

Derivatives

Introduction

Forms of derivative products have existed for many years. The first derivatives products were commodity futures contracts to establish a more certain price for farmers' planned production. Commodity futures have been traded through formalized exchanges for many years. As a result of volatility in interest rates and currency exchange agreements, certain participants in the financial markets desired to hedge some of the risks they were facing. In the 1970s, exchange-based trading in stock options and financial futures contracts was initiated. The birth and rapid growth of the swap agreement began in the early 1980s.

In recent years, market deregulation, growth in global trade, and continuing technological developments led to a corresponding increase in demand for risk management products. This demand is reflected in the growth of financial derivatives from the standardized futures and options products of the 1970s to the wide spectrum of over-the-counter (OTC) products offered and sold today.

Many products and instruments are often described as derivatives by the financial press and market participants. In this guidance, financial derivatives are broadly defined as instruments that primarily derive their value from the performance of an underlying asset or item, typically interest or foreign exchange rates, equity, or commodity prices.

Examples of financial derivatives include futures, swaps, options, structured debt obligations and forward rate agreements. Recently, credit derivatives have been used increasingly by financial institutions to mitigate potential financial difficulties experienced as a result of the failure of borrowers to perform under the terms of loan transactions. Some derivatives are traded on organized exchanges, whereas others are privately negotiated transactions.

Derivatives have become an integral part of the financial markets because they can serve several economic functions. When used properly, derivative products can become effective tools in managing business risks. In the marketplace, derivatives can be used to expand product offerings to customers, manage capital and funding costs, and alter the risk-reward profile of a particular item or an entire balance sheet. Most importantly, derivative transactions offer the opportunity for financial institutions to reduce risks in the marketplace.

Despite their usefulness, financial derivatives may be used inappropriately. In recent years, there have been many examples of financial institutions and other companies losing large sums of money as a result of poorly controlled derivatives use. As the market has developed, there has been a significant increase in the types and complexity of derivatives. Failing to understand, identify and manage the risks associated with financial derivatives can have a sudden and significant impact on an institution's financial position. It is imperative that management of an FHLBank understand what they are attempting to accomplish in making use of the various derivative products in the marketplace.

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The use of financial derivatives requires special expertise, experience and rigorous controls. Critical management systems should be in place commensurate with each institution's use of derivative products. An FHLBank should not engage in derivatives activities unless management understands the features, cash flows and risks inherent in their particular products. Derivatives should not be executed without the proper systems and internal controls necessary to monitor and analyze the performance of the instruments. An FHLBank needs to ensure that the rewards associated with derivatives are commensurate with the risks being taken and that these risks are understood by the FHLBank's board of directors and senior management.

This guidance is intended to provide a framework for evaluating the adequacy of risk management practices regarding derivatives use by an FHLBank. Although this guidance is comprehensive in scope, it provides only a framework. Examiners must still exercise judgment when determining whether risk management processes are appropriate.

Regulatory Environment

The primary authorities governing derivatives use are set forth below:

- 1) *Rules and Regulations of the Federal Housing Finance Board*, which include the following parts and sections relevant to derivatives use:

Part 917 of the Finance Board regulations addresses powers and responsibilities of FHLBank boards of directors and senior management. In particular, Section 917.3, Risk Management, is pertinent.

Part 956 of the Finance Board regulations addresses the use of derivatives in the FHLBank System. Specifically, Section 956.5, Authorization for Derivative Contracts and Other Transactions, and Section 956.6, Use of Hedging Instruments, are pertinent.

FHLBank Environment

Generally, FHLBanks make use of derivative transactions to mitigate risks in market conditions. The most common use of derivative transactions is for the purpose of converting the "fixed or floating" characteristics of assets or liabilities and eliminating the mismatch that would occur between assets and the underlying funding sources by use of interest rate swaps. Additionally, FHLBanks execute various other derivative transactions to mitigate market risks including the use of floors and caps. These transactions are frequently entered into to hedge the risks provided in advance products the FHLBanks offer to members. Forward contracts are used to eliminate the adverse impact of changes in market conditions on the value of assets acquired in AMA programs.

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One of the risks most frequently faced by FHLBanks in the management of financial performance centers on the early payment of mortgages by borrowers, which in turn, can result in prepayment of advances or early pay down of AMA assets. FHLBanks have addressed this risk in a number of ways, including the use of 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. As one would assume, 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 uneconomic.

Because of the unique use of derivatives in an FHLBank and the fact that most derivatives used are designed to mitigate risks in a specific transaction, almost all derivatives used by the FHLBanks are OTC transactions. OTC derivatives are attractive because transactions may be structured to fit the specifics of the risks an FHLBank is attempting to address. Without an exchange mandating rigid standards for settling transactions and marking the positions to market on a daily basis, the FHLBank must satisfy questions it may have related to the creditworthiness of counterparties.

FHLBanks generally segregate the key duties associated with executing and monitoring derivative transactions. Although differences exist among the twelve FHLBanks, the treasury department is usually charged with evaluating the various options for mitigating market risks. Decisions related to executing derivative transactions are usually made by staff in these departments. Valuing the derivative transactions is usually carried out by a group of individuals separate from those executing the derivatives. Accounting for the transaction and assessing the credit risk of counterparties is generally segregated from the risk taking position of the FHLBanks. It is essential that these various functions related to derivative transactions are fully segregated and independent.

Derivatives are an essential tool for Banks to mitigate the interest rate risk exposures experienced as a result of market conditions. Prior to the regulatory requirement for each FHLBank to adopt a capital plan, interest rate risk limitations were established by regulatory guidance in the Finance Board Financial Management Policy. The policy established parameters limiting interest rate risk exposure measured by market value-of-equity (MVE) and duration-of-equity (DOE). Most FHLBanks continue to operate under interest rate risk parameters imposed by board-approved policies. Additionally, some of the FHLBanks have adopted interest rate risk limitations for earnings performance. To comply with these limits, most FHLBanks use derivatives to modify the characteristics of portions of the balance sheet.

Retention of proper legal documentation related to derivative transactions is important. Derivatives are generally only entered into with counterparties when a legally enforceable International Swaps and Derivative Association (ISDA) agreement has been executed. However, instances have been noted where FHLBanks were unable to present copies of these documents which establish the relationship with the counterparty for all

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derivative transactions. Amendments to the legal documents should be executed as new derivative transactions are entered into.

Credit risk related to derivative transactions should be monitored by individuals independent of the execution of derivatives. FHLBanks should have a system in place to conduct an independent analysis of counterparty credit risk based on information from a variety of sources, and not place undue reliance on rating agency information. When assessing counterparty credit risk of institutions not domiciled in the United States, FHLBanks should be cognizant of differences in accounting practices or other financial reporting rules which could distort the financial position of counterparties.

Accounting for derivative transactions can greatly affect the financial performance of the institutions engaging in derivative transactions. Management must ensure that documentation is adequate to support the accounting treatment for derivative transactions, or otherwise be subject to volatility due to changes in the value of derivative instruments that are not allowed hedge accounting treatment.

Whatever the organizational structure of the individual FHLBanks, the complexity of derivative transactions mandates that the FHLBank have adequate controls to mitigate potential risks. Senior management must have the knowledge and expertise to manage the complexity associated with derivative transactions. Reporting to appropriate management personnel and committees is essential to ensure all parties are fully informed. Board-level guidance is essential for establishing limitations related to the appropriate use of derivative transactions. Each FHLBank should have adequate systems to monitor and report the performance of derivative transactions and their overall impact. FHLBanks should ensure that they have fully analyzed potential risks and considered alternatives before engaging in new derivative product transactions.

Risks Associated with Derivatives

An FHLBank's primary risks relating to derivatives activities are set forth below.

1) Lack of Sound Corporate Governance (Board of Directors and Senior Management Oversight)

- a) Key risks and controls are not adequately identified, measured, monitored, and controlled.
- b) A sound risk management framework composed of policies and procedures, risk measurement and reporting systems, and independent oversight and control processes has not been developed and implemented.
- c) Senior management has not adequately analyzed new products or activities, taking into account pricing, processing, accounting, legal, risk measurement, audit, and technology considerations.
- d) Risk management, monitoring, and control functions are not sufficiently independent of the position-taking functions.

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- e) Duties, responsibilities, and staff expertise, including segregation of operational and control functions, are not adequately defined.
- f) Independent audit coverage and testing is limited; auditors are inexperienced or lack the technical expertise to test the control environment.

2) *Market Risk*

Market risk is the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect an institution's MVE or earnings. For FHLBanks, the primary component of market risk is interest rate risk – the risk to the MVE and earnings related to changes in interest rates. Interest rate risk arises from differences between the timing of rate changes and the timing of cash flows (repricing risk); from changing rate relationships among yield curves that affect FHLBank activities (basis risk); from changing rate relationships across the spectrum of maturities (yield curve risk); and from interest-rate-related options embedded in FHLBank products (option risk). Price risk is closely related to interest rate risk and is the risk to earnings or capital arising from changes in the value of a financial instrument or portfolio of financial instruments.

Repricing or Maturity Mismatch Risk

Repricing risk results from differences in the timing of rate changes and the timing of cash flows that occur in the pricing and maturity of an FHLBank's assets, liabilities, and derivatives instruments. Repricing risk is often the most apparent source of interest rate risk for a FHLBank and is often gauged by comparing the volume of a FHLBank's assets that mature or reprice within a given time period to the volume of liabilities that reprice. Because the yield curve is generally upward-sloping (long-term rates are higher than short-term rates), FHLBanks can often earn a positive spread by funding long-term assets with short-term liabilities. However, this strategy makes earnings vulnerable to an increase in interest rates that raises the FHLBank's cost of funds when short-term liabilities have to be replaced.

Basis Risk

Basis risk is the risk that the correlation between two prices or interest rate indices may change. Correlation is the relationship between mathematical or statistical variables. For example, if an FHLBank uses a Constant Maturity Treasuries Indexed-Consolidated Obligation (CMT) to fund LIBOR-indexed advances, it is exposed to basis risk because changes in CMT and LIBOR will not always move in tandem.

Yield Curve Risk

Yield-curve risk arises from variations in the movement of interest rates across the maturity spectrum. It involves changes in the relationship between interest rates of different maturities of the same index or market, such as a three-month U.S. Treasury

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security (Treasury) versus a five-year Treasury. The relationships change when the shape of the yield curve for a given market flattens, steepens, or becomes negatively sloped during an interest rate cycle. Yield curve variation can accentuate the risk of an FHLBank's position by amplifying the effect of maturity mismatches.

Option Risk

Option risk arises when an FHLBank or an FHLBank's member has the right, but not the obligation, to alter the level and timing of the cash flows of an asset, liability, or derivatives instrument. An option gives the option holder the right to buy (call option) or sell (put option) a financial instrument at a specified price (strike price) over a specified period of time. For the seller or writer of an option, there is an obligation to perform if the option holder exercises the option.

The option holder's ability to choose whether to exercise the option creates an asymmetry in an option's performance. Generally, option holders will exercise their right only when it is to their benefit. As a result, an option holder faces limited downside risk (the premium or amount paid for the option) and unlimited upside reward. The option seller faces unlimited downside risk (an option is usually exercised at a disadvantageous time for the option seller) and limited upside reward (if the holder does not exercise the option and the seller retains the premium).

Options often result in an asymmetrical risk/reward profile for the FHLBank. If the FHLBank has written or sold options to its members, the amount of earnings or market value that an FHLBank may lose from an unfavorable movement in interest rates may exceed the amount that the FHLBank may gain if rates move in a favorable direction. As a result, the FHLBank may have more downside exposure than upside reward.

Some FHLBanks buy and sell options on a "stand-alone" basis. The option has an explicit price at which it is bought or sold and may or may not be linked with another FHLBank product. An FHLBank does not have to buy and sell explicitly priced options to incur option risk, however. Indeed, FHLBanks incur option risk from options that are embedded or incorporated into certain assets.

Prepayment options are the most prevalent embedded option. Most residential mortgage loans give the borrower an option to prepay with little or no prepayment fee. FHLBanks may also permit the prepayment of advances with no prepayment penalty, or by not enforcing prepayment penalties in response to competitive pressures. Advances without a prepayment penalty are usually priced at a higher rate. A prepayment option is equivalent to having written a call option to the member. When rates decline, members will likely exercise the calls by prepaying advances, and the FHLBank's asset maturities will shorten just when extension would be preferable. And when rates rise, members will likely keep their advances, making it difficult for the FHLBank to shorten asset maturities just when shortening would be preferable.

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FHLBank products that contain interest rate caps or floors are other sources of option risk. Such products are often embedded into advances and may have a significant effect on an FHLBank's rate exposure. For the FHLBank, an advance cap is like selling a put option on a fixed income security, and a floor is like owning a call. The interest rate on a cap or floor rate is the strike price. When market interest rates exceed the cap rate, the borrower's option moves "in the money" because the borrower is paying interest at a rate lower than market. When market interest rates decline below the floor, the FHLBank's option moves in the money because the rate paid on the loan is higher than the market rate.

Price Risk

Price risk is the risk to earnings or capital arising from changes in the value of portfolios of financial instruments. Many FHLBanks use the term price risk interchangeably with market risk. The accounts most affected by price risk are those that are revalued (marked-to-market) for financial presentation, such as trading account securities, derivatives, and foreign exchange products. When evaluating the sensitivity of a derivative contract to a change in price risk factors, the contract's terms, maturity, and timing and amount of future cash flows must be considered. An assessment of the potential impact on a portfolio of contracts should consider the extent to which contracts may complement or offset one another.

3) *Credit Risk*

Credit risk is the risk to earnings or capital of an obligor's failure to meet the terms of any contract with the FHLBank or otherwise to perform as agreed. Credit risk arises from all activities in which success depends on counterparty, issuer, or borrower performance. It arises any time FHLBank funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether reflected on- or off-balance sheet.

Credit exposure arising from derivative activities should be monitored and managed within the same framework used to assess credit risk in traditional banking activities. Counterparty credit risk can be managed through accurate measurement of exposures, ongoing monitoring, timely counterparty credit evaluations, and sound operating procedures. In addition, there are a growing number of mechanisms that can reduce credit exposure, such as netting arrangements, credit enhancements, and early termination agreements.

Credit risk in derivative products comes in the form of pre-settlement risk and settlement risk. Pre-settlement risk is the risk of loss due to a counterparty defaulting on a contract during the life of a transaction. It consists of both current exposure (the replacement cost of the derivative transaction or its market value) and the add-on (an estimate of the future replacement cost of the derivative).

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Calculating pre-settlement risk is more complex than assessing the credit risk of traditional lending products. The maximum credit exposure from traditional banking activities is generally limited to the outstanding amount of funds advanced or invested at the time of a customer default. For many off-balance-sheet derivatives, however, there is no advancement of funds or exchange of principal. Therefore, the risk of loss is conditional on the counterparty defaulting at a time when the derivative contract has positive value to the FHLBank (an in-the-money contract) at the time of default. The level of exposure can vary throughout the life of the derivative contract. Even derivative contracts that are out-of-the-money (contracts under which the FHLBank has no current loss exposure because the mark-to-market is positive for the counterparty, not the FHLBank) have potential credit risk, because changes in market factors can cause the value of the contract to become positive to the FHLBank at any point prior to maturity. To manage credit risk effectively, an FHLBank should develop a reliable method of estimating potential credit exposure.

Settlement risk is the loss exposure arising when an FHLBank honors its obligation under a contract before the counterparty meets its obligation. A failure to perform may be due to counterparty default, operational breakdown, or legal impediments. Settlement risk occurs from the time an outgoing payment instruction can no longer be canceled unilaterally until the time the incoming payment is received and reconciled. This risk arises because it is generally impractical to arrange simultaneous payment and delivery in the ordinary course of business. For example, settlement risk arises in international transactions because of time zone differences. 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 an FHLBank can be certain that a payment has been received. FHLBanks should monitor and control settlement risk separately from pre-settlement risk.

4) *Operational Risk*

Operational risk is the risk to earnings or capital arising from problems with service or product delivery. This risk is a function of internal controls, information systems, employee integrity, and operating processes. Operational risk exists in all products and services. Derivative activities can pose challenging operational risks because of their complexity and continual evolution. The operations function refers to the product support systems and related processes.

A cornerstone to minimizing operational risk is the internal control framework instituted by the board of directors and senior management to help prevent losses caused by fraud and human error. Fundamental to this framework is the segregation of the operations and risk-taking functions. Adequate systems and sufficient operational capacity are essential to support derivative activities. Just as trading systems have evolved, operational systems must keep pace with the rapid growth in both the volume and complexity of derivatives

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products. Trades must be processed timely not only to service the counterparty but also to update position management and credit line monitoring systems.

Skilled and experienced staff is integral to the efficient operation of back office systems and is especially true for derivatives activities because of their complex nature. Management should regularly evaluate whether the staff have the necessary knowledge and skills and whether staffing levels are sufficient.

Operational risk also encompasses the risk to earnings or capital arising from violations of laws, rules, regulations, prescribed practices, or ethical standards. The risk also arises when the laws or rules governing certain FHLBank products or activities of the FHLBank's members may be ambiguous or untested or when these change. This risk can lead to an inability to enforce contracts as written, or the voiding of contracts.

In addition, earnings or capital face operational risk arising from adverse business decisions or improper implementation of those decisions. This risk is a function of the compatibility between an organization's strategic goals, the business strategies developed to achieve those goals, the resources deployed in pursuit of these goals, and the quality of implementation. The resources needed to carry out business strategies are both tangible and intangible. They include communication channels, operating systems, delivery networks, and managerial capacities and capabilities.

This risk may also arise when the FHLBank's business approach is not well developed or properly executed because of: an inability to react to changes in market condition, shifts in internal management focus, lack of internal coordination and communication to facilitate product delivery, or an inability to assemble the necessary financial, personnel, and systems infrastructure. Proper strategic planning and consistent market approach are integral to the success of the product or business activity.

Earnings or capital can also face risk arising from adverse public opinion or a negative reputation. This affects the FHLBank's ability to establish new relationships or services, or continue servicing existing relationships. This risk can expose the FHLBank to litigation, financial loss, or damage to its reputation and is present throughout the organization. It includes the responsibility to exercise an abundance of caution in dealing with its members and community. This risk is also present in such activities as member transactions.

Because the orderly operation of financial markets is largely based on confidence among all market participants, FHLBanks that actively associate their name with financial products such as derivatives are more likely to have higher operational risk. Derivative activities carry a higher degree of operational risk related to reputation because they are generally more complex and less understood by the public than other financial products. If the FHLBank engages in a derivative transaction that is inappropriate for the member/counterparty or that the member/counterparty does not understand, there is

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greater potential for member/counterparty default, litigation, and damage to the FHLBank's reputation.

5) Financial Condition and Performance

The use of derivatives can adversely affect the FHLBank's liquidity and therefore its financial condition and performance, most notably if the FHLBank is unable to execute a transaction at a reasonable price. This typically arises when counterparty exposure requires a user to liquidate or offset a particular derivative position. When reacting to control this risk, users then become subject to associated market risks affecting the value of the derivative or the cost of the derivative needed for an offset position. The degree of market risk is aggravated when an inadequate primary or secondary market exists for the derivative subject to liquidation or offset.

In addition to the effects associated with liquidating a position, derivative transactions may adversely affect the funding and cash flow positions of an institution. Funding risk stemming from derivatives alone provides only a partial picture of an FHLBank's liquidity position. In general, funding risk is best analyzed for the whole institution across all financial instruments. The impact to an FHLBank's cash-flow position, however, could be significant. If an FHLBank was hedging a large position 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.

Specific Risk Controls Relating to the Derivatives Management Function

An FHLBank's controls relating to the derivatives management function are set forth below.

1) Corporate Governance (Board of Directors and Senior Management Oversight)

The safe and sound use of derivatives is contingent upon effective senior management and board of directors oversight. It is the responsibility of the board to hire a competent executive management team, endorse the corporate vision and the overall business strategy (including the institutional risk appetite), and hold executive management accountable for performance. The board must understand the role derivatives play in the overall business strategy.

It is the responsibility of senior management to ensure the development of risk management systems. This entails developing and implementing a sound risk management framework composed of policies and procedures, risk measurement and reporting systems, and independent oversight and control processes.

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The formality of senior management and board of directors oversight mechanisms will differ depending on the derivatives activities of the FHLBank. However, the board and senior management must provide adequate financial resources, technical expertise, and systems technology support to implement appropriate oversight mechanisms.

The management of derivative activities should be integrated into the FHLBank's overall risk management system using a conceptual framework common to the FHLBank's other businesses. For example, the price risk exposure from derivative transactions should be assessed in a comparable manner to and aggregated with all other price risk exposures. Risk consolidation is particularly important because the various risks contained in derivatives and other market activities can be interconnected and may transcend specific markets.

Policies and Procedures

An FHLBank's board-approved policies should provide a framework for the management of risk. Written policies for derivative activities should ensure proper identification, quantification, evaluation, and control of risks.

Guidelines for derivatives activities can be included in policies that control financial risk-taking, including price, interest rate and credit risk, as well as liquidity adequacy, at the FHLBank level, as well as at the functional business unit or product level. Operating, accounting, compliance, and capital management policies should also address the use of derivatives.

Senior management should ensure that policies identify managerial oversight, assign clear responsibility, and require development and implementation of procedures to guide the FHLBank's daily activities. Policies should detail authorized activities, as well as activities that require board approval and activities that are considered inappropriate. Policies should articulate the risk tolerance of the FHLBank in terms of comprehensive risk limits, and require regular risk position and performance reporting.

Policies must keep pace with the changing nature of derivative products and markets. On an ongoing basis, the board of directors or appropriate board committee should review and endorse significant changes in derivative activities. At least annually, the board or a designated board committee should also approve key policy statements. Meeting minutes should document these actions.

New Products

Senior management should perform a comprehensive analysis of new products or activities. New products frequently require different pricing, processing, accounting, and risk measurement systems. Management and the board of directors must ensure that adequate knowledge, staffing, technology, and financial resources exist to administer the activity. Plans to execute new products for member counterparties or to mitigate risk

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should consider the cost of necessary controls and retaining skilled staff. The new product approval process should include a review by all relevant areas such as risk control, operations, accounting, legal, audit, and line management. Depending on the new product or activity and its potential impact on the FHLBank's risk profile, senior management, and in some cases, the board of directors, should provide the final approval. For new and existing products, a uniform product assessment process should be part of the overall risk management function. The goal of this process should be to ensure that all significant risks and issues are addressed. Elements that should be included in a uniform product assessment are:

- a) Product definition.
- b) Explanation of how the product or activity meets business strategies and objectives, such as customer service or risk management tool.
- c) Pricing mechanisms.
- d) Description of risk management processes.
- e) Descriptions of limits and exception approval processes.
- f) Capital allocations.
- g) Accounting procedures.
- h) Operating procedures and controls.
- i) Legal documentation requirements.
- j) Other legal and regulatory issues.
- k) Tax implications.
- l) Ongoing update/maintenance.

Recognition that a product or activity as new is central to ensuring that variations on existing products receive the proper review and authorization. Factors that should be considered when deciding whether a product must be routed through the new-product process include, but are not limited to: capacity changes, structure variations (non-amortizing swap versus amortizing interest rate swap), products which require a new pricing methodology, legal or regulatory considerations; and market characteristics.

Oversight Mechanisms

An FHLBank's board of directors and senior management should approve policies delineating permissible derivative activities and risk tolerances. However, the volume and complexity of derivatives activities may make it impractical for these directors and senior management to oversee the day-today management. Consequently, they rely, in part, on strong risk control and audit functions to ensure compliance with policies.

The risk control and audit functions should possess the independence, authority, and corporate stature to identify and reporting findings. It is important to employ individuals with sufficient experience and technical expertise to be credible.

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Risk Control

The role and structure of the risk control function (also referred to as “market risk management”) should be commensurate with the extent and complexity of the derivative activities. Because measuring and controlling the risk of some derivative activities can be more complex than doing so for traditional products; a strong risk control function is a key element in assisting members of the board of directors and senior managers in fulfilling their oversight responsibilities.

Risk control units should regularly evaluate risk-taking activities by assessing risk levels and the adequacy of risk management processes. These units should also monitor the development and implementation of control policies and risk measurement systems. Risk control personnel staff should periodically communicate their observations to senior management and the board of directors.

Depending on the nature and extent of an FHLBank's activities, the risk control function can be structured in various ways. Often the most practical solution for such FHLBanks is the use of independent treasury support units, or qualified outside auditors or consultants. These individuals report risk-taking and management issues to the board of directors or a committee, such as an asset liability management committee (ALCO). The selected approach should be structured to ensure sufficient stature and expertise in the oversight role.

Audit

Audits should be conducted by qualified professionals who are independent of the business line being audited. Audits should supplement, and not be a substitute for, a risk control function.

The scope of audit coverage should be commensurate with the level of risk and volume of activity. The audit should include an appraisal of the adequacy of operations, compliance, and accounting systems and the effectiveness of internal controls. Auditors should test compliance with the FHLBank's policies, including limits. The audit should include an evaluation of the reliability and timeliness of information reported to senior management and the board of directors. Auditors should trace and verify information provided on risk exposure reports to the underlying data sources. The audit should include an appraisal of the effectiveness and independence of the risk management process. Auditors might ensure that risk measurement models are properly validated.

The audit should include an evaluation of the adequacy of the derivative valuation process and ensure that it is performed by parties independent of risk-taking activities. Auditors should test derivative valuation reports for accuracy. For hedge transactions, auditors should review the appropriateness of accounting treatment and test for compliance with accounting policies.

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Procedures should be in place to ensure that auditors are informed of significant changes in product lines, 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 or risk levels, are given appropriate attention.

The level of auditor expertise should also be consistent with the level and complexity of activities and degree of risk assumed. In many cases, FHLBanks choose to out-source audit coverage to ensure that the professionals performing the work possess sufficient knowledge and experience.

The audit function must have the support of management and the board of directors in order to be effective. Management should respond promptly to audit findings by investigating identified system and internal control weaknesses and implementing corrective action. Thereafter, management should periodically monitor newly implemented systems and controls to ensure they are working appropriately. The board, or designated committee, should receive reports tracking management's actions to address identified deficiencies.

Risk Measurement

Accurate measurement of derivative-related risks is necessary for proper monitoring and control. All significant risks should be measured and integrated into an FHLBank-wide or corporate-wide risk management system. For example, price risk measurement should incorporate exposure from derivatives, as well as cash products.

Measurement of some types of risk is an approximation. At a minimum, management should regularly assess vulnerabilities to these risks in response to changing circumstances. The sophistication and precision of risk measurement methods will vary by the types, volumes, and level of risk for activities performed.

Risk Limits

Risk limits serve as a means to control exposures to the various risks associated with derivative activities. Limits should be integrated across the FHLBank and measured against aggregate individual and geographical risks. Limits should be compatible with the nature of the FHLBank's strategies, risk measurement systems, and the board of directors' risk tolerance. In addition to an annual approval process, changes in resources or market conditions should prompt the board to reassess limits and make appropriate revisions. Annual approvals of limits and any interim revisions should be communicated to appropriate parties within the FHLBank, including traders, risk managers, operations staff, and auditors.

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In addition to providing a means of controlling aggregate exposure, limits can be used to foster communication of position strategies and changes in the FHLBank's risk profile. Limits called "management action triggers" (any limit that would require some level of management approval or other action in order to be exceeded) are often used for this purpose. Line managers should promptly report unanticipated changes and progressively deteriorating positions, as well as other significant issues arising from their positions, to the risk control function and responsible management.

When reviewing an FHLBank's limit structure, examiners should evaluate the size of limits in relation to the FHLBank's capital base, earnings, and the board of directors' expressed risk tolerance. The risks resulting from full utilization of an FHLBank's limits should not compromise the financial condition of the FHLBank. Examiners should analyze the percentage of limit utilization over time. Excessively large limits as compared to normal usage can mask meaningful shifts in risk-taking activity and can fail to trigger a formal evaluation process. Conversely, overly restrictive limits that are frequently exceeded may undermine the purpose of the limit structure.

Management Information Systems

The frequency and composition of board of directors and management reporting depends upon the nature and significance of derivative activities. Where applicable, board and management reports should consolidate information across functional and geographic divisions. Reporting should be tailored to the intended audience, providing summary information to senior management and the board and more detailed information to line management. For example, the board, or designated committee, should periodically receive information illustrating trends in aggregate exposure and compliance with business strategies and risk limits. Line management should receive more detailed reports with sufficient information to assess risk levels, returns, and consistency with strategic objectives. Ideally, management reports should be generated by control departments independent of the risk-takers.

Personnel and Compensation Plans

Management should ensure that compensation programs are sufficient to recruit and retain experienced staff. However, compensation programs should not encourage excessive risk-taking. Because of the leverage and volatility associated with derivatives and the consequent ability to generate large profits in a relatively short time, employees may be tempted to take excessive risk. Therefore, it is important that compensation programs do not motivate an employee to take risk that is incompatible with corporate strategies, risk appetite, policies, or applicable laws and regulations. Compensation that is based on short-term results may not take into account long-term risks.

Staff turnover can create serious problems, especially if knowledge is concentrated in a few individuals. Periodic rotation and cross-training of staff members performing key functions can help build depth over time and alleviate some of this risk. In addition, both

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contingency plans and management succession plans should be established addressing the loss of key personnel and developing a pipeline to fill unanticipated position vacancies, respectively. Contingency actions may include curtailing existing or new activities or outsourcing functions to qualified auditors or consultants. Succession plans should identify and lay out individual development plans to develop bench strength to backfill vacancies from within where ever possible.

Personnel policies should require employees who are in positions that can significantly affect the books and records of the FHLBank to take two consecutive weeks of leave each year. The importance of implementing this control has been confirmed by recent well publicized 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. Employees subject to this policy should not be able to effect any transactions while on leave. Exceptions to this policy should be granted only after careful consideration and approval by senior management. In no instance should multiple exceptions for the same employee be allowed to occur.

2) *Market Risk*

Derivatives are often an integral part of a financial institution's means to manage interest rate risk exposure. A formal structure should be in place assessing the FHLBank's overall interest rate risk measurement and management practices. When used as hedging tools, derivatives can not be viewed separately from the overall management of the financial institution's market risk exposure.

The level of structure and formality in an FHLBank's measurement and management of interest rate risk should be commensurate with the activities and level of risk approved by senior management and the board of directors. Contributing to effective supervision of interest rate risk are the following:

- a) Appropriate board and management supervision.
- b) Well-formulated policies and procedures.
- c) Reliable pricing and valuation systems.
- d) Accurate risk identification and measurement processes.
- e) Interest rate risk limits.
- f) Timely and effective risk reporting, monitoring, and exception approval processes.

FHLBanks must understand the factors affecting the price of derivatives to be able to effectively measure and manage potential risks to earnings and capital. FHLBanks should have access to several pricing sources to ensure the reasonableness of the prices being quoted. Independent third parties should be used for obtaining market values. However, any considerations affecting independence, such as obtaining market values from the same dealer who sold the derivatives, need to be assessed by management.

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At a minimum, the risk measurement system should evaluate the possible impact on earnings and MVE that may result from adverse changes in interest rates and other market conditions. The measurement system should also allow management to monitor and evaluate the effectiveness of derivatives in the FHLBank's overall interest rate risk profile. This system should include risk-adjusted return analyses.

Interest Rate Risk Measurement

Risk measurement systems should be able to identify and quantify in timely fashion the major sources of interest rate risk. All FHLBanks should have models that enable them to accurately quantify sensitivity to changes in interest rates. However, sophisticated interest rate risk measurement systems introduce the added risk that assumptions used in the model may not hold in all cases. Such a possibility is generally termed “model” risk. FHLBanks should regularly re-evaluate interest rate risk model assumptions to ensure that they provide a reasonable estimate of risk for the scenarios being simulated. See the “Interest Rate Risk Management” section of this manual for more information on evaluating interest rate risk models.

At least annually, a summary of current interest rate risk measurement techniques and management practices should be provided to senior management and the board of directors. This presentation should explicitly identify and report weaknesses or limiting assumptions in risk measurement models. Also, significant revisions to models should be reported and the impact on risk levels quantified.

3) *Credit Risk*

Each FHLBank must have an effective means of measuring and controlling derivatives credit risk. A prudently controlled environment will include the following:

- a) Effective senior management and board of directors oversight.
- b) Policies and procedures.
- c) Strong credit review, approval, and limit processes.
- d) Accurate and validated risk measurement systems.
- e) Timely and effective risk reporting, monitoring, and exception approval processes.
- f) Proper credit documentation standards.

Counterparty credit risk should be strictly controlled through a formal and independent credit process. To avoid conflicts of interest, the credit approval function should be independent of the risk-taking unit and staffed by qualified personnel. Independence must be maintained for the initial credit assessment, establishment of counterparty credit lines, monitoring and reporting of exposure, and approval of exceptions. These functions are typically performed by the FHLBank's credit division.

The credit department should periodically review the creditworthiness of derivative counterparties and assign risk ratings as they would to members using advances.

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Communication between the risk-taking unit and credit department are essential to ensure that all parties are informed of a change in the credit line or creditworthiness of a counterparty. Nonperforming contracts should be reported consistent with the FHLBank's internal policy for nonperforming assets. The quality of the derivative counterparty portfolio and the integrity of risk ratings should be periodically reviewed by the credit review function or similar independent party.

Credit Risk Measurement

Presettlement Risk

FHLBanks should have a system to quantify pre-settlement risk. Pre-settlement credit risk can be estimated using a variety of methods. Techniques have evolved from using the full notional amount of the contract, to a percentage of the notional amount, to loan equivalent estimates. Many FHLBanks now employ sophisticated computer models to simulate the potential credit exposure over the life of a derivative contract.

The credit risk in a derivative product is a function of several factors. The risk depends on the type of contract, cash flows, price volatility, tenor, and other factors. Exposure at the beginning of a contract is usually at or near zero. Most transactions are at market prices. Off-market transactions create an immediate credit exposure, with the risk most often taken by the FHLBank. Most derivative contracts do not involve an exchange of principal. After inception, the expected risk increases or decreases to reflect the impact of changing price factors. The potential for rate movements and a change in potential exposure increases with the duration of the agreement. Credit risk is generally reduced over the life of the contract because (1) interim cash flows reduce payment uncertainty and (2) the shorter the remaining life of the contract the less potential there is that significant adverse rate movements will occur. The credit exposure will often be skewed to either the beginning or the end of the contract depending on the size of the rate differentials and timing of cash flows.

Settlement Risk

The duration of an individual FHLBank's settlement exposure will depend on the characteristics of the relevant payments systems as well as on the FHLBank's internal reconciliation procedures. FHLBanks can reduce settlement exposure by negotiating their correspondent arrangements to reduce the amount of time they are exposed to non-cancelable payments awaiting settlement. Further, FHLBanks should review the time necessary for reconciliation of payment receipt. Reducing the time it takes to identify final and failed trades will reduce settlement exposure. FHLBanks should consider net settlement payments, when legally permissible, rather than settling on a trade-by-trade basis. Netting is discussed later in this section and in the "Operational Risk" section of this manual.

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Credit Risk Limits

Counterparty credit limits should be approved before the execution of derivative transactions. FHLBanks should establish counterparty credit limits in much the same way as traditional credit lines. The credit file should document the purpose, payment source, and collateral (if any). Credit evaluations of individual counterparty credit limits should aggregate limits for derivatives with the credit limits established for other activities.

Mechanisms to Reduce Credit Exposure

In recent years, FHLBanks have increasingly used netting arrangements, credit enhancements, and early termination agreements 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, FHLBanks 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 International Swaps and Derivatives Association (ISDA) agreement, Foreign Exchange and Options Master Agreement (FEOMA), and International Currency Options Market (ICOM) agreement. FHLBanks must also ensure that the arrangements are legally enforceable in the relevant jurisdictions. See the “Operational Risk” section for more information on documentation and enforceability. FHLBanks must ensure that they have adequate operational capacity to perform the necessary calculations for these arrangements.

Management Information Systems

Risk measurement and assessment should be conducted on an aggregate basis and reports should be timely and accurate. They should be generated from sources independent of the trading function, and distributed to all appropriate levels of management. Daily reports should, at a minimum, address significant counterparty line usage and limit exceptions. FHLBanks should combine the derivatives exposures with other credit risks to determine the aggregate risk for each counterparty. Monthly reports should detail portfolio information on industry concentrations, tenors, exception trends, and other relevant information with respect to pre-settlement exposure.

4) *Operational Risk*

Operational Risk Management

In order to effectively manage operational risk, senior managers must fully understand the processing cycle and must change processes and technology when necessary. They should identify areas of transaction risk and estimate the loss an FHLBank could suffer from a given exposure.

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To ensure efficient processing and minimize operational risk, all personnel involved in derivatives activities should understand the distinct roles played by member services, trading, risk control, credit, operations, and accounting. Insufficient knowledge of derivatives prevents an understanding of the risks involved and may prevent effective internal controls from being implemented. The operations unit needs to be more than a processing center. The staff must be knowledgeable of derivative products, and able to communicate and work effectively with front office traders. These skills require that an FHLBank provide back-office personnel with appropriate continuing education.

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, thus jeopardizing the quality of management decisions. For example, losses can occur not only from settlement errors but also from managing incorrect positions or misstating credit exposure because trade data was input incorrectly. Further, operational errors and inefficiencies can harm an FHLBank's reputation that might result in a loss of business.

Organizational Considerations in Managing Operational Risk

The function of an operations department is to process transactions, record contracts, and reconcile transactions and databases. A properly functioning operations department will help ensure the integrity of financial information and minimize operations, settlement, and legal risks. The operations area should provide the necessary checks to detect unauthorized trades.

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." In some FHLBanks, a "middle office" helps to reconcile systems, monitor positions and revenues, and perform related activities. FHLBanks 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.

At FHLBanks for which establishing a separate risk control unit is not economical, the back office will generally be responsible for much of the risk control. This may include exposure/position reporting, monitoring of credit and price limits, and profit and loss reporting. In any event, it is essential that the FHLBank's recording/ reporting function is independent of the risk-taking function.

Operational risk is very difficult to quantify. The ability to control this risk depends on accurate transaction updates to all systems, such as trading, settlement, credit, and general ledger. Back-office personnel who are responsible for accounting records, confirmations, reconciliation and settlement, must maintain a reporting line that is independent of front-office personnel. On-line credit systems should calculate aggregate exposure globally with credit exposure and credit usage information updated as soon as deals are transacted. Procedures should be established to segregate duties among persons responsible for:

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making investment and credit decisions; confirmations; recordkeeping; reconciliations; and disbursing and receiving funds.

FHLBanks that transact large volumes of trades should monitor the quality and efficiency of operations against quantifiable performance measures. Examples of such measures include the number of transactions processed per employee and overtime hours worked. Other examples of performance measures include: the volume of disputed, unconfirmed, or failed trades; reconciling items; and documentation exceptions. Timeframes for resolving discrepancies should be documented, evaluated, and regularly reported to senior management.

Policies and Procedures

Policies and procedures are the framework for managing operational risk. FHLBanks should insure that operating policies and procedures are developed and regularly updated. Procedures manuals can take different forms, but their detail should be commensurate with the nature of derivative activities. Policies and procedures for derivatives activities need not be stand-alone documents, but rather can be incorporated into other applicable policies such as operations guidance on interest rate risk, investment securities, and dealing activities. The documents should guide employees through the range of tasks performed and should contain guidance on relevant areas of trade processing, account valuations, reconciliations and documentation.

The following issues should be addressed in policies and procedures:

Trade Capture

The front office conducts a transaction over the phone, through a broker, or through an electronic matching system. Phone conversations should be captured on recorded lines in the event of disputes between the counterparties at a later date. After the transaction is executed, staff should immediately input trade data into the trading system (or write a ticket to be entered into an FHLBank's operations system). Information on transactions conducted over electronic dealing systems can flow electronically to update relevant reports and databases. All trades should be entered promptly so that all systems can be updated, including credit, intra-day P&L, risk positions, confirmation processing, settlement, and general ledger.

Trade information includes trade date, time of trade, settlement date, counterparty, financial instrument traded and amount transacted, price or rate, and netting instructions. Settlement instructions sometimes accompany this information. The trading system uses this information to update position and P&L reports or on-line systems. Information captured by trading system may also flow into the credit system so that settlement and presettlement exposures can be updated.

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Ideally, the front-office system should have one-time data capture for transactions to maximize operational efficiency. That is, after the trade is executed, the system should automatically generate accounting entries, confirmations, update trader positions, credit risk exposure reports, and other relevant databases. One-time data capture can significantly minimize the possibility of subsequent data entry errors.

Confirmation Process

The purpose of the confirmation process is to verify that each derivative counterparty agrees to the terms of the trade. For each trade, a confirmation is issued by the FHLBank, and the counterparty either issues its own confirmation or affirms the FHLBank's confirmation. To reduce the likelihood of fraud or human error, this confirmation process must be conducted independently of the risk-taking unit.

To minimize risk, an FHLBank should make every effort to send confirmations as soon as possible after deals are executed and no later than the end of the business day. Inefficient confirmation issuance and receipt make it difficult to detect errors that may lead to problems in P&L reconciliation and position valuation.

The method of confirmation varies depending on the type of counterparty, derivative traded, and the method of settlement. Ideally, confirmations are exchanged electronically with the counterparty. Telephone confirmations are frequently conducted in the absence of electronic notification. Oral confirmations should be completed with designated individuals at the counterparty, exclusive of the trading function. Although telephone confirmations can help to reduce trade discrepancies, they are no substitute for physical confirmations. Except when contracts have very short maturities, it is poor practice to rely solely on telephone verifications. Errors may be made in interpreting terminology used over the telephone. In addition, certain jurisdictions only recognize physical confirmations for litigation purposes.

Unconfirmed and Disputed Trades

All incoming confirmations should be sent to a department that is independent of the risk-taking unit. Incoming information should be compared with the outgoing confirmation and any disputes carefully researched. Disputes or unconfirmed trades should be brought immediately to the attention of the operations manager and regularly reported to a senior operations officer.

An FHLBank should adopt standard procedures for addressing disputes and unconfirmed trades. Documentation should include the key financial terms of the transaction, indicate the disputed item, and summarize the resolution. The counterparty should receive notice of the final disposition of the trade and an adequate audit trail of the notice should be on file in the back office. Risk-taking and sales personnel should be notified of disputed or unconfirmed deals.

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Netting

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 payable between parties on particular date, in the same currency, under the same transaction or a specified group of transactions. Payment netting occurs throughout the life of a master agreement. Payment netting reduces credit and transaction risk by allowing the FHLBank to make or receive one payment instead of settling multiple transactions individually. FHLBanks can reduce credit and transaction exposure by using multilateral netting arrangements. 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 positive and negative current replacement values (mark-to-market) with respect to the nondefaulting party for each transaction under the agreement to a single sum, either positive or negative. If the sum of the netting is positive, then the defaulting counterparty owes that sum to the nondefaulting counterparty. If that amount is negative, the nondefaulting counterparty would pay that amount to the other party, provided no “walkaway” provisions exist.

Despite the advantages of netting arrangements, their use presents operational complexities and is mainly confined to the largest FHLBanks and counterparties. FHLBanks cite costs and lack of operational capacity, as well as legal uncertainties, as barriers to the greater use of netting arrangements. FHLBanks performing netting should ensure that they have the systems to accurately and timely calculate net payments. Correct calculations of netted payments are important to preserve counterparty relationships and avoid costly errors. Some FHLBanks use payment netting services such as FXNET, SWIFT, and VALUNET for calculations. These on-line systems allow counterparties to communicate directly with each other. Some pairs of FHLBanks have set up bilateral netting arrangements on their own using standardized netting contracts.

Management should confirm that operational procedures ensure that netting is carried out as contractually obligated between an FHLBank and its counterparties. Operations personnel should ensure that netted trades are reflected in trade capture systems and credit systems so that netting is successfully executed. The operational procedures should include any necessary cut-off times, settlement instructions, and the method of confirmation/affirmation and should be supported by the documentation of the counterparty.

Settlement Process

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 date of final settlement. The settlement of derivative transactions can involve various international and domestic payment system networks.

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By separating the duties of operations staff members, an FHLBank asserts control over the settlement process. Like other operations functions, the settlement process should be controlled through procedures directing the payment/receipt of funds. Specifically, operations procedures should address regular terms of settlement, exception processes, and the reporting of stale dated or unusually large unsettled transactions. The person(s) responsible for the release of funds should be independent of the confirmation process and transaction processing that could allow access to the payment process. Such sensitive areas include, for instance, access to standardized settlement instructions.

Reconciliations

To ensure that data has been accurately captured, critical data points and reports should be promptly reconciled. The person who reconciles accounts must be independent of the person who initiates the transaction or inputs transaction data. The general ledger should be reconciled with front and back systems each day. Front and back office P&L and position reports should also be reconciled each day. Regulatory reports should be periodically reconciled to the general ledger. Reconciliation discrepancies should be investigated and resolved as soon as possible. Significant discrepancies should be brought to the attention of senior management.

Brokers' Commissions and Fees

The back office should review brokers' statements, reconcile charges to FHLBank estimates and the general ledger, check commissions, and initiate payment. Brokers should be approved independently of the risk-takers. The back office should 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 the attention of back office management and reviewed with appropriate senior personnel.

Documentation and Record-Keeping

Transaction documentation for derivative instruments often requires written confirmation of trades, contract terms, legal authorities, and other matters. Many of the terms of the transactions are stipulated in master agreements and other legal documents. Maintaining proper documentation and ensuring proper completion and receipt is often the responsibility of the operations or credit functions. FHLBanks should establish processes such as checklist or tickler files to ensure that derivative transactions, like all other risk-taking transactions, are properly documented. These processes should monitor and control receipt of documents. FHLBanks should establish thresholds limiting future business with counterparties failing to provide required documentation. Proper control over derivative documentation requires a process that quickly identifies and resolves documentation exceptions. The role of legal counsel in the documentation process is discussed later in this section.

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Revaluation Approaches and Reserves

Both the risk control and audit functions should ensure that position valuations are generated from independent sources. Accurate values are the key to the generation of reliable reports on risk levels, profitability, and trends. Ideally, much of the valuation process employs valuation model algorithms or electronic data feeds from wire services, with little manual intervention. When reliable revaluation models or data feeds are not available, as is the case with some illiquid or highly customized products, operations personnel or other independent personnel should obtain values from dealers or use approved mathematical techniques to derive values.

The process through which positions are marked-to-market should be specified in policies and procedures. Controls should be implemented that ensure proper segregation of duties between risk-takers and control personnel, including the independent input and verification of market rates. In addition, controls should provide for consistent use of pricing methods and assumptions about pricing factors, such as volatility, to ensure accurate financial reporting and consistent evaluations of price risk.

The approach FHLBanks use to value their derivative portfolios will depend on a variety of factors including the liquidity and complexity of the contracts and the sophistication of their valuation and accounting systems. Regardless of the valuation method used, management should ensure that policies and procedures are established that support their valuation. For risk management purposes, FHLBanks should independently revalue derivative positions at least once a month and should possess the ability to obtain reliable market values daily if warranted by market conditions.

In obtaining external valuations, the requirements of the valuation should be specified, for example: mid, bid, offer, indication, and firm. In addition, when external valuations are received they should be considered in light of the relationship with the party supplying them and, in particular, whether they include factors that may make them inappropriate, for example, obtaining valuations from the originating dealer.

Information Technology

Although systems and modeling technology supports a derivatives business, technology can also pose significant risks.

The sophistication of systems technology should be commensurate with the character and complexity of the derivatives activity. In assessing risk, management and the board of directors should consider how well the management information system functions, rather than its technical specifications. The system should serve the needs of applicable users, including senior management, risk control units, front office, back office, financial reporting, and internal audit. For large systems, the FHLBank should have flow charts or other documentation that show data flow from input through reporting.

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An important aspect in the evaluation of information technology is how well different systems interface. Interface is usually accomplished using emulators that communicate from one application to another. FHLBanks relying on a single database may have stronger controls on data integrity than those with multiple databases and operating systems. However, it is rare to find a single automated system that handles data entry and all processing and control functions relevant to derivative instruments. The systems used may be a combination of systems purchased from vendors, applications developed in-house, and legacy systems.

Incompatible systems can result in logistical obstacles because deal capture, data entry, and report generation will require multiple keying of data. Accordingly, controls and reconciliations that minimize the potential for corrupting data 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. Regardless of how an FHLBank combines automated systems and manual processes, management should ensure that appropriate validation processes protect data integrity.

Periodic reviews and planning

Operations and support systems should receive periodic reviews to ensure that capacity, staffing, and the internal control environment support current and planned derivative 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.

Other Operational Risk Considerations

The enforceability of many derivative contracts in the event of counterparty insolvency has not been tested in the courts in all jurisdictions. Therefore, legal counsel should review applicable documents before such transactions are executed. Counsel should be familiar with the economic substance of the transaction, the laws of the jurisdictions in which the parties reside, and laws governing the market in which the instrument was traded. All non-standard documents or changes to standard contract documents should be reviewed by counsel.

The use of standard industry contracts and addendums, such as the ISDA master agreement, minimizes the need for legal review, and for every transaction there should be an ISDA agreement if there is not a non-standard contract. FHLBanks should ensure derivative agreements are current to ensure conflicts related to derivative transactions can be resolved and agreements remain enforceable.

There are various methods by which an FHLBank may reasonably satisfy itself that a counterparty has the legal capacity to engage in derivatives transactions. For example, for governmental entities or for certain clients in regulated industries, an FHLBank should review relevant statutes or regulations delineating the powers of the entity. In

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other situations, an FHLBank may need to examine the constitutive documents and other relevant materials of the counterparty; for example, for mutual funds, an FHLBank should at least examine a fund's prospectus. In some cases, an FHLBank may be able to achieve a level of reasonable satisfaction only upon the receipt and analysis from counsel specifically addressing the issues of power and authority of the counterparty to enter into the transaction.

An FHLBank should also ensure that a counterparty is authorized to enter into the derivatives agreement with the FHLBank and that any official of the counterparty who executes the derivative agreement on the counterparty's behalf is authorized to do so. Such authority should be evidenced by appropriate corporate resolutions, delegations of authority and certificates of incumbency. Additionally, FHLBanks should ensure that transactions are adequately documented. If adequate documentation of transactions is not obtained, enforcement of the transactions may be precluded under the relevant state law statute of frauds, which may require the existence of a written agreement for enforcement of a contract.

Credit Enhancements

A FHLBank should ensure that its rights with respect to any cash, securities, or other property pledged to the FHLBank by a counterparty to margin, collateralize, or guarantee a derivative contract are enforceable and exercisable and can be used upon the default of the counterparty to offset losses. To be reasonably sure that the pledged assets will be available upon default, the FHLBank 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 directly to the FHLBank or to an independent escrow agent. FHLBank counsel should give an opinion on whether the contract that governs the pledged assets is legally enforceable.

Strategic Planning

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

An FHLBank's derivative activities should be part of the FHLBank's overall business strategy, which has been endorsed by the board of directors. This strategy may be articulated within policies governing other activities or documented separately. Strategy statements should include the following:

- a) Scope of activities.
- b) Consistency with FHLBank's overall business strategy.
- c) Market assessment:

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- i. Supply/demand.
 - ii. Competitive factors.
 - iii. Niche or role and anticipated level of activity.
 - iv. Target member/counterparties.
- d) Projected risk/reward payoff.
- e) Business evaluation and performance benchmarks.
- f) Personnel and systems needs.

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

Reputation

Management of operational risk includes ensuring the FHLBank proactively avoids activity which would adversely affect its reputation in the marketplace. 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 FHLBank activities and employee compensation programs with the code of conduct.

Furthermore, the overall financial condition of the FHLBank could affect the ability to enter into derivative transactions. FHLBanks whose overall financial condition is weak or deteriorating could find that counterparties require a premium to accept additional risk.

5) Financial Condition and Performance

In developing guidelines for derivatives use, FHLBanks should consider the possibility of losing access to one or more markets, either because of concerns about their own creditworthiness, the creditworthiness of a major counterparty, or because of generally stressful market conditions. At such times, the FHLBank may have less flexibility in managing its market and credit risks. FHLBanks that dynamically hedge their positions require constant access to financial markets, and that need may increase in times of market stress. An FHLBank'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 liquidity are intertwined with those used in the management of market risk. Consideration of market depth and the cash flow characteristics of particular instruments are critical in the establishment of risk limits and construction of portfolio stress tests. The management of these risks is not conducted in

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isolation. As such, the examination of risk management systems for all applicable risks should be conducted concurrently.

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 FHLBank. Well-developed lines of communication, whether formal or informal, should be established between derivative managers and funding managers.

Early Termination Agreements

The use of early termination agreements has grown in recent years as market participants have sought avenues to reduce counterparty credit exposure. However, the use of these agreements is not without potential drawbacks. Although obtaining an early termination agreement from a counterparty can reduce an FHLBank's credit risk, providing a counterparty with an early termination agreement can increase operational, price, and interest rate risk. Early terminations may be triggered when the FHLBank can least afford the liquidity drain and the accompanying increase in price and interest rate risk (as trading or balance sheet hedge transactions are terminated, creating open positions). Management should enter into these agreements on a limited basis and only after careful consideration of their impact on price risk exposure and liquidity adequacy. The exposure and effects upon liquidity resulting from such agreements should be tracked and fully incorporated into liquidity planning. In addition, FHLBank policy should clearly define the circumstances, if any, under which management will honor a request for early termination when not contractually obligated.

FHLBanks often enter into derivative transactions with early termination agreements which mirror options which the FHLBank may exercise on a related asset or liability. In so doing, the FHLBank is eliminating exposure to the counterparty's ability to execute its option.

Examination Guidance

A work program for Derivatives accompanies this narrative. What follows below are illustrative examples of attributes that should be considered by the examiner in completing the analyses required in that work program. In determining the extent of review and testing to be conducted in completing each analysis, the examiner should take into account his or her assessment of the quality and effectiveness of corporate governance, risk management, internal controls and audit coverage related to the management of derivative transactions.

1) Organizational Structure

- a) Determine key personnel and reporting lines. Evaluate the quality of key staff. Determine whether management is technically qualified and capable of properly

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- engaging in the derivatives activity transacted by the FHLBank by reviewing the biographies of managers of units responsible for derivative products and job descriptions for key positions.
- b) Review staffing levels, educational background, and work experience of the staff responsible for carrying-out the FHLBank's day-to-day derivatives transactions. Determine whether the FHLBank has sufficient and qualified staff to accommodate present and projected volumes and types of derivative transactions.
 - c) Review compensation plans, including incentive components, for derivatives staff, such as traders, risk control, operations. Ensure that such plans:
 - i. Are designed to recruit, develop, and retain appropriate talent.
 - ii. Do not encourage employees to take risk that is incompatible with the FHLBank's or member's risk appetite or prevailing rules or regulations.
 - iii. Are consistent with the long-term strategic goals of the FHLBank.
 - iv. Do not encourage trade practices that might damage the reputation of the FHLBank.
 - d) Determine how the FHLBank communicates interest rate risk exposure 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.
 - e) Review the flow chart of front, middle, and back office systems configuration and identify important risk points. Review the policies and procedures governing management information systems applicable to these areas. Determine the adequacy of the segregation of duties. Assess the risk of errors and omissions by determining the degree to which various systems interface and the level of manual intervention required.
- 2) ***Establishment of risk tolerances and development of key policies and oversight by the board of directors. Adequacy of senior management oversight and the risk management function.***
- a) Determine the nature of the FHLBank's derivative activities. Discuss with management the FHLBank's strategies, objectives, and plans regarding derivatives and how they were developed. Determine what management is attempting to accomplish by using derivatives and identify changes in the use of derivatives since the previous examination.
 - b) Review significant changes since the previous examination with respect to:
 - i. Management of the FHLBank and key personnel involved in the derivatives management function.
 - ii. Products offered by the FHLBank and activities engaged in by the FHLBank.

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- iii. Overall philosophy and strategy of the FHLBank.
 - iv. The FHLBank's overall risk profile.
 - v. Changes to policies and procedures related to the FHLBank's derivatives management practices.
 - vi. Front, middle and back office operations and systems.
 - vii. New system or model upgrades implemented and systems.
 - viii. The impact of any changes in market conditions on the FHLBank's use of derivative transactions.
- c) Conclude as to changes in the use of derivatives, changes in the overall volume of derivative transactions, or changes in the types of derivative transactions entered into the FHLBank. Evaluate the reason for the changes and the appropriateness of the changes to the FHLBank's overall risk management practices.
- d) Determine the extent and effectiveness of senior management and board of director's oversight over derivative activities. Review abstracted minutes of the board of directors meetings and other appropriate committee minutes such as ALCO, audit, and new products. Ensure that proper authorization has been provided to trading personnel and treasury management. Determine the limits and restrictions on delegated authorities.
- e) Review information provided to the board of directors and senior management. Determine whether the board and senior management have been provided with material sufficient to fully describe the FHLBank's financial derivative activities. This documentation should include:
- i. A clear statement of derivatives strategy and performance relative to objectives, including a periodic analysis of risk-adjusted return.
 - ii. Ongoing educational material and information regarding major activities.
 - iii. Reports indicating compliance with policies and law, including Finance Board regulation.
 - iv. Internal and external audit reports.
 - v. Reports indicating level of risk.
 - vi. Reports attesting to the validation/quality of risk measurement systems.
 - vii. Reports indicating the sufficiency of internal controls.
 - viii. Reports detailing performance of trading/dealing activity.
 - ix. Reports indicating the performance of positioning or hedging activity.
 - x. Reports detailing interest rate sensitivity and the impact of derivative transactions on earnings and capital.
 - xi. Periodic reports showing the appreciation and depreciation of derivative transactions.
 - xii. Reports indicating level and adequacy of liquidity reserves relative to risk exposures and regulatory requirements.
 - xiii. Other pertinent information.
- f) Determine how the board of directors holds management accountable for

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- performance. Consider:
- i. The consistency of performance against strategic and financial objectives over time.
 - ii. Internal/external audit and regulatory examination results.
 - iii. The level of compliance with policies and procedures.
 - iv. The quality and timeliness of communication to the board.
- g) Evaluate the overall quality of senior management and board of directors oversight with respect to derivatives activity. Assess the:
- i. Adequacy of policies and procedures, including internal controls.
 - ii. Consistency of management's derivatives activities with board of directors and ALCO business strategies.
 - iii. Quality of information provided to the board of directors, ALCO, and senior management on derivative activities.
 - iv. Compliance with internal policies, laws, regulations, and supervisory guidance.
 - v. Effectiveness of the risk management process.
 - vi. Adequacy of the skills of key personnel, staffing levels, and turnover.
 - vii. Reasonableness of employee compensation programs.
 - viii. Effectiveness of the audit process.
 - ix. Oversight of management activities and strategies.
- h) Conclude as to the appropriateness of risk parameters established related to derivative transactions via the FHLBank's policies and procedures. Determine how the FHLBank makes use of derivative transactions to assist in the mitigation of risks.
- i) Review and conclude as to any specific limitations in place for derivative transaction usage.
- i. Are limitations consistent with articulated strategy?
 - ii. Are limits reasonable in light of recent profit and loss experience and budget expectations?
 - iii. Do limits adequately control exposures to identified interest rate risk in normal and volatile market conditions?

3) *Key FHLBank policies and procedures*

- a) Identify all policies related to derivatives management. Are appropriate limitations regarding the use of derivatives in existence? Are the types of derivative transactions which may be transacted clearly identified?
- b) Do policies incorporate limits regarding the various risks and effects on financial condition and performance posed by derivative transactions? Such policies

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should include discussions on credit, operational and market risks as well as the adequacy of liquidity reserves relative to risk exposures and regulatory requirements.

- c) In coordination with other examiners reviewing market risk, evaluate the derivative policy direction and limitations in the context of interest rate risk limitations.
- d) Ensure that policies require appropriate legal review of all relevant activities including new products, counterparty or agreement forms, and netting arrangements.

4) *Risk assessment under Part 917 and internal control evaluation*

- a) Review the FHLBank's risk assessment related to derivative transactions and the hedging process. Conclude as to the adequacy of identifying potential risks to the institution. Determine if mitigating controls are adequate.
- b) Evaluate whether staff assigned to complete an assessment of mitigating internal controls has the expertise to undertake the task.

5) *Testing performed by external audit, internal audit or consultants*

- a) Review the adequacy of the audit scope and frequency of the audits of derivative activities. At a minimum, the audit should accomplish the following:
 - i. Periodic review of the adequacy of all FHLBank policies and procedures.
 - ii. Appraise the adequacy of accounting, operating, compliance, and risk management controls related to derivatives.
 - iii. Test compliance with policies, including risk limits.
 - iv. Evaluate the effectiveness and independence of the risk management function.
 - v. Verify the accuracy of risk measurement and revaluation methodologies, if not performed by another independent party.
 - vi. Ensure the performance of an independent validation of the accuracy of pricing, revaluation, and risk measurement methodologies (including spreadsheet applications), with emphasis on new products.
 - vii. Test the reliability and timeliness of information reported to senior management and the board.
 - viii. 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; independence and timeliness of the reconciliation processes.
 - ix. Determine the adequacy of data processing systems and software.
 - x. Assess unusual situations such as off-market deals, and unusual changes in

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- volume.
- xi. Review brokerage commissions and fees.
- xii. Test trader compensation calculations.

- b) In conjunction with the examiner evaluating the FHLBank's internal audit function, conclude on the adequacy of audit size staff and qualifications relative to the FHLBank's derivative activities.

- c) Review the findings of audits performed since the previous examination. Consider material or deficiencies identified.

- d) Conclude on the adequacy of management's steps to corrected weaknesses identified by the internal audits completed.

6) *Information technology and controls*

- a) In coordination with the Finance Board Risk Modeling Division (RMD), evaluate the FHLBank's method of valuing derivative contracts:
 - i. If outside sources are used, determine whether the FHLBank obtains several quotes, independent of the originating dealer.
 - ii. If the FHLBank revalues the position internally, determine whether the revaluation methodology is consistent with the volatility and complexity of the instruments.
 - iii. Ensure the values are obtained independent of the risk-taker.
 - iv. Ensure the revaluation is performed with reasonable frequency. FHLBanks should formally revalue positions at least monthly and should be able to obtain daily revaluations.

- b) In coordination with RMD staff and information technology (IT) examiners, review current systems capabilities and planned upgrades or enhancements.

- c) In coordination with IT examination staff, evaluate the various systems related to entering into and recording derivative transactions by the front, back and middle office. Determine if controls are in place to ensure that staff involved in executing the transaction are not involved in recording the transaction and may not modify such recording in the future.

- d) In coordination with IT examination staff, evaluate contingency plans in place to provide contingency systems and operations support in case of a natural disaster or systems failure.

7) *Identification and evaluation of controls and significant changes to the activity or function*

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- a) Review the impact of derivatives on earnings. Obtain an overview of performance by derivatives portfolio used in trading (economic or P&L) or risk management activity (yield enhancement or hedge effectiveness). Ascertain the significance of derivatives revenue.
- b) Determine that the board of directors, through the ALCO or other appropriate committee, has established a risk control function. Review the oversight responsibility and staffing of the risk control function. Determine that the risk control function is:
 - i. Independent of persons directly responsible for entering into derivative transactions.
 - ii. Fully staffed with qualified individuals.
 - iii. Fully supported by the board of directors and senior management.
 - iv. Provided with the technical and financial resources, organizational visibility, and authority necessary to ensure effective oversight.
 - v. Reports independently from those individuals directly responsible for trading decisions and trading management.
- c) Review budget and budget variance reports for the past 12 months focusing on earnings. Discuss significant budget variances with management and conclude on the impact of derivative transactions to mitigate risks to the FHLBank's earnings performance.
- d) Assess changes in the use of derivative transactions. Evaluate the potential impact of such changes to the institution. Has FHLBank management appropriately identified risks related to any new type of derivative activities and reported the risks to the board of directors.
- e) In coordination with the examiner or FHLBank analyst reviewing Financial Condition and Performance, evaluate the effect of the FHLBank's derivatives transactions upon the adequacy of the institution's liquidity reserves relative to its risk exposures and regulatory requirements.

8) *Testing*

- a) Select a sample of derivative transactions initiated since the previous examination. Determine whether the strategy behind the transaction is well documented and consistent with the FHLBank's overall business and strategic plans. For hedging transactions, determine that standards for hedge effectiveness have been established. Coordinate with the examiner reviewing Financial Reporting Operations to determine the adequacy of hedge effectiveness documentation.

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- b) Select a sample of derivative agreements. Determine if the agreements are current and appropriately executed. Review all derivative agreements executed with new counterparties since the previous examination.
- c) Select a new derivatives product recently transacted. When applicable, test compliance with the FHLBank's new-product policy. Determine that the new product definition adequately ensures reasonable new product discipline.
- d) Determine any adverse impact to the credit rating and market acceptance of the FHLBank as a counterparty. If the FHLBank recently experienced a rating downgrade, evaluate the impact.
- e) Evaluate the adequacy of credit risk management policies and procedures. Do FHLBank personnel complete an on-going evaluation of counterparty risk and exposure? Does the FHLBank rely on NRSRO Ratings exclusively? Reliance on outside parties to assess credit risk of counterparties could result in the failure to identify potential concerns.
- f) Review credit risk management reports used by senior and line management with respect to derivatives and evaluate their comprehensiveness.
- g) Determine whether the credit risk measurement methodology has been independently validated prior to its first use and at least annually thereafter, or as market conditions warrant. Determine whether:
 - i. Independent of persons directly responsible for entering into derivative transactions.
 - ii. The validation is performed by a competent party independent of the business line using or generating the model.
 - iii. The validation process has been adequately documented.
 - iv. The validation includes an evaluation of routines to convert underlying position data to the format required by the system.
 - v. Management has adequately responded to validation results.
- h) Evaluate the adequacy of the credit risk measurement method used to calculate presettlement credit exposure. Through review of model information and discussions with management determine that:
 - i. The system produces a reasonable estimate of loan-equivalent exposure including the current exposure (mark-to-market) plus an estimate of the potential change in value over the remaining life of the contract (add-on).
 - ii. The credit risk add-on calculation is: statistically derived from market factors; consistent with the probability modeling used to evaluate price of the contract as a time horizon; and based on peak exposure.
 - iii. The frequency of credit calculations is adequate.
 - iv. The FHLBank maintains documentation to support that the assumptions

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used in the credit risk exposure calculation are updated as appropriate.

- i) Obtain and review reports related to the FHLBank's netting agreements. Conclude on the adequacy of these reports.
- j) Determine the extent to which management uses settlement, closeout, or multilateral netting arrangements:
 - i. Determine whether counterparty payments or credit exposures are netted for purposes of computing periodic settlement or reporting aggregate credit exposure.
 - ii. Determine whether the FHLBank's operational systems are adequate to correctly identify the amounts for netting with a counterparty.
 - iii. Ensure management ensures a signed master agreement is on file before netting is performed.
 - iv. Select a sample of counterparties where credit exposure is netted. Determine if calculations are correct and in accordance with the agreement executed with the counterparty.
- k) Evaluate the FHLBank's method for resolving valuation disputes with counterparties. Are differences appropriately resolved? What action has the FHLBank taken in response to counterparties for which valuation differences have recurred? Are conversations of transactions with counterparties recorded?
- l) Determine how the FHLBank communicates credit risk exposure to appropriate levels within the organization. Determine whether the reports are generated independently and are provided to the various levels of management and the board of directors. The formality and frequency of reporting should be directly related to the level of derivative activities and risk exposure.
- m) Select a sample of counterparties from the list of derivative counterparties broken out by dealer and end-user/counterparty. Review credit files for the sample counterparties. Determine whether:
 - i. Files are current and contain sufficient information to document an informed credit decision, including purpose, source of repayment, and collateral.
 - ii. Credit evaluations aggregate limits for derivatives with the limits established for other activities, including commercial lending.
 - iii. Risk ratings are accurate and current.
 - iv. Management completes its own assessment of the counterparty's credit risk and incorporates the impact of the counterparty's use of derivatives.
- n) Obtain a list of recent credit limit and policy exceptions. Determine whether the exceptions were identified and approved. Determine whether the basis and timeliness of approval was reasonable and within the approver's authority.

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- Evaluate the level and nature of the exceptions.
- o) Determine how the credit risk control function notifies traders of deteriorating trends in a counterparty's financial condition or changes in limits. Also determine how traders communicate their knowledge of counterparties' deteriorating financial condition to the credit risk control function.
 - p) Determine whether there have been any recent counterparty credit downgrades or deteriorations affecting the FHLBank's trading activities. If so, determine the FHLBank's response.
 - q) In conjunction with the examiner reviewing Financial Reporting Operations, evaluate the appropriateness of accounting for derivative transactions.
 - r) Determine how the FHLBank identifies and reports past-due counterparty payments.
 - s) Determine whether the FHLBank maintains credit reserves for counterparty exposures apart from the allowance for loan losses. Determine whether the method for calculating the reserves is reasonable.
 - t) Determine whether executive management and credit risk management have assessed credit risk exposure arising from relationships with undisclosed counterparties. If so, evaluate their assessment and management's response.
 - u) From the counterparty concentration report, evaluate the FHLBank's exposure to external factors, such as countries, regions, and industries, and internal factors, such as exposure, tenors, and risk ratings. Discuss with management the FHLBank's strategy for managing concentration risk and evaluate its reasonableness.
 - v) Determine that business managers have developed contingency plans that describe actions to be taken in times of market disruption and major credit deteriorations to minimize losses and potential damage to the institution's market-making reputation.
 - w) Evaluate the adequacy of transaction risk management policies and procedures for derivative activities.
 - x) Review transaction risk monitoring reports used by management.
 - y) Determine the responsibilities of the front, middle (if applicable), and back office in transaction processing.
 - z) To gain an understanding of the manner in which trades are processed, follow an

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- actual trade ticket through the processing system, from trader's verbal commitment to final booking. Consider the following:
- i. The length of time from a dealer's verbal commitment to entry of the trade into the accounting system.
 - ii. Whether the back office has a queuing mechanism to ensure all transactions are processed in a timely manner.
 - iii. Ensure that recording the transaction is completely independent of the traders. In the case of discrepancies, ensure that traders do not have the authority to make modifications.
 - iv. The capacity and ability of the systems and staff to handle present and projected future volumes and types of transactions.
- aa) Determine if conversations with dealers and counterparties are recorded. Test a sample of transaction recordings. Ensure that the FHLBank's system of recording transaction negotiations is adequate to provide evidence in the event of a dispute related to the terms of a derivative transaction.
- bb) Review operations exception reports for aging, failed trades, off-market trades, outstanding items, suspense items, and miscellaneous losses. Evaluate the level and nature of exceptions. Determine whether appropriate approval for exceptions was obtained when warranted.
- cc) Review the settlement process and controls to ensure that they adequately limit settlement risk. Determine the adequacy of internal controls related to the settlement process.
- dd) Discuss with operations management any unconfirmed or disputed trades that have occurred over the past 12 months. Evaluate the source and nature of the discrepancies and disputes and their ultimate resolution. Review the adequacy of documentation.
- ee) Review a recent valuation report. Research significant differences between the FHLBank's and counterparty's values.
- ff) Determine whether the valuation process is performed independently of the risk-takers and with appropriate frequency.
- gg) For illiquid products for which independent quotes are not obtained, ask the FHLBank to provide documentation supporting how the value was derived.
- hh) If the FHLBank uses mid-market valuations, determine the extent and nature of valuation adjustments (credit, administrative, close-out costs, funding/investing costs, or model errors) established at transaction inception. Determine whether the FHLBank justifies why certain adjustments listed above are not used. Determine whether adjustments are:

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- i. Reasonable and well supported.
 - ii. Clearly authorized in policies and procedures.
 - iii. Consistently applied.
 - iv. Periodically reviewed for reasonableness.
- ii) Determine how discrepancies between front and back office comparisons are resolved. Select a sample from the larger discrepancies and determine the reason for each discrepancy and the final resolution.
- jj) Review the reconciling process between general ledger and operational data bases, regulatory reports, and broker statements and between the front and back offices. Ensure that the person(s) who reconciles accounts does not also input transaction data. Determine:
- i. The frequency and volume of reconciling items.
 - ii. The process for sign-off on reconciliation differences.
 - iii. Whether senior managers review large reconciliation differences.
- kk) The content and frequency of reports will vary, but the FHLBank must be able to track errors and miscellaneous losses in sufficient detail to pinpoint the source of problems. Reports provided to senior management should be prepared independent of traders. The operations unit should generate management reports that reflect current status and trends for the following items:
- i. Aging of documentation exceptions.
 - ii. Position reconcilements.
 - iii. Outstanding general ledger reconciling items.
 - iv. Failed trades.
 - v. After-hour and off-premise trades.
 - vi. Off-market trades.
 - vii. Aging of unconfirmed trades.
 - viii. Suspense items payable/receivable.
 - ix. Brokerage payments.
- ll) Evaluate the quality of transaction risk management and the levels and trends in transaction risk exposure. Assess:
- i. The adequacy of internal controls, including policies and procedures,
 - ii. Quality of information provided to senior management and the board of directors.
 - iii. Efficiency of trade processing.
 - iv. Compliance with policy.
 - v. Levels of unconfirmed and disputed trades.
 - vi. Adequacy of independence of the revaluation process.
 - vii. System capability and planned upgrades or enhancements.
 - viii. Adequacy of the disaster recovery plan.

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- mm) Ensure that the FHLBank requires legal opinions from all relevant jurisdictions addressing enforceability of a netting agreement before relying on the netting agreement to calculate and monitor credit exposure to the counterparty.

- nn) Determine that the FHLBank adequately ensures that counterparties have the legal capacity to execute specific derivative transactions and that counterparty officers and staff entering into derivative agreements are duly authorized by the counterparty to do so.

- oo) Determine that the FHLBank adequately documents its legal authority to engage in derivative transactions. If the FHLBank is required to notify the Finance Board and receive prior approval to engage in the activity, determine that such approval has been obtained.

- pp) Review any legal exceptions. Evaluate the adequacy of tracking systems. Evaluate the source, nature, and level of exceptions.

- qq) Evaluate the quality of compliance risk management and the levels and trends in compliance risk exposure. Assess:
 - i. Adequacy of internal controls, including policies and procedures.
 - ii. Adequacy of the legal review of all relevant documents.
 - iii. Adequacy of the compliance program.
 - iv. Level of legal documentation tracking exceptions.
 - v. Adequacy of legal documentation tracking systems.
 - vi. Pending litigation or counterparty complaints.

9) *Assessment of Risks*

Summarize the results of the activity or function examined in a separate memorandum. The memorandum must articulate the risks and the management of those risks. It should also clearly and specifically describe the basis and analysis for the assessment. The memorandum should discuss the type(s) of risk (market, credit, operational); the level of the risk (low, moderate, high); the direction of the risk (stable, decreasing, increasing); and the quality of risk management (strong, adequate, weak). A memorandum must be prepared irrespective of whether the examiner's assessment is positive or negative.

10) *Items requiring follow-up at the next on-site visitation*

Identify key issues that have been communicated to management (written or oral) that require follow-up during the next on-site visitation.