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TB 13a

Handbooks: **Thrift Activities** **Section: 520 (TA)**

Subject: **Interest Rate Risk; Investment Securities; and Derivatives Activities**

Management of Interest Rate Risk, Investment Securities, and Derivatives Activities

Summary: This Thrift Bulletin provides guidance to management and boards of directors of thrift institutions on the management of interest rate risk, including the management of investment and derivatives activities. In addition, it describes the framework examiners will use in assigning the "Sensitivity to Market Risk" (or "S") component rating.
Thrift Bulletin 13a replaces Thrift Bulletins 13, 13-1, 13-2, 52, 52-1, and 65, and New Directions Bulletin 95-10.

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Thrift Bulletin 13a

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Part I: Background

An effective interest rate risk (IRR) management process that maintains interest rate risk within prudent levels is important for the safety and soundness of any financial institution. This is especially true for thrift institutions, which by the nature of their business, are particularly prone to IRR. In recognition of that fact, 12 CFR 563.176 requires institutions to implement proper IRR management procedures. In January 1989, OTS issued Thrift Bulletin 13 (TB 13),

Responsibilities of the Board of Directors and Management with Regard to Interest Rate Risk, to provide guidance in the area of IRR management. Since TB 13 was first issued, a great deal of progress has been made in the areas of IRR measurement technology and IRR management. The present Thrift Bulletin, TB 13a, updates the guidelines contained in the original TB 13. It also provides guidance implementing the Federal Financial Institutions Examination Council's *Supervisory Policy Statement on Investment Securities and End-User Derivative Activities* (63 Fed. Reg. 20191 [1998]) and OTS's rule on financial derivatives at Section 563.172. The following Thrift Bulletins are hereby rescinded:

TB 13: *Responsibilities of the Board of Directors and Management with Regard to Interest Rate Risk*;
TB 13-1: *Implementation of Thrift Bulletin 13*;
TB 13-2: *Implementation of Thrift Bulletin 13*;
TB 52: *Supervisory Statement of Policy on Securities Activities*;
TB 52-1: *"Mismatched" Floating Rate CMOs*; and
TB 65: *Structured Notes*.

Also rescinded is New Directions Bulletin 95-10, *Interim Policy On Supervisory Action to Address Interest Rate Risk.*

A. Definition and Sources of Interest Rate Risk

The term "interest rate risk" refers to the vulnerability of an institution's financial condition to movements in interest rates. Although interest rate risk is a normal part of financial intermediation, excessive interest rate risk poses a significant threat to an institution's earnings and capital. Changes in interest rates affect an institution's earnings by altering interest-sensitive income and expenses. Changes in interest rates also affect the underlying value of an institution's assets, liabilities and off-balance sheet instruments because the present value of future cash flows (and, in some cases, the cash flows themselves) change when interest rates change.

Savings associations confront interest rate risk from several sources. These include repricing risk, yield curve risk, basis risk, and options risk.

1. Repricing Risk. The primary form of interest rate risk arises from timing differences in the maturity and repricing of assets, liabilities, and off-balance sheet positions. While such repricing mismatches are fundamental to the business, they can expose a savings association's income and economic value to fluctuations as interest rates vary. For example, a thrift that funded a long-term, fixed-rate loan with a short-term deposit could face a decline in both the future income arising from the position and its economic value if interest rates increase. These declines occur because the cash flows on the loan are fixed, while the interest paid on the funding is variable, and therefore increases after the short-term deposit matures.

2. Yield Curve Risk. Repricing mismatches can also expose a thrift to changes in both the slope and shape of the yield curve. Yield curve risk arises when unexpected shifts of the yield curve have adverse effects on an institution's income or economic value. For example, suppose an institution has variable-rate assets whose interest rate is indexed to the 1-year Treasury rate and which are funded by variable-rate liabilities having the same repricing date but indexed to the 3-month Treasury rate. A flattening of the yield curve will have an adverse impact on the institution's income and economic value, even though a parallel movement in the yield curve might have no effect.

3. Basis Risk. Another source of interest rate risk arises from imperfect correlation in the adjustment of the rates earned and paid on different financial instruments with otherwise similar repricing characteristics. When interest rates change, these differences can cause changes in the cash flows and earnings spread between assets, liabilities and off-balance sheet instruments of similar maturities or repricing frequencies. For example, a strategy of funding a three-year loan that reprices quarterly based on the three-month U.S. Treasury bill rate, with a three-year deposit that reprices quarterly based on three-month LIBOR, exposes the institution to the risk that the spread between the two index rates may change unexpectedly.

4. Options Risk. Interest rate risk also arises from options embedded in many financial instruments. An option provides the holder the right, but not the obligation, to buy, sell, or in some manner alter the cash flows of an instrument or financial contract. Options may be stand alone instruments such as exchange-traded options and over-the-counter (OTC) contracts, or they may be embedded within standard instruments. Instruments with embedded options include bonds and notes with call or put provisions, loans which give borrowers the right to prepay balances, adjustable rate loans with interest rate caps or floors that limit the amount by which the rate may adjust, and various types of non-maturity deposits which give depositors the right to withdraw funds at any time, often without any pen-

alties. If not adequately managed, the asymmetrical payoff characteristics of instruments with option features can pose significant risk, particularly to those who sell them, since the options held, both explicit and embedded, are generally exercised to the advantage of the holder.

Part II: OTS Minimum Guidelines Regarding Interest Rate Risk

OTS has established specific minimum guidelines for thrift institutions to observe in two areas of interest rate risk management. The first guideline concerns establishment and maintenance of board-approved limits on interest rate risk. The second, concerns institutions' ability to measure their risk level.

A. Interest Rate Risk Limits

Effective control of interest rate risk begins with the board of directors, which defines the institution's tolerance for risk. OTS regulation 563.176 requires all institutions to establish board-approved interest rate risk limits.

1. Limits on Change in Net Portfolio Value. All institutions should establish and demonstrate quarterly compliance with board-approved limits on interest rate risk that are defined in terms of net portfolio value (NPV).[1] These limits should specify the minimum NPV Ratio[2] the board is willing to allow under current interest rates and for a range of six hypothetical interest rate scenarios.[3] The hypothetical scenarios are represented by immediate, permanent, parallel movements in the term structure of interest rates plus and minus 100, 200, and 300 basis points from the actual term structure observed at quarter end. The level of detail with which the limits are specified depends on the board's preferences. In their simplest form, the limits could specify a single minimum NPV Ratio which would apply to all seven rate scenarios, while more detailed limits might specify a different minimum NPV Ratio for each of the scenarios.

2. Limits on Earnings Sensitivity. Many institutions also set limits expressed in terms of the interest rate sensitivity of projected earnings. Such limits can provide a useful supplement to the NPV-based limits. Although institutions are not required by OTS to establish limits and conduct analysis in terms of earnings sensitivity, OTS considers it a good management practice for institutions to estimate the interest rate sensitivity of their earnings and to incorporate this analysis into their business plan and budgeting process. The institution has total discretion over the type of earnings sensitivity analysis and all details of how that analysis is performed. However, OTS encourages institutions to develop earnings simulations utilizing base case and adverse interest rate scenarios and to compare results to actual earnings on a quarterly basis.

3. Prudence of IRR Limits. In assessing the prudence of their institution's NPV limits as well as in evaluating their institution's current level of risk relative to the rest of the industry, the board of directors may find it useful to refer to the quarterly OTS publication, *Thrift Industry Interest Rate Risk Measures.*[4] This publication contains statistical data about key interest rate risk measures for the industry.

The board should also be aware that examiners will evaluate the institution's IRR limits as part of their assessment of the quality of the institution's risk management practices. See Part IV.B.2, *Prudence of Limits*, and Appendix A, *Evaluating Prudence of Interest Rate Risk Limits*, for discussion of this topic.

4. Revision of IRR Limits. Interest rate risk limits reflect the board of directors' risk tolerance. Although the board should periodically re-evaluate the appropriateness of the institution's interest rate risk limits, particularly after a

[1] Net portfolio value (NPV) is defined as the net present value of an institution's existing assets, liabilities, and off-balance sheet contracts. In the original TB 13, this measure was referred to as the "market value of portfolio equity" (MVPE). A detailed description of how OTS defines and calculates NPV is provided in the manual entitled, *The OTS Net Portfolio Value Model.*

[2] An institution's NPV Ratio for a given interest rate scenario is calculated by dividing the net portfolio value that would result in that scenario by the present value of the institution's assets in that same scenario and is expressed in percentage terms. The NPV ratio is analogous to the capital-to-assets ratio used to measure regulatory capital, but NPV is measured in terms of economic values (or present values) in a particular rate scenario. These limits represent a change in format from those called for by the original TB 13. They will provide a greater degree of comparability across institutions and will mesh better with the OTS guidelines for the Sensitivity to Market Risk component rating, described later in this Bulletin.

[3] Institutions that do not file Schedule CMR of the Thrift Financial Report and do not have a means of calculating NPV should have suitable alternative limits.

[4] *Thrift Industry Interest Rate Risk Measures* is published for a particular quarter approximately seven weeks after the end of that quarter. It may be retrieved using the OTS PubliFax system, at (202) 906-5660, or from the OTS World Wide Web site, http://www.ots.treas.gov/quarter.html

significant change in market interest rates, any changes should receive careful consideration and be documented in the minutes of the board meeting.

If the institution's level of risk at some point does violate the board's limits, that fact should be recorded in the minutes of the board meeting, along with management's explanation for that occurrence. Depending on the circumstances and the board's reliance for risk, the board may elect to revise the risk limits. Alternatively, the board may wish to retain the existing limits and direct management to adopt an acceptable plan for an orderly return to compliance with the limits.

Recurrent changes to interest rate risk limits for the purpose of accommodating instances in which the limits have been, or are about to be, breached may be indicative of inadequate risk management practices and procedures.

B. Systems for Measuring Interest Rate Risk

Key elements in managing market risk include identifying, measuring, and monitoring interest rate risk. To ensure compliance with its board's IRR limits and to comply with OTS regulation §563.176, each institution must have a way to measure its interest rate risk. OTS guidelines for interest rate risk measurement systems are as follows, though examiners have broad discretion to require more rigorous systems.

1. Interest Rate Sensitivity of NPV for Institutions below $1 Billion in Assets. Unless otherwise directed by their OTS Regional Director, *institutions below $1 billion in assets* can usually rely on the quarterly NPV estimates produced by OTS and distributed in the *Interest Rate Risk Exposure Report*. If such an institution owns complex securities (see *Glossary* for definition) whose recorded investment exceeds 5 percent of total assets, the institution should be able to measure, or have access to measures of, the economic value of those securities under the range of interest rate scenarios described in Part II.A.1, *Limits on Change in Net Portfolio Value*. The institution may rely on the OTS estimates for the other financial instruments in its portfolio, unless examiners direct otherwise.

2. Interest Rate Sensitivity of NPV for Institutions above $1 Billion in Assets. Those *institutions with more than $1 billion in assets* should measure their own NPV and its interest rate sensitivity. OTS examiners will look for the following desirable methodological features in evaluating the quality of such institutions' NPV measurement systems:

(a) The institution's NPV estimates utilize information on its financial holdings that is generally more detailed than the information reported on Schedule CMR.

(b) Value is ascribed only to financial instruments currently in existence or for which commitments or other contracts currently exist (*i.e.*, future business is not included in NPV).

(c) Values are, where feasible, based directly or indirectly on observed market prices.

(d) Zero-coupon (spot) rates of the appropriate maturities are used to discount cash flows.

(e) Implied forward interest rates are used to model adjustable rate cash flows.

(f) Cash flows are adjusted for reasonable non-interest costs the institution will incur in servicing both its assets and liabilities.

(g) Valuations take account of embedded options using, at a minimum, the static discounted cash flow technique, but preferably using more rigorous options pricing techniques (which normally produce a value greater than zero even for out-of-the-money options).

(h) Valuation of deposits is based, at least in part, on institution-specific data regarding retention rates of existing deposit accounts and the rates offered by the institution on deposits. Preferably, the institution would base these valuations on sound econometric research into such data.

Examiners may determine an institution should use more sophisticated measurement techniques for individual financial instruments or categories of instruments where they believe it is warranted (*e.g.*, because of the volume and price sensitivity of a group of financial instruments; because of concern that the institution's results may materially misstate the level of risk; because of the combination of a low Post-shock NPV Ratio and high Sensitivity Measure; *etc.*). In any case, the institution should be familiar with the details of the assumptions, term structure, and logic used in performing the measurements. Measures obtained from financial screens or vendors may, therefore, not always be adequate.

In addition to the prescribed parallel-shock interest rate scenarios described above, OTS recommends that institutions evaluate the effects of other stressful market conditions (*e.g.*, non-parallel movements in the term structure,

basis changes, changes in volatility), as well as the effects of breakdowns in key assumptions (*e.g.*, prepayment and core deposit attrition rates).

3. Integration of Risk Measurement and Operations. As part of their assessment of the quality of an institution's risk management practices, examiners will consider the extent to which the institution's risk measurement process is integrated with management decision-making. Examiners will evaluate whether, in making significant operational decisions (*e.g.*, changes in portfolio structure, investments, business planning, derivatives activities, funding decisions, pricing decisions, *etc.*), the institution considers their effect on the level of interest rate risk. Institutions may do this by using an earnings sensitivity approach, an NPV sensitivity approach, or any other reasonable approach. The institution has discretion over all aspects of such analysis. The analysis, however, should not be merely *pro forma* in nature, but rather should be an active factor in the institution's decision-making process. If evidence of such integration is not apparent, examiner criticism or an adverse rating may result.

Part III: Investment Securities and Financial Derivatives

A. Analysis and Stress Testing

Management should exercise diligence in assessing the risks and returns (including expected total return) associated with investment securities and financial derivatives. As a matter of sound practice, prior to taking an investment position or initiating a derivatives transaction, an institution should:

(a) ensure that the proposed transaction is legally permissible for a savings institution;

(b) review the terms and conditions of the security or financial derivative;

(c) ensure that the proposed transaction is allowable under the institution's investment or derivatives policies;

(d) ensure that the proposed transaction is consistent with the institution's portfolio objectives and liquidity needs;

(e) exercise diligence in assessing the market value, liquidity, and credit risk of the security or financial derivative;

(f) conduct a pre-purchase portfolio sensitivity analysis for *any* significant transaction involving securities or financial derivatives (as described below in *Significant Transactions*);

(g) conduct a pre-purchase price sensitivity analysis of any complex security[5] or financial derivative[6] prior to taking a position (as described below in *Complex Securities and Financial Derivatives*).

1. Significant Transactions. A "significant transaction" is any transaction (including one involving instruments other than complex securities) that might reasonably be expected to increase an institution's Sensitivity Measure by more than 25 basis points. Prior to undertaking any significant transaction, management should conduct an analysis of the incremental effect of the proposed transaction on the interest rate risk profile of the institution. The analysis should show the expected change in the institution's net portfolio value (with and without the proposed transaction) that would result from an immediate parallel shift in the yield curve of plus and minus 100, 200, and 300 basis points. In general, an institution should conduct its own analysis. It may, however, rely on analysis conducted by an independent third-party (*i.e.*, someone other than the seller or counterparty) provided management understands the analysis and its key assumptions.

Institutions with less than $1 billion in assets that do not have the internal modeling capability to conduct such an incremental analysis may use the most recent quarterly NPV estimates for their institution provided by OTS to estimate the incremental effect of a proposed transaction on the sensitivity of its net portfolio value.[7]

[5] For purposes of this Thrift Bulletin, the term "complex security" includes any collateralized mortgage obligation ("CMO"), real estate mortgage investment conduit ("REMIC"), callable mortgage pass-through security, stripped-mortgage-backed-security, structured note, and any security not meeting the definition of an "exempt security." An "exempt security" includes non-callable, "plain vanilla" instruments of the following types: (1) mortgage-pass-through securities, (2) fixed-rate securities, and (3) floating-rate securities.

[6] The following financial derivatives are exempt from the pre-purchase analysis called for above: commitments to originate, purchase, or sell mortgages. To perform the pre-purchase analysis for derivatives whose initial value is zero (*e.g.*, futures, swaps), the institution should calculate the change in value as a percentage of the notional principal amount.

[7] Institutions that are exempt from filing Schedule CMR and that choose not to file voluntarily, should ensure that *no transaction* – whether involving complex securities, financial derivatives, or any other financial instruments – causes the institution to fall out of compliance with its board of directors' interest rate risk limits.

2. Complex Securities and Financial Derivatives. Prior to taking a position in any complex security or financial derivative, an institution should conduct a price sensitivity analysis (*i.e.*, pre-purchase analysis) of the instrument. At a minimum, the analysis should show the expected change in the value of the instrument that would result from an immediate parallel shift in the yield curve of plus and minus 100, 200, and 300 basis points. Where appropriate, the analysis should encompass a wider range of scenarios (*e.g.*, non-parallel changes in the yield curve, changes in interest rate volatility, changes in credit spreads, and in the case of mortgage-related securities, changes in prepayment speeds). In general, an institution should conduct its own in-house pre-acquisition analysis. An institution may, however, rely on an analysis conducted by an independent third-party (*i.e.*, someone other than the seller or counterparty) provided management understands the analysis and its key assumptions.

Investments in complex securities and the use of financial derivatives by institutions that do not have adequate risk measurement, monitoring and control systems may be viewed as an unsafe and unsound practice.

3. Risk Reduction. In general, the use of financial derivatives or complex securities with high price sensitivity[8] should be limited to transactions and strategies that *lower* an institution's interest rate risk as measured by the sensitivity of net portfolio value to changes in interest rates. An institution that uses financial derivatives or invests in such securities for a purpose other than that of reducing portfolio risk should do so in accordance with safe and sound practices and should:

(a) obtain written authorization from its board of directors to use such instruments for a purpose other than to reduce risk; and

(b) ensure that, after the proposed transaction, the institution's Post-shock NPV Ratio would not be less than 4 percent.

The use of financial derivatives or complex securities with high price sensitivity for purposes other than to reduce risk by institutions that do not meet the conditions set forth above may be viewed as an unsafe and unsound practice.

B. Record-Keeping

Institutions must maintain accurate and complete records of all securities and derivative transactions in accordance with 12 CFR 562.1. Institutions should retain any analyses (including pre- and post-purchase analyses) relating to investments and derivatives transactions and make such analyses available to examiners upon request.

In addition, for each type of financial derivative instrument authorized by the board of directors, the institution should maintain records containing:

(a) the names, duties, responsibilities, and limits of authority (including position limits) of employees authorized to engage in transactions involving the instrument;

(b) a list of approved counterparties with which transactions may be conducted;

(c) a list showing the credit risk limit for each approved counterparty; and

(d) a contract register containing key information on all outstanding contracts and positions.

The contract registers should specify the type of contract, the price of each open contract, the dollar amount, the trade and maturity dates, the date and manner in which contracts were offset, and the total outstanding positions.

Where deferred gains or losses on derivatives from hedging activities have been recorded consistent with generally accepted accounting principles (GAAP), the institution should maintain appropriate supporting documentation.[9]

C. Supervisory Assessment of Investment and Derivatives Activities

Examiners will assess the overall quality and effectiveness of the institution's risk management process governing investment and derivatives activities. In making such assessments, examiners will take into account compliance with the guidelines set forth above and the quality of the institution's risk management process. The quality of the

[8] For purposes of this Bulletin, "complex securities with high price sensitivity" include those whose price would be expected to decline by more than 10 percent under an adverse parallel change in interest rates of 200 basis points.

[9] In June 1998, the FASB issued SFAS No. 133, "Accounting for Derivative Instruments and Hedging Activities." Under SFAS No. 133, all "derivative instruments," as defined therein, including those used for hedging purposes, would be accounted for at fair value. Accordingly, under that Standard, deferred gains and losses on "derivative instruments" from hedging activities will no longer be reported.

institution's risk management process will be evaluated in the context of Appendix B, *Sound Practices for Market Risk Management*.

Part IV: Guidelines for the "Sensitivity to Market Risk" Component Rating

Consistent with the interagency Uniform Financial Institutions Rating System, or CAMELS rating system, of which an excerpt is attached as Appendix C, the "Sensitivity to Market Risk" component rating (*i.e.*, the "S" rating) is based on examiners' conclusions about two dimensions: (1) an institution's *level of market risk* and (2) the *quality of its practices for managing market risk*. This section discusses the guidelines that examiners will use in assessing the two dimensions, and combining those assessments into a component rating. Because few thrift institutions have significant exposure to foreign exchange risk or commodity or equity price risks, interest rate risk will generally be the only form of market risk to be assessed under this component rating.

A. Assessing the Level of Interest Rate Risk

Examiners will base their conclusions about an institution's level of interest rate risk -- the first dimension for determining the "S" component rating -- primarily on the interest rate sensitivity of the institution's net portfolio value. The two specific measures of risk that will receive examiners' primary attention are the Interest Rate Sensitivity Measure and the Post-shock NPV Ratio (see *Glossary* for definitions).

OTS uses risk measures based on NPV for several reasons. First, the NPV measures are more readily comparable across institutions than internally generated measures of earnings sensitivity. Second, NPV focuses on a longer-term analytical horizon than institutions' internally generated earnings sensitivity measures. (The interest rate sensitivity of earnings is typically measured over a short time horizon such as a year, while NPV is based on all future cash flows anticipated from an institution's existing assets, liabilities, and off-balance sheet contracts.) Third, the NPV-based measures take better account of the embedded options present in the typical thrift institution's portfolio.

1. Interest Rate Sensitivity Measure. In assessing the level of interest rate risk, a high (*i.e.*, risky) Interest Rate Sensitivity Measure, by itself, may not give cause for supervisory concern when the institution has a strong capital position. Because an institution's risk of failure is inextricably linked to its capital level, and, hence, to its ability to absorb adverse economic shocks, an institution with a high level of economic capital (*i.e.*, NPV) may be able safely to support a high Sensitivity Measure.

2. Post-Shock NPV Ratio. The Post-shock NPV Ratio is a more comprehensive gauge of risk than the Sensitivity Measure because it incorporates estimates of the current economic value of an institution's portfolio, in addition to the reported capital level and interest rate risk sensitivity. There are three potential causes of a low (*i.e.*, risky) Post-shock NPV Ratio: (*i*) low reported capital; (*ii*) significant unrecognized depreciation in the value of the portfolio; or (*iii*) high interest rate sensitivity. Although the first two of these, low reported capital and significant unrecognized depreciation in portfolio value, may cause supervisory concern (and receive attention under the portions of the examination devoted to evaluating Capital Adequacy, Asset Quality, or Earnings), they do not necessarily represent an "interest rate risk problem." Only when an institution's low Post-shock Ratio is, in whole or in part, caused by high interest rate sensitivity is an interest rate risk problem suggested. That condition is reflected in the guidelines discussed below.

3. Guidelines for Determining the Level of Interest Rate Risk. In describing the five levels of the "S" component rating, the interagency uniform ratings system established several broad, descriptive levels of risk: "minimal," "moderate," "significant," "high," and "imminent threat." The following interest rate risk levels are ordinarily indicated for OTS-regulated institutions, based on the combination of each institution's Post-shock NPV Ratio and Interest Rate Sensitivity Measure. (These guidelines are summarized in Table 1 below.) *These risk levels are for guidance, they are not mandatory; examiners utilize them as starting points in their ratings assessments, but have broad discretion to exercise judgment* (see Part IV.D, *Examiner Judgment*).

An institution with a Post-shock NPV Ratio below 4% and an Interest Rate Sensitivity Measure of:

(a) more than 200 basis points will ordinarily be characterized as having "high" risk. Such an institution will typically receive a 4 or 5 rating for the "S" component.[10]

[10] According to the interagency uniform ratings system (61 Fed. Reg. 67029 [1996]), the level of market risk at a 4-rated institution is "high," while that at a 5-rated institution is so high as to pose "an imminent threat to its viability." Under the Prompt Corrective Action regulation, 12 CFR Part 565, supervisory action is tied to regulatory capital. An institution's viability is, therefore, directly dependent on regulatory capital, not on economic capital. Because regulatory capital can remain positive for an extended period of time after economic capital has become zero or negative, the NPV measures are not by themselves indicators

(b) 100 to 200 basis points will ordinarily be characterized as having "significant" risk. Such an institution will typically receive a 3 rating for the "S" component.

(c) 0 to 100 basis points will ordinarily be characterized as having "moderate" risk. Such an institution will typically receive a rating of 2 for the "S" component. If the institution's sensitivity is extremely low, a rating of 1 may be supportable unless the institution is likely to incur larger losses under rate shocks other than the parallel shocks depicted in the OTS NPV Model.

An institution with a Post-shock NPV Ratio between 4% and 6% and an Interest Rate Sensitivity Measure of:

(a) more than 400 basis points will ordinarily be characterized as having "high" risk. Such an institution will typically receive a 4 or 5 rating for the "S" component.

(b) 200 to 400 basis points will ordinarily be characterized as having "significant" risk. Such an institution will typically receive a 3 rating for the "S" component.

(c) 100 to 200 basis points will ordinarily be characterized as having "moderate" risk. Such an institution will typically receive a 2 rating for the "S" component.

(d) 0 to 100 basis points will ordinarily be characterized as having "minimal" risk. Such an institution will typically receive a rating of 1 for the "S" component.

An institution with a Post-shock NPV Ratio between 6% and 10% and an Interest Rate Sensitivity Measure of:

(a) more than 400 basis points will ordinarily be characterized as having "significant" risk. Such an institution will typically receive a 3 rating for the "S" component.

(b) 200 to 400 basis points will ordinarily be characterized as having "moderate" risk. Such an institution will typically receive a 2 rating for the "S" component.

(c) less than 200 basis points will ordinarily be characterized as having "minimal" risk. Such an institution will typically receive a rating of 1 for the "S" component.

An institution with a Post-shock NPV Ratio of more than 10% and an Interest Rate Sensitivity Measure of:

(a) more than 400 basis points will ordinarily be characterized as having "moderate" risk. Such an institution will typically receive a 2 rating for the "S" component.

(b) less than 400 basis points will ordinarily be characterized as having "minimal" risk. Such an institution will typically receive a rating of 1 for the "S" component.

Table 1
Summary of Guidelines for the "Level of Interest Rate Risk"

Post-Shock NPV Ratio	Interest Rate Sensitivity Measure			
	0 - 100 b.p.	100-200 b.p.	200-400 b.p.	Over 400 b.p.
Over 10%	Minimal Risk (1)	Minimal Risk (1)	Minimal Risk (1)	Moderate Risk (2)
6% to 10%	Minimal Risk (1)	Minimal Risk (1)	Moderate Risk (2)	Significant Risk (3)
4% to 6%	Minimal Risk (1)	Moderate Risk (2)	Significant Risk (3)	High Risk (4)
Below 4%	Moderate Risk (2)	Significant Risk (3)	High Risk (4)	High Risk (4)

In Table 1 the numbers in parentheses represent the "S" component ratings that examiners would typically use as starting points in their analysis, assuming there are no deficiencies in the institution's risk management practices.

of near-term viability. For an institution's level of interest rate risk to constitute an imminent threat to viability, the institution will typically have a high level of interest rate risk *and* will have other serious financial problems that place it in imminent danger of closure.

Examiners may assign a different rating based on their interpretation of the facts and circumstances at each institution.

4. Internal vs. OTS Risk Measures. In applying the guidelines described above, examiners will encounter three general types of situations regarding the availability of risk measures.

First, if the institution does not have internal NPV measures, but does file Schedule CMR, examiners will use the NPV measures produced by OTS. In such instances, examiners must be aware of the importance of accurate reporting by the institution on Schedule CMR, particularly of items for which the institution provides its own market value estimates in the various interest rate scenarios, such as for mortgage derivative securities. They must also be aware of circumstances in which the OTS measures may overstate or understate the sensitivity of an institution's financial instruments.

Second, if the institution does produce its own NPV measures, examiners will have to decide whether to use the institution's or OTS's risk measures.

(a) If the institution's own measures and those produced by OTS are broadly consistent and result in the same risk category (*e.g.*, "minimal risk," "moderate risk," *etc.*), the choice between using the institution's measures or the OTS estimates probably does not matter, though examiners should attempt to ascertain the reasons for any major discrepancies between the two sets of results.

(b) If the institution's NPV measures place it in a different risk category than the OTS measures do, examiners (in consultation with their Regional Capital Markets group or the Washington Risk Management Division) should determine which financial instruments are the source of the discrepancy. If the institution's valuations for those instruments are judged more reliable than OTS', the institution's results will be used to replace the OTS results for those financial instruments in calculating NPV in the various interest rate scenarios.

(c) If examiners have reason to doubt *both* the institution's own measures and those produced by OTS, they may modify (in consultation with their Regional Capital Markets group or the Washington Risk Management Division) either or both measures to arrive at NPV measures that the examiners consider reasonable.

In deciding whether to rely on an institution's internal NPV measures, examiners will ensure that the institution's measures are produced in a manner that is broadly consistent with the OTS measures. (The major methodological points to consider are described in Part II.B, *Systems for Measuring Interest Rate Risk*.)

The third situation examiners will encounter is one in which the institution calculates no internal NPV measures and does not report on Schedule CMR. Because no NPV results will be available in such cases, the guidelines are not directly applicable. In addition to reviewing the institution's balance sheet structure in such cases, examiners will review whatever interest rate risk measurement and management tools the institution uses to comply with §563.176. Depending on their findings regarding the institution's general level of risk and its risk management practices, examiners might reconsider the appropriateness of the institution's continued exemption from filing Schedule CMR.

B. Assessing the Quality of Risk Management

In drawing conclusions about the quality of an institution's risk management practices -- the second dimension of the "S" component rating -- examiners will assess all significant facets of the institution's risk management process. To aid in that assessment, examiners will refer to Appendix B of this Bulletin which provides a set of *Sound Practices for Market Risk Management*. These sound practices suggest the sorts of management practices institutions of varying levels of sophistication may utilize. As (*i*) the size of the institution increases, (*ii*) the complexity of its assets, liabilities, or off-balance sheet contracts increases, or (*iii*) the overall level of interest rate risk at the institution increases, its risk management process should exhibit more of the elements included in the Sound Practices and should display a greater degree of formality and rigor. Because there is no formula for determining the adequacy of such systems, examiners will make that determination on a case-by-case basis. Examiners will take the following eight factors, among others, into consideration in assessing the quality of an institution's risk management practices.

1. Oversight by Board and Senior Management. Examiners will assess the quality of oversight provided by the institution's board and senior management. That assessment may have many facets, as described in Appendix B, *Sound Practices for Market Risk Management*.

2. Prudence of Limits. Examiners will assess the prudence of the institution's board-approved interest rate risk limits. Ordinarily, a set of IRR limits will raise examiner concerns if the limits permit the institution to have a Post-shock NPV Ratio and Interest Rate Sensitivity Measure that would ordinarily warrant an "S" component rating of 3

or worse. (For examples of how examiners will make that determination, see Appendix A, *Evaluating Prudence of Interest Rate Risk Limits*.) Depending on the level of concern, such limits may result in examiner criticism or an adverse "S" component rating.

3. Adherence to Limits. Examiners will assess the degree to which the institution adheres to its interest rate risk limits. Frequent exceptions to the board's limits may indicate weak interest rate risk management practices. Similarly, recurrent changes to the institution's limits to accommodate exceptions to the limits may reflect ineffective board oversight.

4. Quality of System for Measuring NPV Sensitivity. Examiners will consider whether the quality of the institution's risk measurement and monitoring system is commensurate with the institution's size, the complexity of its financial instruments, and its level of interest rate risk. Examiners will generally expect the quality of an institution's system for measuring the interest rate sensitivity of NPV to be consistent with the descriptions in Part II.B, *Systems for Measuring Interest Rate Risk*.

5. Quality of System for Measuring Earnings Sensitivity. OTS places considerable reliance on NPV analysis to assess an institution's interest rate risk. Other types of measures may, however, be considered in evaluating an institution's risk management practices. In particular, utilization of well-supported earnings sensitivity analysis may be viewed as a favorable factor in determining an institution's component rating. In fact, all institutions are encouraged to measure the interest rate sensitivity of projected earnings. Despite inherent limitations,[11] such analyses can provide useful information to an institution's management.

Methodologies used in measuring earnings sensitivity vary considerably among different institutions. To assist examiners in reviewing the earnings modeling process, institutions should have clear descriptions of the methodologies and assumptions used in their models. Of particular importance are the types of rate scenarios used (*e.g.*, instantaneous or gradual, consistent with forward yield curve) and assumptions regarding new business (*i.e.*, type of assets, dollar amounts, and interest rates). In addition, formulas for projecting interest rate changes on existing business (*e.g.*, ARMs, transaction deposits) should be clearly described and any major differences from analogous formulas used in the OTS NPV Model should be explained and supported.

6. Integration of Risk Management with Decision-Making. Examiners will consider the extent to which the results of an institution's risk measurement system are used by management in making operational decisions (*e.g.*, changes in portfolio structure, investments, derivatives activities, business planning, funding decisions, pricing decisions). This is of particular significance if the institution's Post-shock NPV Ratio is relatively low, and thus provides less of an economic buffer against loss.

Examiners will evaluate whether management considers the effect of significant operational decisions on the institution's level of interest rate risk. The form of analysis used for measuring that effect (earnings sensitivity, NPV sensitivity, or any other reasonable approach) and all details of the measurement are up to the institution. That analysis should be an active factor in management's decision-making and not be generated solely to avoid examiner criticism. In the absence of such a decision-making process, examiner criticism or an adverse rating may be appropriate.

7. Investments and Derivatives. Examiners will consider the adequacy of the institution's risk management policies and procedures regarding investment and derivatives activities. See Part III of this Bulletin, *Investment Securities and Financial Derivatives*, for a detailed discussion.

8. Size, Complexity, and Risk Profile. Under the interagency uniform ratings descriptions, an institution's risk management practices are evaluated relative to the institution's "size, complexity, and risk profile." Thus, a small institution with a simple portfolio and a consistently low level of risk may receive an "S" rating of 1 even if its risk management practices are fairly rudimentary. A large institution with these same characteristics would be expected to have more rigorous risk management practices, but would not be held to the same risk management standards as a similarly sized institution with either a higher level of risk or a portfolio containing complex securities or financial derivatives. An institution making a conscious business decision to maintain a low risk profile by investing in low risk products or maintaining a high level of capital may not require elaborate and costly risk management systems.

[11] The effectiveness of an earnings sensitivity model to identify interest rate risk depends on the composition of an institution's portfolio. In particular, management should recognize that such models generally do not fully take account of longer-term risk factors.

C. Combining Assessments of the Level of Risk and Risk Management Practices

Guidelines examiners will use in assessing an institution's level of risk and the quality of its risk management practices have been described in the two previous sections. This section provides guidelines for combining those two assessments into an "S" component rating for the institution.

The interagency uniform rating descriptions specify the criteria for the "S" component ratings in terms of the level of risk and the quality of risk management practices (see Appendix C). For example:

> A rating of 1 indicates that market risk sensitivity is *well controlled* and that there is *minimal* potential that the earnings performance or capital position will be adversely affected. … [*emphasis added*][12]

Thus, if market risk is less than "well controlled" (*i.e.*, "adequately controlled," "in need of improvement," or "unacceptable"), the institution does not qualify for a component rating of 1. Likewise, if the level of market risk is more than "minimal" (*i.e.*, "moderate," "significant," or "high"), the institution similarly does not qualify for a rating of 1.

Applying the same logic to the descriptions of the 2, 3, 4, and 5 levels of the "S" component rating results in the ratings guidelines shown in Table 2. That table summarizes the various combinations of examiner assessments about an institution's "level of interest rate risk" and "quality of risk management practices" translate into a suggested rating.[13]

Two important caveats must be noted about this table. First, the two dimensions are not totally independent of one another, because the quality of risk management practices is evaluated relative to an institution's level of risk (among other things). Thus, for example, an institution's risk management practices are more likely to be assessed as "well controlled" if the institution has minimal risk than if it has a higher level of risk. Second, as described further in the next section, the ratings shown in Table 2 provide a starting point, but examiners have broad discretion to exercise judgment and deviate from them.

Table 2
"S" Component-Rating Guidelines in Matrix Form

Quality of Risk Management Practices*	Level of Interest Rate Risk			
	Minimal Risk	Moderate Risk	Significant Risk	High Risk**
Well Controlled	S=1	S=2	S=3	S=4 or 5
Adequately Controlled	S=2	S=2	S=3	S=4 or 5
Needs Improvement	S=3	S=3	S=3	S=4 or 5
Unacceptable	S=4	S=4	S=4	S=4 or 5

* The Quality of Risk Management Practices is evaluated relative to an institution's size, complexity, and level of interest rate risk.

** To receive a component rating of 5, an institution's level of interest rate risk must be an "imminent threat to its viability." Such an institution will typically have a high level of interest rate risk *and* will have other serious financial problems that place it in imminent danger of closure.

D. Examiner Judgment

Blind adherence to the guidelines is undesirable. Examiners have a responsibility to exercise judgment in assigning ratings based on the facts they encounter at each institution. This section provides a non-exhaustive list of factors examiners might consider in applying the "S" rating guidelines to a particular institution.

[12] 61 Fed. Reg. 67029 (1996).

[13] Some of the combinations of risk management quality and level of risk shown in the table will rarely, if ever, be encountered (*e.g.*, an institution with "unacceptable" risk management practices, but a "minimal" level of risk). For the sake of completeness, however, all cells of the matrix are shown.

1. Judgment in Assessing the Level of Risk. In assessing the level of interest rate risk, the likelihood that examiners will deviate from the guidelines in Table 1 is heightened in cases where the Post-shock NPV Ratio and the Interest Rate Sensitivity Measure are both near cell boundaries. For example, there is no material difference between an institution whose Post-shock Ratio and Sensitivity Measure are, respectively, 4.01% and 199 b.p. and one where they are 3.99% and 201 b.p., yet the guidelines in Table 1 suggest a 2 rating for the former and a 4 for the latter. Clearly, the row and column boundaries of the cells in the table must be interpreted as transition zones or "gray areas," rather than as precise cut-off points, between suggested ratings. As such, examiners will more commonly deviate from the stated guidelines in the vicinity of cell borders than in their interior. Open-ended cells are another instance where examiners will more commonly deviate from the guidelines. For example, in assessing an institution whose Sensitivity Measure is well beyond 400 b.p., an examiner might very well determine that its level of risk is higher than the guidelines in the rightmost column of Table 1.

In applying the guidelines in Table 1, many considerations may cause an examiner to reach a different conclusion than suggested by the guidelines. Such considerations include the following:

(a) the trend in the institution's risk measures during recent quarters.

(b) the trend in the institution's risk measures compared with those of the rest of the industry in recent quarters. (Comparison with the results for the industry as a whole often provides a useful backdrop for evaluating an institution's results, particularly during periods of volatile interest rates.)

(c) the examiner's level of comfort with the overall accuracy of the available risk measures as applied to the particular products of the institution.

(d) the existence of items with particularly volatile or uncertain interest rate sensitivity for which the examiner wants to allow an added margin for possible error.

(e) the effect of any restructuring that may have occurred since the most recently available risk measures.

(f) other available evidence that causes the examiner to favor a higher or lower risk assessment than that suggested by the guidelines.

2. Judgment in Assessing the Quality of Risk Management Practices. Conclusions about the quality of risk management practices should be based, in part, on the institution's level of risk, with less risky institutions requiring less rigorous risk management practices. Considerations listed in the *Judgment in Assessing the Level of Risk*, above, may therefore cause the examiner to modify his or her assessment of the institution's risk management practices. In addition, if changes have occurred in the institution's level of risk since the last evaluation, the examiner may wish to reassess the quality of the institution's risk management practices in light of the changes.

Part V: Supervisory Action

If supervisory action to address interest rate risk is needed, examiners will discuss the problem with management and obtain their commitment to correct the problem as quickly as practicable.

If deemed necessary, examiners will request a written plan from the board and management to reduce interest rate sensitivity, increase capital, or both. The plan should include specific risk measure targets. If the initial plan is inadequate, examiners will require amendment and re-submission. Examiners will document the corrective strategy and results and review progress at case review meetings.

For institutions with composite ratings of 4 or 5, the presumption of formal enforcement action generally requires a supervisory agreement, cease and desist order, prompt corrective action directive, or other formal supervisory action.

If an institution's interest rate risk increases between examinations, examiners will consider whether a downgrade of the "S" component rating or the composite rating is warranted. Examiners will obtain quarterly progress reports (more frequently if the situation is severe). Where appropriate, examiners may require the institution to develop the capacity to conduct its own modeling.

Appendix A: Evaluating Prudence of Interest Rate Risk Limits

The basic principle examiners will use in evaluating the prudence of an institution's risk limits is whether they permit NPV to drop to a level where the Post-shock NPV Ratio and Sensitivity Measure would suggest an "S" component rating of 3 or worse under the guidelines for the Level of Risk (reproduced here as Table 1).

Table 1
Summary of Guidelines for the "Level of Interest Rate Risk"

Post-Shock NPV Ratio	Interest Rate Sensitivity Measure			
	100 b.p.	100-200 b.p.	200-400 b.p.	Over 400 b.p.
Over 10%	Minimal Risk (1)	Minimal Risk (1)	Minimal Risk (1)	Moderate Risk (2)
6% to 10%	Minimal Risk (1)	Minimal Risk (1)	Moderate Risk (2)	Significant Risk (3)
4% to 6%	Minimal Risk (1)	Moderate Risk (2)	Significant Risk (3)	High Risk (4)
Below 4%	Moderate Risk (2)	Significant Risk (3)	High Risk (4)	High Risk (4)

Examples of Evaluating the Prudence of Interest Rate Risk Limits.
The following examples illustrate how OTS examiners will evaluate an institution's interest rate risk limits. In each example, the interest rate risk limits approved by the institution's board of directors are shown in column [b]. These specify a minimum NPV Ratio for each of the interest rate scenarios shown in column [a]. The NPV Ratios currently estimated for the institution for each rate scenario are shown in column [c].

Example Institution A

Institution A has a detailed set of interest rate risk limits by which the board of directors specifies a minimum NPV Ratio for each of the seven rate shock scenarios described in Part II.A.1 of this bulletin.

Institution A
Limits and Current NPV Ratios:

[a] Rate Shock (in basis points)	[b] Board Limits (Minimum NPV Ratios)	[c] Institution's Current NPV Ratios
+300	6.00%	10.00%
+200	7.00	11.50
+100	8.00	12.50
0	9.00	13.00
-100	10.00	13.25
-200	11.00	13.50
-300	12.00	13.75

To assess the prudence of Institution A's interest rate risk limits, examiners will evaluate the risk measures permitted under those limits relative to the guidelines for the Level of Risk in Table 1. The Post-shock NPV Ratio permitted by the institution's board limits is 7.00% (from the +200 b.p. scenario in column [b], above). The Sensitivity Measure permitted by the limits is not known; it depends on the *actual* level of the base case NPV Ratio, which will probably be higher than the *limit* for the base case scenario. Examiners will, therefore, use the institution's *current* Sensitivity Measure (based on OTS's results or those of the institution) in performing their evaluation. Institution A's current Sensitivity Measure is 150 basis points (*i.e.*, [13.00% - 11.50%], the NPV Ratios in the 0 b.p. and +200 b.p. scenarios in column [c], above).

Referring to Table 1, the Post-shock NPV Ratio allowed by the institution's limits falls into the "6% to 10%" row and its current Sensitivity Measure falls into the "100 to 200 b.p." column. The rating suggested by Table 1 is, therefore, a 1, and Institution A's risk limits would, thus, probably be considered prudent.[14]

Example Institution B

Institution B
Limits and Current NPV Ratios:

[a] Rate Shock (in basis points)	[b] Board Limits (Minimum NPV Ratios)	[c] Institution's Current NPV Ratios
+300	6.00%	6.00%
+200	7.00	8.50
+100	8.00	11.00
0	9.00	13.00
-100	10.00	14.00
-200	11.00	14.50
-300	12.00	15.00

Institution B has identical interest rate risk limits as Institution A, but is considerably more interest rate sensitive than Institution A at the present time. Institution B's Sensitivity Measure is 450 b.p. (*i.e.*, [13.00% - 8.50%]).

For purposes of applying the guidelines in Table 1 to the limits, the Post-shock NPV Ratio of 7.00% permitted by the institution's board limits falls into the "6% to 10%" row. Its *current* Sensitivity Measure, however, falls into the "Over 400 b.p." column of Table 1. The rating suggested by the guidelines is therefore a 3 or a 4. Institution B's risk limits would probably *not* be considered sufficiently prudent. Even though its limits are identical to those of Institution A, its much higher *current* Sensitivity Measure requires the support of a higher Post-shock NPV Ratio than the minimum permitted by the board limits.

Example Institution C

Institution C
Limits and Current NPV Ratios:

[a] Rate Shock (in basis points)	[b] Board Limits (Minimum NPV Ratios)	[c] Institution's Current NPV Ratios
+300	6.00%	6.00%
+200	6.00	8.50
+100	6.00	11.00
0	6.00	13.00
-100	6.00	14.00
-200	6.00	14.50
-300	6.00	15.00

Institution C has the same current NPV Ratios as Institution B. Its board of directors has established the institution's interest rate risk limits as a single minimum NPV Ratio of 6% that applies to all seven rate shock scenarios. In assessing the prudence of those limits, therefore, the Post-shock NPV Ratio permitted by the limits is 6.00%. The *current* Sensitivity Measure, like that of Institution B, is 450 b.p.

In applying the Table 1 guidelines to the limits, Institution C's Post-shock NPV Ratio is in either the "4% to 6%" or the "6% to 10%" row and its Sensitivity Measure in the "Over 400 b.p." column of Table 1. The rating suggested by the table is, therefore, a 3 or a 4, and so Institution C's risk limits would also probably *not* be considered sufficiently prudent.

[14] This example assumes there are no significant deficiencies in the institution's risk management practices.

Example Institution D

Institution D
Limits and Current NPV Ratios:

[a] Rate Shock (in basis points)	[b] Board Limits (Minimum NPV Ratios)	[c] Institution's Current NPV Ratios
+300	3.50%	2.50%
+200	3.50	3.25
+100	3.50	3.75
0	3.50	4.00
-100	3.50	4.25
-200	3.50	4.50
[illegible]	3.50	4.75

Institution D has quite a low base case level of economic capital, and its board limits recognize that fact by permitting low NPV Ratios. Furthermore, the institution's level of interest rate risk currently exceeds the board limits (*i.e.*, the current NPV Ratios in the +200 and +300 scenarios are below the board's 3.50% minimum). While examiners would be very likely to express concern about that aspect of the institution's risk management process, the limits themselves might still be viewed as prudent.

To determine whether the institution's limits *are* prudent, examiners will use the Post-shock NPV Ratio of 3.50% permitted by the limits and the institution's current Sensitivity Measure of 75 basis points (*i.e.*, [4.00% - 3.25%]). In applying Table 1, the Post-shock NPV Ratio permitted by the limits falls into the "Below 4%" row and the *current* Sensitivity Measure falls into the "0 to 100 b.p." column. The ranking suggested by Table 1 is therefore a 2, and assuming that Institution A's Sensitivity Measure has been consistently low, its risk limits would probably be considered prudent. Because of the critical importance of the Sensitivity Measure in this determination, examiners might well arrive at a different conclusion if they lack assurance that the institution has the ability to maintain that measure at its current, low level. Thus, if the Sensitivity Measure has been volatile in the past or if examiners have concerns about the quality of the institution's risk management practices, they might well conclude that the risk limits are not sufficiently prudent.

Appendix B: Sound Practices for Market Risk Management

This section describes the key elements for effective management of market risk exposures. These key elements encompass sound practices for both interest rate risk management and the management of investment and derivatives activities.

The degree of formality and rigor with which an institution implements these elements in its own risk management system should be consistent with the institution's size, the complexity of its financial instruments, its tolerance for risk, and the level of market risk at which it actually operates.

A. Board and Senior Management Oversight

Effective oversight is an integral part of an effective risk management program. The board and senior management should understand their oversight responsibilities regarding interest rate risk management and the management of investment and derivatives activities conducted by their institution.

Board of Directors. The board of directors should approve broad strategies and major policies relating to market risk management and ensure that management takes the steps necessary to monitor and control market risk. The board of directors should be informed regularly of the institution's risk exposures.

The board of directors has ultimate responsibility for understanding the nature and level of risk taken by the institution. Board oversight need not involve the entire board, but may be carried out by an appropriate subcommittee of the board. The board, or an appropriate subcommittee of board members, should:

- Approve broad objectives and strategies and major policies governing interest rate risk management and investment and derivatives activities.
- Provide clear guidance to management regarding the board's tolerance for risk.
- Ensure that senior management takes steps to measure, monitor and control risk.
- Review periodically information that is sufficient in timeliness and detail to enable it to understand and assess the institution's interest rate risk and risks related to investment and derivatives activities.
- Assess periodically compliance with board-approved policies, procedures and risk limits.
- Review policies, procedures and risk limits at least annually.

Although board members are not required to have detailed technical knowledge, they should ensure that management has the expertise needed to understand the risks incurred by the institution and that the institution has personnel with the expertise needed to manage interest rate risk and conduct investment and derivative activities in a safe and sound manner.

Senior Management. Senior management should ensure that the institution's operations are effectively managed, that appropriate risk management policies and procedures are established and maintained, and that resources are available to conduct the institution's activities in a safe and sound manner.

Senior management is responsible for the daily oversight and management of the institution's activities, including the implementation of adequate risk management polices and procedures. To carry out its responsibilities, senior management should:

- Ensure that effective risk management systems are in place and properly maintained. An institution's risk management systems should include (1) systems for measuring risk, valuing positions, and measuring performance, (2) appropriate risk limits, (3) a comprehensive reporting and review process, and (4) effective internal controls.
- Establish and maintain clear lines of authority and responsibility for managing interest rate risk and for conducting investment and derivatives activities.
- Ensure that the institution's operations and activities are conducted by competent staff with technical knowledge and experience consistent with the nature and scope of their activities.
- Provide the board of directors with periodic reports and briefings on the institution's market-risk related activities and risk exposures.
- Review periodically the institution's risk management systems, including related policies, procedures, and risk limits.

Lines of Responsibility and Authority for Managing Market Risk. **Institutions should identify the individuals and/or committees responsible for risk management and should ensure there is adequate separation of duties in key elements of the risk management process to avoid potential conflicts of interest. Institutions should have a risk management function (or unit) with clearly defined duties that is sufficiently independent from position-taking functions.**

Institutions should identify the individuals and/or committees responsible for conducting risk management. Senior management should define lines of authority and responsibility for developing strategies, implementing tactics, and conducting the risk measurement and reporting functions.

The risk management unit should report directly to both senior management and the board of directors, and should be separate from, and independent of, business lines. The function may be part of, or may draw its staff from, more general operations (e.g., the audit, compliance, or Treasury units). Large institutions should, however, have a separate risk management unit, particularly if the Treasury unit is also a profit center. Smaller institutions with limited resources and personnel should provide additional oversight by outside directors in order to compensate for the lack of separation of duties.

Management should ensure that sufficient safeguards exist to minimize the potential that individuals initiating risk-taking positions may inappropriately influence key control functions of the risk management process such as the development and enforcement of policies and procedures, the reporting of risks to senior management, and the conduct of back-office functions.

B. Adequate Policies and Procedures

Institutions should have clearly defined risk management policies and procedures. The board of directors has ultimate responsibility for the adequacy of those policies and procedures; senior management and the institution's risk management function have immediate responsibility for their design and implementation. Policies and procedures should be reviewed periodically and revised as needed.

Interest Rate Risk. Institutions should have written policies and procedures for limiting and controlling interest rate risk. Such policies and procedures should be consistent with the institution's strategies, financial condition, risk-management systems, and tolerance for risk. An institution's policies and procedures (or documentation issued pursuant to such policies) should:

- Address interest rate risk at the appropriate level(s) of consolidation. (Although the board will generally be most concerned with the consolidated entity, it should be aware that accounting and legal restrictions may not permit gains and losses occurring in different subsidiaries to be netted.)
- Delineate lines of responsibility and identify individuals or committees responsible for (1) developing interest rate risk management strategies and tactics, (2) making interest rate risk management decisions, and (3) conducting oversight.
- Identify authorized types of financial instruments and hedging strategies.
- Describe a clear set of procedures for controlling the institution's aggregate interest rate risk exposure.
- Define quantitative limits on the acceptable level of interest rate risk for the institution.
- Define procedures and conditions necessary for exceptions to policies, limits, and authorizations.

Investment and Derivatives Activities. Institutions should have written policies and procedures governing investment and derivatives activities. Such policies and procedures should be consistent with the institution's strategies, financial condition, risk-management systems, and tolerance for risk. An institution's policies and procedures (or documentation issued pursuant to such policies) should:

- Identify the staff authorized to conduct investment and derivatives activities, their lines of authority, and their responsibilities.
- Identify the types of authorized investment securities and derivative instruments.
- Specify the type and scope of pre-purchase analysis that should be conducted for various types or classes of investment securities and derivative instruments.
- Define, where appropriate, position limits and other constraints on each type of authorized investment and derivative instrument, including constraints on the purpose(s) for which such instruments may be used.

- Identify dealers, brokers, and counterparties that the board or a committee designated by the board (*e.g.*, a credit policy committee) has authorized the institution to conduct business with and identify credit exposure limits for each authorized entity.
- Ensure that contracts are legally enforceable and documented correctly.
- Establish a code of ethics and standards of professional conduct applicable to personnel involved in investment and derivatives activities.
- Define procedures and approvals necessary for exceptions to policies, limits, and authorizations.

Policies and procedures governing investment and derivatives activities may be embedded in other policies, such as the institution's interest rate risk policies, and need not be stand-alone documents.

C. Risk Measurement, Monitoring, and Control Functions

Interest Rate Risk Measurement. Institutions should have interest rate risk measurement systems that capture all material sources of interest rate risk. Measurement systems should utilize accepted financial concepts and risk measurement techniques and should incorporate sound assumptions and parameters. Management should understand the assumptions underlying their systems. Ideally, institutions should have interest rate risk measurement systems that assess the effects of interest rate changes on both earnings and economic value.

An institution's interest rate risk measurement system should address all material sources of interest rate risk including repricing, yield curve, basis and option risk exposures. In many cases, the interest rate sensitivity of an institution's mortgage portfolio will dominate its aggregate risk profile. While all of an institution's holdings should receive appropriate treatment, instruments whose interest rate sensitivity may significantly affect the institution's overall results should receive special attention, as should instruments where embedded options may have a significant effect on the results.

The usefulness of any interest rate risk measurement system depends on the validity of the underlying assumptions and accuracy of the methodologies. In designing interest rate risk measurement systems, institutions should ensure that the degree of detail about the nature of their interest-sensitive positions is commensurate with the complexity and risk inherent in those positions.

Management should assess the significance of the potential loss of precision in determining the extent of aggregation and simplification used in its measurement approach.

Institutions should ensure that all material positions and cash flows, including off-balance-sheet positions, are incorporated into the measurement system. Where applicable, these data should include information on the coupon rates or cash flows of associated instruments and contracts. Any adjustments to underlying data should be documented, and the nature and reasons for the adjustments should be understood. In particular, any adjustments to expected cash flows for expected prepayments or early redemptions should be documented.

Key assumptions used to measure interest rate risk exposure should be re-evaluated at least annually. Assumptions used in assessing the interest rate sensitivity of complex instruments should be documented and reviewed periodically.

Management should pay special attention to those positions with uncertain maturities, such as savings and time deposits, which provide depositors with the option to make withdrawals at any time. In addition, institutions often choose not to change the rates paid on these deposits when market rates change. These factors complicate the measurement of interest rate risk, since the value of the positions and the timing of their cash flows can change when interest rates vary. Mortgages and mortgage-related instruments also warrant special attention due to the uncertainty about the timing of cash flows introduced by the borrowers' ability to prepay.

IRR Limits. Institutions should establish and enforce risk limits that maintain exposures within prudent levels. Management should ensure that the institution's interest rate risk exposure is maintained within self-imposed limits. A system of interest rate risk limits should set prudent boundaries for the level of interest rate risk for the institution and, where appropriate, should also provide the capability to set limits for individual portfolios, activities, or business units.

Limit systems should also ensure that positions exceeding limits or predetermined levels receive prompt management attention.

Senior management should be notified immediately of any breaches of limits. There should be a clear policy as to how senior management will be informed and what action should be taken. Management should specify whether the

limits are absolute in the sense that they should never be exceeded or whether, under specific circumstances, breaches of limits can be tolerated for a short period of time.

Limits should be consistent with the institution's approach to measuring interest rate risk.

Interest rate risk limits should be tied to specific scenarios for movements in market interest rates and should include "high stress" interest rate scenarios.

Limits may also be based on measures derived from the underlying statistical distribution of interest rates, using "earnings-at-risk" or "value-at-risk" techniques.

Stress Testing. Institutions should measure their risk exposure under a number of different scenarios and consider the results when establishing and reviewing their policies and limits for interest rate risk.

Institutions should use interest rate scenarios that are sufficiently varied to encompass different stressful conditions.

Stress tests should include "worst case" scenarios in addition to more probable scenarios. Possible stress scenarios might include abrupt changes in the general level of interest rates, changes in the relationships among key market rates (*i.e.*, basis risk), changes in the slope and the shape of the yield curve (*i.e.*, yield curve risk), changes in the liquidity of key financial markets or changes in the volatility of market rates. In conducting stress tests, special consideration should be given to instruments or positions that may be difficult to liquidate or offset in stressful situations. Management and the board of directors should periodically review both the design and the results of such stress tests and ensure that appropriate contingency plans are in place.

Market Risk Monitoring and Reporting. Institutions should have accurate, informative, and timely management information systems, both to inform management and to support compliance with board policy. Reports for monitoring and controlling market risk exposures should be provided on a timely basis to the board of directors and senior management.

The board of directors and senior management should review market risk reports (*i.e.*, interest rate risk reports and reports on investment and derivatives activities) on a regular basis (at least quarterly). While the types of reports prepared for the board and various levels of management will vary, they should include:

- summaries of the institution's aggregate interest rate risk and other market risk exposures including results of stress tests;
- reports on the institution's compliance with risk management policies, procedures, and limits;
- reports comparing the institution's level of interest rate risk with other savings associations using industry data provided by OTS;
- a summary of any major differences between the results of the OTS Net Portfolio Value Model and the institution's own results; and
- summaries of internal and external reviews of the institution's risk management framework, including reviews of policies, procedures, risk measurement and control systems, and risk exposures.

D. Internal Controls

Institutions should have an adequate system of internal controls over their interest rate risk management process. A fundamental component of the internal control system involves regular independent reviews and evaluations of the effectiveness of the system.

Internal controls should be an integral part of an institution's risk management system. The controls should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, and institutional policies. An effective system of internal control for interest rate risk should include:

- effective policies, procedures, and risk limits;
- an adequate process for measuring and evaluating risk;
- adequate risk monitoring and reporting systems;
- a strong control environment; and
- continual review of adherence to established policies and procedures.

Institutions are encouraged to have their risk measurement systems reviewed by knowledgeable outside parties. Reviews of risk measurement systems should include assessments of the assumptions, parameter values, and methodologies used. Such a review should evaluate the system's accuracy and recommend solutions to any identified weaknesses. The results of the review, along with any recommendations for improvement, should be reported to senior management and the board, and acted upon in a timely manner.

Institutions should review their system of internal controls at least annually. Reviews should be performed by individuals independent of the function being reviewed. Results should be reported to the board. The following factors should be considered in reviewing an institution's internal controls:

- Are risk exposures maintained at prudent levels?
- Are the risk measures employed appropriate to the nature of the portfolio?
- Are board and senior management actively involved in the risk management process?
- Are policies, controls, and procedures well documented?
- Are policies and procedures followed?
- Are the assumptions of the risk measurement system well documented?
- Are data accurately processed?
- Is the risk management staff adequate?
- Have risk limits been changed since the last review?
- Have there been any significant changes to the institution's system of internal controls since the last review?
- Are internal controls adequate?

E. Analysis and Stress Testing of Investments and Financial Derivatives

Management should undertake a thorough analysis of the various risks associated with investment securities and derivative instruments prior to making an investment or taking a significant position in financial derivatives and periodically thereafter. Major initiatives involving investments and derivatives transactions should be approved in advance by the board of directors or a committee of the board.

As a matter of sound practice, prior to taking an investment position or initiating a derivative transaction, an institution should:

- Ensure that the proposed investment or derivative transaction is legally permissible for a savings institution.
- Review the terms and conditions of the investment instrument or derivative contract.
- Ensure that the proposed transaction is allowable under the institution's investment or derivatives policies.
- Ensure that the proposed transaction is consistent with the institution's portfolio objectives and liquidity needs.
- Exercise diligence in assessing the market value, liquidity, and credit risk of any investment security or derivative instrument.
- Conduct a price sensitivity analysis of the security or financial derivative prior to taking a position.
- Conduct an analysis of the incremental effect of any proposed transaction on the overall interest rate sensitivity of the institution.

Prior to taking a position in any complex securities or financial derivatives, it is important to have an understanding of how the future direction of interest rates and other changes in market conditions could affect the instrument's cash flows and market value. In particular, management should understand:

- the structure of the instrument;
- the best-case and worst-case interest rates scenarios for the instrument;
- how the existence of any embedded options or adjustment formulas might affect the instrument's performance under different interest rate scenarios;
- the conditions, if any, under which the instrument's cash flows might be zero or negative;
- the extent to which price quotes for the instrument are available;

- the instrument's universe of potential buyers; and
- the potential loss on the instrument (*i.e.*, the potential discount from its fair value) if sold prior to maturity.

F. Evaluation of New Products, Activities, and Financial Instruments

Involvement in new products, activities, and financial instruments (assets, liabilities, or off-balance sheet contracts) can entail significant risk, sometimes from unexpected sources. Senior management should evaluate the risks inherent in new products, activities, and instruments and ensure that they are subject to adequate review procedures and controls.

Products, activities, and financial instruments that are new to the organization should be carefully reviewed before use or implementation. The board, or an appropriate committee, should approve major new initiatives involving new products, activities, and financial instruments.

Prior to authorizing a new initiative, the review committee should be provided with:

- a description of the relevant product, activity, or instrument;
- an analysis of the appropriateness of the proposed initiative in relation to the institution's overall financial condition and capital levels; and
- a description of the procedures to be used to measure, monitor, and control the risks of the proposed product, activity, or instrument.

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

Appendix C: Excerpt from Interagency Uniform Financial Institutions Rating System[15]

Sensitivity to Market Risk

The sensitivity to market risk component reflects the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution's earnings or economic capital. When evaluating this component, consideration should be given to: management's ability to identify, measure, monitor, and control market risk; the institution's size; the nature and complexity of its activities; and the adequacy of its capital and earnings in relation to its level of market risk exposure.

For many institutions, the primary source of market risk arises from non-trading positions and their sensitivity to changes in interest rates. In some larger institutions, foreign operations can be a significant source of market risk. For some institutions, trading activities are a major source of market risk.

Market risk is rated based upon, but not limited to, an assessment of the following evaluation factors:

- The sensitivity of the financial institution's earnings or the economic value of its capital to adverse changes in interest rates, foreign exchange rates, commodity prices, or equity prices.
- The ability of management to identify, measure, monitor, and control exposure to market risk given the institution's size, complexity, and risk profile.
- The nature and complexity of interest rate risk exposure arising from non-trading positions.
- Where appropriate, the nature and complexity of market risk exposure arising from trading and foreign operations.

Ratings

1 A rating of 1 indicates that market risk sensitivity is *well controlled* and that there is *minimal* potential that the earnings performance or capital position will be adversely affected. Risk management practices are strong for the size, sophistication, and market risk accepted by the institution. The level of earnings and capital provide substantial support for the degree of market risk taken by the institution.

2 A rating of 2 indicates that market risk sensitivity is *adequately controlled* and that there is only *moderate* potential that the earnings performance or capital position will be adversely affected. Risk management practices are satisfactory for the size, sophistication, and market risk accepted by the institution. The level of earnings and capital provide adequate support for the degree of market risk taken by the institution.

3 A rating of 3 indicates that control of market risk sensitivity *needs improvement* or that there is *significant* potential that the earnings performance or capital position will be adversely affected. Risk management practices need to be improved given the size, sophistication, and level of market risk accepted by the institution. The level of earnings and capital may not adequately support the degree of market risk taken by the institution.

4 A rating of 4 indicates that control of market risk sensitivity is *unacceptable* or that there is *high* potential that the earnings performance or capital position will be adversely affected. Risk management practices are deficient for the size, sophistication, and level of market risk accepted by the institution. The level of earnings and capital provide inadequate support for the degree of market risk taken by the institution.

5 A rating of 5 indicates that control of market risk sensitivity is *unacceptable* or that the level of market risk taken by the institution is an *imminent threat to its viability*. Risk management practices are wholly inadequate for the size, sophistication, and level of market risk accepted by the institution. *[Emphasis added.]*

[15] 61 Fed. Reg. 67029 (1996).

Appendix D: Glossary

Alternate Interest Rate Scenarios: Scenarios that depict hypothetical shocks to, or movements in, the current term structure of interest rates. As currently utilized in the OTS NPV Model, there are eight alternate interest rate scenarios, depicting shocks in which the term structure has been changed by the same amount at all maturities. The changes currently depicted in the alternate scenarios range from -400 basis points to +400 basis points. (Institutions need only provide board limits for scenarios ranging from -300 to +300 basis points.)

Base Case: A term sometimes used for the prevailing term structure of interest rates (*i.e.*, the current interest rate scenario). Also known as the "pre-shock" or "no shock" scenario, one not subjected to a change in interest rates. This is in contrast to, say, the plus or minus 100 basis point rate shock scenarios.

CAMELS Rating System: A uniform ratings system, applied to all banks, thrifts, and credit unions, which provides an indication of an institution's overall condition.. The six factors of the CAMELS rating system represent Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, and Sensitivity to Market Risk. Quantitative and qualitative factors are used to establish a rating, ranging from 1 to 5 for each CAMELS component rating. A rating of 1 represents the best rating and least degree of concern, while a 5 rating represents the worst rating and greatest degree of concern. The six CAMELS component ratings are used in developing the overall Composite Rating for an institution.

Complex Securities: The term "complex security" includes any collateralized mortgage obligation ("CMO"), real estate mortgage investment conduit ("REMIC"), callable mortgage pass-through security, stripped-mortgage-backed-security, structured note, and any security not meeting the definition of an "exempt security." An "exempt security" includes non-callable, "plain vanilla" instruments of the following types: (1) mortgage-pass-through securities, (2) fixed-rate securities, and (3) floating-rate securities.

Composite Rating: A rating that summarizes an institution's overall condition under the CAMELS rating system. This overall rating is expressed through a numerical scale of 1 through 5, with 1 representing the best rating and least degree of concern, and 5 representing the worst rating and highest degree of concern.

Financial Derivative: Any financial contract whose value depends on the value of one or more underlying assets, indices, or reference rates. The most common types of financial derivatives are futures, forward commitments, options, and swaps. A mortgage derivative security, such as a collateralized mortgage obligation or a real estate mortgage investment conduit, is not a financial derivative under this definition.

Interest Rate Risk: The vulnerability of an institution's financial condition to movements in interest rates. Changes in interest rates affect an institution's earnings and economic value.

Interest Rate Risk Exposure Report: A quarterly report, sent by OTS to all institutions that file Schedule CMR, presenting the results of the OTS NPV Model for each institution.

Interest Rate Sensitivity Measure: The magnitude of the decline in an institution's NPV Ratio that occurs as a result of an adverse rate shock of 200 basis points. The measure equals the difference between an institution's Pre-shock NPV Ratio and its Post-shock NPV Ratio and is expressed in basis points. In general, institutions that have significant imbalances between the interest rate sensitivity (*i.e.*, duration) of their assets and liabilities tend to have high Interest Rate Sensitivity Measures.

MVPE: The abbreviation for Market Value of Portfolio Equity, a term previously used for Net Portfolio Value. This term is no longer used by OTS because some of the factors used to determine NPV may not be market based.

NPV: The abbreviation for Net Portfolio Value which equals the present value of expected net cash flows from existing assets *minus* the present value of expected net cash flows from existing liabilities *plus* the present value of net expected cash flows from existing off-balance sheet contracts.

Post-shock NPV Ratio: Along with the Sensitivity Measure, one of the two primary measures of interest rate risk used by OTS. The ratio is determined by dividing an institution's NPV by the present value of its assets, where both the numerator and denominator are measured after a 200 basis point increase or decrease in market interest rates, whichever produces the smaller ratio. A *higher* Post-shock Ratio indicates a *lower* level of interest rate risk. Also sometimes referred to as the "Exposure Measure."

Pre-shock NPV Ratio: Ratio determined by dividing an institution's NPV by the present value of its assets, where both the numerator and denominator are measured in the base case. The ratio is a measure of an institution's economic capitalization. It is also referred to as the "Base Case NPV Ratio."

Prompt Corrective Action: A system of enforcement actions, established under the Federal Deposit Insurance Corporation Improvement Act of 1991, that regulators are required to take against insured institutions whose capital falls below certain critical thresholds.

"S" Component Rating: see "Sensitivity to Market Risk Component Rating."

Schedule CMR: A section of the Thrift Financial Report that is used by OTS to collect financial data for the OTS NPV Model.

Sensitivity Measure: See "Interest Rate Sensitivity Measure."

"Sensitivity to Market Risk" Component Rating: The component rating in the CAMELS rating system designed to express the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution's earnings or economic capital. The rating is based on two components: an institution's level of market risk and the quality of its practices for managing market risk. The "S" component rating.

Shocked Rate Scenarios: See "Alternative Interest Rate Scenarios."

Structured Notes: Structured notes include fixed-income securities with embedded options or derivative-like features where the bond's coupon, average life, or redemption value is dependent on a reference rate, an index, or formula. The term "structured notes" includes but is not limited to: dual-indexed floaters, de-leveraged floaters, inverse floaters, leveraged inverse floaters, ratchet floaters, range floaters, leveraged cap floaters, stepped cap/floor floaters, capped callable floaters, stepped spread floaters, multi-step bonds, indexed amortization notes, etc. Standard, non-leveraged, floating rate securities (i.e., those whose interest rates is not based on a multiple of the index) are not considered structured notes for purposes of this Thrift Bulletin.

Uniform Financial Institutions Rating System: see "CAMELS Rating System" and "Composite Rating."

Value-at-risk: A measure of market risk. An estimate of the maximum potential loss in economic value over a given period of time for a given probability level.