

Introduction

The Federal Home Loan Banks, Fannie Mae, and Freddie Mac (collectively, the regulated entities) use derivatives for a variety of reasons; for example, to limit downside earnings exposures, preserve upside earnings potential, increase yield, reduce funding costs, and minimize income or capital volatility because of changing market conditions. When used properly, derivatives can be an effective risk management tool; however, when used improperly, or for speculative purposes, they increase the institution's risk exposures. This module applies to the regulated entities; it does not apply to the Office of Finance.

Financial derivatives are broadly defined as instruments that derive their value from the performance of an underlying asset, index, or reference rate. Common derivative instruments include swaps, options, swaptions, futures, forwards, structured debt obligations, and credit derivatives. Typically, derivative contracts do not involve exchanging principal. Some derivatives are traded on organized exchanges, while others are privately negotiated in the over-the-counter (OTC) market.

Expertise and rigorous controls are required to properly use derivatives. Management systems should be in place commensurate with the regulated entity's derivatives usage. Derivatives should only be used when all the instrument's features, cash flows, and inherent risks are fully understood and when the proper systems and internal controls are in place to monitor and analyze the instrument's performance. The board and senior management should understand how the use of derivatives complements the regulated entity's risk management strategy. Furthermore, the board and management must be informed of the risk-reward trade-off associated with derivatives and ensure controls are in place to prevent the use of derivatives for speculative purposes.

Derivative transactions expose an institution to a variety of risks. Failing to understand, identify, and manage the risks can have a sudden and significant effect on the regulated entity's financial position and adversely affect its ability to operate in a safe and sound manner. Risks may arise from inadequate governance practices or the failure to establish appropriate internal controls. If not done properly, entering into derivative transactions result in increased market, credit, and/or operational risks that can ultimately affect the institution's financial performance. The board and management must be aware of potential risks and take appropriate action to mitigate risk.

A discussion of the many risks and processes necessary to manage the risk associated with derivative transactions is provided below.

Corporate Governance

A regulated entity must use derivatives in a manner consistent with the overall risk management policies approved by its board. Policies governing derivatives should clearly describe the

purposes for which these transactions are to be undertaken. Senior management must approve procedures and controls and management should enforce them. The board must provide guidance on the institution's risk tolerance, and provide sufficient financial and technological resources for management to implement and support a risk management system governing derivatives, including the following:

- 1) Comprehensive and up-to-date policies and procedures;
- 2) Appropriate risk limits;
- 3) Capable management and staff;
- 4) Adequate segregation of duties;
- 5) Risk measurement and reporting systems;
- 6) Independent oversight and control processes;
- 7) A system for ensuring corrective action is taken to address regulatory, internal/external audit, and consultant findings;
- 8) Sufficient financial resources and technology systems to implement and support risk management mechanisms; and
- 9) A satisfactory records retention program.

Given the complexity of many derivative instruments, an effective board will have directors with practical skills and experience with derivatives. In addition, the board should receive ongoing derivatives training to ensure the directors understand the derivatives activities. Board training is imperative when management begins using new types of complex derivatives.

Board-approved policies should provide a risk management framework that ensures proper identification, quantification, evaluation, reporting, and control of derivative activity risks. The board and management must review policies and procedures to determine that they are keeping pace with the evolution of new derivative instruments and markets. Guidelines should be incorporated into all of the policies and procedures for areas affected by derivative activities such as interest rate, liquidity, credit risk, accounting, compliance, operations, and capital management. For example, when a new derivative instrument is implemented, the accounting and interest rate risk policies and/or procedures may need to be revised to accommodate instrument features that are new to the institution. At least annually, and more frequently if derivatives use changes, management and the board (or the appropriate board committee) should review and approve these policies. Policies and procedures should:

- 1) Establish comprehensive risk limits;
- 2) Address compliance with regulatory requirements;
- 3) Require regular independent risk position and performance reporting;
- 4) Identify managerial oversight and assign clear responsibility;
- 5) Establish adequate segregation of duties;
- 6) Detail authorized activities, including those that require board approval;
- 7) Specify a new instrument assessment process; and

- 8) Define inappropriate activities.

Approved policies and procedures should provide specific guidance related to:

- 1) Records retention and safekeeping requirements;
- 2) Trade capture and confirmation processes;
- 3) Unconfirmed and disputed trades;
- 4) Netting;
- 5) Settlement processes;
- 6) Reconciliations;
- 7) Authorized brokers and counterparties;
- 8) Broker commissions and fees; and
- 9) Independent position valuations and re-valuations.

Management should perform a comprehensive analysis before engaging in new derivative instruments or activities to determine whether they require new or different pricing, processing, accounting, and risk measurement systems. Changes in strategy and new instruments or activities that could alter the regulated entity's risk profile, generally require approval by the board or relevant board committee. Management and staff expertise, technology requirements, and additional costs to administer the activity (e.g., additional staff, consulting fees) should be analyzed before changing existing risk management strategies and introducing new derivatives instruments and related activities.

For new instruments or variations on existing instruments, the risk management function should have a product assessment process that addresses significant risks and potential issues. To decide whether a product must be routed through the product assessment process, management should consider capacity changes, structure variations (for example, non-amortizing versus amortizing interest rate swaps), new pricing methodology requirements, legal or regulatory considerations, and market characteristics. Elements that should be included in the product assessment include:

- 1) Product definition;
- 2) Justification that the product or activity meets business strategies and objectives, such as customer service or risk management;
- 3) Pricing mechanism requirements;
- 4) Explanation of risk management processes;
- 5) Descriptions of limits and exception approval processes;
- 6) Capital allocations;
- 7) Procedure and controls;
- 8) Legal documentation requirements;
- 9) Other legal and regulatory issues;
- 10) Tax implications;

- 11) Ongoing update/maintenance and
- 12) Internal audit coverage.

Internal audits should be conducted by qualified professionals who have expertise that is appropriate for the level and complexity of the derivative instruments and related activities. Outsourcing or co-sourcing audit coverage may be necessary to ensure that the auditors possess sufficient knowledge and experience. Audits are not a substitute for the risk control function.

The internal audit function must have the board and management's support to be effective. Management should respond promptly to audit findings by investigating identified weaknesses and implementing corrective action. Management should also periodically monitor newly implemented changes to ensure they are working as intended. Audit scope and coverage should be commensurate with the risk level and activity volume.

Procedures should be in place to ensure that internal auditors are informed of significant changes in instrument types, risk management methods, risk limits, operating systems, and internal controls so that they can update their procedures and revise their audit scope accordingly. Auditors should periodically review and analyze performance and risk management reports to ensure that areas showing significant changes, such as earnings, gains/losses on the derivatives portfolio, or risk levels, are given appropriate attention.

A sound risk measurement system is essential to monitor potential risks to the organization resulting from derivative transactions. Risk measurement is an approximation; however, estimating derivative-related risks is necessary for proper monitoring and control. At a minimum, management should regularly assess vulnerabilities to these risks in response to changing circumstances. The risk measurement method's sophistication and precision will vary by the types, volumes, and level of risk for activities performed. All significant risks should be measured and integrated into an enterprise-wide risk management system.

Board and management reporting frequency and composition will depend upon the nature and significance of derivative activities. Risk measurement and assessment should be on an aggregate basis and reports should be timely and accurate. Report preparation should be by sources independent of the trading function and tailored to the intended audience. Line management should get detailed information while the board and senior management should receive summary information.

The board, or a designated board committee, should periodically receive information showing trends in aggregate derivatives exposure, counterparty credit risk, and compliance with business strategies and risk limits. This information should be presented at all regularly-scheduled board meetings. Senior management typically receives more detailed reports on a more frequent interval. Line management receives detailed reports, including daily reports, with sufficient information to assess risk levels, returns, and consistency with strategic objectives.

Daily reports should address significant counterparty line usage and limit exceptions. Regulated entities should also combine the derivatives exposures with other credit risks to assess aggregate counterparty exposure. Monthly reports should detail portfolio information on industry concentrations, tenors, exception trends, and information with respect to pre-settlement exposure.

Experienced staff is especially important for derivatives activities because of their complex nature. Management should regularly evaluate whether the staff has the necessary knowledge, skills, and training, and whether staffing levels are sufficient.

Staff turnover can create serious problems, especially if knowledge is concentrated in a few individuals. Periodic rotation and cross-training of staff members builds depth over time and alleviates some of this risk. In addition, contingency plans and management succession plans should address the loss of key personnel and the development of staff to fill unanticipated vacancies. Contingency actions may include curtailing existing or new derivatives activities, outsourcing functions, or hiring consultants. Succession planning includes individual development plans to build bench strength.

Personnel policies should require employees in positions that significantly affect the regulated entity's books and records to take a meaningful amount of consecutive time off each year (typically two weeks). The importance of this control has been reinforced by publicly-reported trading losses that occurred because traders were able to conceal unauthorized trading activities for a number of years without being detected. These unauthorized activities might have been detected earlier if the traders had been required to take leave for a meaningful amount of time. Employees subject to this policy should not be able to effect any transactions while on leave. Policy exceptions should be granted only with senior management's approval subject to the institution's policies, and multiple exceptions for the same employee should be prohibited.

Compensation programs should be designed to recruit and retain experienced staff and discourage excessive risk-taking. For example, they should not create an incentive for an employee to take risks that conflict with corporate strategies, the institution's risk appetite, policies, or applicable laws and regulations. Additionally, compensation programs should take into account long-term risks and performance.

Market Risk

The examination module on Interest Rate Risk Management provides a comprehensive discussion of the interest rate risks the regulated entities face. Examiners responsible for completing the Derivatives module should consult with examiners completing the Interest Rate Risk Management module to identify potential market risk to the regulated entity and assess the adequacy of action take to mitigate those potential risks.

Although derivatives are most often used to manage a regulated entity's interest rate risk, derivative transactions may expose a regulated entity to income or market value volatility resulting from changes in derivative values. Some of the factors that affect a derivative's price are fluctuations in interest and foreign exchange rates, commodity and equity prices, and supply and demand (liquidity risk), and market expectations of interest rate volatility. Sources of market risk differ depending on the derivative type. End-users must understand these sources of risk for the types of derivatives they use.

Market risk management should be commensurate with the extent and complexity of the derivative activities and in line with the activities and risk level approved by management and the board. Measuring and controlling the risk requires a strong risk control function to assist the board and senior managers in fulfilling their oversight responsibilities. A formal structure should be in place that assesses the regulated entity's overall interest rate risk exposure, as well as its risk management practices.

The regulated entities must understand the factors affecting derivative pricing to be able to effectively measure and manage potential risks to earnings and capital. Several independent third party pricing sources should be used to ensure the reasonableness of quoted prices. Management should assess any considerations affecting independence of the pricing, such as obtaining market values from the same dealer who sold the derivatives.

Risk measurement systems should be able to identify and quantify in a timely fashion the major interest rate risk sources. At a minimum, the risk measurement system should evaluate the possible effect on earnings and market value of equity (MVE) from adverse interest rate changes and other market conditions. The measurement system should allow management to monitor and evaluate the effectiveness of derivatives in the overall interest rate risk profile.

While models enable management to quantify sensitivity to interest rate changes, sophisticated models introduce the risk that modeling assumptions may not hold in all cases. Such a possibility is generally termed "model" risk. Regulated entities should regularly re-evaluate interest rate risk model assumptions and validate models to ensure that they provide a reasonable estimate of risk for the simulated scenarios. Examiners completing work on derivatives should consult with those completing examination activities covered in the Risk Modeling module of this *Examination Manual*.

Credit Risk

When completing the *Examination Manual's* Derivatives module, examiners should consult with those completing examination activities in the Credit Risk area. When considering derivative transactions, credit risk is the risk of a loss occurring if a counterparty defaults or otherwise fails to perform on a contract. Evaluating a counterparty's financial condition is particularly important with derivatives because the creditworthiness of counterparties can vary significantly.

For instance, counterparty risk on exchange-traded contracts is generally viewed as minimal because trades made on an exchange are cleared through a “clearing house,” which acts as the buyer to all sellers and the seller to all buyers. In addition, the exchanges impose margin requirements and daily settlement practices that minimize the credit exposure. By comparison, OTC derivatives counterparties accept credit exposure from each other. Cleared derivatives counterparties are exposed to credit risk from the clearing house. Further, OTC derivatives margin requirements are subject to negotiation by the parties. When considering credit risk, it is important to note counterparty concentrations and the regulated entity’s current and potential exposure resulting from derivative transactions.

Regulated entities should measure credit risk on derivatives in terms of both current exposure and potential exposure. Current exposure is the replacement cost, or market value, of the derivative. A derivative instrument’s market value is the net present value of future cash flows. At inception, the derivative contract’s current exposure is at or near zero (at-the-money), but over time exposure can become positive (in-the-money) or negative (out-of-the-money). A derivative with positive current exposure represents an asset and the contract holder will suffer a loss if the counterparty defaults. Conversely, when the contract’s market value is negative, the contract represents a liability. However, even though it might seem that a counterparty holding an out-of-the-money contract could not suffer a credit loss in the event of default since the contract has no value, it is still possible for the counterparty to experience a loss as described in the example below.

In September 2008, Lehman Brothers and its affiliates (“Lehman”) filed bankruptcy. Many of Lehman’s counterparties incurred significant losses including those counterparties that were in out-of-the-money positions. Market risk was a significant factor affecting the amount of counterparty loss. Over a short timeframe and under highly volatile market conditions, counterparties had to unwind all of their Lehman positions. Interest rates rose sharply, causing the counterparties’ Lehman positions to change rapidly from a net liability to a net receivable. Contract provisions, such as the “right to set-off” amounts owed to Lehman against amounts Lehman owed the counterparties, reduced the losses incurred for some counterparties but not all. The Lehman case highlights the need for regulated entities to remain abreast of potential risk exposure and counterparty risk exposure.

A derivative contract’s potential exposure, or pre-settlement exposure, is the estimated future replacement cost of the derivative based on a probabilistic analysis using confidence intervals over the remaining term of the transaction. A regulated entity should use a sound method to estimate its potential credit risk exposure. The potential exposure measurement is more subjective than the current exposure measurement and is primarily a function of the time remaining to maturity; the number of cash flow exchanges; and the expected volatility of the price, rate, or index underlying the contract. Evaluating potential exposure should incorporate possible changes in the contract’s market value as market conditions change. Common statistical techniques include Monte Carlo simulation and option pricing models to estimate potential

exposures. Other things being equal, the longer the contract's tenor, the greater the potential credit exposure because the derivative could have a positive value at any time throughout the contract's duration. Credit risk is generally reduced over the contract's life because the interim cash flows reduce payment uncertainty and the shorter the contract's remaining life the less potential there is for a significant adverse rate movement. The credit exposure can also be skewed to either the contract's beginning or the end depending on the size of rate differentials and cash flow timing.

Settlement is the process through which trades are cleared by the payment/receipt of currency, securities, or cash flows on periodic payment dates and the final settlement date. Derivative transaction settlement procedures can involve different domestic and international payment system networks. Settlement risk is the exposure arising when the regulated entity meets its contractual obligation before the counterparty meets its obligation. A failure to perform may be due to counterparty default, operational breakdown, or legal impediments. Settlement risk exists from the time an outgoing payment instruction can no longer be canceled unilaterally until the time the incoming payment is received with finality and reconciled. This risk arises because it is generally impossible to arrange simultaneous payment and delivery. Clearing and settlement exposes counterparties to intraday and overnight credit risks, although the risk could extend to several days for international transactions. For example, settlement risk arises because of time zone differences, particularly with international transactions. This risk generally exists for a minimum of one to two days. It can take another one to two business days to confirm receipt through reconciliation procedures. As a result, settlement risk can often last more than three business days before the regulated entity's settlement bank can be certain that a payment has been received.

Senior managers as well as sales, trading, operations, risk control, and credit management should understand the settlement process and be aware of the timing of key processing events, when payment instructions are recorded, when they become irrevocable, and when confirmation of counterparty payment is received with finality. Knowledge of these items allows the duration and level of settlement exposure to be better quantified and controlled.

Collateral arrangements are negotiated in the OTC market to reduce settlement risk and can be unilateral or bilateral. Unilateral agreements require only the weaker counterparty to post collateral. For bilateral arrangements, no collateral is posted initially, but either side may be required to post collateral if a triggering event occurs, such as a Nationally Recognized Statistical Rating Organization (NRSRO) downgrade or a sharp movement in rates.

To reduce these risks and transaction costs, the regulated entities also use netting arrangements when they have two or more transactions with the same counterparty. Netting is an agreement between counterparties to offset positions or obligations. Payment or settlement netting is a bilateral agreement intended to reduce settlement risk and is used to net payments between parties on a particular date, in the same currency, and under the same transaction or a specified

group of transactions. Payment netting occurs throughout the life of a master agreement. Multilateral netting is designed to extend the benefits of bilateral netting to cover contracts with a group of counterparties. Close-out (or default) netting arrangements involve netting the non-defaulting party's positive and negative current replacement values for each transaction to a single sum, either positive or negative. If the netted sum is positive, then the defaulting counterparty owes that sum to the non-defaulting counterparty. If that amount is negative, the non-defaulting counterparty would pay that amount to the other party, provided no walkaway provisions exist.

If netting does not apply, no offsetting occurs in the event of default. As a result, a practice known as "cherry picking" may occur. For example, if a regulated entity has two transactions with the same counterparty, one with a positive replacement value and one with a negative replacement value, and the counterparty files for bankruptcy, the counterparty may attempt to seek relief from the transaction that has a negative replacement value and attempt to force the regulated entity to continue to pay on the transaction with a positive value.

Regulated entities can reduce settlement exposure by:

- 1) Using ISDA standard agreements;
- 2) Negotiating their correspondent arrangements to reduce the amount of time they are exposed to non-cancelable payments awaiting settlement;
- 3) Reviewing the payment receipt reconciliation in order to determine if the time it takes to identify final and failed trades can be shortened;
- 4) Considering net settlement payments, when legally permissible, rather than settling on a trade-by-trade basis; and
- 5) Carefully selecting brokers and dealers, including reviewing each firm's financial statements and evaluating its ability to honor its commitments.

Credit derivatives are contracts used to mitigate potential credit risks and allow one party (the beneficiary) to transfer the credit risk of an asset or off-balance-sheet credit exposure to another party (the guarantor). The credit derivative's value is dependent, at least in part, on a referenced asset's credit performance.

Each regulated entity must have an effective means of measuring, monitoring, and controlling derivatives credit risk. A well-controlled environment will include the following:

- 1) Effective senior management and board oversight;
- 2) Sound policies and procedures;
- 3) Strong credit review, approval, and limit processes;
- 4) Accurate and validated risk measurement systems;
- 5) Timely and effective risk reporting, monitoring, and exception approval processes; and
- 6) Proper credit documentation standards.

Counterparty credit risk should be controlled through a formal and independent credit process. To avoid conflicts of interest, the credit approval function must be segregated from the risk-taking unit that executes the transactions. The credit approval function must also be staffed by qualified personnel. Independence must be maintained for the credit assessment, when establishing counterparty credit lines, monitoring and reporting exposures, and approving exceptions.

The credit risk management function should periodically review the derivative counterparties' creditworthiness and assign and update internal ratings. The analysis should be based on information from a variety of sources, and should not rely on NRSRO ratings. When assessing foreign counterparty credit risk, regulated entities should be cognizant of differences in accounting practices or other financial reporting requirements that could make analysis of the counterparty's financial condition difficult because the presentation differs from U.S. generally accepted accounting principles (GAAP). Nonperforming contracts should be reported consistent with the regulated entity's nonperforming assets policy. Communication between the risk-taking unit and credit department is essential to ensure that all parties are informed of a change in a counterparty's credit risk limits or creditworthiness.

Risk limits serve as a means to control aggregate exposures to the various risks associated with derivatives activities. Limits should be integrated across the regulated entity and measured against earnings, capital, and the institution's market value of equity (e.g., for FHLBanks) under a variety of plausible scenarios. They should be compatible with the business strategies, risk measurement systems, and the board's risk tolerance and should not compromise the regulated entity's condition when fully utilized. Policy limits should be adhered to, but in the event they are breached, the situation should be promptly addressed in accordance with the institution's policies and procedures, including documenting and reporting to the board. In addition to approving the limits annually, changes in resources or market conditions should prompt management and the board to reassess limits and make appropriate revisions. All limit revisions should be communicated to appropriate personnel, including traders, risk managers, operations staff, and auditors.

Limits can also be used to foster communication of position strategies and risk profile changes. In some instances regulated entities use management level limits often referred to as a management action trigger (MAT) to supplement policy limits. MATs could require some level of management approval or other action before they can be exceeded. They could also serve as a warning indicator to prompt management to take steps to reduce risk exposures. Line managers should not wait until a limit or MAT is broken to alert senior management and risk control units. They should promptly report unanticipated changes, deteriorating positions, and other significant position issues to the risk control function and responsible senior management.

Examiners should analyze risk limits and instances when activities breached limits. Unreasonably high limits may not detect meaningful shifts in risk-taking activity and, as a result, may fail to trigger a formal evaluation process. Conversely, restrictive limits that are easily and frequently exceeded may not fulfill the limit structure's purpose.

Counterparty credit limits should be approved before executing derivative transactions and should be established in much the same way as limits for traditional credit lines. Credit evaluations of individual counterparty credit limits should consider aggregate exposures and limits established for other activities. Source documents for the credit evaluation should include information such as Call Report data, SEC filings, missed payment data, internal ratings, and external ratings.

The regulated entities should have distinct settlement risk limits. The dollar volume of exposure due to settlement risk is often greater than the credit exposure arising from pre-settlement risk because settlement risk sometimes involves exchange of the instrument's total notional value or principal cash flow. However, it is important to understand that settlement risk exists only when principal cash flows are exchanged and delivery versus payment is not applied. Limits should reflect the counterparty's credit quality and the regulated entity's own capital adequacy, operations efficiency, and credit expertise. Any transaction that will exceed a limit should be pre-approved by an appropriate credit officer subject to the institution's policies and procedures. Reports to managers should enable them to easily recognize limits that have been exceeded.

Netting arrangements, credit enhancements, and early termination agreements are used to reduce credit exposure, to manage credit lines more efficiently, and to minimize transaction costs. Before recognizing the reduction in credit risk that these arrangements can provide, regulated entities must ensure that they are properly documented and legally enforceable. Terms of these arrangements are usually outlined in a standardized master agreement covering specific products such as the ISDA agreement, Foreign Exchange and Options Master Agreement, and International Currency Options Market agreement. The regulated entities must also ensure that the arrangements are legally enforceable in the relevant jurisdictions. See the "Operational Risk" section below for more information on documentation and enforceability.

Correctly calculating netted payments is important to preserve counterparty relationships and avoid costly errors. Systems need to accurately and timely calculate net payments. Operations personnel should ensure that netted trades are reflected in trade capture and credit systems so that netting is successfully executed. Procedures should ensure that netting is carried out in accordance with contractual terms and should address cut-off times, settlement instructions, confirmation/affirmation methods, and documentation requirements.

The use of early termination agreements has grown in recent years as market participants have sought avenues to reduce counterparty credit exposure. The regulated entities enter into early termination agreements that mirror their options to exercise on a related asset or liability. By

doing so the regulated entity is less exposed in the event that a counterparty is unable to execute its option. However, these agreements do not eliminate risk. Although an early termination agreement with a counterparty can reduce credit risk, it can increase operational, price, and interest rate risk. Early terminations may be triggered when the regulated entity can least afford the liquidity drain and the accompanying price and interest rate risk increase from terminated transactions, creating open positions. Management should carefully consider the effect of these agreements on price, interest rate risk exposure, and liquidity adequacy. The agreements' exposure and effects upon liquidity should be tracked and incorporated into liquidity planning. In addition, institution policy should clearly define the circumstances, if any, under which management will honor an early termination request when the institution is not contractually obligated to permit it.

Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), Pub. L. 111-203, 124 Stat. 1376, 1641 (2010), deals with, among other things, transparency, standardization, clearing, collateral management and trading of most derivatives that have traditionally been traded in the OTC markets. Oversight is divided between the U.S. Commodity Futures Trading Commission (CFTC) for most non-security based derivatives and the U.S. Securities and Exchange Commission (SEC) for security-based derivatives. Via Title VII of the Dodd-Frank Act, Congress tasked the CFTC and SEC with issuing a multitude of rules with respect to swaps regulation, some of which have been finalized (and are in various stages of implementation, often due to phased-in deadlines for different types of market participants), some of which have been only proposed but not yet finalized, and some of which have yet to be even proposed. Among the rules that have been finalized include those rules: (a) specifically defining this market's products (*e.g.*, swaps, security-based swaps, and related terms) and participants (*e.g.*, swap dealers, major swap participants, eligible contract participants, and the like); (b) requiring that swaps (including initial and ongoing terms and value changes for both cleared and non-cleared swaps) be reported to a swap data repository or applicable regulator; and (c) mandating that certain types of swaps be cleared by a derivatives clearing organization.

The Dodd-Frank Act requires the regulated entities to report to a Swap Data Repository (SDR) or the CFTC the initial and ongoing swap terms, and any value changes for both cleared and un-cleared swaps. Additionally, the Dodd-Frank Act requires the regulated entities to submit to a derivatives clearing organization (DCO) every swap or swap type identified by the CFTC, in its sole discretion, as appropriate for such treatment.

It is not possible to include a full recitation of all the Title VII rulemaking under the Dodd-Frank Act in this module, since any summary would be nearly immediately out of date given this rapidly evolving landscape. Therefore, examiners working on derivatives matters should at all times take care to apprise themselves of the current regulatory regime applicable to swaps and ensure their examinations reflect the same.

Operational Risk

Operational risk is the risk of possible losses resulting from inadequate or failed internal processes, people, and systems or from external events, including potential losses from internal or external fraud; improper business and accounting practices; fiduciary breaches; misrepresentations; unauthorized trading activities; business disruption and system failures; and execution, delivery, and process management failures. A cornerstone to minimizing operational risk is a strong risk mitigation framework, which includes segregating the risk taking functions from the risk management functions, maintaining information systems and processes sufficient to support derivative activities, and implementing strong internal controls. This framework should be continually evaluated to ensure it is keeping pace with derivative activity growth and instrument complexity.

To manage operational risk effectively, senior managers must fully understand the processing cycle and change processes and technology. Insufficient understanding of the risks involved could prevent effective internal controls from being implemented. All derivatives activity personnel should have the level of derivatives knowledge appropriate for the role they are assigned and should receive continuing training. They should also understand the distinct roles played by each department and be able to communicate and work effectively with the various departments.

Weak operational processes increase the possibility of loss from human error, fraud, or systems failure. Operational errors may affect the accuracy of management reports and risk measurement systems and jeopardize the quality of management decisions. For example, losses can occur not only from settlement errors, but also from managing inaccurately measured positions or misstating credit exposure because the trade data was input incorrectly. Operational risk can result in mistakes such as unanticipated open positions or risk exposures that exceed established limits. Further, operational errors and inefficiencies increase a regulated entity's reputational risk.

An effective operations function will help ensure the financial information's integrity and minimize operational, settlement, and legal risks. The operations area should provide the necessary checks and balances to detect unauthorized trades. Procedures should segregate duties among persons responsible for making credit decisions; confirmations; recordkeeping; reconciliations; and disbursing and receiving funds. Personnel responsible for accounting records, confirmations, reconciliation, and settlement must maintain a reporting line that is independent of the risk taking function.

Legal counsel should review contractual terms before the institution executes derivatives contracts. Counsel should be familiar with the transaction's economic purpose and applicable laws. All non-standard documents or changes to standard contract documents should be reviewed by counsel.

The use of standard industry contracts and addenda, such as the ISDA Master Agreement reduces legal risk. ISDA standard agreements define counterparty rights and responsibilities for derivative transactions. Regulated entities should ensure derivative agreements are current to ensure conflicts related to derivative transactions can be resolved and agreements remain enforceable. Additionally, any time a new type of derivative instrument is considered, the appropriate ISDA agreement should be used, and should be reviewed by the regulated entity's legal counsel for suitability.

There are various methods to confirm that a counterparty has the legal capacity to engage in derivatives transactions. A regulated entity should review relevant statutes and regulations for governmental entities or for certain clients in regulated industries. In other situations, a regulated entity may need to examine the operative documents and other relevant counterparty materials. In some cases, a regulated entity may be able to achieve reasonable satisfaction only upon legal counsel's analysis specifically addressing the counterparty's power and authority to enter into the transaction.

A regulated entity should also ensure that the counterparty officials executing the derivative agreement are properly authorized to do so. Evidence includes corporate resolutions, delegations of authority, and certificates of incumbency. If adequate transaction documentation is not obtained, enforcement of the transactions may be precluded under the relevant laws, which may require a separate, properly authorized written agreement to enforce the contract.

By separating the duties of operations staff members, a regulated entity asserts control over the settlement process. Operation procedures should address regular settlement terms, exception processes, and the reporting of stale, dated, or unusually large unsettled transactions. The person(s) responsible for releasing the funds should be independent of the confirmation process and any other process that could allow access to the transaction's payment process.

A regulated entity should ensure that its rights with respect to collateral pledged to the regulated entity by a counterparty to margin, collateralize, or guarantee a derivative contract are enforceable and exercisable and can be used upon the counterparty's default to offset losses. To be reasonably sure that the pledged assets will be available upon default, the regulated entity must have both access to, and the legal right to use, the assets. For example, to establish reasonable access, the counterparty should be required to deliver pledged assets to the regulated entity or to an independent escrow agent. A regulated entity's counsel should give an opinion on whether the contract that governs the pledged assets is legally enforceable.

The risk control and audit functions should ensure that position valuations are generated from independent sources. Accurate values are the key to producing reliable reports on risk levels, profitability, and trends. The valuation approach regulated entities use depends on a variety of factors including the contract's liquidity and complexity and the sophistication of their valuation

and accounting systems. Ideally, the valuation process would employ valuation models or wire service electronic data feeds, with little manual intervention. However, some illiquid or highly customized instruments have to be priced by obtaining values from dealers or using approved mathematical techniques to derive values. In obtaining external prices, the valuation requirements should be specified; for example, mid, bid, offer, indication, and firm. In addition, they should consider the relationship with the party supplying the pricing information. For example, it would be inappropriate to obtain valuations from the originating dealer.

The mark-to-market processes should be specified in policies and procedures that require segregation of duties between risk-takers and control personnel, including the independent input and verification of market rates. In addition, they should dictate pricing methods and assumptions, such as volatility, to be consistently applied to ensure accurate financial reporting and price risk valuations. At least monthly, regulated entities should independently revalue derivative positions and should be able to obtain daily market values if warranted by market conditions.

Derivative transaction documentation generally requires written trade confirmations, contract terms, legal authorities, and other transaction terms that are stipulated in master agreements and other legal documents. Maintaining proper documentation and ensuring it is complete is often the operation's or credit function's responsibility. Regulated entities should establish processes such as checklists or tickler files to confirm that derivative transactions were properly documented. Thresholds should be established that limit future business with counterparties failing to provide required documentation.

Although systems and modeling technology supports a derivatives business, technology can also pose significant risks. The system should serve the applicable users' needs, including senior management, risk control units, front and back office, financial reporting, and internal audit. For large systems, the regulated entity should have flow charts or other documentation that show data flow from input through reporting.

Systems interfacing with other systems are an important aspect in evaluating information technology. Interface is usually accomplished using emulators that communicate from one application to another. Regulated entities relying on a single database may have stronger data integrity controls than those with multiple databases and operating systems. However, some regulated entities may use a combination of vendor systems, in-house applications, and legacy systems.

Incompatible systems typically result in deal capture, data entry, and report generation requiring multiple data input. Accordingly, controls and reconciliations that minimize potential data corruption should be used when consolidating data obtained from multiple sources. If independent databases are used to support subsidiary systems, reconciliation controls should be in place at each point that data files come together.

The management of derivatives operational risk not only involves the development of the strategic plan, but also focuses on how plans, systems, and implementation affect the regulated entity's value. It includes analyses of external factors affecting the regulated entity's strategic direction and the success of past business strategies.

Derivative activities should be incorporated into the regulated entity's overall business strategy that has been approved by the board. This strategy may be articulated within policies governing other activities or documented separately. Strategy statements should include the following:

- 1) Scope of activities;
- 2) Consistency with overall business strategy;
- 3) Market assessment
 - a) Supply/demand
 - b) Competitive factors
 - c) Niche or role and anticipated level of activity
 - d) Target member/counterparties
 - e) Projected risk/reward payoff
- 4) Business evaluation and performance benchmarks; and
- 5) Personnel and system needs.

Business strategies should be communicated to appropriate levels within the regulated entity to ensure consistent understanding and implementation.

Operations and support systems should receive periodic reviews to ensure that capacity, staffing, and the internal control environment support current and planned derivatives activity. These reviews can be performed as a part of the annual budgeting and planning process, but should also be conducted as activity and plans change throughout the year.

A regulated entity can face risk arising from adverse public opinion or a negative reputation, which affects the ability to establish new relationships or services or continue servicing existing relationships and can lead to litigation and/or financial loss. The financial markets operate based on confidence among all market participants, and thus, regulated entities that actively associate their name with financial instruments such as derivatives are more likely to have higher reputation risk. Derivative activities carry a greater degree of reputation risk because they are generally more complex and less understood by the public than other financial instruments. Engaging in derivative transactions or transactions for which the regulated entity does not have adequate controls in place increases the potential for default, litigation, reputational damage, and financial loss.

Senior management should adopt a code of conduct that addresses such areas as conflicts of interest, member confidentiality, trade practices, appropriateness, and illegal or improper

transactions or payments. Management should encourage compliance with policies through employee affirmations, standardized disclosures, and appropriate testing processes. The administration of prompt and consistent disciplinary action for infractions helps to foster a strong compliance culture. Senior management should continually assess the compatibility of the regulated entity's activities and employee compensation programs with the code of conduct.

Typically, the dealing/risk-taking functions are referred to as the "front office" and the processing and recording/reporting areas are referred to as the "back office." The front office is essentially the trading desk operation which is responsible for deciding the type and amount of derivatives to purchase and executing the trades. Further, the front office duties include ensuring the institution stays within the established market risk policy limits. Front office staff include individuals such as the treasurer, chief capital markets officer, funding manager, and analysts. The back office confirms the executed trade information is accurate, records the trade into the system of record, and manages the accounting aspect of the trades. In some regulated entities, a "middle office" helps to reconcile systems, monitor positions and revenues, and perform related activities. The regulated entities create middle offices to be able to calculate and verify profits and losses, as well as position risk. Like the back office, the middle office should operate independently of the risk-taking environment. If establishing a middle office is not practical, the back office will generally be responsible for much of the risk control.

The regulated entities are exposed to numerous operational risks that must be mitigated. Although front office operations are subject to operational risk, the back office has more significant risks because the back office processes the transactions, records them in the accounting system, and performs reconciliation procedures. In conducting these functions, the back office provides the necessary checks to prevent unauthorized trading activities. Listed below are two examples of methods a regulated entity might use to manage these operational risks.

Operational Incident Reports – The regulated entities use the reports to identify inherent areas of risk. Once these risks are identified, a root cause analysis is performed to determine the leading indicators and to define appropriate risk mitigating actions. Management, and the board when significant risks are found, is responsible for ensuring the root-cause analysis is thorough and for monitoring the corrective action until resolution is achieved.

Process Mapping – The regulated entities that map their key processes improve workflow efficiencies, reduce operational risks, lower costs, and create a better match between information systems and derivatives-related processes.

Regulated entities must promptly enter trades so that all systems can be updated, including credit, intra-day profit and loss, risk positions, confirmation processing, settlement, and general ledger. Trade information includes trade date, time of trade, settlement date, counterparty, instrument traded and amount transacted, price or rate, and netting instructions. Sometimes

settlement instructions accompany this information. When regulated entities use electronic trade systems, relevant reports and databases can be automatically updated with the transaction data. On the other hand, trades conducted telephonically need to be on recorded lines, and after the transaction is executed, trade data must be immediately inputted into the trading system (or a ticket must be written to be entered into a regulated entity's operations system).

To verify that the counterparties agree to the trade terms, the regulated entity issues a confirmation and the counterparty either issues its own confirmation or affirms the regulated entity's confirmation. This confirmation process must be completed independently of the risk-taking unit to reduce the likelihood of fraud or human error. A regulated entity should send confirmations as soon as possible after deals are executed and no later than the end of the business day. The confirmation process varies depending on the type of counterparty, derivative traded, and the settlement method. Ideally, the regulated entity exchanges confirmations electronically, but sometime the parties may conduct telephone confirmations. The regulated entity should complete oral confirmations with designated counterparty individuals who are exclusive of the trading function. Except when contracts have very short maturities, it is poor practice to rely solely on telephone verifications, as the parties may make errors in interpreting terminology and certain jurisdictions only recognize physical confirmations for litigation purposes.

Staff independent of the person who initiates the transaction or inputs transaction data should promptly reconcile critical data points and reports. Daily, a regulated entity should reconcile the general ledger and profit and loss position reports with the front and back office systems. Prior to submission, regulated entities should reconcile regulatory reports to the general ledger. All reconciliation discrepancies should be investigated and resolved as soon as possible and significant discrepancies should be reported to senior management.

The regulated entity should route all incoming confirmations to a department independent of the risk-taking unit. Incoming information should be compared with the outgoing confirmation and any disputes researched. Disputed or unconfirmed trades should be brought immediately to the operations manager's attention and regularly reported to senior management. Risk-taking and sales personnel should be notified of disputed or unconfirmed trades.

To manage this risk, regulated entities produce reports that track outstanding unconfirmed and disputed trades. Typically, the back office will maintain a file that includes a description of the disputed transaction's key financial terms and the resolution, as well as evidence that the counterparty received notice of the final disposition. The regulated entity should have procedures that define its process for addressing disputes and unconfirmed trades.

Typically, the regulated entity's back office will review broker statements, reconcile charges to estimates and the general ledger, check commissions, and initiate payment. Additionally, the back office will monitor brokerage activity to ensure that it is conducted with only approved

brokers and that trades are distributed to a reasonable number of brokers. Unusual trends or charges should be brought to management's attention and reviewed with appropriate senior personnel. The regulated entities should only allow individuals in a non-risk taking function to approve brokers.

Implementing the Dodd-Frank Act will add a new dimension to operational risk because it is a notable step away from the regulated entities' current operating models. To ensure compliance with Dodd-Frank Act rulemaking, regulated entities will need to address challenges across people, processes, and systems. They may have to make significant investments to execute infrastructure and process changes related to documentation, reconciliations, reporting, and recordkeeping. Although the CFTC/SEC rulemaking landscape remains unfinished, the regulated entity should have developed a board-approved comprehensive implementation plan to account for those rules in effect (and take appropriate steps in anticipation of those rules still to be proposed and/or finalized) to the extent possible. The board and senior management should be kept abreast of the implementation status and be informed of any significant potential obstacles.

Financial Condition and Performance

Derivative activities can adversely affect liquidity, along with earnings implications, notably if the regulated entity is unable to execute a transaction at a reasonable price. This typically arises when counterparty exposure requires a user to liquidate or offset a derivative position. The degree of risk is aggravated when the derivative to be liquidated or offset has an inadequate primary or secondary market. Derivative transactions may also adversely affect funding and cash flow positions. For example, if a large position is being hedged and interest rates move against the position, the margin call for exchange-traded derivatives could be significant relative to the available cash on hand. The same is true with OTC derivatives that have collateralization agreements that may be triggered and require the posting of collateral.

In developing derivative guidelines, the regulated entities should consider the possibility of losing access to one or more markets, either because of concerns about their own creditworthiness, a major counterparty's creditworthiness, or because of stressful market conditions. At such times, there may be less flexibility in managing its market and credit risks. Those regulated entities that dynamically hedge their positions require constant access to financial markets, and that need may increase in times of market stress. A regulated entity's liquidity plan should consider its ability to access alternative markets, such as futures or cash markets, or to provide sufficient collateral or other credit enhancements in order to continue executing derivative transactions under a broad range of scenarios.

Risk management systems for derivatives are intertwined with those used to manage market risk. Consideration of market depth and the cash flow characteristics of particular instruments are

critical in establishing risk limits and constructing portfolio stress tests. The management of these risks is not conducted in isolation.

Managers responsible for derivatives and funding activities must regularly communicate market conditions to senior management. In turn, senior management must ensure that personnel are aware of any strategies or events that could affect market perception of the regulated entity. Well-developed lines of communication, whether formal or informal, should be established between derivative managers and funding managers.

Additionally, actual losses on derivative transactions will adversely affect an institution's financial performance. Failure of a counterparty to perform on a derivative transaction or costs associated with unwinding a derivative transaction could result in real losses to an institution and adversely affect its overall financial condition. Effective management of potential risk to the institution's overall financial condition requires an understanding of the implication of accounting principles. The following provides details on some of the most significant accounting rules related to derivative transactions.

Accounting

Accounting for derivatives transactions can greatly affect the regulated entity's financial performance. Derivatives are primarily governed by three Accounting Standards Codification (ASC), ASC 815 *Derivatives and Hedging*, ASC 948 *Financial Services-Mortgage Banking*, and ASC 310-20 *Receivables-Non Refundable Fees and Other Costs*.

ASC 815 *Derivatives and Hedging*

Derivatives are required to be recorded at fair value on the balance sheet and periodically marked-to-market. Where derivatives are acquired to hedge assets or liabilities, and the hedge relationships qualify for hedge accounting, earnings volatility can be mitigated.

Specifically, for a *fair value hedge*, the derivative's gain/loss recorded in earnings from a fair value change would be offset by a similar fair value change to the hedged item that is also recorded in earnings. For a *cash flow hedge*, the derivative's gain/loss is recognized in Accumulated Other Comprehensive Income (AOCI) and is not offset by the hedged item's fair value change. To qualify for hedge accounting, certain documentation and effectiveness testing requirements must be met.

ASC 948 *Financial Services-Mortgage Banking*

Accounting and reporting standards for the origination and purchase of mortgage loans are found in ASC 948 *Financial Services-Mortgage Banking*. ASC 948 provides that mortgage loans held for sale must be reported at the lower of cost or market value.

ASC 310-20 Receivables-Non Refundable Fees and Other Costs

When a regulated entity purchases investments, most costs and fees and discounts or premiums on loans at their time of purchase are amortized over the loan's life. Amortization is calculated based on the interest method, using a level yield (constant effective yield method).

Regarding mortgage backed securities (MBS), a regulated entity is permitted to incorporate into its constant effective yield calculation the anticipated principal prepayments if the prepayments' timing and amount may be reasonably estimated. Premiums and discounts are amortized based upon the underlying mortgages' expected prepayments. At least monthly, amortizations should be adjusted to reflect actual prepayments and revised outlook, which could cause the MBSs' accounting yield to change substantially, as recognition of discounts and premiums accelerates or slows. Regulated entities may also use the contractual method for calculating amortization. This method bases the amortization of premiums and discounts upon the instrument's actual terms and does not use estimated prepayments.

Regulatory Environment

The primary rules, regulations, and other issuances of the Federal Housing Finance Agency (FHFA) pertaining to derivatives activities at the regulated entities are set forth below. The examiner should ensure that the application of such authorities to a regulated entity has been considered by the regulated entity and its legal counsel.

1) *Rules and Regulations of the predecessor Federal Housing Finance Board (Finance Board), which include the following parts and sections relevant to the FHLBank's derivatives activities:*

12 CFR part 917 – Powers and Responsibilities of Bank Boards of Directors and Senior Management

2) *Rules and Regulations of the predecessor Office of Federal Housing Enterprise Oversight (OFHEO), which include the following parts and sections relevant to the Enterprises' derivatives activities:*

12 CFR part 1710 – Corporate Governance
12 CFR part 1720 – Safety and Soundness

3) *Rules and Regulations of the Federal Housing Finance Agency (FHFA), which include the following parts and sections relevant to derivatives activities:*

12 CFR part 1267 – Federal Home Loan Bank Investments

12 CFR part 1236 – Prudential Management and Operations Standards (PMOS) –Standard 1 (Internal Controls and Information Systems), Standard 3 (Management of Market Risk Exposure), Standard 4 (Management of Market Risk—Measurement Systems, Risk Limits, Stress Testing, and Monitoring and Reporting), Standard 8 (Overall Risk Management Processes), and Standard 9 (Management of Credit and Counterparty Risk). For example, Standard 1 requires the board and senior management to ensure there are appropriate controls in place such as experienced staff, segregation of duties, clear lines of authority and an effective risk recognition and assessment process. The standard also mandates, among other things, that the institution should have information systems that provide relevant, accurate, and timely information and data that is supported by adequate contingency arrangements. Standard 4 requires the institution to maintain measurement systems capable of valuing all financial assets, including derivatives. In addition, Standard 4 dictates that the regulated entity has risk monitoring and reporting systems that provide regular, accurate, informative, and timely market risk reports. Standard 9 provides, among other things, that the board and senior management should ensure that the regulated entity has appropriate policies and procedures governing derivatives and the use of clearing houses for derivatives trades.

4) *Advisory Bulletins of the Finance Board and FHFA that provide derivatives related supervisory guidance are the following:*

Advisory Bulletin 2002-AB-07 (Unsecured Credit Reporting Requirements) dated August 27, 2002, provides guidance for reporting unsecured credit exposures.

Advisory Bulletin 2005-AB-06 (Changes to Internal Market Risk Models) dated June 10, 2005, provides guidance on the process by which an FHLBank may obtain approval to make changes to a previously approved internal market risk model.

Advisory Bulletin 2011-AB-01 (Operational Readiness for Swaps-Related Reporting, Clearing, and Recordkeeping Requirements) dated March 4, 2011, provides guidance on complying with certain provisions of the Dodd-Frank Act.

Advisory Bulletin 2012-AB-03 (FHFA Examination Rating System) dated December 19, 2012, describes the FHFA examination rating system, known as CAMELSO (Capital, Asset Quality, Management, Earnings, Liquidity, Sensitivity to Market Risk, and Operational Risk). Among other things, AB 2012-03 provides guidance to examiners when rating a regulated entity's earnings and instructs them to determine the quantity, trend, sustainability, and quality of earnings.

5) *OFHEO Policy Guidance that provides supervisory guidance relevant to derivatives activities generally include the following:*

PG-00-001 dated December 19, 2000 – Minimum Safety and Soundness Requirements

PG-06-001 dated November 8, 2006 – Examination for Corporate Governance

PG-06-002 dated November 8, 2006 – Examination for Compensation Practices

PG-06-003 dated November 8, 2006 – Examination for Accounting Practices

Issues Specific to the Regulated Entities

The most common type of derivative used by the regulated entities is a fixed-to-floating swap, which converts fixed-rate assets or liabilities into floating-rate assets or liabilities and are traded in the OTC market. Privately negotiated swaps are used because they can be structured to fit the regulated entity's specific needs. Without an exchange mandating rigid standards for settling transactions and daily marking of the positions to market, the regulated entity must rely upon the counterparty's creditworthiness. These activities require stringent counterparty monitoring programs. Prudent practices include:

- 1) Reviewing existing counterparty reports more frequently and in many cases daily.
- 2) Substituting cash collateral for some of the securities collateral since cash is not subject to market value changes.
- 3) Measuring counterparty exposure by estimating the dollar value of one basis point (DV01), or the dollar change in net present value given a one-basis-point change in rates. This analysis allows management to reduce or even restrict trading with counterparties that have a high DV01.
- 4) Calculating counterparty potential future exposures for all points in time when payments are to be made or received. For instance, one method for calculating potential future exposure is to estimate it using the forward curve at a given point in time, generate interest rate paths based on historical data, and determine the exposures for each interest rate path.
- 5) Placing less reliance upon NRSRO ratings since they have proven to be a lagging indicator of financial performance.
- 6) Using modified derivative contract agreements that afford better protection in the event of a default.

Issues Specific to the Enterprises

To appropriately assess risks associated with derivatives transactions at the Enterprises, examiners should understand all the uses of derivatives at the Enterprises and the potential risks associated with the use of derivatives.

The Enterprises enter into master agreements with lenders to facilitate ongoing transactions. Mortgage loans delivered to the Enterprises for pooling into MBS generally require a master agreement, while mortgage loans purchased in cash transactions may or may not be under a master agreement. Pursuant to a master agreement, a lender agrees to deliver a specified volume of mortgage loans over a specified period, usually 12 months. The master agreement usually requires mandatory delivery by the lender of an agreed upon volume, but may also contain an optional delivery amount after the lender has met the required mandatory delivery commitment. If a lender does not deliver the mandatory specified volume, the Enterprise may assess a buyout fee based on the undelivered amount. The optional portion does not obligate the lender to sell loans to the Enterprise, but the Enterprise is obligated to accept the loans if the lender delivers them.

A key risk faced by the regulated entities is the early payment of mortgages by borrowers, which in turn, results in the prepayment of mortgage assets. Regulated entities address this risk in a number of ways, including by entering into derivative transactions. “Caps” may limit the costs associated with debt. “Floors” may be executed to ensure a minimal return on assets even during periods of low interest rates. The costs of entering into these transactions reflect the current and projected interest rate environments. Depending on market conditions, the upfront costs of entering into derivative transactions may be excessive and make the transaction economically disadvantageous.

The Enterprises also purchase mortgage loans pursuant to mandatory delivery commitments. Under these commitments, lenders are obligated to sell the Enterprise a specified volume of mortgage loans at agreed upon prices within a specified period (generally from one to ninety days for fixed-rate mortgages and from one to sixty days for adjustable-rate mortgages). If a lender is unable to deliver some or all mortgage loans during the commitment term, the lender may be assessed a pair-off fee, which is based on the undelivered commitment amount and the difference between the commitment price and the current price.

The Enterprises enter into credit derivatives, including risk-sharing agreements. Under these agreements, default losses on specific mortgage loans delivered by sellers are compared to default losses on referenced mortgage loan pools with similar characteristics. Based upon the comparison’s results, the Enterprises would remit or receive payments depending on the default performance of the referenced mortgage loan pools. These agreements are accounted for as credit derivatives rather than financial guarantees, in part, because the Enterprises may make payments to the seller/servicer under these agreements depending upon actual default experience over the mortgages’ lives.

In exchange for a monthly fee, the Enterprises can enter into agreements to assume credit risk for mortgage loans held by third parties. If any mortgage loans become past due by a specified period (i.e., four months past due), the Enterprises are obligated to purchase the loans.

The Enterprises may purchase mortgage loans containing debt cancellation terms, which provide for mortgage debt or payment cancellation for borrowers who experience unanticipated losses of income dependent on a covered event. The agreement's rights and obligations are assigned to the servicers. However, in the event the servicer does not perform as required by contract, because of the guarantee, the Enterprises would be obligated to make the required contractual payments.

In connection with some of the Enterprises' guarantee arrangements for multifamily housing revenue bonds and pass-through certificates, the Enterprises may also guarantee the sponsor's or the borrower's obligations as a counterparty on any related interest-rate swaps used to mitigate interest-rate risk. These guarantees are accounted for as swap guarantee derivatives.

Issues Specific to the FHLBanks

Derivatives usage and overall hedging practices requires continued scrutiny by examiners. FHLBanks should be able to estimate the financial costs associated with derivative transactions in aggregate or to demonstrate how hedging practices are consistent with overall financial management strategy. To ensure derivatives are achieving an FHLBank's goals, it is essential to identify the effect these transactions have on the organization's financial management practices. Other matters on which examiners should focus during the review of derivatives activities include:

- 1) Implementation of a sound risk management framework composed of policies and procedures, risk measurement and reporting systems, and independent oversight and control processes;
- 2) Analysis of new derivative transaction types and the related risks taking into account pricing, processing, accounting, legal, risk measurement, audit, and technology;
- 3) Segregation of risk management, monitoring, and control functions from the position-taking functions;
- 4) Fully defined duties and responsibilities of staff, including segregation of operational and control functions; and
- 5) Independent audit coverage and appropriate testing by experienced auditors with necessary technical expertise.

Examination Guidance

The workprogram for the Derivatives examination module is detailed below. If this module is included in the examination scope, the examiner must perform worksteps sufficient in coverage to document the basis for conclusions on the quantity of risk and quality of risk management pertaining to this area. Transaction testing is mandatory and the examiner must evidence sufficient worksteps from Section 4, *Testing*, to support the findings and conclusions from this examination module.

In determining the extent of review and testing to be conducted in completing each examination, the examiner should take into account applicable FHFA off-site monitoring or analysis reports, such as analyses of the quality and effectiveness of corporate governance practices, financial condition and performance, economic and housing industry conditions, internal controls, and audit coverage relating to the institution's derivatives activities.

NOTE: Text in (*italics*) referenced in a workstep represents illustrative guidance that serves as suggestions for specific inquiry.

1. Scope of Examination Work Performed

- 1) Review derivatives-related internal and external audit reports and supporting workpapers to determine the audit function's coverage and effectiveness in identifying internal control and risk management deficiencies. Based upon this review, some of the workprogram steps can be abbreviated or scoped out.
- 2) Review FHFA off-site monitoring or analysis reports, and workpapers produced as part of ongoing monitoring, related to derivatives activities.
- 3) Assess the regulated entity's responsiveness and actions taken to address deficiencies identified by internal/external auditors, third-party consultants, and the FHFA.
- 4) Evaluate the derivatives business strategy for its ability to assist the board and management in accomplishing the regulated entity's mission and generating income in a safe and sound manner. Additionally, ensure that the board, management, and staff have the ability to successfully execute the strategy and are appropriately monitoring derivative activities.

- 5) Assess the institution's organizational structure, control environment, and risk management framework to ascertain if they are adequate to meet the regulated entity's needs with regard to derivatives activities.
- 6) Determine the soundness of the derivatives policies and procedures.
- 7) Assess the regulated entity's conformance with internal policies and procedures, and regulatory requirements. Consult with personnel from the FHFA Office of Chief Accountant regarding accounting practices and compliance with GAAP.
- 8) Review the suitability of the analysis and controls surrounding the trading processes.
- 9) Evaluate the derivatives activities' effect on the regulated entity's overall performance as well as the contribution to the regulated entity's interest rate risk profile.
- 10) Determine whether the regulated entity is using derivatives to speculate rather than hedge.
- 11) Review minutes for the board, board committees, and other appropriate committees such as Asset Liability Management Committee (ALCO) and Risk Management.
- 12) Determine the extent and effectiveness of senior management and the board's oversight over derivative activities.
- 13) Review the board minutes to assess the board's participation in the derivatives policymaking and strategic planning process.
- 14) Determine whether the board and senior management have received ongoing derivatives education regarding major activities and new activities.
- 15) Review budget and budget variance reports for the past twelve months focusing on earnings and discuss significant budget variances with management.
- 16) Evaluate the derivatives strategy and the portfolio's effectiveness at mitigating risks to earnings and capital.
- 17) Review agreements with new derivatives counterparties executed since the previous examination.
- 18) Determine the extent to which management uses settlement, close-out, or multilateral netting arrangements. Ascertain whether counterparty payments or credit exposures are netted for computing periodic settlements or reporting aggregate exposure.

- 19) Evaluate the method for resolving counterparty valuation disputes. What action has the regulated entity taken in response to valuation differences that have recurred?
- 20) Evaluate the adequacy of the method for calculating potential exposure and discuss with management the following topics:
 - a) Does the measurement consider the time remaining to maturity; the number of cash flow exchanges; and the expected volatility of the price, rate, or index underlying the contract?
 - b) Is there sufficient documentation to support the measurement assumptions?
 - c) Is the measurement frequency adequate?
- 21) Evaluate the regulated entity's response to any recent counterparty credit internal or external downgrades, negative press releases, or significant financial deterioration.
- 22) From the counterparty concentration report, evaluate the exposure to external factors, such as countries, regions, and industries, and internal factors, such as exposure, tenors, and risk ratings. Discuss with management the regulated entity's strategy for managing concentration risk and evaluate its reasonableness.

Summarize the work performed in the examination of the institution's hedging practices/use of derivatives. To the extent there were modifications to the originally planned scope based on concerns identified during the examination, document those changes and the reasons for such changes.

2. Description of Risks

- 1) Evaluate the regulated entity's strategies regarding derivatives. Consider the effect of the changes on the regulated entity's risk profile. (*Have derivatives transactions reduced the overall risk profile of the organization?*)
- 2) Review and evaluate significant derivatives-related changes since the previous examination or changes being considered with respect to:
 - a) Management and personnel;
 - b) New derivatives instruments offered or used;
 - c) Policies and key procedures;
 - d) Implementation of new system or model upgrades;
 - e) Derivative strategy modifications due to market condition; and
 - f) Overall volume and/ or derivative transaction types.

3. Risk Management

Risk Identification Process

- 1) Based on worksteps performed under **Description of Risks**, assess and conclude on the adequacy of the organization's risk identification process.
- 2) Review the regulated entity's annual risk assessment to determine if it reasonably identifies and evaluates all material derivatives activities' risks. Investigate any action plans arising from the assessment and check corrective actions for effectiveness.
- 3) Determine that the management committees and delegated authorities appropriately identify, measure, monitor, and report the derivative portfolio's risk trends and level of risk and that the derivative activities are consistent with the business strategy.

Organizational Structure

- 1) Identify the key derivatives officers and personnel and their primary responsibilities, reporting lines, knowledge, and technical expertise. Determine if the staffing and skill level, segregation of duties, and cross-training are sufficient to execute present and projected derivatives strategies. *(If an individual is on vacation, is someone able to take over the individual's responsibilities? Can anyone perform a transaction from start to finish? Does the staff have the necessary education and experience to perform their duties? Is the area fully staffed? If new strategies are planned, does the existing staff have the required skill set or is the regulated entity planning to add more staff?)*
- 2) Review resumes or biographies for new managers in key positions and job descriptions for key positions, particularly any recently created positions.
- 3) Determine how interest rate risk exposure is communicated to appropriate levels within the organization. The formality and frequency of reporting should be directly related to the level of derivative activities and risk exposure.
- 4) Determine if the board's committee structure and delegated authorities effectively assist the full board in understanding the derivative portfolio's risks and risk levels.
- 5) Review the enterprise risk management (ERM) function's oversight responsibility and staffing. Determine if the ERM function is:
 - a) Independent of persons responsible for entering and managing derivative transactions;

- b) Fully staffed with qualified individuals;
- c) Provided with the necessary technical and financial resources, organizational visibility, and authority; and
- d) Independent from those individuals directly responsible for trading decisions and management.

Policy and Procedure Development

- 1) Determine if the policies and procedures are current, relevant, comprehensive, and comply with applicable regulations. They should address credit, market, operational, and financial risks. Some topics to consider include:
 - a) Policy and/or procedure limits
 - i. Transaction approvals
 - ii. Aggregate derivatives portfolio price sensitivity
 - iii. Traders and Treasury personnel authorizations
 - iv. Counterparty exposure;
 - b) Types of permitted derivatives;
 - c) Approved brokers;
 - d) Segregation of duties and
 - e) Legal review of new products, counterparty agreements, and netting arrangements.

Risk Metrics

- 1) Evaluate any derivatives-related risk metrics to conclude whether the metrics consider all aspects of potential risks.
- 2) In conjunction with the examiner reviewing interest rate risk, evaluate the appropriateness of the derivative risk limits. Are the limits:
 - a) Consistent with the strategy and the board's risk tolerance?
 - b) Reasonable in light of recent financial performance and budget expectations?
 - c) Adequately controlling interest rate risk exposures in normal and volatile market conditions?

Reporting

- 1) Assess the board and management derivative reports. Consider whether the reports:
 - a) Are tailored to the intended audience and level of risk;
 - b) Are accurate and timely;
 - c) Explain how risks have changed rather than simply provide data;
 - d) Provide both summary information and transaction detail, as appropriate; and

- e) Address or include:
 - i. Compliance with risk limits
 - ii. Policy exceptions/waivers (A large number could indicate a weakness, especially if not pre-approved by board or a supervisory committee)
 - iii. Performance relative to the business strategy
 - iv. Effect of derivative transactions on earnings and capital
 - v. Internal/external audit reports
 - vi. Consultant reports covering significant issues
 - vii. Model validation reports
 - viii. Trading and positioning/hedging activity
 - ix. Derivative appreciation/depreciation
 - x. Level and adequacy of liquidity
 - xi. Counterparty credit exposure and netting reports

Internal/External Audit

- 1) Review the audit scope's adequacy and audit frequency. At a minimum, the audit should accomplish the following:
 - a) Assess the adequacy of all policies and procedures;
 - b) Appraise the accounting, operating, compliance, and risk management controls related to derivatives;
 - c) Test compliance with policies, including risk limits;
 - d) Evaluate the risk management function's effectiveness and independence;
 - e) Verify internal risk measurement and revaluation methodologies' accuracy;
 - f) Validate the accuracy of pricing, revaluation, and risk measurement methodologies (including spreadsheet applications), with emphasis on new products;
 - g) Test the reliability and timeliness of senior management and board reports;
 - h) Evaluate the adequacy of internal controls and the testing of operations functions including: segregation of duties; trade entry and transaction documentation; confirmations; settlement; cash management; revaluations; accounting treatment; and independence and timeliness of the reconciliation processes;
 - i) Determine the adequacy of data processing systems and software;
 - j) Assess unusual situations such as off-market deals and unusual changes in volume;
 - k) Review brokerage commissions and fees; and
 - l) Test trader compensation calculations.
- 2) In conjunction with the examiner evaluating the internal audit function, conclude on the adequacy of derivative audit staff resources and qualifications.
- 3) Review the audit findings since the previous examination and consider the materiality of identified deficiencies.

- 4) Review the adequacy of management's steps to correct weaknesses identified by the internal and external audits and examination findings.

Information Technology

- 1) Review process flow charts or narrative work flow documents to identify and assess the derivative function's automated and manual systems and applicable control points for processing, verifying, and settling transactions. Examples of activities/controls to review include:
 - a) Reconcilements to determine whether there are significant unexplained differences, which should be discussed with management;
 - b) Independent review controls;
 - c) Trade confirmation process;
 - d) Dependence upon and controls surrounding user-developed applications;
 - e) Controls to ensure compliance policy limits;
 - f) Controls over trading systems access, trade confirmation workflow, and the process for entering trades into the system of records (Processes requiring multiple trade transaction entries to populate other systems are more error prone than when trade transaction data is only entered once (straight-through processing));
 - g) Documentation audit trail;
 - h) Operational losses to identify possible control weaknesses; and
 - i) Trader, counterparty, regulatory, and bank-wide concentration limits, robustness of data environment, authorized users, and vendor technical support.
- 2) In coordination with risk modeling and information technology (IT) examiners, review current systems capabilities and planned upgrades or enhancements.

Compliance

- 1) Determine if the regulatory entity complies with pertinent regulations and regulatory guidance.
- 2) Evaluate the board and management's efforts to ensure compliance with policies and procedures related to derivatives.
- 3) Assess compliance with relevant provisions of FHFA prudential management and operations standards, including Standards 1 (Internal Controls and Information Systems); 3 (Management of Market Risk Exposure); 4 (Management of Market Risk—Measurement, Risk Limits, Stress Testing, and Monitoring and Reporting); 8 (Overall Risk Management Processes) and 9 (Management of Credit and Counterparty Risk).

- 4) Evaluate compliance with any conditions imposed as part of the approval to conduct a new business activity, if applicable.
- 5) In conjunction with the examiner reviewing Financial Reporting, evaluate compliance with derivative transactions accounting.

4. Testing

- 1) Select a sample of counterparties where credit exposure is netted. Determine if calculations are correct and in accordance with the counterparty agreement. Verify that a signed master agreement was on file prior to performing netting.
- 2) Obtain a sample of trade tickets and follow the trade through the processing system beginning with the trader's verbal commitment to final accounting system entry to gain an understanding of the manner in which trades are processed. Consider the following:
 - a) The length of time from verbal commitment to accounting system entry;
 - b) Whether the back office has a queuing mechanism to ensure timely processing;
 - c) Whether the transaction's recording is completely independent of the traders; and
 - d) In the case of discrepancies, ensure that traders do not have the authority to make modifications.
- 3) Test a sample of transaction conversation recordings to ensure that the recording is adequate to provide evidence if a transaction's terms are disputed.
- 4) Review unconfirmed or disputed trades that have occurred in the last 12 months. Evaluate the source and nature of the discrepancies and disputes, their ultimate resolution, and the adequacy of the documentation.
- 5) Select a sample from the larger discrepancies between front and back office and determine the discrepancy's reason and the final resolution.
- 6) Review the reconciling process between general ledger and operational databases, regulatory reports, and broker statements. Determine:
 - a) The frequency and volume of reconciling items;
 - b) The sign-off process on reconciliation differences; and
 - c) Whether senior managers review large reconciliation differences

- 7) In coordination with the model risk examiners, evaluate the derivative contracts valuation method:
 - a) If outsourced, determine if several quotes are obtained and are independent of the originating dealer;
 - b) For internal valuations, determine if the method is consistent with the instrument's volatility and complexity. Ensure that assumptions are adequately supported and documented;
 - c) Confirm that the individual obtaining the values is independent of the risk-taker; and
 - d) Verify that the positions are revalued at least monthly and that revaluations can be obtained daily if needed.

- 8) Review a sample of counterparty credit evaluation files. Determine whether:
 - a) Files are current and contain sufficient information to make an informed credit decision such as Call Report data, SEC filings, missed payment data, regulated entity internal ratings, and current external ratings;
 - b) Internal ratings are accurate and current;
 - c) External ratings are not relied upon exclusively;
 - d) Credit evaluations consider regulated entity-wide aggregate exposure; and
 - e) The evaluation conclusion is reasonable.

- 9) Obtain a list of recent credit limit and policy exceptions to evaluate the level and nature of the exceptions. Verify that the exceptions were identified and approved, the approval basis and timeliness was appropriate, and the approver had the approval authority. Evaluate the level and nature of the exceptions and whether they conform to the institution's policies and procedure requirements.

- 10) Assess the effectiveness of the communication between the credit risk department and the group responsible for derivatives activities when a counterparty's financial condition deteriorates or changes are made to existing limits.

- 11) Verify that the regulated entity adequately confirms that counterparties have the legal capacity to execute specific derivative transactions and that the counterparty officials executing the derivative agreement are authorized by the counterparty to do so. (Evidence includes corporate resolutions, delegations of authority, and certificates of incumbency.).

5. Conclusions

- 1) Summarize conclusions for all examination work performed, including work performed by other FHFA staff as it relates to the regulated entity's derivatives practices. Develop a memorandum describing the risks to the institution related to capital and the regulated entity's management of those risks. The memorandum should describe the basis of conclusions reached and summarize the analysis completed. Within the memorandum, discuss the types of risk the regulated entity is exposed to in its derivatives practices (e.g., market, credit, operational); the level of risk exposure; the direction of risk (stable, decreasing, increasing); and the quality of risk management practices (strong, adequate, weak). A memorandum must be prepared irrespective of whether the examiner's assessment is positive or negative.
- 2) Conclude on the responsiveness to previous examination findings. Evaluate the adequacy of the regulated entity's response to previous examination findings and concerns.
- 3) Develop findings and prepare findings memoranda, as appropriate. Based on examination work performed, develop findings communicating concerns identified during the examination. Findings should identify the most significant risks to the institution and the potential impact to the regulated entity resulting from the concerns identified. Such documents should describe a remediation plan specifying the appropriate corrective action to address examination concerns and establish a reasonable deadline for the regulated entity to remediate the finding. Communicate preliminary findings with the EIC. Discuss findings with regulated entity personnel to ensure the findings and analysis are free of factual errors.
- 4) Develop a list of follow-up items to evaluate during the next annual examination. In addition to findings developed in the steps above, include concerns noted during the examination that do not rise to the level of a finding. Potential concerns include issues the regulated entity is in the process of addressing, but require follow-up work to ensure actions are completed appropriately. In addition, potential concerns should include anticipated changes to the institution's practices or anticipated external changes that could impact the institution's future derivatives practices.

Workprogram

1. Scope of Examination Work Performed

Workpapers must document the examination activities undertaken to evaluate potential risks in derivatives activities.

2. Description of Risks

- Identify areas of concern related to the regulated entity's use of derivatives
- Assess current risks and trends in the risk to the organization emanating from the regulated entity's derivatives activities
- Evaluate changes within the organization or industry affecting risk
- Evaluate the entity's own risk-identification practices and conclude on their adequacy

3. Risk Management

- Assess and conclude on the adequacy of the organization's risk identification process
- Assess and conclude on the overall adequacy of internal controls, including an evaluation of:
 - The regulated entity's organizational structure
 - Policy and procedure development for derivatives
 - Appropriateness of risk metrics established for derivatives activities
 - Reporting by management and the board
- Assess and conclude on the internal and external audit of risks
- Assess and conclude on the adequacy of information technology and controls for derivatives
- Assess and conclude on the adequacy of the organization's efforts to ensure:
 - Compliance with laws, regulations and other regulatory guidance
 - Compliance with the organization's policies and procedures

4. Testing

- Complete testing, as appropriate, to assess adherence with examination standards

5. Conclusions

- Summarize conclusions for all examination work performed related to derivatives
 - Conclude on the level of risk to the organization
 - Include an assessment of the adequacy of an organization's monitoring of risk and establishment of internal controls to mitigate risk
- Conclude on responsiveness to examination findings from previous examinations
- Develop examination findings as appropriate
- Identify areas requiring follow-up examination activities or monitoring