on the general taxing authority of the issuer or general obligation. Many municipal bonds also have insurance that protects bondholders in the event of default. If an association has a significant portfolio of municipal bonds, consider geographic concentration. For example, municipalities in the same state may be subject to similar economic conditions and changes in the political and legal environment that could affect their ability to repay the bonds.

There are two main considerations in evaluating these bonds.

- Bond rating

Bond insurers have experienced financial difficulties recently, and some risk losing (or have already lost) their AAA ratings. In those instances, the rating agencies look toward the issuer's underlying financial strength. For example, if the issuer would have received a AAA rating even without the insurance, it could retain that rating. If, however, the rating depended on the insurance, the insurer's downgrade would also result in a downgrade on the bond.

-
- Source of repayment

A general obligation (G.O.) bond is backed by the full faith and credit (that is, taxing authority) of the state or local government. Municipalities issue revenue bonds (see below) to finance public works, such as bridges or tunnels and the project's revenues, such as tolls, pay for the project.

Municipal bonds have certain factors that may adversely affect their creditworthiness. These factors include the following:

Declining property values and an increasing number of delinquent taxpayers.

- Increasing tax burden relative to other regions.
- Increasing property tax rate in conjunction with declining population.
- Actual general fund revenues consistently falling below budgeted amounts.
- Budget expenditures increasing annually in excess of inflation rate.
- General obligation debt increasing while property values remain static.
- Declining economy as measured by increased unemployment and declining population.
- Investment activities that involve excessive leveraging to achieve enhanced yields.

Floating-rate notes usually have a maturity of five to seven years, and interest payments periodically adjust, often every six months. A money market index, usually Treasury bills or Eurodollar rates determine the interest rate. State, municipal, and other political subdivisions, including independent school districts, issue municipal bonds that are usually dependent upon the general taxing authority of the locality or on specific revenue generating projects for repayment. Interest income generated by state and municipal obligations is not subject to federal income taxes and is usually exempt from taxation by the issuing state and local authorities. Other state and municipal obligations include Bond Anticipation Notes (BANs), Tax Anticipation Notes (TANs), and Revenue Anticipation Notes (RANs). These notes are short-term obligations to finance current expenditures pending receipt of proceeds from expected bond offerings or revenues.

Section 560.42 permits savings associations to invest in obligations of state or political subdivisions. The obligations must meet the following requirements:

- Rated in one of the four highest grades.
- Issued by a public housing agency.
- Backed by the full faith and credit of the United States.

The regulation limits investments in state or political subdivisions ten percent of capital for any one issuer, excluding general obligations of any one issuer. A savings association may invest, in the aggregate, up to one percent of its assets outside of the rating requirements and guarantee provisions within the state or political subdivision where the savings association's home or branch office is located.

Revenue Bonds

Revenue bonds are dependent upon the income generated by specific projects established by government authority. A type of revenue bond often held by savings associations are public housing authority revenue bonds. Although they have corporate debt characteristics, the FDIC does not consider such public entity issues to be corporate debt securities and are not subject to the FDIC divestiture requirements. The credit quality of these issues varies greatly and is dependent upon the revenue source, any guarantees, sinking funds, and market value of collateral, if any.

Because the taxing authority does not support revenue bonds, unless rated, you should classify them the same as other commercial credits. Other factors that negatively affect their creditworthiness include:

- Decreasing coverage of debt service by net revenues.
- Regular use of debt reserves and other reserves by the issuer.
- Growing financial dependence of the issuer on unpredictable federal and state aid appropriations for meeting operating budget expenses.
- Unanticipated cost overruns and schedule delays on capital construction projects.
- Frequent or significant user rates increases.
- Deferred capital plant maintenance and improvement.
- Shrinking customer base.
- New and unanticipated competition.

Commercial Paper

Top-rated corporations issue commercial paper with 2- to 270-day maturities. Commercial paper is unsecured, usually discounted and possibly backed by bank lines of credit. Standard and Poor's rates commercial paper ranging from A, the highest quality, to D, the lowest quality. Moody's uses designations of Prime-1 to Prime-3, and Not Prime (issuers that do not fall within any of the Prime rating categories).

Banker's Acceptances

Banker's acceptances arise mostly out of foreign trade transactions and are similar to commercial paper in form. They are noninterest-bearing notes sold at a discount and redeemed by the accepting bank at maturity for full face value. Banker's acceptances are short-term instruments with maturities of nine months or less. Most banker's acceptances are for very large amounts, although some are available for as low as \$5,000. Liquidity risk varies considerably based on the size of the security. There is no secondary market for the very low denomination instruments. Banker's acceptances have very low credit risk since the accepting bank and the ultimate borrower both guarantee payment.

Federal Agency Discount Notes and Coupon Securities

Although they are only a small portion of the money market, federal agency securities are second highest in credit quality. The purposes, maturities, and types of agency securities issued vary widely. Typically, the government backs these issues with collateral such as cash, U.S. Government securities, and debt obligations the issuing agency acquires through its lending activities. The more common types of federal agency securities include obligations of the following agencies:

- Federal Home Loan Banks (FHLBs)
- Farm Credit System (FCS)
- Federal National Mortgage Association (Fannie Mae)
- Federal Home Loan Mortgage Corporation (Freddie Mac)
- Government National Mortgage Association (GNMA)
- Student Loan Marketing Association (SLMA).

Obligations of the U.S. Government and federal agencies are safe and liquid. Federal agency securities (except for GNMA) generally do not bear the full faith and credit of the U.S. Government. They do bear the full faith and credit of the U.S. Government agency or government sponsored enterprise that sponsors them.

Structured Notes

Federal agency notes include structured notes that are securities with derivative-like characteristics. Structured notes are fixed-income securities with embedded options where the bond's coupon, average life, or redemption value are dependent on a reference rate, an index, or formula. Fannie Mae, Freddie Mac, and the FHLBs are the primary issuers of structured notes. OTS considers structured notes a complex security and they require a price sensitivity analysis. See [TB 13a-2](#) for more information.

Structured notes take various forms. The term structured notes includes the following securities:

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- Dual-indexed floaters
 - De-leveraged floaters
 - Inverse floaters
 - Leveraged inverse floaters
 - Ratchet floaters
 - Range floaters
 - Leveraged cap floaters
 - Stepped cap/floor floaters
 - Capped callable floaters
 - Stepped spread floaters
 - Multi-step bonds
 - Indexed amortization notes.

The major type of structured note owned by financial institutions is step-up bonds. These bonds have successively higher coupons over their life and the issuer may call them. Institutions should carefully evaluate the purchase of a step-up bond. See the explanation of the call feature of step up bonds immediately below in the description of corporate bonds.

OTS does not consider standard, nonleveraged, floating rate securities (where the interest rate is not based on a multiple of the index) to be structured notes.

Shares in Money Market Funds

Money market funds are the combined money of many entities jointly invested in high yield financial instruments including U.S. government securities, certificates of deposits, and commercial paper. A money market fund is a mutual fund that makes its profit by buying and selling various forms of money rather than buying and selling shares of ownership in corporations.

Fixed-Income Investments

The bond (or debt) market represents debt instruments with maturities of longer than one year and includes longer-term U.S. Government and federal agency bonds and notes, corporate debt securities, and municipal bonds.

Bond Ratings

Bond ratings are good threshold indicators of the probability of default, but savings associations should conduct a thorough credit analysis of the security issuer before buying a security. Savings associations should also monitor the security after the purchase. The issuer should have the capacity to meet principal and interest payments as they become due. Failure to do so results in a default. Credit analysis should, at a minimum, encompass a review of the issuing entity's financial statement, level of capitalization, management, earnings, business reputation, and other relevant factors. Other relevant factors may include adequacy of sinking funds, collateralization, refinancing needs, and callability.

Besides performing the very basic credit analysis, each type of bond or industry has a unique set of factors. The institution should also review these factors when performing a credit review.

Rated Securities

We identify Moody's ratings first, and Standard & Poor's ratings in parentheses.

Investment Grade

- Aaa (AAA): Bonds judged to be of the best quality that carry the smallest degree of risk. The capacity to pay interest and repay principal is extremely strong.
- Aa (AA): Bonds judged to be of high quality by all standards. These securities have a very strong capacity to pay interest and repay principal. They differ from the higher-rated issues only in a small degree.
- A (A): Bonds of upper-medium-grade obligation with many favorable investment attributes. These securities have a strong capacity to pay interest and principal. However, they are somewhat more susceptible to the adverse effects of changes in circumstance and economic conditions than debt in higher-rated categories.
- Baa (BBB): Bonds of medium-grade obligation. They are not highly protected or poorly secured. These securities have an adequate capacity to pay interest and repay principal. Normally, debt in this category exhibits adequate protection limits. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than in higher-rated categories.

Below Investment Grade

- Ba (BB): Bonds judged to have speculative elements. Often the protection of interest and principal payments may be moderate and thereby not well safeguarded.
- B (B): These bonds generally lack the characteristics of a desirable investment. Assurance of principal and interest payments or maintenance of other contract terms over a long period may be suspect.

- Caa, Ca, C (D): These bonds are of poor standing. Such issues may be in default or have other shortcomings.

The rating agencies (Moody's or Standard & Poor's) may append a designation of Provisional (Moody's) or Conditional (Standard & Poor's) to a rating. For example, the provisional or conditional description is when the issuer does not specify an offering date. Associations should be aware that ratings on seasoned corporate paper are lagging indicators. For example, the rating agencies did not downgrade Enron's corporate paper to junk status until four days before the company entered bankruptcy, although the risk premium for its paper was growing for a substantial period of time prior to that point. The gap between the yield of the specific instrument and the average yield for similar rated paper with similar maturities is the risk premium. The greater the gap, the higher the underlying risk of the issue. The risk premium is a moving target, fluctuating with corporate performance and market conditions, and associations should evaluate each on a regular basis. Evaluating the risk premium does not substitute for detailed analysis, but it is a tool to facilitate evaluation of risk in the portfolio.

Subquality debt is, on balance, predominantly speculative regarding capacity to pay interest and repay principal according to the terms of the obligation. Large uncertainties on major risk exposures to adverse conditions outweigh any quality and protective characteristics. Debt rated D is in payment default. Rating companies use the D rating category when issuers do not make interest or principal payments on the date due. They assign the D rating even if the applicable grace period has not expired, unless the rating agency believes that the issuer will make such payments during the grace period.

Institutions should obtain current bond ratings or credit analysis before any purchase. Associations invested in corporate bonds should regularly review the current ratings of their holdings for any adverse changes, and management should report the result of these credit reviews to the board of directors.

Nonrated Securities

Nonrated securities are generally not permissible investments for savings associations. Institutions should establish guidelines to ensure that their securities meet legal requirements and that the institution fully understands the risk involved. Institutions should establish limits on individual counterparty exposures. Policies should also provide credit risk and concentration limits. Such limits may define concentrations relating to a single or related issuer or counterparty, a geographical area, or obligations with similar characteristics.

U.S. Treasury Securities

Treasury Bills

A U.S. government short-term security, sold to the public by auction, and having a maturity of 28, 91, or 182 days. Bills are discounted at purchase, so the interest received is front-loaded. The government issues them in minimum denominations of \$1,000. They are exempt from state and local taxation, and are backed by the full faith and credit of the U.S. Government.

Treasury Notes

A U.S. government long-term security, sold to the public and having a maturity of one to ten years.

Treasury Bonds

A U.S. government long-term security, sold to the public and having a maturity longer than ten years.

Zero-Coupon Treasuries or STRIPS

Zero-coupon bonds, although they can be U.S. Government or agency securities, are most frequently corporate bonds. The market sells zero-coupon bonds at a deep discount from par value. They accumulate and compound interest and pay full face value at maturity. Zero-coupon bonds are highly sensitive to interest rates and tend to exacerbate interest rate risk in the majority of savings associations. As a result, it may be an unsafe and unsound practice for savings associations with excessive exposure to interest rate risk to invest in zero-coupon bonds. Moreover, taxable zero-coupon securities receive unfavorable tax treatment. Even though the savings association receives no cash, thrifts must pay taxes annually on accrued interest.

Corporate Bonds

Corporate bonds can consist of subordinated debentures, collateralized or mortgage bonds, and floating-rate notes. Corporate debt securities face the same risks as loans to a business entity. Section 560.40 restricts investments in corporate obligations and sets forth requirements for minimum credit quality and loan-to-one-borrower limitations. Federal institutions may only invest in investment grade corporate bonds. Investment grade corporate debt securities are those that, at the time of their purchase, were in one of the four highest rating categories by at least one nationally recognized statistical rating organization. The recourse regulation establishes capital requirements based on these ratings as well.

Corporate bonds typically have much less complex structures than Collateralized Mortgage Obligations (CMO), Asset-Backed Securities (ABS), and Collateralized Debt Obligations (CDO). A bond may be senior or subordinate to other bonds by the same issuer, but the bond's rating directly reflects its seniority. The rating process for corporate bonds is less complex and has a longer track record than the process for rating structured debt such as CMOs, ABSs, and CDOs. There are two important items worth considering when evaluating corporate bonds. For any significant bond portfolio, consider the concentration of bonds within a particular industry or in industries affected by similar macroeconomic factors. Also, consider concentrations within lower investment grades (that is, A and especially BBB). While bonds in these categories are usually more likely to receive upgrades than downgrades, a downgrade (particularly to "junk" status) has a much bigger impact on market value.

Collateralized Bonds

Corporate bonds come in many varieties with differing features and characteristics such as being secured or unsecured. The real estate mortgage or capital equipment that the bond money purchases usually collateralizes the bond. The bondholder can sell the collateral to satisfy a claim if the bond issuer

fails to pay principal and interest when due. The full faith and credit of the issuer, but not any specific collateral, backs an unsecured bond or debenture.

Debenture Bonds

A bond that has no specific security set aside or allocated for repayment of the principal. A debenture bond is secured only by the general credit of the issuer.

Callable Bonds

Institutions should carefully evaluate provisions that permit the issuer to modify the maturity of a bond. Many corporate bonds contain call privileges that permit the issuer to redeem the bond, either fully or partially, before the scheduled maturity. Call provisions are generally detrimental to investors since they run the risk of losing a high-coupon bond when rates begin to fall. Call provisions also tend to limit the price appreciation of the bond that might otherwise occur when interest rates decline. The presence of call protection, however, limits the right of the issuer to call the bond to a specified number of years early in the life of the bond.

Sinking Fund Bonds

Sinking fund provisions are a form of maturity modification most often found in industrial bonds but increasingly found in other types of bonds as well. A sinking fund provision can take either of two forms. In one form, the issuer makes periodic payments to a segregated fund that is sufficient to retire the bonds upon maturity.

The other form mandates the issuer to retire some portion of the debt in a prearranged schedule during its life and before the stated maturity. Sinking funds are beneficial because they assure an orderly retirement of debt and enhance liquidity. Sinking funds can also be disadvantageous to investors. In particular, those investors holding one of the early bonds to be called for a sinking fund are disadvantageous to the investor.

Risk Associated with Bonds in General

In assessing the risk of an investment in bonds, the association should consider reinvestment rate risk as well as interest rate risk. These risks generally work inversely to one another.

Long-term bonds are more sensitive to interest rate changes; the loss potential is greater the longer term the bond. Long-term bonds tend to command a higher premium, known as the maturity risk premium. Interest rates fluctuate over time, and an increase in interest rates leads to a reduction in value of an outstanding bond. For example, a 5% bond with a value of \$1000.00 would lose value if interest rates were to increase to 7.5%, exposing the holder to a loss. If the interest rate falls to 2.5%, the bond may gain in value, but may only be redeemable at par. The issuing entity may exercise a call option, denying the holder the benefits of additional interest payments, as well as any differential from the par value.

Short-term bonds are exposed to investment rate risk. When short-term bonds or bills mature and the funds “roll over” or are reinvested, declining interest rates would result in the funds being reinvested at

lower rates. Investing in short-term bonds preserves the value of the principle. Reinvestment rate risk is related to the income the bond produces as it matures and rolls over.

Therefore, investors cannot consider fixed-rate bonds to be totally without risk. Associations can minimize, or balance the risks associated with owning bonds by holding a mixture of short- and long-term issues.

Equity Instruments

The equity markets are the primary exchanges for the trading of stocks. The shares of common stock and preferred stock bought and sold in these markets represent actual ownership interest in a corporate entity. The major markets are the New York Stock Exchange, the American Stock Exchange, and the over-the-counter market. Savings associations may not generally invest in or retain equity securities. The Home Owners' Loan Act permits the following investments:

Mutual Funds

Investing in mutual funds is permissible, so long as investing in the underlying assets is permissible. Simply stated, if investing in the underlying securities is permissible, the institution can invest in the fund. See the Pass-through Investment Regulation, § 560.32 in [Appendix C](#), General Lending and Investment Powers of Federal Savings Associations. Institutions should be aware of and avoid concentrating capital in one fund or a group of funds investing in the same underlying assets.

Many savings associations invest in mortgage-related mutual funds. Some of these funds have run into problems. Redemption in-kind is payment of the redemption value, in whole or in part, by distribution of a fund's portfolio securities. Although funds usually pay share redemption proceeds in cash, often funds reserve the right to pay the redemption value, in whole or in part, by a distribution of the fund's portfolio securities.

Prior to purchase Management should:

- Evaluate the fund based on anticipated and historical yield, net of expenses.
- Evaluate the risk profile of the underlying assets.

Evaluate the suitability of the position in relation to the institution's overall portfolio.

Secondary Mortgage Market

Through this market, original lenders are able to sell loans in their portfolios to build liquidity to support additional lending. Mortgage agencies, such as Freddie Mac, Fannie Mae, and investment bankers buy mortgage loans. In turn, these agencies and investment bankers create pools of mortgages that they repackage as mortgage-backed securities (MBS), which they sell to investors. MBSs or mortgage pass-through certificates provide investors with payments of interest and principal on the underlying mort-

gages. Since the underlying issuer guarantees the mortgage pass-through certificate, the default risk is low for this type of security.

The buying, selling, and trading of existing mortgage loans and MBSs constitutes the secondary mortgage market. This has become a significant activity for many savings associations.

The payments for MBSs resemble mortgage payments but without delinquencies. Principal and interest payments, less guarantee and servicing fees, pass through to the investor whether or not the issuer collects them. The servicer advances the delinquencies to the investor until the mortgage either becomes current or foreclosure is complete. Prepayments pass through to the investor as received.

The servicer collects mortgage payments on a monthly basis from the mortgagor and remits those funds less its servicing fee to a central collection point, or directly to the investors for GNMA I. Fannie Mae, Freddie Mac, and GNMA II collect their guarantee fee directly from the payments that they pass through or from the servicer.

Fannie Mae and GNMA have always guaranteed the timely payment of both principal and interest to investors for their MBSs, requiring the servicer to advance its own funds to the investor to make up for delinquencies. Freddie Mac only guaranteed the timely payment of principal until they developed their Gold PC and now it, too, guarantees the timely payment of both principal and interest. The following characteristics determine the structure of an MBS:

- Types of mortgages in the pool.
- Weighted-average coupon on the pool of underlying mortgages.
- Pass-through rate on the MBS.
- Weighted-average remaining maturities of the mortgages.
- Number and size of the mortgages.
- Geographic distribution of mortgages.

Weighted-Average Coupon and Pass-Through Rate

The weighted-average coupon (WAC) of the mortgage pool is an important factor in determining prepayment speeds. In general, higher WACs relative to current mortgage rates result in faster prepayments because homeowners have an incentive to refinance at lower market rates. Lower WACs relative to current mortgage rates lead to slower prepayments because lower refinancing rates are not readily available.

The average interest rate on the underlying mortgages of an MBS usually exceeds the pass-through rate. The spread between the WAC and the pass-through rate represents guarantee fees and servicing fees. A savings association that originates and packages loans for securitization can set limits on the permissible

range of interest rates in a pool. These limits must be within the guidelines established by the guarantor of the MBS for each specific program.

Original Term and Weighted-Average Remaining Maturity

The original term and the weighted-average remaining maturity (WARM) also affect the rate of repayment. Longer terms to maturity mean that amortization of principal will spread out over a longer period. This means the security passes through less principal during the early years of the security. In addition, prepayment patterns vary by original terms such as 30 years or 15 years. Loan age, which represents the difference between original and remaining maturity, also affects the rate of repayment. Payments on older mortgages allocate more to principal than to interest. Prepayments on a mortgage pool also tend to increase as the mortgages age, or become more seasoned. Eventually, prepayments slow down, or burn out. This occurs when most of the mortgagors remaining in the pool are either unwilling or unable to prepay. The maturity date of an MBS is generally the date on which the last mortgage in the pool repays in full. Each guarantor of an MBS sets limits on the permissible range of interest rates and maturities for each specific program.

Geographic Distribution

The location of the mortgages comprising the pool affects the likelihood and predictability of prepayments. Different areas of the country prepay at much different rates. Geographical diversity permits greater predictability of cash flows as the mortgage pool is less subject to regional economic conditions and other local influences. More mortgages in a given pool tend to diversify risks and make cash flows more regular and predictable.

Federal Agency Securities

Savings association may invest in certain equity securities of FHLBs, Freddie Mac, Fannie Mae, SLMA and GNMA. The cash flows of mortgage pass-through securities generally mimic those of the underlying mortgages. The mortgages themselves are usually homogeneous. The securities consist of a pool of residential loans and principal and interest on those loans (less a guarantee fee) that the security “passes through” to investors. These securities have minimal credit risk.

Nonagency securities

MBSs not issued by the GSE’s such as Fannie Mae, Freddie Mac, and GNMA. The cash flows of these securities also generally mimic the cash flows of the underlying mortgages. Their structures are somewhat more complex than an agency pass-through, however. Because these securities lack an agency guarantee, the overall deal may include some credit support in the form of subordinated (first loss) and second loss (mezzanine) tranches. (We describe subordinated tranches as “first loss” classes for purposes of simplicity. Issuers of nonagency MBS, CMOs, ABS, and CDOs usually retain some interest in the securitization. This retained interest, known as a residual or equity interest, absorbs losses even before the subordinated tranches.) The quality and performance of the underlying loans and the level of credit support both affect the overall credit risk of these securities.

Banker's Banks

A federal savings association may purchase for its own account shares of stock of a bankers' bank, provided it meets the following conditions:

- The institution is insured by the Federal Deposit Insurance Corporation or a holding company that owns or controls such an insured institution, if the stock of such institution or company is owned exclusively by depository institutions or depository institution holding companies.
- Such bank or company and all subsidiaries engage exclusively in providing services to or for other depository institutions, their holding companies, and the officers, directors, and employees of such institutions and companies, and in providing correspondent banking services at the request of other depository institutions or their holding companies.
- The total amount of such stock held by the association in any bank or holding company must not exceed at any time ten percent of the association's capital stock and paid in and unimpaired surplus.
- The purchase of such stock must not result in an association's acquiring more than five percent of any class of voting securities of such bank or company.

Asset-Backed Securities

Any asset can back this type of debt security. The security represents pools of assets, collateralized by the cash flows from a specified pool of underlying assets. Assets are pooled to make otherwise minor and uneconomical investments worthwhile, while also reducing risk by diversifying the underlying assets. Securitization makes these assets available for investment to a broad set of investors. These asset pools can be made of any type of receivable like credit card payments, auto loans, and mortgages.

There are two primary risks in this market: credit risk and liquidity risk. Credit risk speaks to the payment performance of the collateral supporting the security. If the loans suffer losses, issuers will incur a loss and security holders may not receive payment at maturity. Liquidity risk is measured by the ability of the program to raise funds to retire the maturing security.

ABS is also a general term that also covers CMOs and CDOs. As with CMOs, ABS often have a senior/subordinated structure. Excess spread also provides an important form of credit support for ABS. For example, the underlying loans in a credit card securitization may have a yield of 12 percent but the weighted average yield on the ABS is only 7 percent. The difference between the two (5 percent) will be available to absorb credit losses (the excess spread is occasionally placed in a separate reserve account). ABS and other types of investment securities can have many different types of credit support. They may include overcollateralization (the amount of the collateral exceeds the amount of the securities that it backs), letters of credit, and cash collateral accounts.

Mortgage-Backed Securities

An issuer creates a mortgage-backed security (MBS) by pooling mortgage loans and using the pool as collateral for the security. The three main types of MBS are:

- Mortgage pass-through securities
- Collateralized mortgage obligation
- Stripped MBS

Cash flows from any MBS are dependent on the underlying pool of individual mortgages, and consist of interest, scheduled principal repayments, and payments in excess of scheduled principal repayment. Interest and scheduled principal repayment can be determined in advance, while excess (early) payments are a component of risk (prepayment risk).

Limits on MBS Trading Activity

Savings associations may buy and sell securities to manage risk or to improve profitability. Active management of an MBS portfolio may presume an ability to anticipate changes in market interest rates. In practice, interest rates are notoriously difficult to predict. Active portfolio management requires out-guessing the market consensus sufficiently to cover transaction costs. Historical data suggests that very few investment professionals can outperform a passive fixed income indexing strategy with active portfolio management.

OTS allows savings associations to use an MBS portfolio for trading purposes only in limited cases and subject to certain safeguards. The association should have the core earnings and capital to absorb potential trading losses. The savings association should also possess the financial expertise and management information systems to monitor and evaluate trading activity effectively.

You should determine the amount of MBS trading activity by reviewing the volume of trades transacted since the previous examination. You should quantify the volume and compare it with the change in portfolio balances since the previous examination. Calculate portfolio turnover ratio by comparing the dollar amount of securities sold, by type, with the balance of the portfolio at the beginning of a period. For example, if the savings association sold \$10 million of MBS all with the same coupon rate during the quarter, compared with the balance of \$10 million of this coupon rate at the beginning of the quarter, the turnover ratio would be 100 percent. You can make these comparisons on a monthly or annual basis.

There is no bright line that automatically indicates that the MBS portfolio is part of a trading portfolio. You should review the composition of the trades and determine the rationale for the transactions.

While designating certain assets for trading can be consistent with prudent portfolio management, you may consider certain practices speculative or otherwise abusive.

Mortgage Pass-through Securities

An issuer creates a pass-through security by pooling a group of mortgages and using the mortgages as collateral for the security. The cash flow of the security reflects the cash flow of the underlying mortgages. The issuer sells interest in the pool as “units” and the holder of a unit receives a fraction of the cash flow commensurate with the number of units owned. Simply put, if a pass-through security has 50 units, each unit is entitled to 1/50th of the cash flow. The industry calls the process of creating the pass-through securitization of mortgage loans.

A government-related entity, such as the Fannie Mae, or the Freddie Mac, GNMA, or the FHLBs, (collectively called agency securities) guarantees most pass-throughs, but private entities may also issue pass-throughs. Agency securities generally have the highest credit ratings, as the entities that issue these securities are agencies of the federal government. Savings association management should be aware of the difference between agency securities and nonagency securities when contemplating purchase. The credit risk assessment of a nonagency CMO involves the risk of default and loss from the underlying collateral and of the levels of credit support for the CMO.

The pooling process is more efficient for than purchasing individual mortgages for investors and marketers.

Stripped MBS

Stripped MBS (strips) divide the proceeds of the security into principal only (PO) and interest only (IO) bond classes. The risk/return characteristics of strips may make them attractive as a hedge for a portfolio of pass-throughs, or servicing rights. Stripped MBS are complex investment securities.

Collateralized Mortgage Obligations (CMOs)

A CMO changes the method of distributing the proceeds of the cash flow. Pass-throughs distribute cash flow on a pro-rata basis, while CMOs distribute cash flow by rules, according to class of bonds. This has the effect of redistributing the prepayment risk. Each CMO class has a different effective maturity date due to the rules governing the distribution of cash flows. These differing effective maturities make the tranches attractive to various associational investors for differing reasons. Cash flow rules mitigate the uncertainty about the maturity dates of each class of CMO.

Some savings associations issue CMOs. The issuer may retain a subordinate interest in the CMO as a credit enhancement to outside investors. The gain recognized on the sale depends on the relative fair values assigned to the sold and retained tranches. The higher the value assigned to the retained pieces, the lower the cost basis for the securitized assets, and the larger the recognized gain on sale. There is often no liquid market for the retained securities, so their fair values may be difficult to verify. You must analyze the savings association’s valuation assumptions to ensure that the savings association bases its gain on sale upon the economics of the transaction rather than merely an inflated value assigned to retained tranches. Particularly important variables include the assumed prepayment rate, loss rate on the underlying mortgages, and required rate of return (discount rate).

CMOs redistribute, rather than mirror the cash flows of the underlying mortgages. The mortgages generate cash flows. The issuer then segments the cash flows into different classes or tranches. Tranching accommodates varying interest rate risk preferences of investors. Suppose, for example, the underlying loans in a CMO deal have a weighted average life (WAL) of seven years. Rather than having a single tranche also with a WAL of seven years, the issuer can divide the cash flows into tranches with shorter and longer WALs. Mortgage prepayments can also make the cash flows of the underlying mortgages volatile. The issuer can redirect cash flows generated by the mortgages to create securities with more stable cash flows (for example, planned amortization class securities (PACs)) or more volatile cash flows (for example, support tranches). Savings associations can also use CMOs to segment credit risk. Subordinate and (sometimes) mezzanine tranches carry more credit risk (and offer higher returns) than the underlying mortgages while senior tranches carry less credit risk. As with nonagency pass-throughs, the quality and performance of the underlying mortgages and the level of credit support both affect the overall credit risk of these securities.

Collateralized Loan or Bond Obligations

Savings associations may invest in collateralized loan obligations, CLOs, (backed by commercial loans) and collateralized bond obligations, CBOs, (backed by corporate bonds) through the pass-through authority to invest in the underlying assets of the collateralized pool (12 CFR 560.32) or through their authority to invest in corporate debt securities under HOLA (12 CFR 560.40). In either case, the savings association must meet the requirements of the respective regulation. Therefore, to use the pass-through authority for a CBO backed by corporate bonds, each underlying bond must meet the requirements of §560.40. If commercial loans back the issue, the underlying loans must be underwritten in a safe and sound manner. If the association makes the investment using the corporate debt security authority, the issue must be investment grade and meet the marketability requirements as discussed above. CLOs and CBOs are typically issued as structured notes, meaning the cash flows of the underlying collateral are divided into several separate tranches, each having yield, term, and other characteristics designed to appeal to different investors. For example, an issuer can split a CBO into three different tranches: a senior note, a mezzanine (or junior) note, and a residual interest or “equity” certificate. The senior notes typically are over-collateralized by 10 to 25 percent and have repayment priority over the other notes in the issue with respect to both principal and interest. Issuers often overcollateralize the mezzanine note at 100 to 105 percent of its initial value and has repayment priority over the equity certificates but is subordinate to the senior notes. The equity certificate is only a claim on the remaining cash flows and has no claim on the collateral until all the security repays obligations due to both the senior and mezzanine notes. CLOs typically have a revolving period and an amortization period. During the revolving period, the issuer reinvests principal payments in additional assets in accordance with the terms of the agreement. During the amortization period, any principal payments first go to repay the senior note holders in full, and then any remaining principal goes to repay the mezzanine tranche investors. Typically, the senior note receives the highest investment rating. The mezzanine notes generally receive a lower investment grade. The residual interest certificates do not receive a rating and are usually subordinate, not only to senior tranches, but also to expenses of the issuing trust. These residual tranches are difficult to value and are generally illiquid investments.

Split Ratings

While it is unusual, some securities may have a split rating, meaning that the principal may receive an investment grade rating, while the interest portion of the investment may be unrated or rated below investment grade. To make the residual tranche more marketable, the CLO issuer or trustee may swap the residual interest certificate for certificates guaranteed by a AAA-rated counterparty as to the principal amount at maturity. While the swap creates a guarantee of the principal at maturity, the amount guaranteed may be discounted to its present value if terminated early. In that respect, the guaranteed portion of the security is similar to a zero-coupon bond. Therefore, the credit support provided by the guarantor may only cover a fraction of the face amount of the certificate at purchase. Unlike zero-coupon bonds, which sell at a discount, these certificates generally sell at par. To receive any interest on the certificates, investors must rely on the performance of the swapped asset (the residual certificates), which is not guaranteed. Apparently, the motivation to purchase such certificates is the high yield projected if the CLO collateral pool (and thereby the reference asset) performs well. However, there is no guarantee of residual cash flows. Moreover, the certificates will not be in default if it pays no cash flows to the investors. These investments are highly speculative, and are clearly not intended to hedge interest rate risk or credit risk. Based on the general lack of supporting cash flow analysis for these investments, it is difficult to assess the likelihood of achieving a particular return. In essence, associations should be wary of split ratings where only a part of the security is either guaranteed or rated investment grade. Therefore, investments that do not receive ratings as to both principal and interest do not meet OTS regulatory requirements.

Collateralized Debt Obligation (CDO)

A general inclusive term that covers collateralized bond obligations, collateralized loan obligations and collateralized mortgage obligations. Invented in 1987, CDOs became an important funding vehicle for many markets, including mortgage market.

Consisting of fixed-income assets, the issuer divides CDOs into different tranches:

- Senior tranches (generally rated AAA)
- Mezzanine tranches (generally rated AA to BB)
- Equity tranches (generally unrated).

Losses flow in reverse order of seniority and so junior tranches offer higher interest rates to compensate for the additional risk of default.

CDOs represent a securitized pool of debt instruments, usually secured bonds, rather than loans. A CDO involves the issuance of multiple tranches of securities based on their credit risk (subordinated/mezzanine/senior). A cash flow CDO involves the actual transfer of loans to a special purpose entity (SPE). A synthetic CDO treats the loans as a reference pool (avoiding sale treatment under GAAP). Synthetic CDOs do not own cash assets like bonds or loans. Instead, synthetic CDOs gain credit exposure on the loans or bonds without owning those assets by using credit default swaps (CDS). Under such a swap, the credit protection seller, the CDO, receives periodic cash payments, or premi-

ums, in exchange for agreeing to assume the risk of loss on a specific asset in the event that asset experiences a default or other credit event.) Synthetic CDOs may also involve credit-linked notes (CLNs), which are bonds whose performance depends on the performance of the reference assets (for example, a pool of loans). CLNs and CDOs are often part of the same CDO deal. A CDO-Squared is a CDO that consists of other CDOs.

The assets underlying a CDO are not necessarily homogeneous. In fact, the initial appeal of CDOs derives from, in part, a presumed diversification benefit. Some of the assets underlying a CDO might default, but not at the same time and gains in some parts of the portfolio will be available to offset losses in other parts. (See details below on the effect of this correlation assumption.)

The credit risk of a CDO depends on the underlying assets, the correlation of those underlying assets with each other, and the structure of the CDO. All but the most senior tranches of a CDO have “attachment” and “detachment” points. The attachment point represents the minimum level of losses on the underlying assets required for a particular tranche to first experience a loss. The detachment point represents the level of losses that will wipe the tranche out.

Indentures and other documents governing a CDO can provide a third source credit risk. CDO documents specify events of default. Events of default include obvious items such as failure to pay principal and interest when due and bankruptcy. Some CDOs also include as an event of default failure to maintain a defined amount of overcollateralization. For example, a senior tranche of a CDO may get a AAA rating because the underlying assets far exceed the amount necessary to pay off that particular tranche. Not all assets provide equal protection. Treasury bills are better collateral than junk bonds. As a result, some transactions discount the value (apply a haircut) of lower quality assets when making the overcollateralization calculation. The haircutting begins at the cusp between investment and noninvestment grade (BBB and BB) and assets are valued at lower of market value or recovery rate for ratings CC or below. Poor performance of subprime mortgages led to a record number of downgrades of the mortgage-related securities that make up CDOs. Lower ratings resulted in bigger haircuts on the collateral, moving overcollateralization ratios closer to event of default thresholds. This domino effect is even more exaggerated for a CDO-squared, a CDO made up of other CDOs.

If an event of default does occur, the controlling class (that is, the noteholders of the most senior tranche) has the right to enforce a revised priority of payments. The definition of a controlling class depends on the particular CDO deal and can include holders of some lower priority tranches or even of financial guarantors. The decision to accelerate payment and/or liquidate is an option of the controlling interest, not a requirement. The CDO pays super senior tranches first, stopping principal and interest payments to everyone else, although this also depends on the particular deal. Some suspend principal payments but continue payments of interest.

Risks of CDOs

Some CDOs, initially rated investment grade, sometimes even AAA, received severe downgrades and wound up trading at pennies to the dollar. Even many of those securities that have maintained high credit ratings are now trading at deep discounts to par. Part of the problem stems from the evaporation of liquidity in the market. In addition, however, there are certain characteristics of these securities and

certain aspects (and limitations) of the ratings process that can result in a sharp reversal of fortune. As a result, the NRSROs are revisiting their methodologies for rating structured securities, particularly CDOs.

Consider the following example of securities that remain highly rated but are currently trading at deep discounts. The portfolio consists of roughly 125 corporate bonds. The underlying bonds are rated BBB. The CDO has an attachment point of 6 percent and a detachment point of 7 percent. Historically, the probability that a BBB security will default in the next year is 0.2 percent. Assume also an expected recovery rate of 30 percent (a loss given default of 70 percent). The expected loss over the next year would be 0.14 percent. If defaults of the underlying loans were completely uncorrelated with one another, the focus is on the probability that there will be a loss and not on the severity of the loss, should it occur.

Also, as noted above, bond indentures, such as failing an OC threshold, can trigger an event of default, which adversely affects all but the most senior tranches of a CDO.

Trust-Preferred Securities

Savings associations may invest in trust-preferred securities (TPSs) in accordance with the limitations established in 12 CFR § 560.40. TPSs are nonperpetual cumulative preferred stock issued by a wholly owned trust subsidiary of a corporation (typically insurance companies and bank or savings and loan holding companies). Revenue from the sale of the TPSs is exchanged for junior subordinated debentures issued by the parent corporation. These debentures feature coupon payment and term to maturity identical to those of TPSs. Coupon payments on the TPSs have a specific dollar amount and term (typically 30 years). A unique feature of TPSs is the option of the issuer to defer any payments that come due to a future date (typically up to five years). Most issues provide that the issuer must pay a contractual rate of interest on any deferred payment as long as it is outstanding.

TPSs have some similarities to other investments and activities permissible for federal savings associations. Federal savings associations may invest in high quality corporate debt securities under section 5(c)(2)(D) of the Home Owners' Loan Act in compliance with 12 CFR 560.40. The junior subordinated debentures supporting TPSs may meet these requirements. Moreover, federal savings associations may make pass-through, equity-type investments in entities such as limited partnerships, trusts, and similar entities so long as the underlying investments are permissible for federal savings associations. See 12 CFR 560.32. The TPS structure has characteristics that may satisfy the pass-through requirements.

Unique Risks of TPSs

TPSs and similar instruments display some characteristics that may present higher levels of risks than those traditionally associated with corporate debt securities or pass-through investments:

- The deferral option would allow an issuer to defer payments for up to five years without being in default, thus preventing holders from taking action against the issuer.

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- For some 30-year issues, the issuer has the ability to extend the maturity of the issue for an additional 20 years without approval of the TPS holders.
 - An association may issue the securities, count them toward capital, then use the proceeds of the sale to purchase similar securities from other issuers—in effect, raising capital without substantively changing its financial condition.
 - Many issuers of TPSs are bank holding companies, that, when rated, are rated in one of the two lower investment grades. This leaves little cushion should the financial capacity of the issuer decline.
 - Little data is available on the performance of TPSs over time, yet the securities have long maturities.

Investment Authority and Limits for TPSs

In general, federal saving associations may invest in TPSs that otherwise meet the requirements of corporate debt securities set forth at 12 CFR 560.40. Savings associations may not invest in TPSs or any other type of security from their parent holding company or any other affiliate. Because of the considerable differences among these issues, and because their complex and varied nature, particularly the deferral option, poses higher risk than traditional corporate debt securities, savings associations that invest in these or similar securities should ensure that such investments meet the following limitations and requirements.

- Limit their aggregate investment in TPSs and securities with similar attributes, 3 to 15 percent of the association's total capital.
- Not enter into a formal or informal reciprocal agreement or understanding with another issuer or broker to purchase the securities of another issuer (also, 12 CFR 563.81(d)(3) prohibits an association from selling subordinated debt directly or indirectly to another association unless the sale is approved by OTS).
- Not invest in a security if the issuer can unilaterally extend maturity beyond 30 years.
- In addition, an association's investment in such securities must:
 - Be able to be sold with reasonable promptness at a price that corresponds reasonably to their fair value.
 - Be rated in one of the four highest categories by a nationally recognized investment rating service at its most recently published rating before the date of purchase of the security.
 - Meet the general lending limits of 560.93(c).

Similar attribute means a security with the same risk characteristics as a TPS, such as a payment deferral option by the issuer and a subordinated debt status. A CBO backed by TPSs is also covered by the investment restrictions in this guidance unless the association can demonstrate that the credit support and rating afforded by the issuer remove the payment deferral and other concerns OTS has with respect to TPSs. TPS CDOs (also known as pooled TPS) are not liquid and a number of mezzanine tranches have been downgraded to below investment grade. In addition, these securities can be difficult to evaluate and monitor since information on the underlying issuers is often lacking.

Only purchase TPSs that the association can sell with reasonable promptness at a price that reasonably reflects fair value. This means that a ready market must exist for the securities. While publicly offered securities will generally meet these requirements, some private placement issues may not. As with other types of corporate debt securities, OTS requires that associations risk weight TPSs at 100 percent for risk-based capital purposes.

TPSs are subject to all other requirements or guidelines applicable to investment securities. This means associations should ensure that their investment in TPSs is consistent with the association's risk management and investment policies. Specifically, management should consider the overall effect of any investment in TPSs on the association's levels of market, credit, liquidity, legal, operational, and other risks of investment securities. Refer to [Thrift Bulletin 13a](#), Management of Interest Rate Risk, Investment Securities, and Derivatives Activities, and the Federal Financial Associations Examination Council Supervisory Policy Statement on Investment Securities and End-User Derivatives Activities for additional guidance.

Approval for additional investment. If a savings association wants to invest more than 15 percent of their capital in trust preferred or similar securities, they must obtain approval from the OTS Regional Office prior to purchase or commitment. The Region will approve the request if it determines that the proposed investment poses no greater risk than an investment in a nonsubordinated, investment-grade, corporate debt security.

The Region will base its determination on the following facts:

- Current rating of the security.
- Date of the rating.
- Whether other rating agencies have recently issued lower ratings.

The Region will also consider the adequacy of information concerning the financial strength of the issuer, the due-diligence performed by the association and the effect of the investment on the overall level of interest rate risk. OTS regional offices will carefully scrutinize TPSs with unusual characteristics. Examples include:

- Securities rated in the lowest investment grade.

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- Thinly traded securities (where the association has not demonstrated that a viable resale market exists).

Glossary of Investment Terms

A Notes – Tranche of an ABS or MBS issue that is senior to other tranches, such as the class B notes, in credit terms, as well as in priority of repayment of principal.

“A” Quality Credit – A borrower with the best credit rating, typically deserving of the lowest prices that lenders offer.

ABS – Asset-Backed Security – Bonds secured by assets, such as credit card receivables or auto loans.

ABX Index – A series of credit-default swaps based on 20 bonds that consist of subprime mortgages. ABX contracts are commonly used by investors to speculate on or to hedge against the risk that the underlying mortgage securities are not repaid as expected. The ABX swaps offer protection if the securities are not repaid as expected, in return for regular insurance-like premiums. A decline in the ABX Index signifies investor sentiment that subprime mortgage holders will suffer increased financial losses from those investments. Likewise, an increase in the ABX Index signifies investor sentiment looking for subprime mortgage holdings to perform better as investments. CDS spreads are converted to a price (as a percentage of par) and often viewed as an indicator of investor sentiment in the nonmortgage securities market. Making inferences based on the ABX index should be approached with some caution, however, because the index consists specifically of subprime mortgages and (usually) of the longest duration tranches. A security consisting of higher quality mortgages or shorter duration tranches may show prices closer to par.

Accelerated Amortization – An accounting technique in which the larger portion of the asset’s book value is written off in the early years of the asset’s expected life.

Accelerated Remittance Cycle (ARC) – An option whereby an entity selling and/or servicing mortgages to/for FHLMC reduces the guarantee fee it pays by paying principal and interest payments early and shortening the monthly remittance delay. Remittance requirements are a component of servicing asset valuation due to their impact on assumptions of float profitability. Super ARC is also a remittance option which calls for even faster payment to FHLMC.

Accrual Bond – A bond that accrues interest, which is added to the remaining principal and paid to the investor at maturity, rather than periodically over the term of the bond. Also known as a **Z bond**.

Adjusted Trading – The sale of a security to a broker at an above-market price and the simultaneous purchase of a security from that broker also at an above-market price. This practice will overstate income. Also known as overtrading. It is also illegal.

Adverse Selection – A market process in which “bad” results occur when buyers and sellers have asymmetric information (i.e. access to different information): the “bad” products or customers are more likely to be selected. For example, a mortgage program that does not require income verification is more likely to attract borrowers that misstate their income.

Agencies – Government-sponsored intermediaries including FNMA and FHLMC.

Arbitrage – A transaction that generates a risk-free profit, typically by exploiting inefficiencies in the markets.

Arbitrage CDO – A CDO transaction based on assets whose aggregate yield is more than the aggregate yield for which the transaction’s securities can be issued.

Asked – The lowest declared price that a dealer will accept for a security at a particular time. A thrift buys securities at the asked price.

Asset-Backed Commercial Paper (ABCP) – CP whose principal and interest payments are designed to be derived from cash flows from an underlying pool of assets. If CP cannot be reissued to repay maturing CP, however, a backstop liquidity facility is drawn upon to provide cash to repay investors.

At-the-Money – An option whose exercise price equals the underlying security’s market price.

Attachment Point (AP) – The level of losses on the underlying assets at which a tranche would first incur a credit loss. Comparable to credit support percentage. Most commonly used in synthetic CDOs. See also Detachment Point.

Auction Rate Preferred Stock – Floating rate preferred stock whose dividend is adjusted every seven weeks through a [Dutch auction](#). Also known as money **market preferred stock**.

Auction Rate Security (ARS) – A debt or preferred security in which the coupon is reset based on periodic auctions, which typically occur at 7, 28, 35, or 49-day intervals. The market for ARS essentially collapsed in 2008 as many auctions failed to clear. Also known as money market preferred, [Dutch auction](#) preferred stock, short-term auction rate stock, and auction rate preferred stock.

Available for Sale – Securities that the institution does not have the intent and/or ability to hold to maturity but are also not held for the purpose of selling them in the near term (i.e., trading securities). Unrealized gains and losses on securities available for sale are not included in current earnings but are reported as a separate component of shareholder’s equity. Unrealized gains or losses on debt securities will not be included in *regulatory* capital calculations. Unrealized losses on equity securities (e.g., mutual funds) are included in regulatory capital calculation.

Average Life – Average number of years that each principal dollar will be outstanding. Alternatively, it is the number of years that each dollar in a pass-through pool is expected to be serviced. Average life is calculated as the dollar-weighted average time to repayment of all the principal paydowns.

Backstop Facility – The agreement of a highly rated entity to make payment if the entity with the primary obligation to make the payment is unable to do so.

Balance-Sheet CDO – A CDO transaction where the sponsor securitizes assets it already owns.

Basis Point – One 100th of a percentage point (e.g., .01% = 1 b.p.).

Basis (or Correlation) Risk – Risk that the yield or price in the futures market will change at a different rate than in the cash market. For example, if you are hedging MBSs with short futures and the futures price increases to 105 (a loss of 5) while the MBSs only increase to 103, you lose 2 on the hedge due to basis risk. More generally, basis risk is used to describe any risk that occurs due to the use of different price indices between assets and liabilities (see [Mismatched floaters](#)).

Beneficial Interest – The interest of an entity that does not have legal title to an asset, but enjoys the rights incident to ownership of that asset.

Bid – The highest declared price a dealer is willing to pay for a security at a particular time. A thrift sells securities at the bid price.

Bid-Ask Spread – The difference between the price a broker is willing to pay for a security vs. the price at which he is willing to sell a security. For example, if a broker will sell a security at 101 and is only willing to buy it at par, the bid-ask spread is \$1. A wide bid-ask spread is indicative of poor liquidity.

B Note – A subordinated tranche.

Bond Equivalent – A yield based on a 365-day year with two semiannual coupon payments.

Broken Bond – A collateralized security where losses on the underlying assets have caused credit support to become exhausted.

Brokered Deposits – Funds accepted for deposit obtained directly or indirectly, by or through a deposit broker.

Burnout – Phenomenon where mortgage pools that have had rapid prepayments (or defaults) in the past tend to slow down (burn out) as the faster prepayers (or those most likely to default) leave the pool.

Call Option – The contractual right (not obligation) to buy a security from someone at a prespecified price by a prespecified date. With a long call, you buy the right; with a short call, you sell the right. Long calls benefit when rates go down (you can buy the security at a below market price) while short calls benefit when rate go up (the option goes unused and you receive the premium). Similar to a floor. Some securities also have embedded call options that allow the issuer to redeem the security early.

Callable Security – A security that allows the issuer to call or redeem the security prior to contractual maturity.

Capital Markets – The market for debt and equity securities.

Cash Market – Transactions involving the transfer of an actual asset with payment given on delivery (distinguished from the futures market).

CDO of ABS – A collateralized debt obligation backed by asset backed securities, most commonly ABS of subprime mortgages.

CDO-Squared – A collateralized debt obligation consisting of other CDOs. The resulting leverage offers potentially higher returns but can also magnify potential losses.

Claw Back – The risk that assets that have been validly transferred will be set aside (or clawed back) in the insolvency of the originator/transferor. The risk is most common for transactions completed shortly before the insolvency or with terms deemed preferential to certain creditors.

Cleanup Call – A provision with a CMO or structured security that allows the issuer to call (“clean up”) the remaining balance once the outstanding principal balance falls below a certain threshold level (e.g., ten percent of the original principal balance).

CMO – A mortgage-collateralized security where the cash flows are not simply passed through to the investor but are structured and divided into tranches with varying risk and return characteristics.

Collateralized Bond Obligation (CLO) – See CDO.

Collateralized Debt Obligations (CDO) – A security backed by a pool of bonds, loans and other assets. CDOs do not specialize in one type of debt but are often nonmortgage loans or bonds.

Collateral Interest Class – A subordinate class of securities issued in connection with a credit card receivables transaction, which provides credit enhancement to more senior classes of securities issued in connection with the same transaction. The collateral interest is often retained by the transaction sponsor.

Collateralized Loan Obligation (CLO) – See CDO.

Collection Float – The total time period between when a check is prepared by the remitter and when the check is presented to the remitter’s bank. The float also includes the mail float, processing float, and transit float, and is considered the disbursement float for the organization that issues the check.

Commercial Mortgage Backed Security (CMBS) – Security backed by one or more loans secured by commercial properties, which may include multifamily housing, shopping centers, office buildings, and hotels.

Commercial Paper (CP) – Short term promissory notes, with maturities typically 30 to 50 days.

Commitment Fee (lender/borrower) – A fee paid by a potential borrower to the potential lender for the lender's promise to lend money at a specified date in the future, or for a specified period of time and under specified terms. The timing of income recognition for these fees should follow GAAP using the specified contractual terms.

Complex Security – Any security with an [embedded option](#), excluding mortgage pass-through securities. Includes [CMOs](#), [trust preferred securities](#), and [callable securities](#).

Complex Security with High Price Sensitivity – A [complex security](#) with a projected decline in value from a 200 basis point rate shock of more than ten percent. TB 13a requires institutions to conduct a price sensitivity analysis of the security prior to purchase. In general, investments in complex securities with high price sensitivity should be limited to investments that reduce an institution's interest rate risk. Investments that do not reduce risk require written authorization from the board of directors and should ensure that the institution's post-shock NPV ratio following the investment remains above four percent.

Component (CPT) – CMO class that combines two or more difference tranche types. The most prevalent structure is a combination of PAC and TAC classes or two PACs with different bands.

Convexity – The rate of change in duration as interest rates change. Positive convexity means that duration decreases as rates increase, while negative convexity means that duration increases as rates increase. Generally, an investment with negative convexity has greater downside than upside potential. A mortgage has negative convexity due to the presence of the prepayment option (prepayments tend to increase when rates fall, decreasing their effective duration). Convexity (positive or negative) is a measure of the stability or instability of the measured duration over a range of yields. If convexity is low, that is, if the price/yield relationship is close to a straight line, duration is stable. If convexity is high, duration is unstable. The greater an instrument's convexity, the less accurate duration will be. Convexity is a measure of the curvature of how the price of a bond changes as the interest rate changes. Specifically, duration can be formulated as the first derivative of the price function of the bond with respect to the interest rate in question, and the convexity as the second derivative. Also known as Gamma Risk.

Core Deposits – Customer deposits based on the convenience and financial service provided by an institution rather than the interest rate paid. In other words, deposits which are not rate sensitive. The NPV Model treats the incremental value attributable to core deposits as an asset. Core deposits are usually (but not always) synonymous with nonmaturity deposits, though some [nonmaturity deposits](#) do not represent true core deposits and there may be some core deposit features of CDs.

Coupon Rate – The interest rate stated on a bond, note, mortgage or other fixed income asset, expressed as a percentage of the principal (face value).

CPR – Conditional Prepayment Rate, a method for measuring prepayment speed. A 20 percent CPR means that the mortgage pool prepays at an annual rate of 20 percent.

Conditional Default Rate (CDR) – The annualized rate of default on a pool of mortgages or other assets. “Default” is defined as liquidation of the underlying collateral. For mortgage securities, that means when a loan goes into REO and is sold.

Conforming mortgage – A mortgage loan that meets all requirements (loan type, amount, and age) for purchase by the FHLMC or FNMA.

Conventional mortgage – A mortgage loan that is not government-guaranteed or government-insured. There are two types of conventional loans, conforming and nonconforming. See also [conforming mortgage](#) and [nonconforming mortgage](#).

Convergence – The narrowing of futures prices to cash prices as the delivery date approaches.

Correlation – The degree of relationship between two sets of data. A correlation near plus 1, called a positive correlation, indicates that changes in one set of data are closely related to changes in the other set and that the data sets change in the same direction. A correlation near minus 1, called negative correlation, indicates that changes in one set of data are closely related to changes in the other set and that the data sets change in the opposite direction. A correlation near zero indicates little or no relationship between the changes in the two sets of data. Correlation is equal to the [covariance](#) between two variables, divided by the standard deviation of each variable. While a high correlation can be indicative of effective hedging, a low correlation between assets (of asset classes) is desirable for purposes of portfolio diversification.

Correspondent / Correspondent Originator – An entity that originates mortgage loans that are sold to other mortgage bankers.

Counterparty – The entity on the other side of a swap or other bi-lateral financial agreement (e.g., if the institution pays fixed, receives floating, the counterparty pays floating and receives fixed). The financial condition of the counterparty is important because of the possibility that the counterparty will be unable to make its payments on the swap.

Covariance – A measure of how much two variables move together. Unlike [correlation](#), it is not adjusted for the standard deviations of the two variables.

Covenant – A provision in a legal document that involves a promise to do or not do something stipulated in the related agreement.

Covered Bond – A corporate bond with one important enhancement: recourse to a pool of assets that secures or “covers” the bond if the originator (usually a financial institution) becomes insolvent. This enhancement typically (although not always) results in the bonds being assigned AAA credit ratings. Unlike an ABS, the pool of assets remains consolidated on the issuer’s balance sheet.

Credit Default Swap (CDS) – A credit default contract between two counterparties. The *buyer* makes periodic payments (premium leg) to the *seller*, and in return receives a payoff (protection or default leg) if an underlying financial instrument defaults.

Credit Derivative – Capital markets instruments designed to transfer credit risk from one party to another. Instruments include [credit default swaps](#), market value swaps, and credit linked notes.

Credit Enhancements – This can encompass a variety of provisions to reduce the credit risk (to the buyer) and may involve over-collateralization, recourse to the seller, and standard reps and warranties.

Credit Event – An event that can trigger a loss claim by the protection buyer of a credit derivative to a protection sell.

Credit Linked Note (CLN) – A note whose payments depend on the performance of a reference equity or pool of assets. For example, payment on a CLN may depend on the level of losses within a specified mortgage pool.

C Statistic – A test of the [discriminatory](#) ability of a model based on the number of concordant and discordant pairs. A pair is concordant if the subject ranking higher on the predicted probability also ranks higher on the dependent variable. A pair is discordant if the subject ranking lower on the predicted probability ranks higher on the dependent variable. A pair is tied if the subjects rank the same on the predicted probability and the dependent variable. For example, a credit model might try to predict defaults based on FICO scores.

Higher FICO	Lower FICO	
Defaults	Does Not Default	Discordant
Does Not Default	Defaults	Concordant
Defaults	Defaults	Tie
Does Not Default	Does Not Default	Tie

Current Coupon – The interest rate for mortgage-backed securities which is approximately 50 basis points less than the most widely quoted interest rate for fixed rate mortgages. (For example, if interest rates on new mortgages are 8.5 percent, the current coupon MBS is 8 percent.) It will be priced near par.

Current Market Index – An ARM index that adjusts quickly to changes in market interest rates. Examples include the one-year [CMT](#) and [LIBOR](#).

Custodial Accounts – Bank accounts for the deposit of funds belonging to others.

CUSIP – Committee on Uniform Securities Identification Procedures. Uniquely identifying numbers and symbols for a security. All buy or sell orders contain the security's CUSIP number.

Dealer – A person or firm acting as a principal rather than as an agent, in the purchase or sale of securities or commodities.

Derivatives – Financial instruments whose value depends upon the values of underlying assets, interest rates, currency exchange rates, or indexes. Large financial institutions use derivatives for hedging. Options, futures, swaps, and swaptions are common derivatives used for hedging purposes. FAS 133 define derivatives as any financial instrument or other contract that has all three of the following characteristics:

- A. The financial instrument or contract has both:
 - 1. One or more underlyings.
 - 2. One or more notional amounts or payment provisions or both.
- B. The financial instrument or contract either does not require an initial investment or requires an initial net investment that is “smaller than the amount that would be required for other types of contracts that would be expected to have a similar response to changes in market factors.”
- C. The terms of the financial instrument or contract:
 - 1. Require or permit net settlement.
 - 2. Provide that the contract can be readily settled net by a means outside the contract.
 - 3. Provide for delivery of an asset that puts the recipient in a position not substantially different from net settlement.

Detachment Point – Level of losses on the underlying assets at which a tranche would be wiped out. Most commonly used with respect to synthetic [CDOs](#). See also [Attachment Point](#).

Discount – The amount by which the price of an asset is less than its face value, increasing its yield to the investor.

Discount Rate – The rate at which future dollars are converted into present value. The time value of money can be interpreted as the rate at which individuals are willing to trade present for future consumption or as the opportunity cost of capital.

Discriminant Analysis – Statistical technique that (for example) classifies customers into two groups: those that will default and those that will not.

Dollar Roll – A type of reverse repurchase agreement wherein the security pledged or collateralizing the borrowing may be substituted with another similar security with the same coupon and face value. The substitution of the security is not treated as a sale and, therefore, there is no recording of a gain or loss on the transaction.

Dual Index Floaters – Structured notes that pay an interest rate based on two separate interest rate indices, which typically are not perfectly correlated. An example of this is a bond return based on the Prime Rate (which tends to be sticky) less LIBOR (which is typically more volatile). The rate of return realized on these bonds will vary depending on the shape of the yield curve.

Duration – The present value weighted term to repricing of an asset, considering maturity, prepayments, and intervening cash flows. More generally, duration is used to signify the level of sensitivity between market interest rates and the market price of an asset. For example, an asset with a duration of 5 years would decline in price by roughly 5 percent for every 100 basis point rise in market interest rates.

Duration Drift – As time passes, the shift in durations between assets and their funding sources which were initially matched at the onset of the transactions. For example, if the institution purchased an MBS with a duration of five years funded with short-term source. The effective maturity of the short-term funding source was synthetically extended by entering into an interest rate swap (pay fixed, receive variable) with a 5-year duration. After 2 years, the MBS has a duration of 5.5 years due to an expected decrease in the prepayments while the swap has a duration of 2.9 years. Therefore, the entire transaction now has interest rate risk.

Dutch Auction – Also known as a descending price auction, uses a bidding process to find an optimal market price for a stock or a bond, i.e., the lowest price at which the issuer can clear the market (sell all the shares). Auctions of Treasury securities use a Dutch auction approach, as do auction rate preferred stock (money market preferred stock) offerings, which are sometimes known as Dutch auction preferred stock.

DV01. (Dollar Value of 1 Basis Point) – The present value impact of a 1 basis point move in an interest rate. It is often used as a price alternative to duration (a time measure).

Early Amortization Event – A triggering occurrence that leads to an immediate end to the revolving period and early repayment of investor principal. Applies to [ABS](#) transactions that operate on a revolving basis, such as those backed by credit card receivables. These qualifying events could include bankruptcy of the originator or a decline in asset yields below some specified levels.

Early Payment Default (EPD) – A provision in the sales contract that requires a seller to repurchase or indemnify a purchaser against loss if a loan becomes delinquent. The regulations permit a seller to repurchase delinquent loans within 120 days of the sale date without recourse ramifications if the loans were first liens, sold within one year of origination and qualify for the 50 percent risk based capital category.

Early Pay-Off (EPO) – A provision in a loan sales contract similar to the [EPD](#) clause. If the sold loans prepay within a contractually set period after the sale, the seller may have to repay set amounts. This type of clause is subject to the same risk based capital treatments as the EPD clauses.

Early Pool Buyouts – An agency-approved loan servicing option of buying eligible delinquent loans from GNMA pools to eliminate the servicer’s exposure to principal and interest payment pass-through requirements.

Earnings at Risk (EAR) – The quantity by which net income is projected to decline in the event of an adverse change in prevailing interest rates. EAR is one measure of an institution’s exposure to adverse consequences from changes in prevailing interest rates. See [Value at Risk](#) for an alternative measure.

Embedded Option – Many investments have implicit or explicit options associated with them that affect their risk and return characteristics. These can include a call option on a bond, a prepayment option (call) on a mortgage, a cap and floor on an ARM, or a put option on an asset purchased with recourse. The option adjusted spread technique attempts to value the embedded prepayment option on mortgages (see [OAS](#)).

Equity Piece – See [First Loss Piece](#).

Escrow – A legal arrangement in which an asset (usually cash) is held in trust pending a contingency or fulfillment of a condition in a contract. Mortgage servicers escrow funds to pay taxes, insurance, and related expenses when due. A delay between the deposit of escrows and their actual payout (float) provides servicers with access to an inexpensive source of funds.

Event of Default – An occurrence that allows the other party to a transaction (bondholder, counterparty) to demand repayment in advance of the normal due date. Can arise from an actual failure to pay principal and interest or due to prospective default (e.g., the borrower has put into liquidation; losses on the underlying collateral exceed certain triggers).

Expected Loss – The average loss expected on a portfolio or an individual asset. It represents the mean of a distribution of possible losses.

Expected Loss Given Default (ELGD) – Basel II term that reflects the long run average loss on defaulted exposures. Expected losses are net of expected recoveries.

External Credit Enhancement – Credit support provided by a highly-rated third party, such as a monoline insurer.

Event Risk – The risk that a political, economic, or regulatory “event” could affect either the institution as a whole or the value of some of its assets. The FIRREA-mandated divestiture of junk bonds (which depressed the junk bond market) is an example of the event risk.

Excess Spread – The difference between the yield on the underlying collateral and the coupon payable on securities issued from the same structure. A form of internal credit enhancement.

Excess Yield – The interest rate spread between the weighted average coupon rate (WAC) of a mortgage loan pool and the pass-through interest rate after deducting the servicing fee and the guarantee fee. For example, when the WAC is 9.00 percent for the pool, the pass-through rate is 8.50 percent, the servicing fee is 0.25 percent, and the guarantee fee is 0.21 percent, the excess yield is 0.04 percent.

Extension Risk – The risk that a rise in rates will lead to a reduction in prepayments and a lengthening of the expected life of a mortgage or mortgage-related securities.

Face Value – Par value; the principal or nominal value of a bond, note, mortgage, etc.; the amount of principal the issuer contracts to repay.

Factor – The number, calculated monthly, which represents the proportion of the original principal amount of the securities issuance that remains outstanding. It is calculated by dividing the current principal balance of a pool by the original face value at issue.

Fallen Angel – A debt security that was initially investment grade but subsequently was downgraded to a level below investment grade (i.e., junk bond). Unlike other junk bonds, divestiture of fallen angels is not required under FIRREA. Instead, the market depreciation is classified as “doubtful” and the remaining balance is classified as “substandard”. Also applies to CMOS that initially pass but subsequently fail the old FFIEC High Risk Test.

Fallout – Mortgages in the [pipeline](#) that do not close. This is a common problem in mortgage banking, particularly if the institution has a forward commitment to sell the loan. For example, suppose that a thrift commits to originate a 6.5 percent mortgage. Shortly after commitment (but prior to origination), the thrift commits to sell the loan at par (100). Rates fall, and the borrower decides he can find more attractive financing elsewhere. To honor its commitment, the thrift must purchase another 6.5 percent loan in the secondary market. The market price is now 103, so the thrift loses 3. The historical fallout ratio is used to estimate the desired coverage for expected loan closings (pull-through) subject to price risk in the secondary market. Volatile rate changes can significantly impact expected fallout and make pipeline hedging more difficult. It is the inverse of the pull-through rate.

Fannie Mae / FNMA – A government sponsored enterprise (formerly the Federal National Mortgage Association) created by Congress that operates mortgage purchase and securitization programs to support the secondary market in mortgages on residential property.

FASB Accounting Standards Codification 948 (formerly FAS 65) – Accounting pronouncement that requires loans held for sale to be carried at the lower of cost or market (LOCOM).

FASB Accounting Standards Codification 320 (formerly FAS 115) – Accounting pronouncement that addresses the reporting for investments in equity securities that have readily determinable fair values and for all investments in debt securities. These investments are classified and accounted for as 1) held-to-maturity; 2) available for sale; or 3) trading securities.

FASB Accounting Standards Codification 815 (formerly FAS 133) – Accounting guidelines for derivative instruments and hedging activities. ASC 815 stipulates that the value of derivatives (positive or negative) should be reported on the balance sheet at their fair value. If the derivative hedges another asset or liability, changes in the fair value of that instrument may also be recorded.

FASB Accounting Standards Codification 860 (formerly FAS 140) – Accounting pronouncement addressing transfers and servicing of financial assets and the extinguishment of liabilities. It replaced FAS 125. Both FAS 125 and FAS 140 were controversial because they were seen as fostering the front-ending of income, known as gain on sale accounting.

FASB Accounting Standards Codification 820 (formerly FAS 157) – Accounting pronouncement that defines fair value, establishes a framework for measuring fair value in generally accepted accounting principles (GAAP), and expands disclosures about fair value measurements.

Federal Financial Institutions Examination Council (FFIEC) – Interagency rulemaking group, consisting of the Federal Reserve, OTS, OCC, FDIC, and NCUA.

Federal Home Loan Bank (FHLB) – Government Sponsored Enterprise whose mission “is to provide cost-effective funding to members for use in housing, community, and economic development; to provide regional affordable housing programs, which create housing opportunities for low- and moderate-income families; to support housing finance through advances and mortgage programs; and to serve as a reliable source of liquidity for its membership.” The FHLB System consists of 12 district banks and these banks are regulated by the Federal Housing Finance Authority. The FHLBs are owned by their member banks and thrifts.

Federal Home Loan Banks (FHLBs) Mortgage Programs– Certain FHLBs purchase single-family mortgages from their member financial institutions through these programs and provide an alternative to selling mortgage loans to FNMA and FHLMC. These programs permit a participating institution to share in the credit risk with the FHLB and receive compensation accordingly. These mortgages must meet the same requirements as mortgages that FNMA and FHLMC are permitted to purchase (single-family one- to four-family conforming loans within the size limit established by Congress).

Federal Home Loan Mortgage Corporation (Freddie Mac or FHLMC) – A U.S. Government-sponsored enterprise that purchases conventional mortgages in the secondary mortgage market from insured depository institutions and HUD-approved mortgage bankers and sells participation certificates backed by pools of these mortgages.

Federal Housing Administration (FHA) – FHA is a division of the Department of Housing and Urban Development. Its main activity is insurance of residential mortgage loans made by private lenders.

FICO Score – Another name for credit score. The FICO acronym stands for the Fair Isaac Credit Organization. A consumer will have three FICO scores, one from each national credit bureau. FICO scores are a measure of a consumer's financial responsibility, based on their credit history. Most lenders will look at FICO scores when evaluating a loan application.

Financial Engineering – The field of applied finance devoted to the design and pricing of derivative instruments.

First Loss Piece – The class or tranche within a structured transaction (such as a CMO or CDO) that is first to absorb losses on the underlying collateral or reference index. Also known as the equity piece.

First Payment Default (FPD) – If the borrower does not make the first required payment, it is referred to as a FPD. Some refer to the first payment due under the note but others refer to the first payment due to the investor. If the sale to the investor takes several months, that difference can be material.

Fixed-Rate Mortgage – A mortgage on which the interest rate is set at one level for the term of the loan.

Giant – Large (e.g., \$10 million) pool of FHLMC mortgage-backed securities. The market pays a premium for these securities because the prepayment experience is less likely to deviate from the market norm they are associated with lower recordkeeping expenses, and they are more liquid.

Float – In mortgage servicing, the period of time between receipt of a borrower's loan payment and remittance of funds to investors. Float also applies to tax and insurance escrows.

Floor – Similar to a call option. The buyer of a floor attempts to lock in a minimum interest rate. This strategy may be appropriate if the institution has a sizable portion of short-term assets that are expected to reprice downward in the near future.

FLUX – A measure of the variability of cash flows for mortgage pass-through and mortgage derivative securities in different interest rate scenarios. The higher the FLUX score, the more volatile the security. The average FLUX score is 9.6, ranging from 2.9 for PACs to 31.2 for IOs. FLUX scores are used by insurance regulators as a measure of risk.

Forwards – A commitment to sell a security at a prespecified price at a prespecified date in the future. This technique is frequently used to hedge interest rate risk for mortgage bankers.

Fully Indexed Rate – For adjustable rate mortgages, equals the rate on the underlying index (e.g., CMT, Libor, COFI) plus a predetermined spread. The actual rate on the mortgage may be different due to an initial [teaser rate](#) or due to the presence of periodic or lifetime caps and floors.

Futures – Contracts for the purchase or sale of commodities in the future, usually on or before a particular date. Futures contracts on fixed-income instruments, such as Treasury bills, are referred to as financial futures.

Gamma – The rate of change of an option's delta for a small change in the price of the option's underlying, or the second derivative of an option's value with respect to the underlying financial instrument. See also [delta](#) and [convexity](#).

Gain-on-Sale (GOS) – The amount by which the sales price exceeded the carrying value of the loan.

Gain-on-Sale Accounting – Asset sales and securitizations result in a gain (or loss) on the sale of the sold assets. Gain on sale accounting is often used as a derisive term for the front ending of income that may not reflect the economic substance of the transaction. For example, retained mortgage servicing rights create an asset that reduces the cost basis of the assets sold, increasing the gain on sale (or decreasing the loss). In addition, FASB Accounting Standard Codification 860 stipulates that the definition of a sale depends on control rather than whether the risk and rewards of ownership have effectively been transferred (the previous standard). As a result, a “sale” can occur even if the institution has retained much of the risk associated with the assets.

Gains Trading – Practice of selling loans/securities when they can be sold for a gain, but holding them for portfolio when market conditions become less favorable. FAS 115 was adopted, in part, to prevent gains trading by establishing stricter rules for designating securities as held to maturity, available for sale, or trading. The practical impact of these rules was somewhat blunted, however, by FFIEC's decision to exclude unrealized gains or losses on debt securities from [regulatory](#) capital calculations.

Gearing – Leverage; most often used in the United Kingdom.

GIC – Guaranteed Investment Contract. – Although similar to a CD, a GIC is not federally insured. Its risk is largely a function of the financial strength of the insurance company that issued it. Some thrifts bought GICs that were originally investment grade, but as a result of problems with issuing insurance company, these assets became fallen angels.

Give Up – The lower yield resulting from the sale (at a profit) of high yielding assets and the reinvestment into lower yielding assets.

GNMA I – A mortgage-backed security program in which individual mortgage lenders issue securities backed by the “full faith and credit of the United States government.” The mortgages comprising the security are government-insured or government-guaranteed. The issuer is responsible for passing principal and interest payments directly to the securities holders, whether or not the homeowner makes the monthly payment on the mortgage. All mortgages in a GNMA I pool must have the same note rate.

GNMA II – Under the GNMA II program, monthly payments are made to the security holders through a paying agent. Multiple issuer pools may be formed through the aggregation of loan packages of more than one GNMA issuer. Under this option, packages submitted by various GNMA issuers for a particular issue date and pass-through rate are aggregated into a single pool backing a single issue of GNMA II certificates. Each security issued under a multiple issuer pool is backed by a proportionate interest in the entire pool rather than solely by the loan package contributed by any one GNMA issuer. Single issuer pools also may be formed. Mortgages underlying a particular GNMA II certificate may have annual interest rates that vary from each other, by established thresholds.

Gnome – Fifteen-year FHLMC pass-through securities (single family, fixed rate conventional loans).

Good Delivery – Securities industry designation (developed by the Public Securities Administration) that obligates the buying broker to accept delivery of a particular security. Generally, “good delivery” occurs when the principal amount purchased is within 2.5 percent of the agreed-upon amount.

Government National Mortgage Association (GNMA) also known as Ginnie Mae – A federal government corporation that guarantees mortgage-backed securities that are insured by the Federal Housing Administration or guaranteed by the VA and backed by the full faith and credit of the U.S. government.

Government-Sponsored Enterprise (GSE) – A private organization with a government charter and backing. The Federal Home Loan Mortgage Corporation (FHLMC) and Fannie Mae (FNMA) are GSEs, as are the Federal Home Loan Banks, the Tennessee Valley Authority (TVA) and others.

GRADE – (for Graduated Risk Assessment for DEbentures) Rating system used by Bloomberg Analytics to rate the relative riskiness of a bond, particularly CMOs. It contains a number and two letters to indicate the bond’s duration, convexity under a moderate (i.e., 100 basis point) rate change and under a stressed (i.e., 300 basis point) rate change. Convexity scores range from A (strong positive convexity) to E (strong negative convexity). A Treasury bond has a convexity of B while a current coupon MBS has a convexity of C. If a CMO has, for example, a grade of 5BE, this means that its simple duration is comparable to that of a 5 year Treasury Note. The security remains relatively stable if rates change moderately, but becomes extremely volatile if rates change substantially. A Type II PAC may have these characteristics.

Graduated Payment Mortgage (GPM) – A type of flexible-payment mortgage in which the principal payments increase for a specified period of time, usually five years, and then level off.

Granularity – Level of detail.

Guarantee (or Guaranty) Fee – The fee paid to a federal agency (or private entity) in return for its agreement to accept a portion of the loss exposure. Currently, typical guarantee fees required by Freddie Mac and Fannie Mae for loan sales without recourse range from 0.16 percent to 0.25 percent of the pool balance annually. The GNMA guarantee fee on pools of federally insured or guaranteed loans is lower, 0.06 percent annually.

Haircut – The difference between the market value of a security used as collateral for a loan and the amount of money a lender will advance against it. Frequently used in reference to repurchase agreements and reverse repurchase agreement. Also used to refer to the capital requirement that mortgage servicing rights be carried at the lower of the carrying value or 90 percent of their market value.

Hazard Bond – Bond that will absorb prepayments or losses due to hazard conditions.

Held-to-Maturity – Classification for securities that the institution has the intent and ability to hold to maturity. These securities are reported at amortized cost.

High LTV Loan – Any loan, line of credit, or combination of credits secured by liens on or interests in owner-occupied one- to four-family residential property that equals or exceeds 90 percent of the real estate's appraised value, unless the loan has appropriate credit support. Appropriate credit support may include mortgage insurance, readily marketable collateral, or other acceptable collateral that reduces the LTV ratio below 90 percent.

High-Yield Bonds – Debt instruments, which are typically below investment grade or are unrated. The high yields associated with these securities are commensurate with an increased level of default and credit risks. Also called junk bonds.

HUD – A governmental entity responsible for the implementation and administration of housing and urban development programs. HUD was established by the Housing and Urban Development Act of 1965 to supersede the Housing and Home Finance Agency.

Hurdle Rate – Minimum rate of return required by an investor. The investment is only attractive if the expected return is greater than the hurdle.

Implied Forward Rate Analysis – A method for inferring the market's expectations of interest rates based on the yield curve. For example, if we know the six month Treasury rate, and the one year treasury rate, we can calculate what the six month rate should be six months from now.

International Financial Accounting Standards (IFRS) – Standards and interpretations adopted by the International Accounting Standards Board (IASB). IFRS tends to be more principles-based (less specific) than U.S. GAAP. In August 2008, the SEC announced a timetable that would allow some companies to report under IFRS as soon as 2010 and require it of all companies by 2014.

Interest-Only Loans – Mortgages that for a specified period (e.g., three or five years) the borrower is required to pay only interest and not principal. IO loans can be fixed rate, hybrid, or ARM mortgages.

Interest Rate Collar – Risk management tool that mitigates risk by restricting the range to which a variable rate instrument may rise (cap) or fall (floor).

Interest Rate Floor – A lower limit on a variable interest rate paid or received in a transaction. Also, an interest rate contract typically used in hedging where one party is paid if an index rate moves below an established strike rate, effectively maintaining a floor on the interest rate. An interest rate floor can benefit a servicer as rates decline below a specified level, which has an offsetting effect to the runoff of [MSRs](#).

Interest-Only Strip – A contractual right to receive some or all of the interest due on a bond, mortgage loan, collateralized mortgage obligation, or other interest-bearing financial asset. The interest only strip or “excess yield” consists of forward-looking estimates of interest earned on the underlying assets less the servicing fee paid to the servicer, administration and trustee fees, coupon paid to investors, and credit losses. Interest only strips may or may not be in the form of a security.

Interest Rate Option – Right but not an obligation to pay or receive a specific interest rate on a predetermined principal for a set interval.

Interest Rate Swap – A financial instrument often used in hedging where two parties agree to swap net cash flows, on agreed-upon dates, for an agreed-upon period of time, for interest on an agreed-upon principal, or notional, amount. The notional amount is not typically exchanged, as only net interest cash flows are remitted.

Internal Credit Enhancement – Credit protection provided by subordination, excess spread, and overcollateralization.

International Swaps and Derivatives Association (ISDA) – A trade association for participants in the over-the-counter derivatives market. ISDA has created a master agreement (ISDA Master Agreement) to standardized derivatives contracts.

Interest Coverage (IC) – The current collateral interest flow divided by the interest owed to the reference bond and all bonds senior to it in the structure. The higher the IC ratio for a particular tranche, the greater its credit protection.

Inverse (LIBOR) Floaters – Also known as Yield Curve Notes, have returns based on an intermediate-term fixed interest rate less a short-term floating rate index (e.g., 6-month LIBOR).

IO Security – A security that pays only the interest distributions from a pool of underlying loans. The principal cash flows from the underlying loans are thus “stripped” into two separate securities. IOs generally decline in value as rates fall, due to the increased prepayments on the underlying mortgage loans. This reduces the amount of interest received by the security holder over the life of the underlying loans. Servicing rights have cash flow risks similar to IO securities. IOs can be categorized as rate sensitive or credit sensitive. Rate sensitive IOs have little credit risk (except to the extent that defaults on the underlying loans have the same practical effect as prepayments), but are subject to market risk as interest rates change. Credit sensitive IOs provide credit support to senior positions, so are subject to both credit risk and market risk. Credit sensitive IOs are known as credit enhancing IOs in the capital regulations literature.

IPO – Initial public offering.

Investor advances – In mortgage banking, funds advanced to the investor and costs incurred by the servicer on behalf of a delinquent mortgagor.

Jam – A practice by broker/dealers of pawning off undesirable securities on purchasers that may not fully understand their risk.

Jumbo Loan – A mortgage in an amount larger than the statutory limit on loans that may be purchased or securitized by the FHLMC or FNMA.

Jump Class – Class of CMO whose principal priorities change upon the occurrence of multiple “trigger” or other priority changing conditions. This category includes classes whose priority changing conditions fail to satisfy the requirements for the nonsticky jump or sticky jump designation.

Key-Rate Duration – Method that calculates the spot durations of each of the 11 “key” maturities along a spot rate curve. These 11 key maturities are at the three-month and one, two, three, five, seven, 10, 15, 20, 25, and 30-year portions of the curve. In essence, key-rate duration, while holding the yield for all other maturities constant, allows the duration of a portfolio to be calculated for a one-basis-point change in interest rates. The key-rate method is most often used for portfolios such as the bond-ladder, which consists of fixed-income securities with differing maturities. Here is the formula for key-rate duration:

$$\frac{\text{Price of security after 1\% decrease in yield} - \text{Price of security after 1\% increase in yield}}{2 * (\text{Initial price of security}) * 1\%}$$

The sum of the key-rate durations along the curve is equal to the effective duration.

Kitchen Sink Bond – A CMO that pools a number of different CMOs into a single security. The underlying securities are typically high risk (e.g., IOs and POs) but their risks are supposed to be offsetting so that the resulting bond is less risky than its component parts. The risks with a Kitchen Sink Bond are that the underlying securities may not offset each other perfectly, the structure is extremely complex and difficult to evaluate, and bonds may become illiquid. Also known as a **Re-REMIC** or an **Available Funds Class (AFC) bond**.

Knock-Out – A provision (for an amortizing swap) that can trigger termination based on an indexed rate. For example, it may specify that if LIBOR is below six percent after one year, the swap will terminate.

Lagging Index – An ARM index that reflects past as well as current interest rates. COFI is a lagging index because a bank’s cost of funds reflects both past and current transactions so it will not fully reflect the current interest rate environment.

Level I Pricing – The top rung of the [SFAS 157](#) valuation hierarchy, which favors observed inputs over unobserved inputs. Uses quoted prices in active markets on identical instruments. An active market is said to exist when transactions occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level II Pricing – The middle rung of the [SFAS 157](#) valuation hierarchy. Prices are based on observable inputs, either directly or indirectly.

Level III Pricing – The bottom rung of the [SFAS 157](#) valuation hierarchy where prices are based on unobserved inputs. Most common with illiquid assets. Also known as [mark-to-model](#) pricing.

Leverage – A debt-to-equity ratio. Leverage increases both potential returns and potential losses.

London Interbank Offered Rate (LIBOR) – The rate the highest quality banks pay for Eurodollar deposits. There is a different LIBOR for each deposit maturity. LIBOR is commonly used as an index that represents short-term rates.

LIBOR/Swap Curve – Yield curve based on Libor rates (for shorter maturities) and swap rates (for longer maturities).

Liquidity CMOs – CMOs with a stated maturity of less than five years.

Loan Production Office or LPO – An office where loan application, underwriting, and/or loan closing take place. This office does not take deposits and it is not considered a branch of the thrift.

Loan Serviced for Others, or LSFO – The dollar amount of loans being serviced for outside investors.

LOCOM –Lower of Cost or Market – Accounting technique appropriate for held for sale portfolios (e.g., mortgage banking operations) where carrying values are adjusted downward based on market depreciation. The carrying value never exceeds amortized historical cost.

Lock-Out – A provision (for a bond, borrowing, or an amortizing swap) that indicates that no amortization or prepayment will occur over a specified period of time (e.g., the first year of the contract). Designed to limit call risk.

Loss Curve – A graphical representation of the pattern of losses experienced over time. See [Seasoning](#).

Loss Severity – The rate of losses suffered on defaulted assets.

Marginal Cost – The change in total cost that arises when the quantity produced (or purchased) changes by one unit. Economies of scale are said to exist when marginal cost is less than the average cost per unit. This means that the average cost will decline as new volumes are added.

Marginal Cost to Originate – The increase in total costs when one additional loan is originated.

Marginal Cost to Service – The increase in total servicing costs when one additional loan is added to the servicing portfolio.

Market Value Swap – A form of credit enhancement for [ABCP](#) transactions where a highly rated counterparty (credit provider) agrees to cover any declines in the market value of the underlying collateral. The credit provider risk exposure results from a default by the ABCP issuer combined with a decline in the value of the underlying collateral.

Mark-to-Market – Accounting technique appropriate for trading accounts and available-for-sale portfolios where the carrying values of assets are adjusted based on market depreciation or market appreciation.

Mark to Model – A process where the value of assets (or liabilities) are based on the result of a model, typically a sophisticated statistical model, rather than by market transactions. Mark to model values are generally considered less reliable than true market prices. The poor performance of models in recent years has prompted some to label mark to model approaches as “mark to make believe.”

Mark Up – Refers to the difference between what the dealer has paid for a security and the price at which the security is offered to another person. Also called spread.

Master Servicer – Contractually responsible servicer of a mortgage or pool of mortgages that is included in a servicing or subservicing arrangement.

Matched Principal Bond – Similar to a Kitchen Sink Bond in that it pools a number of different CMOs into a single security. In addition, however, there is sufficient underlying principal (usually in the form of POs) to cover the principal on the bond.

Maturity – The date on which an agreement expires.

MBA – Mortgage Bankers Association – The national association representing the mortgage banking business.

MBA Cost Study Report – The annual report provides analysis of income and costs associated with origination, warehousing, marketing, and servicing.

MBA Method – Approach to measuring mortgage delinquencies that indicates a loan increases its delinquency status if a monthly payment is not received by end of day immediately preceding the loan’s next due date. This approach is standard in the prime market. Contrast with the [OTS method](#). A borrower that misses one payment would be delinquent under the MBA method but current under the OTS method.

MBA Refi Index – An index of applications to refinance mortgages. The index's base uses mortgage applications as of 3/16/1990, so an index rate of 200 means that refinancing applications were double those of 3/16/1990. The Refi Index is considered a leading indicator of future prepayments.

MBS – Mortgage-Backed Security – An investment instrument backed by mortgage loans as security. Ownership is evidenced by an undivided interest in a pool of mortgages or trust deeds. Income from the underlying mortgages is used to pay interest and principal on the securities. (Note – OTS's TFR instructions refer to this as an MPS or mortgage pool security).

MERS – (Mortgage Electronic Registrations System) – A separate corporation that acts as the nominee for the lender and any of the lenders successors. MERS is the mortgagee and the loan is registered in the MERs system. When the loan is sold, the MERS system records the transaction but MERS remains as the mortgagee.

Mezzanine Bond – A bond that provides credit enhancement to the senior classes of a deal, but has a higher credit rating than the subordinated bonds also offered in the deal. For example, a security may have tranches A, B, and C. The first wave of losses is absorbed by C, then by B, then by A. B is the Mezzanine Bond; it has more credit risk than the senior A tranche but less credit risk than the subordinate C tranche.

Midget – A 15-year GNMA pass-through security. (FHA/FMHA/VA loans). This is a dealer term and not used by GNMA in its formal description of the program.

Mismatched Floater – A floating rate CMO that adjusts at least annually, but off of a longer-term index (e.g., the 10 year Treasury). The major risk with this type of security would be if short-term rates adjust upward more quickly than long term rates. (See [basis risk](#).)

Modified Duration – Duration divided by $(1+i/c)$ where i is the interest rate and c is the number of times the interest payment is received in one year. For example, if the duration of a bond with a semi-annual coupon payment has a current market yield of ten percent and a duration of four years, the modified duration is calculated as follows: $4/(1+.10/2)$ or 3.8 years. If interest rates increased or decreased by 100 basis points, the bond would be expected to change in value by 3.8 percent. Modified duration is a better measure of price sensitivity than duration.

Money Good – A bond where full repayment of principal is expected even if the security is trading below book.

Monoline Insurer – Insurance company that is restricted, by the terms of its charter, to writing insurance policies related to a single type of risk. A monoline insurer typically provides unconditional guarantees of repayment for securities. Many of these companies have experienced financial difficulties, reducing the value of their guarantees.

Mortgage-Backed Bonds – Bonds secured by mortgages. Unlike mortgage-backed pass-through securities, mortgage-backed bonds do not convey ownership of any portion of the underlying pool of mortgages.

Mortgage Banker – A lender that originates loans for sale to other investors. The mortgage banker frequently continues to service the loans after their sale to others.

Mortgage Broker – An individual or firm that receives a commission for matching mortgage borrowers with lenders. Mortgage brokers typically do not fund the loans they help originate.

Mutual Funds – Funds coordinated by investment companies that invest in portfolios of related securities, such as growth stocks or money market instruments. The value of the fund's shares is related to the value of the underlying securities. The funds may be open-ended, whereby the investment company continuously accepts new investors, or closed-ended, in which case an investor must purchase existing shares either through the investment company or in the secondary market.

Mortgage Derivative Product – A financial instrument that is created by redistributing the cash flows from mortgages or mortgage-backed securities to new classes of securities instruments. The most common derivatives include multiple class securities, stripped mortgage-backed securities, and residuals.

Mortgage Insurance (MI) or Private Mortgage Insurance (PMI) – Insurance coverage that protects mortgage lenders or investors in the event the borrower defaults. By absorbing some of the credit risk, MI allows lenders to make loans with lower down payments. The federal government offers MI for FHA loans; private companies offer MI for conventional loans.

Mortgage Pool – A group of mortgage loans with similar characteristics that are combined to form the underlying collateral of a mortgage-backed security.

Mortgage Servicing Rights (MSR) – The right to service a mortgage loan or a portfolio of loans. The value of MSRs are treated as assets if they were purchased by a third party or retained as part of a mortgage sale or securitization. The value of MSRs is primarily a function of the servicing fee, costs to service, prepayments on the underlying mortgages, earnings from float on escrows, and the required rate of return on the servicing (discount rate).

NASDAQ – National Association of Securities Dealers Automated Transaction System – An American electronic stock exchange.

Negative Carry – A situation whereby an arbitrageur earns a lower yield on securities than paid to finance the securities. Opposite of Positive Carry.

Negatively Amortizing Loan – A loan in which monthly payments fund only part of the interest payable, and the remainder is added to the principal balance, thereby increasing, or negatively amortizing the outstanding balance.

Negative Convexity – Phrase used to describe a particular type of instability in the duration of an instrument. Negative convexity means that as yields rise, duration rises and as yields fall, duration falls. Graphically, this is seen as a price/yield curve for which the price at very low and very high yields is less than the price indicated by a straight, tangent line. For an instrument with negative convexity, duration understates the interest rate sensitivity. If convexity is low, that is, if the price/yield relationship is close to a straight line, duration is stable. If convexity is high, duration is unstable. The greater an instrument's convexity, the less accurate duration will be. Callable bonds, mortgage loans, and mortgage-backed bonds typically have negative convexity.

NIMS (Net Interest Margin Securities) – A NIM securitization structure is created when an issuer securitizes residual cash flows from existing asset-backed transactions. Residual certificates receive cash flow on a monthly basis only after all fees and expenses related to the transaction and amounts due on all other classes of certificates have been paid.

No-Bid – An option that permits the VA to pay the guaranty rather than take possession of the property and pay the full amount of the loan.

NonAgency Security – A security, especially an MBS that is not issued by Fannie Mae, Freddie Mac, or Ginnie Mae. These securities are subject to more credit risk and are less liquid than agency MBS. Also known as [Private Label](#) Securities.

NonAsset Trigger Event – A change in a transaction's priority of payments due to a specific event that is not related to the performance of the underlying assets (e.g., the insolvency of the seller or servicer).

Nonconforming Mortgage – A mortgage loan that does not meet the standards of eligibility for purchase or securitization by the FHLMC or Fannie Mae. The loan amount, the loan-to-value ratio, the term, or some other aspect of the loan does not conform to the agencies' standards.

Nontraditional Mortgage Product (see also "[Alternative](#)") – A type of mortgage that allows borrowers to defer payment of principal and sometimes interest. Examples include interest only loans and payment option ARMs.

Normal Servicing Fee – The servicing fee rates set by GNMA, FNMA, and FHLMC are generally considered normal servicing fees. Currently, the normal servicing fee rate is 0.25 percent for fixed rate mortgages, 0.375 percent for adjustable rate mortgages, and 0.44 percent for federally insured and guaranteed loans. A bank may not use its cost to service loans as the normal servicing fee.

Notional Amount – The principal amount or face value of a financial derivative. The notional amount is used to calculate the payments that are exchanged by the counterparties in the transaction. Market participants refer to notional principal because, unlike bonds or other conventional credit instruments, these types of derivatives do not involve an exchange of principal. Rather, the parties state the principal amount only as a basis for calculating the sizes of the interest related payments that they exchange. In this application, principal is only a reference point or idea – hence the term. Also called the notional principal balance.

Notional Class (NTL) – CMO classes that have only a notional principal amount (i.e., used to calculate the amount of interest due on an interest only class that is not entitled to any principal.

NRSRO – National Recognized Statistical Rating Organization – Firm designated by the SEC whose bond ratings can be used for meeting certain regulatory criteria (e.g., investment grade bonds, SMMEA). NRSROs include Moody's, Standard and Poor's, Fitch, A.M. Best, and Dominion Bond Rating Service, Ltd.

Off-Balance Sheet Item – Asset or liability of actual or potentially assignable value or cost, such as letters of credit or loan commitments that are not permitted or required to be booked on the balance sheet under GAAP. Financial derivatives, such as futures, options, and swaps are often referred to as off-balance sheet items as well, even though their net values (positive or negative) are recorded on the balance sheet under GAAP.

Offering Circular – A disclosure document used in marketing a new securities issuance to prospective investors. The circular usually describes the characteristics of each class of the security and provides information on the underlying assets.

Offset – The liquidation of a purchase of futures through sale of an equal number of contracts of the same delivery month, or the covering of a short sale of futures through the purchase of an equal number of contracts of the same delivery month. Either action cancels the obligation to make or take delivery.

Operational Risk – Risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.

Option – A contract granting the right to buy or sell a security or a commodity at a set price within a stipulated time.

Option ARM – An [alternative or nontraditional mortgage product](#) where the borrower may choose from several payment amounts. The payment options often include amounts that allow for negative amortization, interest-only, or amortizing payments.

Origination Fee – The fee a lender charges to prepare documents, make credit checks, and inspect the property being financed. Origination fees are usually stated as a percentage of the face value of the loan.

Optional Principal Reduction Bonds – Securities with a fixed rate of return but an uncertain term to maturity. These bonds may be fully or partially called based on the interest rates they are indexed to. According to a predetermined call schedule, investors can expect to earn a “significant” spread over Treasury if these bonds are called away; however, if the call provision is not exercised, investors can expect a return equivalent to similar maturity Treasuries.

Out-of-the-Money – For call options, when the strike price exceeds the market price. For put options, when the current market price exceeds the strike price. Its immediate exercise value is negative. It has no intrinsic value.

Overcollateralization – The extent to which the dollar amount of the underlying assets exceed the dollar amount of the security. Often used as a form of credit enhancement for CMOs, CDOs, and ABSs.

Over-the-Counter Market (OTC) Market – The market for securities that are not listed on the NASDAQ or a national securities exchange, like the New York Stock Exchange. Trading in these securities takes place through dealers who negotiate the transactions over the telephone. Prices are determined by negotiation between dealers and customers, rather than by auction, as on a stock exchange.

OTC Bulletin Board – A regulated quotation service that displays real time quotes, last-sale prices, and volume information on OTC equity securities.

PAC – Planned Amortization Class – Type of CMO class that attempts to resemble more closely noncallable bonds. A PAC limits prepayment risk by establishing a planned schedule of cash flows within a band of prepayments. A PAC can become “busted” when prepayments become exceptionally high or low, and the cash flows become much more uncertain.

PAC Drift – A PAC band does not remain fixed over time. For example, high prepayments on the underlying collateral can deplete the supply of support bonds, limiting their ability to absorb prepayment risk. As a result, the PAC band can narrow or even disappear, or “bust.”

PAC Support – Also known as companion bonds. Support bonds make PACs possible by absorbing much of the prepayment risk. These securities can have considerable prepayment and extension risk.

Pair Off – A security purchase transaction that is closed out or sold at, or prior to, settlement date. In a pair-off, the institution will commit to purchase a security. Then, prior to settlement date, the purchase will be paired-off with the sale of the sale security. Such transactions are regarded as trading activity and considered speculative.

Participation Certificate (Freddie Mac PC or FHLMC PC) – A mortgage pass-through security issued by the FHLMC that is backed by a pool of conventional mortgages purchased from a seller. The seller typically retains a 5 percent to 10 percent interest in the pool.

Pass-Through or Pass-Through Certificate (PC) – A mortgage-backed security in which principal and interest are passed through to the investors as received. The mortgage collateral is held by a trust in which the investors own an undivided interest.

Pass-Through Rate – The interest rate paid to the investors who purchase mortgage loans or mortgage-backed securities. Typically, the pass-through rate is less than the coupon rate of the underlying mortgages.

Pass-Through Security – A pass-through is created when one or more mortgage owners form a group or “pool” of mortgages and subsequently sell shares or participations in the pool. The pool may contain as few as one or as many as several thousand mortgages. After pooling, each mortgage continues to be serviced by its originator, or other contracted service. A trustee is assigned to hold the mortgage titles and to ensure all mortgages and properties are in acceptable form. The cash flow generated by the pool of mortgages, which consists of principal plus interest minus servicing and other fees, is distributed to the pass-through security holders on a pro-rata basis. The name is derived from the fact that cash flow is “passed through” to the security holders by the servicers.

Penultimate ABX – An [ABX](#) index based on the second-to-last (penultimate) tranche in a CMO structure. Penultimate ABX indices will show less price volatility than will ABX indices based on otherwise comparable, but longer duration tranches.

Pipeline – For a mortgage banker, the period between commitment and origination. Pipeline risk is often hedged with forward commitments to sell.

PITI – Principal, Interest, Taxes, and Insurance – The payment a borrower must make to cover the principal and interest on the loan as well as the amounts needed for the escrows amounts to pay taxes and insurance.

PO – Principal Only Strip – Mortgages and mortgaged backed securities can be stripped with the cash flows attributable to principal and interest payments segregated and sold separately. When the underlying mortgages prepay, the yield on POs increases because the cash flows are received more quickly. A decline in prepayments reduces the yield.

Pool Factor – The outstanding mortgage pool’s principal balance divided by the original principal balance.

Portfolio Lender – A company that holds loans in portfolio rather than selling them in the secondary market.

Positive Carry – Circumstance where the cost of financing an investment is less than the return obtained from that investment. In warehousing, positive carry results when the interest rate paid for short-term warehouse financing is less than the interest rate earned on the mortgages held in the warehouse.

Positive Convexity – A particular type of instability in the duration of an instrument. Positive convexity means that as yields rise, duration declines. Graphically, this is seen as a price/yield curve for which the price at very low and very high yields exceeds the price indicated by a straight, tangent line. For an instrument with positive convexity, duration overstates the interest rate sensitivity. If convexity is low, that is, if the price/yield relationship is close to a straight line, duration is stable. If convexity is high, duration is unstable. The greater an instrument's convexity, the less accurate duration will be.

Premium – A fee paid over and above the face value of a bond or note.

Preferred Term Securities (PRETSLs) – A type of pooled [trust preferred security](#) issued by Keefe, Bruyette & Woods.

Prepayment – The payment of all or part of a loan before it is contractually due.

Prepayment Penalty – A fee that must be paid to the lender if the borrower prepays a loan within a defined time period.

Prepayment Speed – The rate at which mortgage prepayments occur or are projected to occur, expressed as a percentage of the outstanding principal balance.

Price Compression – For bonds, mortgages, etc. prices are generally inversely related to market interest rates. The price appreciation for mortgages and MBS, however, can be dampened due to a corresponding increase in prepayments. Price compression is particularly prevalent for premium mortgages. (Traditionally, prepayments would start to kick in when market rates were 200 basis points below the coupon rate, although recent experience indicates that the trigger points are occurring earlier.)

Primary Dealer – Bank or investment dealer authorized to buy and sell government securities in direct dealings with the Federal Reserve Bank of New York in its Open Market Operations. Such dealers may be qualified due to their reputation, capacity, and adequacy of staff and facilities.

Primary Servicer – The primary servicer responsibilities include payment collection, cash management, escrow administration, customer service, and investor reporting. The primary servicer should maintain effective systems to report loan activity directly to the trustee and/or investor, or when in place, to the master servicer, who oversees and monitors the primary servicer's performance.

Principal-Only Mortgage Strips (PO Strip) – A PO strip is the principal portion of a collateralized mortgage obligation. A PO strip has positive convexity and a long duration. Its yield increases as prepayments increase, making it an effective vehicle to hedge MSRs.

Private Label – See [NonAgency](#) Security.

PSA – (Public Securities Association) Prepayment Model – A standard of measurement of the projected annual rate of prepayment for a mortgage loan or pool of loans. A 100 PSA prepayment rate assumes that loans prepay at a 6 percent annual rate after the 30th month of origination. From origination to the 30th month, the annualized prepayment rate increases in a linear manner by 0.2 percent each month (6 percent divided by 30). See also [CPR](#).

Put Option – The right (not obligation) to sell a security at some predetermined price over some predetermined period. With a long put, you buy the right; with a short put, you sell the right. Long puts benefit from rising rates (you can sell, or “put” the security at an above market price) while short puts benefit from falling rates (the option will expire unused while you receive a premium). Similar to a cap.

Recourse – The retention, in form or in substance, of any credit risk directly or indirectly associated with a sold asset that exceeds a *pro rata* share of that seller’s claim on the asset. If a seller has no claim on an asset it has sold, then the retention of any credit risk is recourse. Recourse obligations typically arise from the transfer of assets in a sale and retention of an explicit obligation to repurchase assets or to absorb losses due to a default on the payment of principal or interest or any other deficiency in the performance of the underlying obligor or other party. Recourse may also exist implicitly through credit enhancements beyond contractual obligations to support assets sold. Recourse obligations include: (1) Credit-enhancing representations and warranties made on transferred assets; (2) Loan servicing assets retained pursuant to an agreement under which the savings association will be responsible for losses associated with the loans serviced. Servicer cash advances as defined in this section are not recourse obligations; (3) Retained subordinated interests that absorb more than their *pro rata* share of losses from the underlying assets; (4) Assets sold under an agreement to repurchase, if the assets are not already included on the balance sheet; (5) Loan strips sold without contractual recourse where the maturity of the transferred portion of the loan is shorter than the maturity of the commitment under which the loan is drawn; (6) Credit derivatives that absorb more than the savings association's *pro rata* share of losses from the transferred assets; (7) Clean-up calls on assets the savings association has sold. However, clean-up calls that are ten percent or less of the original pool balance and that are exercisable at the option of the savings association are not recourse arrangements; and (8) Liquidity facilities that provide support to asset-backed commercial paper (other than eligible ABCP liquidity facilities).

Recourse Servicing – Mortgage servicing contracts whereby the servicer assumes all or part of the risk in the event of borrower default.

Registered Agent – A mortgage loan producing entity that has contracted with an investor to generate loans for that investor to a specified standard in return for a set fee per loan.

Regulation AB – Rules governing offerings of asset-backed and mortgage-backed securities that were adopted by the Securities and Exchange Commission in December 2004 and provide a consolidated, comprehensive set of registration, disclosure, and reporting requirements for these securities. The rules require extensive additional disclosure in asset-backed security prospectuses, including expanded descriptions and financial disclosure regarding transaction parties and static pool data for portfolios and prior securitizations. The rules include, among other things, requirements for additional periodic reports and new standards for assessment of servicing compliance and the related accountants' attestation.

Relative Value – A phrase used to refer to whether or not a security's price is relatively cheap, relatively fair, or relatively rich (expensive) compared to prices for other securities.

Real Estate Mortgage Investment Conduit (REMIC) – A pass-through tax entity for issuing multi-class mortgage-backed securities, which allows the issuer to treat the security as a sale of assets for tax and accounting purposes. Most CMOs are issued as REMICs.

Redemption in kind – A mutual fund redemption in the form of a pro rata share of the fund's underlying assets rather than in cash.

Re-REMIC – Same as **Kitchen Sink Bond**. Also called an **Available Funds (AFC) Bond**.

Reserve Account – A form of credit enhancement in a **securitization**. Reserve accounts are at least partially funded at the start of the transaction but are often designed to be built up over time with excess cash flow available after making payments to investors.

Residual – The equity interest in a CMO. Returns on these securities can be very sensitive to changes in prepayments on the underlying mortgages. A floating rate residual represents the difference between the fixed rate on the underlying mortgages and the floating rate paid to investors. The securities will suffer an erosion in yield if rates rise (because the spread between the rate on the underlying mortgages and the rate on paid out to investors will shrink) or if they fall precipitously.

Residual Interest – Any on-balance sheet asset that: (i) Represents an interest (including a beneficial interest) created by a transfer that qualifies as a sale (in accordance with generally accepted accounting principles) of financial assets, whether through a securitization or otherwise; and (ii) Exposes a savings association to credit risk directly or indirectly associated with the transferred asset that exceeds a *pro rata* share of that savings association's claim on the asset, whether through subordination provisions or other credit enhancement techniques. (2) Residual interests generally include credit-enhancing interest-only strips, spread accounts, cash collateral accounts, retained subordinated interests (and other forms of overcollateralization), and similar assets that function as a credit enhancement. (3) Residual interests further include those exposures that, in substance, cause the savings association to retain the credit risk of an asset or exposure that had qualified as a residual interest before it was sold. (4) Residual interests generally do not include assets purchased from a third party. However, a credit-enhancing interest-only strip that is acquired in any asset transfer is a residual interest.

Reps and Warranties – Representations and Warranties – This is the term used to cover the representation and warranties of the seller to the buyer of loans. Standard reps and warranties generally cover items such as the loans are all the type presented (all 30-yr fixed and not ARMs), they all meet the documentation and underwriting requirements of the buyer, and there is no fraud.

“Credit-enhancing” representations and warranties are considered [recourse](#) for regulatory capital purposes. Warranties that permit the return of assets in instances of fraud, misrepresentation, or incomplete documentation are not considered recourse, but are likely to be scrutinized more closely if the sold assets experience significant credit losses.

Retail Class (RTL) – CMO classes designed for sale to retail investors. Retail assets typically are issued in small retail class units and may receive principal payments in accordance with special priorities and allocation procedures.

Retail Production – Mortgage loan production for which the origination and underwriting process was handled exclusively by the bank or a consolidated subsidiary of the bank.

Revenue Bonds – State or municipal debt securities which are repaid from the income generated by specific projects established by governmental authority. Revenue bonds are considered to be less secure than general obligation bonds because they are not supported by the full taxing authority.

Revolving Period – The period during which newly originated loans or other receivables may be added to an asset pool of a revolving transaction.

Reverse Auction – Also known as a [Dutch Auction](#).

Riding the Yield Curve – The purchase of a higher-yielding, longer-maturity securities financed by short-term, lower costing funds. The strategy depends on an upward-sloping yield curve.

Rich – Securities that sell at a high price, relative to their risks and reward. This situation can arise due to a supply shortage (e.g., too few adjustable rate mortgages are originated) or from excess demand.

Risk Controlled Arbitrage (RCA) – The purchase of mortgage-backed securities (MBS) funded by a short-term source such as reverse repurchase agreements. The short-term funding source is synthetically extended using futures, options, interest rate swaps, caps, or derivative mortgage products so that there is reasonable match in the effective maturities of the assets and liabilities involved in the program. The term is also used more generally to a transaction using financial leverage and emphasizing wholesale funding, such as borrowings.

Risk Management – Controlling the probability, and/or the severity, of a potential adverse event so that the consequences of that event are within acceptable limits. Since all risks have, by definition, the potential to generate losses, and since capital is the ultimate protection against failure resulting from losses, the underlying basis of risk management is equivalent to managing solvency risk.

Rule 144A – An SEC rule that permits institutional buyers to trade privately placed securities, without satisfying certain holding period requirements. Rule 144A securities tend to be more liquid than other private placements, but less liquid than public offerings.

Scenario Analysis – Formalized “what if” analysis typically performed as a part of asset-liability management or corporate risk management.

Scheduled Bond – Type of CMO similar to a PAC in that it has a fairly predictable stream of cash flows across a range of prepayments. The range of protection is narrower than for a PAC, however.

Seasoning – The age of an asset, which can affect its likelihood of default and prepayment. Both prepayments and defaults tend to follow a seasoning curve, where the rates typically rise, then level off and eventually decline.

Secondary Mortgage Market – Trading operations between lenders and investors who buy and sell mortgages and mortgage securities on the open market. Purchasers include both private investors and government sponsored enterprises like FNMA and FHLMC.

Securitization – The process and the result of pooling financial assets together and issuing liability and equity obligations backed by the resulting pool of assets to convert those assets into marketable securities. Any type of financial asset can be securitized. Securitized mortgage obligations may be called **mortgage-backed securities** or **collateralized mortgage obligations**. Securitized nonmortgage assets are typically called **asset-backed securities**. A single loan or groups of similar loans may be securitized. Loans to be securitized must usually be underwritten with terms and documents that conform to wholesale market standards. For some **securitizations**, additional credit support, called credit enhancement, may be obtained through insurance, a letter of credit, over collateralization, or other means. Many **securitizations** use multi-tranche (senior/subordinate) structures that allocate the principal and interest cash flows from the underlying assets in patterns that create higher and lower risk securities. Securitization is designed to reduce the issuer’s credit risk and improve its liquidity, though reliance on securitization can lead to credit and liquidity problems during periods of financial stress.

Seller/Servicer – FNMA and FHLMC reference to an entity that meets the requirements to sell and service mortgages for these GSEs.

Semi-Variance – An alternative to **variance** that focuses on negative values of a distribution. This focus on bad outcomes can make semi-variance a better indicator of risk than variance.

Senior Mezzanine – **Senior support** tranche.

Senior/Subordinated Structure – Method for facilitating [securitization](#). To make a private-issue security (e.g., mortgage backed) more attractive to risk-averse investors the security is sometimes divided into two or more pieces: a “senior” piece with minimal credit risk and a “subordinated” piece that absorbs most of the credit risk on the underlying assets. The senior/subordinated relationship is similar to the relationship between PACs and PAC support bonds. The creation of a senior/subordinated structure is known as **tranching the credit risk**.

Senior Support – CMO tranche that receives credit support from subordinate and mezzanine tranches but also provides credit support to [super senior](#) tranches. Losses on senior support tranches will experience losses less-than-proportionate to losses on the underlying assets until its credit support is exhausted; then it will experience more-than-proportionate to losses on the underlying assets.

Sensitivity Measure – A capital-neutral statistic for measuring interest rate risk. The NPV Sensitivity ratio equals the decline in the NPV/PV of Assets Ratio from a 200 basis point rise or decline in rates (whichever has the more adverse effect). For example, if NPV equals 8 percent of the portfolio value of assets in the current market and 5.5 percent of the portfolio value of assets if rates rise 200 basis points, the Sensitivity Ratio will equal 250 basis points. See also [Exposure Measure](#).

Sensitivity Tests (Analysis) – A test to see how dependent a forecast, projection or stress test outcome is upon a selected variable or assumption. For example, the secondary marketing manager would be able to see how sensitive the mortgage pipeline and warehouse positions are to changes in interest rates or mortgage prices.

Sensitivity to Market Risk – One of the six CAMELS components reflects the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution’s earnings or economic capital.

Sequential Pay (SEQ) – CMO classes that receive principal payments in a prescribed sequence, that do not have predetermined schedules and that, in most cases, receive payments of principal continuously from the first payment date on which they receive principal until they are retired.

Servicer – The company that owns the servicing rights to a pool of loans.

Servicing (See also [LSFO](#)) – A mortgage banking function that includes document custodianship, receipt of payments, cash management, escrow administration, investor accounting, customer service, loan setup and payoff, collections, and the administration of other real estate owned.

Servicing Agreement – A written agreement between an investor and a mortgage servicer stipulating the rights and obligations of each party.

Servicing Fee – The contractual fee due to the mortgage servicer for performing various loan servicing duties for investors.

Servicing Premium Refund – A common clause in many sales agreements that may require the seller to refund the fee paid for the servicing rights if certain conditions occur. (Also, see [reps and warranties](#)).

Servicing Released – A stipulation in a mortgage sales agreement that specifies that the seller is not responsible for servicing the loans.

Servicing Release Premium – SRP – A fee paid to a correspondent originator to entice that loan producer to sell their loan and associated servicing. This represents a significant portion, if not the majority, of the fair value of the MSR associated with that loan.

Servicing Retained – A stipulation in a mortgage sales agreement that specifies that, in return for a fee, the seller is responsible for servicing the mortgages.

Servicing Runoff – Reduction in the principal of a servicing portfolio resulting from monthly payments, mortgage prepayments, and foreclosures. Runoff reduces future servicing fee income and other related cash flows as well as the current market value of the servicing portfolio.

Set-Off – Right that allows two parties with cross-claims to net the amounts owed.

Settlement Date – The deadline by which a purchaser of securities must pay the seller and the seller must deliver the securities. The deadline for “regular way” or “corporate” delivery of securities is the fifth business day following the execution of an order. For listed options or government securities, the deadline is the next business day.

Short Sale – The practice of selling a financial instrument that the seller does not own at the time of the sale. Short selling is done with intent of later purchasing the financial instrument at a lower price. Short-sellers attempt to profit from an expected decline in the price of a financial instrument. Short selling or “going short” is contrasted with the more conventional practice of “going long” which occurs when an investment is purchased with the expectation that its price will rise. May also refer to a real estate transaction where the outstanding obligations (loans) against a property are greater than what the property can be sold for. Short sales are a way for homeowners to avoid foreclosure and still be able to pay off their loan by settling with lender.

Significant Transaction – Any transaction that might reasonably be expected to increase an institution’s sensitivity measure by more than 25 basis points. TB 13a requires analysis of the incremental impact of such a transaction on the institution’s interest rate risk profile prior to initiating the transaction.

Skewness – A parameter that describes a lack of symmetry of a probability distribution.

SMMEA Security – Asset that meets the definition of mortgage backed security pursuant to the Secondary Mortgage Market Enhancement Act. This definition includes, among other items, a credit rating of AA or better. For privately-issued (as opposed to agency) MBSs, the SMMEA designation is significant for a number of reasons. SMMEA securities can qualify for the 20 percent risk weight for capital purposes. In addition, these securities tend to be more liquid.

Special Purpose Entity (SPE) – A legal entity, sometimes a trust or a limited partnership, typically created solely for the purpose of holding assets.

Special Servicer – Entity responsible for maximizing recoveries predominantly on portfolios of subprime, home equity, nonperforming, and other loans that necessitate intensive default-related activities, as well as liquidating real estate owned (REO) assets.

Speculator – One who does not hedge, but who trades in futures or options with the objective of achieving profit through the successful anticipation of price movements.

Spot Curve – Points on the zero-coupon yield curve.

Spread – The percentage difference between the interest earned on assets less the interest expense of liabilities.

Standard Deviation – A measure of how much variation from the mean can be expected and is equal to the square root of the variance. Standard deviation is often referred to as the sigma of a distribution.

Standard Error – Measurement that estimates the standard deviation of the difference between the measured or estimated values and the true values.

Standby Commitment – An agreement to purchase mortgages at the option of the issuer synonymous with optional delivery or a short put.

Standby Contract – An option to sell a specified amount of mortgages or mortgage-backed securities by or on a specified date at a specified price.

Standby Fee – A nonrefundable fee paid by a prospective borrower to a prospective lender for a standby commitment.

Stated Maturity – Also known as legal maturity, this represents the final date on which a security must be repaid to avoid an event of default.

Static Pool – Where the underlying collateral or reference assets are known and fixed for the life of the security.

Static Pool Analysis – A measure for assessing the performance of a pool of loans by providing a cumulative default and prepayment history for estimating expected future portfolio cash flows and determining the cash yield on servicing assets. Static pool analysis captures information from a specified population of loans originated or acquired during a specified time frame or from a specific origination source and tracks scheduled payments, prepayments, and default frequency. The information is used to determine performance behavior for evaluation of portfolio cash flow dynamics. These statistics can identify high-risk segments of the portfolio of owned or serviced assets and allow management to determine why a segment failed to perform as profitably as expected.

Step-Up Bonds (and **Multiple Step-Up Bonds**) – Securities that have interest rates that are fixed over time and then “step-up” to a higher rate after a certain time period. (For example, the initial rate may be 5 percent, increasing to 6 percent after 2 years and 7 percent after 4 years.) The disadvantage with these securities is that they are typically callable at the first (and every) step-up date. It is advantageous for the issuer to call away these bonds if market interest rates are below the higher “step-up” rate, allowing the issuer to refinance these bonds at the lower rate. The duration of these securities gets longer when rates increase since the probability of them being called away is less likely. Additionally, the yield premium given the investor is typically small. Step-up bonds are considered [complex securities](#).

Step-Up Margin – The margin on notes that occurs after a specified date (the step-up date), typically double the previous margin. The step-up margin provides an incentive for issuers to call the security.

Sticky Jump (SJ) – CMO classes whose principal payment priorities change permanently upon the occurrence of one or more “triggers” or other priority-changing conditions. A sticky jump class “jumps” (changes its principal payment priority) on the first payment date when the condition is met and retails that priority until retired. This jump feature makes risk assessment difficult.

Stochastic – Random.

Story Bond – A security that is marketed based on a compelling scenario. For example, a broker may indicate to a thrift that a particular MBS is “cheap”, because they were planning to issue a CMO with the securities, were not able to, and are now left with excess inventory.

Strike Price – The price at which securities can be purchased or sold upon exercise of an option, standby or optional commitment. Also called Exercise Price.

Stripped MBS – An instrument that segregates the principal from interest to make separate interest only and principal only MBS.

Structured Arbitrage – The purchase of MBS, normally in conjunction with several derivative products. The objective of the strategy is to achieve high returns within a certain expected range of interest rates and prepayments. If interest rates fluctuate outside of the expected interest rate range, the returns could decline significantly.

Structured Advance/Borrowing – A borrowing with embedded options. One popular example is a convertible advance that the FHLB can, at its option, convert to a floating rate.

Structured Security – A bond that includes derivative elements, such as call or put options or use of complex indices. Structured securities are often issued by government sponsored enterprises.

Subprime Loans – Loans whose borrowers have weakened credit histories, reduced repayment capacity, or incomplete credit history.

Sub-Servicer – A company that performs the on-going servicing activities for a mortgage or pool of mortgages under the terms of an agreement with the contractually responsible servicer.

Substitution Criteria – The parameters under which new assets can be purchased from principal receipts during the revolving period of a transaction, such as a [securitization](#).

Super-Duper Senior – The [super-senior](#) tranche of a re-REMIC, which is itself made up of super-senior tranches. The term is especially appreciated by those who like to mock Wall Street hype.

Super-Senior – CMO or CDO tranche that will be the last to absorb losses on the underlying assets. Typically super-senior tranches receive credit support from not only subordinate and mezzanine tranches but also from senior support tranches, which are often rated AAA.

Surety Bond – Written evidence of a third party, called the surety that will be primarily liable for a debt in the case of default.

Swap – An agreement to exchange interest rate payments on a notional amount for a given time period. One party is a fixed-rate payer; the other is a floating-rate payer.

Swaption – An option on a swap.

Synthetic CDO – A [collateralized debt obligation](#) in which the risk is transferred through the use of credit derivatives (such as credit default swaps) rather than a true sale of assets.

Systematic risk – That component of an instrument or portfolio's market risk that is correlated with the overall market. Systematic risk cannot be reduced through diversification. See [Beta](#).

Systemic Risk – The likelihood of the collapse of a financial system, such as a general stock market crash or a joint breakdown of the banking system. As such, it is a type of “aggregate risk” as opposed to “idiosyncratic risk”, which is specific to individual stocks or banks. Systemic risk should also be carefully distinguished from **systematic risk**, which describes risks the whole economy faces such as business cycles or wars.

Table Funding – Mortgage transaction where the broker or third-party originator (TPO) closes the mortgage in its own name for simultaneous assignment to an investor who advanced money for the funding at closing.

TAC – Targeted Amortization Class – A type of CMO that limits the risk of early prepayment (similar to a PAC). However, unlike a PAC, a TAC offers no protection against extension risk arising from slower-than-expected prepayments.

Tail – (1) Mortgage-backed securities allow for a deviance of +2.5 percent of the face value. The tail is that part which is in excess of face value. For example, a \$1 million GNMA security issued for \$1,025,000 would have a tail of \$25,000. (2) The extreme end of a probability distribution, used to describe improbable (but potentially catastrophic) events.

Taint – If a significant portion of a “held to maturity” portfolio is sold (gains trading), the entire remaining portfolio may be considered tainted and required to be “held for sale” and recorded at fair value.

TB 13a – “Management of Interest Rate Risk, Investment Securities, and Derivative Activities” – Thrift Bulletin that provides guidance on the management of interest rate risk, including the management of investment and derivatives activities. The bulletin also describes the framework examiners will use in assigning the “Sensitivity to Market Risk” (or “S”) rating.

TB 13a-2 – “Structured Advances” – Thrift Bulletin that provides guidance on the prudent management of structured advances. Includes a requirement to conduct a prepurchase analysis for any [significant transaction](#) involving structured advances.

TB 73a – “Investing in Complex Securities” – Thrift Bulletin that provides guidance on investing in [trust preferred](#) and other [complex securities](#).

TBA – Abbreviation for future pools “to be announced” which are bought and sold for future settlement. “To be announced” refers to interest rates and due dates which are determined at a later date. Trading in these securities is done on a yield basis.

Teaser Rate (Introductory Rate) – A low initial rate on an adjustable rate mortgage, used as a means of attracting borrowers. A major implication of a teaser rate is that it limits the upward adjustment when rates rise. For example, if the fully indexed rate is 7 percent, the teaser rate is 5 percent, and the annual cap is 2 percent, the interest rate after the first year will adjust to 7 percent if rates remain stable or if rates rise sharply (because it will cap out).

Time-series Data – Observations of a variable over time.

Time Value of an Option – The market value of an option minus its intrinsic value. Options with longer time to expiration, all else being equal, have higher values.

Theta (Time) Risk – Measure of how much the value of an option changes as it moves toward maturity.

Third Party Originator (TPO) – see Broker or [Correspondent](#).

Third-party Servicing (Subservicer) – Mortgage loan Servicer that performs the on-going servicing activities for a mortgage or pool of mortgages under the terms of an agreement with the contractually responsible servicer.

Three-Part Test – Under former TB 52, mortgage derivatives were considered “high risk” if 1) its weighted average life is > 10 years; 2) expected weighted average life extends by more than 4 years or shortens by more than 6 years from a yield curve shift of 300 basis points; or 3) its price declines by more than 17 percent from a yield curve shift of 300 basis points. Floating rate securities are exempted from the first 2 tests. While TB 52 is no longer in effect, these risk benchmarks often appear in an institution’s internal investment policy.

Tick – Refers to a change in price, either up or down. Synonymous with minimum fluctuation.

Time Decay (Theta) Risk – The exposure to a change in the value of a transaction or portfolio arising from the passage of time. Typically associated with options.

Time Value – Along with [intrinsic value](#), the other element of an option premium. The longer the remaining time before expiration, the greater the time value of the option.

Title I Loan – Under the Title I loan insurance program, established by Title I of the National Housing Act in 1934, lenders make loans from their own funds, and HUD insures the lender against loss if the borrower defaults on the loan. Title I loans are made for property improvement or manufactured home and lot purchase. Title I loans are also used as part of state and local community revitalization programs.

Toggle (T) Class – Floating rate or inverse floating rate CMO classes whose coupons can change significantly as a result of very small changes in the applicable index. The change in coupon is not a continuous function of changes in the index; rather, a change in the index will result in a “shift” from one predetermined rate to another predetermined rate. Similar to a [Range Bond](#).

TPM – Tiered Payment Mortgage – A 15-year FHLMC mortgage-backed security associated with a “buydown” arrangement on the underlying mortgages. The mortgagor pays a low initial rate that increases over time. The holder of the TPM, however, receives a fixed rate because any interest shortfalls are paid by a buydown fund. TPMs typically prepay quickly. Although TPMs have minimal credit risk (due to the FHLMC guarantee), they have less liquidity than more conventional mortgage-backed securities.

Trading – Debt and equity securities that are bought and held principally for the purpose of selling them in the near term. These securities are reported at fair value and unrealized gains and losses are included in earnings and shareholder’s equity. Trading activity is generally considered speculative in nature and should only be conducted in a closely supervised trading account by institutions with strong capital and earnings.

Tranche – CMOs are split into different units, called tranches, with different cash flows, yields, and risks. Analogous to the Three Bears fairy tale. Just as Goldilocks could choose between the too hot porridge of Papa Bear, the too cold porridge of Mama Bear, and the just right porridge of Baby Bear, investors can choose between the cash flow certainty of a PAC tranche, the yield of a support tranche, and the lower interest rate risk of a floating rate tranche. From the French, meaning “slice.”

Tranche Thickness – The difference between a tranche’s [detachment point](#) and [attachment point](#). Tranches with less thick tranches incur losses more quickly once losses on the underlying assets exceed the attachment point. For example, if a tranche’s attachment point is 15 percent and its detachment point is 17 percent, tranche thickness is 2 percent. In this example, an additional one percent increase in losses on the underlying assets beyond the attachment point of 15 percent would result in a 50 percent loss on the tranche.

Tranching the Credit Risk – Term used to characterize a senior/subordinated structure. It broadens the base of potential investors by dividing the security into low risk/low yield and high risk/high yield pieces.

Treasury Bill (T-Bill) – US Treasury security with a maturity of a year or less at the time of issue.

Treasury Bond (T-Bond) – A coupon-bearing Treasury security with original maturity greater than ten years.

Treasury Note (T-Note) – Coupon-bearing Treasury security with original maturity greater than one year and up to ten years.

Trigger Event – The occurrence of an event that indicates the financial condition of the issuer of the quality of the underlying collateral has deteriorated, such as defaults rising above some threshold level. Typically, such events are defined in the transaction documents, as are changes in the transaction structure or priority of payments.

Trust Preferred Securities (TruPS) – Cumulative preferred stock issued by bank holding companies through a Special Purpose Entity (SPE). For the issuing bank holding company, TruPS combine benefits of both debt and equity. TruPS often have a provision that allows the issuer to defer preferred stock payments for periods of time. TruPS can be pooled and issued as a [CDO](#). See [PreTSLs](#).

t-Statistic — A measure of how extreme a statistical estimate is. Frequently used in [regression analysis](#) to determine whether the slope of an [independent variable](#) is significantly different from zero. The threshold for statistical significance varies by sample size, but t-statistics with absolute values more than 2.00 are generally considered statistically significant. Sometimes known as the Student’s t-statistic after William Sealy Gosset, a statistician working for the Guinness brewery in Dublin, Ireland, who introduced the concept in 1908 and used “Student” as his pen name.

Type II PAC – This security combines the elements of a PAC and a support bond. Like a PAC, it follows a planned redemption schedule within a range of prepayments. However, the band of prepayments is narrow, and when they fall outside that band, cash flows become much more volatile. For example, a Type II PAC may have a WAL of 3.4 years if prepayments are between 130 percent and 180 percent PSA. At 90 PSA, WAL extends to 7.4 years, and at 500 PSA, WAL shortens to 2 years.

Unexpected Loss (UL) – The Unexpected Loss relates to potentially large losses that seldom occur. According to this concept, capital would only be needed for absorbing Unexpected Losses. Banks are expected in general to cover their Expected Losses on an ongoing basis, e.g. by provisions and write-offs, because it represents another cost component of the lending business.

Unwind – Derivative trades (e.g., swaps) are normally not terminated through a simple sale of the instrument. Rather, the terminator obtains another derivative that is exactly the opposite of the first. The result is to cancel, or “unwind” the first trade.

VA No Bid Exposure – Recourse servicing risk that can exist for GNMA pools. The recourse on GNMA servicing is usually limited to the VA portion of the mortgage pool. The VA guarantee covers the first 25 percent of loss on the individual loans. In the event of losses in excess of the 25 percent guarantee, the VA may exercise its “no bid” option, whereby the servicer would be subject to any loss beyond 25 percent.

VA Loan – A loan made through an approved lender and partially guaranteed by the Veterans Administration.

VA No-Bid – An option that allows the Veterans Administration (VA) to pay only the amount of its guarantee on a defaulted mortgage loan, leaving the investor with the title to the foreclosed property. The VA must exercise this option when it is in the government’s best interest. No-bid properties become other real estate owned.

VADM (Very Accurately Directed Maturity) Bond – Type of CMO that never extends. Cash flows are directed from an accrual bond to ensure that scheduled prepayments are made, no matter what. In contrast to a PAC bond (which offers protection against prepayment and extension risk) and a TAC (which offers protection against prepayments but not extension), a VADM’s primary aim is to prevent extension risk.

Value at Risk (VaR) – A general measure developed to equate risk across products and to aggregate risk on a portfolio basis. VaR is defined as the predicted worst-case loss with a specific confidence level (for example, 95 percent) over a period of time (for example, one day). For example, a 99 percent VAR of \$10 million means there is a one percent chance that losses will exceed \$10 million. See [earnings at risk](#) for an alternative measure of interest rate risk.

Vantage Score – A credit risk score that was developed through the utilization of information from the three national credit-reporting companies. In the past, the agencies had each used their own proprietary formulas to create their own scores. With vantage score, a single methodology is used to create the scores.

Variance – The mean square difference in the difference between a random number and its mean. It is a measure of how widely dispersed a distribution and the variance of a portfolio's returns is an indicator of its risk. Variance equals the **standard deviation** squared.

Vintage – A group of assets or liabilities originated or put on the balance sheet at a given time period. For example, mortgages originated in 2007 would represent the 2007 vintage. Vintage analysis can be used to assess and forecast asset quality, mortgage prepayments, or the attrition rates on nonmaturity deposits as defaults, prepayments, and deposit withdrawals can all vary with the age of the asset or liability. Vintage analysis is often used to enable lenders to compare delinquency, foreclosure, and loss rates on similar portfolio products over comparable loan origination periods.

Vega (Volatility) Risk – The exposure to a change in the value of a transaction or portfolio resulting from a given change in the expected volatility of the price of an underlying asset or index. The risk is typically associated with options. Vega is considered one of the **Greeks** based on the mistaken notion that it is a Greek letter. In fact, Vega was a star and the name was of Arabic origin. Vega was also a notoriously unreliable car produced by Chevrolet in the early 1970's.

Voluntary Prepayment Rate – The annualized rate of mortgage prepayments due to refinancings or sales rather than to defaults. This measure contrasts with **CPR**, which also includes defaults.

WAC – Weighted Average Coupon – The average **coupon rate** (not necessarily yield) of the underlying mortgages of a mortgage backed security or a servicing portfolio, weighted by the balance of each mortgage in the portfolio. It provides one indicator of prepayment characteristics.

WAC Class – CMO class whose coupons represent a blended interest rate that may change from period to period. WAC classes may consist of components with different interest rates or may be backed by assets with different interest rates.

WAL – Weighted Average Life – The average expected period to maturity or prepayment of the underlying mortgages of a mortgage backed security. Unlike WAM, it considers likely prepayments. Unlike duration, it does *not* consider intervening cash flows prior to maturity or prepayment.

WALA – Weighted Average Loan Age – The period of time since origination. The age or “seasoning” of the underlying mortgages of a mortgage backed security or servicing portfolio can affect its prepayment characteristics. The life cycle of a mortgage pool is generally characterized by a rise in prepayments in the early years, a leveling off, and eventually a decline as “burnout” occurs.

WAM – Weighted Average Maturity – The average contractual maturity (not considering prepayments) *at origination* of the underlying mortgages of a mortgage-backed security or servicing portfolio.

Warehouse – For a mortgage banking operation, the period between origination and sale. A warehouse is exposed to rising rates. This risk can be hedged with forward sales.

Warehouse Loan – In mortgage lending, this refers to newly closed loans that are funded and awaiting sale or delivery to an investor.

Warehouse Financing – The short-term borrowing of funds by a mortgage banker, collateralized by warehouse loans. This form of interim financing is used until the warehouse loans are sold to a permanent investor.

WARM (Weighted Average Remaining Maturity) – The weighted average of the remaining terms to maturity of the mortgages in a mortgage pool subsequent to the security issue date. The difference between the weighted average maturity and the weighted average remaining maturity is the weighted average loan age (WALA).

Wash Sale – The sale and repurchase of the same or very similar securities over a very short period of time. Under GAAP, no gain on sale from a wash sale may be recognized.

Waterfall (Cash Flow) – The priority of payments on a CMO, CDO, or ABS, where, in the event of credit losses on the underlying assets, the senior tranches are paid first, then mezzanine tranches, then subordinate tranches. The “waterfall” refers to the cascading effect between tranches.

When Issued Securities Trading – The buying and selling of securities in the period between the announcement of an offering and the issuance and payment date of the securities. A purchaser of “when issued” (also known as TBA) securities acquires the risks and rewards of ownership and may sell the security prior to taking delivery. This is considered trading activity. In some cases (e.g., CMOs) the characteristics of the “when issued” security are not completely known at the time of purchase.

Yankee – A bond or CD denominated in U.S. dollars, publicly issued in the U.S. by foreign banks and corporations. According to the Securities Act of 1933, these bonds must first be registered with the Securities and Exchange Commission (SEC) before they can be sold.

Yield Curve – The relationship between short-term rates and long-term rates. A yield curve is considered steep when long-term rates are much higher than short-term rates. A yield curve is considered flat when short term and long-term rates are similar. A yield curve is considered inverted when short-term rates are higher than long-term rates. The yield curve is normally somewhat upward sloping due to a liquidity premium for short-term securities.

Yield to Maturity (YTM) – A rate of return to an investor, YTM is the discount rate used to equate a bond’s current selling price with the present value of its future cash flows (principal and interest). It is assumed that all cash flows are reinvested at the YTM rate. For assets with embedded options, such as calls, investors occasionally use yield to call (yield based on the next call date) or yield to worst (the lowest yield the investor could receive, depending on whether or not the asset is called).

Z Bond – Also known as an accrual bond. A type of CMO that receives no payments until the other pieces (tranches) of the CMOs are paid off — then it receives principal and interest payments. Similar to a zero coupon bond, except that its returns are heavily dependent on prepayment rates.

Zero Coupon Bonds – Debt issues sold at a deep discount from par value. Since the holder of a zero receives no periodic interest payments, the return on the investment is derived from the difference between the purchase price and the par value if held to maturity.