RESCINDED

This document and any attachments are superseded by OCC 2012-5.

Interest Rate Risk Management

Sensitivity to market risk 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.[1]

In this section, we discuss interest rate risk (IRR) only, as IRR is the primary component of market risk that affects savings institutions.

LINKS

Program

Appendix A

Appendix B

Thrift Bulletin (TB) 13a, *Management of Interest Rate Risk, Investment Securities, and Derivatives Activities*, provides guidance to boards of directors and managers on IRR, investment securities, and derivatives activities. Because TB 13a discusses management of all of these activities, there is overlap between this Handbook Section on IRR, the Investment Securities Section, and the Off-Balance-Sheet Derivatives and Hedging Section.

We define IRR as the sensitivity of a depository institution's earnings and net portfolio value (NPV) to changes in interest rates. IRR results from the differences in the way interest rate changes affect the values of assets, liabilities, and off-balance-sheet instruments. IRR poses repricing risk, yield curve risk, basis risk, and options risk.

The interest rate sensitivity of an institution's portfolio depends on the characteristics of the financial instruments that make up the portfolio. Because deposit liabilities typically reprice faster than mortgage assets, rising interest rates adversely affect most thrift institutions. This means their NPV and earnings decline when interest rates rise and increase when interest rates fall. Due to their portfolio composition, there are some institutions, however, that experience both decreased earnings and net worth when interest rates fall.

The interest rate sensitivity of a financial instrument depends on many factors including the following:

- Maturity (generally, of two otherwise identical instruments, the one with the longer maturity will be more interest rate sensitive).

- Repricing characteristics (instruments such as adjustable-rate loans that reprice frequently to market interest rates are typically less interest rate sensitive than fixed-rate instruments).

[1] 61 Fed. Reg. 67029 (1996).

- The presence of embedded options, such as loan prepayments, interest rate caps, and deposit withdrawal options that affect the timing of the cash flows generated by the instruments.

To evaluate properly the IRR exposure of a thrift institution, we must analyze the effect of interest rate changes on the entire portfolio. It can be misleading to conclude that an institution has high IRR exposure based on a few very rate sensitive instruments. In fact, the institution can offset the interest rate sensitivity of those instruments with other instruments in the portfolio that are less rate sensitive, or that are inversely affected by rate changes.

Both the board of directors and senior management of a thrift institution are responsible for the management of IRR. See 12 CFR § 563.176. We summarize below IRR management responsibilities. We describe these responsibilities more fully in Appendix B of TB 13a.

This Handbook Section includes the following topics:

- Sound practices for IRR management.
- OTS's minimum guidelines for IRR.
- OTS's guidelines for assessing sensitivity to market risk, primarily IRR (the S component rating).
- Examination objectives.

Appendix A describes four types of IRR models used by thrifts, and Appendix B discusses reconciliation of the OTS NPV sensitivity estimates with the institutions' own estimates.

Sound Practices

The objective of IRR management is to control an institution's exposure to changes in interest rates. Management can then maintain adequate levels of earnings and capital over a range of possible interest rate environments. Section 563.176 establishes requirements for the management of IRR.

Management Strategy

The board and management are responsible for the institution's IRR management strategy and its implementation. They must understand the strategy and its possible effects on the short- and long-term financial health of the institution.

In formulating an IRR strategy, the board and management should take into account the level of expertise needed to implement the strategy. A prudent IRR management strategy should be within the scope of existing management expertise. The institution should not rely on speculative plans to remedy an excessive IRR exposure, nor should it incur excessive credit or liquidity risk to do so.

There can be circumstances in which the steps taken to manage IRR conflict with other business goals. To minimize such conflicts, management should develop an IRR strategy in conjunction with the creation of a comprehensive business plan for the institution.

It could be that the profitability, financial structure, and IRR targets that an institution would choose independently of one another are not attainable simultaneously. By developing these targets and the plans for achieving them as part of a single process, management can determine which combinations of targets are feasible and can make an informed choice among them.

Policy and Procedures

The board's policy statement should include established limits and controls on IRR exposure. The board's policy statement should clearly define the delegation of responsibility for managing the institution's exposure to IRR. The policy statement should provide specific authorizations and restrictions regarding the institution's investment and trading activities, the use of derivatives and synthetic instruments, and hedging strategies.

It is senior management's responsibility to successfully implement the policy by establishing adequate guidelines and procedures. Further, senior management is responsible for reporting on the implementation and monitoring of such policy to the board on a periodic basis. The board shall review the results of operations at least quarterly (§ 563.176(e)) and make adjustments to the policy as needed.

Risk Measurement, Monitoring, and Control Functions

Institutions should:

- Have IRR measurement systems that capture all significant sources of IRR. Measurement systems should use accepted financial concepts and risk measurement techniques and should incorporate sound assumptions and parameter values. Management should understand the assumptions underlying their systems. Ideally, institutions should have IRR measurement systems that assess the effects of interest rate changes on both earnings and economic value.

- Establish and enforce risk limits that maintain exposures within prudent levels. A system of IRR limits should set prudent boundaries for the level of IRR for the institution. Management should ensure that it maintains the institution's IRR exposure within the board's self-imposed limits. Where appropriate, the institution should also set limits for individual portfolios, activities, or business units.

- Measure their risk exposure under a number of different scenarios and consider the results when establishing and reviewing their policies and limits for IRR.

- Have accurate, informative, and timely management information systems, both to inform management and to support compliance with board policy.

Besides monitoring institutions, there should be internal controls over the IRR management process. Systems should include regular independent reviews by outside parties and evaluations of the effectiveness of the system itself, at least annually.

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 before making an investment or taking a significant position in financial derivatives and periodically thereafter. The board of directors or a committee of the board should approve, in advance, major initiatives involving investments and derivative transactions.

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 to ensure that they are subject to adequate review procedures and controls.

Minimum Guidelines Regarding Interest Rate Risk

Interest Rate Risk Limits

TB 13a requires that the board's policy statement contain limits on the following measures:

- Changes in NPV. All institutions should establish and demonstrate quarterly compliance with board-approved limits on IRR, in terms of NPV. 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.

- Earnings sensitivity. Earnings-based limits can provide a useful supplement to the NPV-based limits. OTS does not require institutions to establish limits and conduct earnings sensitivity analysis. OTS does, however, consider 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.

IRR limits reflect the board of directors' risk tolerance, and should be prudently set. The board should periodically reevaluate the appropriateness of the institution's IRR limits, particularly after a significant change in market interest rates. Any changes should receive careful consideration and be documented in the minutes of the board meeting.

[2] To calculate and express an institution's NPV Ratio for a given interest rate scenario, the institution should divide the net portfolio value that would result in that scenario by the present value of the institution's assets in that same scenario. 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.

Systems for Measuring Interest Rate Risk

Key elements in managing market risk are identifying, measuring, and monitoring IRR. 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 IRR. OTS guidelines for IRR measurement systems are as follows, although you have broad discretion to require more rigorous systems.

Institutions Below $1 Billion In Assets

These institutions can usually rely on the quarterly NPV estimates produced by OTS and distributed in the *Interest Rate Risk Exposure Report*. The institution should be able to measure, or have access to measures of, the economic value of complex securities under the range of interest rate scenarios as described in TB 13a, Part II, 1, *Limits on Change in Net Portfolio Value*. The institution can use OTS estimates for the other financial instruments in its portfolio, although you may direct otherwise, if necessary.

Institutions With More Than $1 Billion In Assets

These institutions should measure their own NPV and its interest rate sensitivity. TB 13a gives guidance on desirable methodological features in evaluating the quality of such institutions' NPV measurement systems.

You may determine that an institution should use more sophisticated measurement techniques for individual financial instruments or categories of instruments because of the following considerations:

- The volume and price sensitivity of a group of financial instruments.
- Concern that the institution's results may materially misstate the level of risk.
- The combination of a low post-shock NPV ratio and high sensitivity measure.

In any case, the institution should be familiar with the details of the assumptions, term structure of interest rates, and logic used in performing the measurements. Therefore, measures obtained from financial screens or vendors may not always be adequate.

In addition to the interest rate scenarios described above, OTS recommends that institutions evaluate the effects of other stressful market conditions.

As part of your assessment of the quality of an institution's risk management practices, you should consider the extent to which management integrates the institution's risk measurement process with its decisionmaking. 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, but it should not be merely *pro forma* in nature. If evidence of such integration is not apparent, you should consider written criticism in the report or an adverse rating.

OTS Measurement of Interest Rate Risk

Schedule CMR of the Thrift Financial Report collects consolidated data on the interest rates and maturities of thrifts' assets, liabilities, and off-balance-sheet contracts. OTS requires all institutions with assets in excess of $300,000 million and with risk-based capital ratios below 12 percent to file Schedule CMR. All others may do so at their option.

OTS calculates quarterly estimates of NPV sensitivity for all institutions that file Schedule CMR and provides them with an Interest Rate Risk Exposure Report. This report lists OTS estimates of the institution's NPV in seven interest rate scenarios. The report provides ratios that you can use to assess an institution's IRR exposure and to compare it with other institutions.

Evaluating Interest Rate Risk Exposure

To make meaningful judgments about an institution's exposure to changes in interest rates, it is helpful to measure and compare its exposure with that of other institutions under a standardized framework. The framework adopted by OTS for this purpose is to examine exposure in the context of how an instantaneous, adverse shift in interest rates of plus or minus 200 basis points affects an institution's NPV.

OTS views the effect on NPV of an adverse rate shock relative to the size of the estimated present value of the institution's assets. An institution's NPV ratio is its NPV divided by the present value of its assets (PVA) both measured in the same interest rate scenario, or

$$\text{NPV Ratio} = \frac{\text{NPV}}{\text{PVA}}$$

It is important to determine both the level to which an institution's NPV ratio declines as a result of an adverse change in interest rates, as well as the magnitude of the decline in the ratio.

Two measures help detect excessive exposure:

- The post-shock NPV ratio.
- The sensitivity measure.

Post-shock NPV Ratio

The post-shock NPV ratio is an institution's NPV ratio after an adverse interest rate shock of 200 basis points.

$$\text{Post - shock NPV Ratio} = \frac{\text{NPV after Shock}}{\text{PVA after Shock}}$$

$$= \frac{\text{NPV}_{+200} \text{ or } \text{NPV}_{-200}}{\text{PVA}_{+200} \text{ or } \text{PVA}_{-200}}, \text{ whichever is lower.}$$

Table 1 illustrates the calculation of the post-shock NPV ratio. This table shows the estimated change in the present value of the assets, liabilities, and NPV of XYZ Savings Association resulting from a 200 basis point increase and decrease in interest rates.

TABLE 1

	Interest Rate Scenario		
	-200 Basis Point Change	Base Case	+200 Basis Point Change
Present Value of Assets	$105	$100	$80
Present Value of Liabilities	-99	-95	-77
NPV	6	5	3
NPV Ratio	5.7%	5%	3.8%

In Table 1, the adverse scenario is the one in which rates increase 200 basis points. Under that scenario, XYZ's NPV ratio declines to 3.8 percent. Thus, XYZ's post-shock NPV ratio is 3.8 percent.

Again, the post-shock NPV ratio is simply the NPV ratio that results from the more adverse 200 basis point shift in rates. This ratio indicates the cushion of economic capital an association would retain should an adverse change in interest rates occur.

The post-shock NPV ratio is a function of the sensitivity of NPV to changes in rates and the size of the NPV cushion in the base case scenario. Thus, an institution's post-shock NPV ratio could be low for one of two reasons:

- Its portfolio is very sensitive to changes in interest rates, causing it to lose a large portion of its NPV in an adverse interest rate move.

- Its base case NPV is low.

Thus, a low post-shock NPV ratio does not necessarily indicate high IRR. It may only indicate that the institution's base case NPV ratio is low.

Sensitivity Measure

The sensitivity measure gauges the magnitude of loss that an institution would suffer from the adverse move in interest rates. More specifically, it is the decline in the NPV ratio that will result from a hypothetical 200 basis point change in interest rates. In the example above, XYZ's NPV ratio declines

120 basis points from the base case level of 5.0 percent to 3.8 percent as a result of a 200 basis point increase in rates. The decline in the NPV ratio is simply the difference, expressed in basis points, between an institution's base case NPV ratio and its post-shock NPV ratio.

Taken alone, a large decline in the NPV ratio does not necessarily indicate excessive risk. An institution with a strong capital position could experience a sharp decline in its NPV ratio, as a result of a 200 basis point rate shock, and still be left with a substantial capital cushion.

In summary, OTS views exposure analysis as a two-dimensional problem that involves estimating both the level to which an institution's NPV ratio will decline as a result of an adverse rate shock, as well as the extent of the decline.

Guidelines for the Sensitivity to Market Risk Component Rating

Consistent with the interagency CAMELS rating system, you must base the Sensitivity to Market Risk component rating (S Rating) on your conclusions about two dimensions:

- An institution's level of market risk.
- The quality of its practices for managing market risk.

Assessing the Level of IRR

Assess the level of IRR by using the post-shock NPV ratio and the interest rate sensitivity measure. You should base your 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.

OTS uses risk measures based on NPV for several reasons:

- The NPV measures are more readily comparable across institutions than internally generated measures of earnings sensitivity.
- NPV focuses on a longer-term analytical horizon than institutions' internally generated earnings sensitivity measures. The interest rate sensitivity of earnings is usually measured over a short-term 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.
- The NPV-based measures take better account of the embedded options present in the typical thrift institution's portfolio.

Guidelines for Determining the Level of IRR

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
- Imminent threat

Table 2 indicates IRR levels ordinarily assigned for OTS-regulated institutions, based on the combination of each institution's post-shock NPV ratio and interest rate sensitivity measure.

These risk levels are for guidance; they are not mandatory. You should use them as starting points in your ratings assessments, but you have broad discretion to exercise judgment. See the discussion under Examiner Judgment later in this section.

TABLE 2
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)

OTS characterizes an institution with a post-shock NPV ratio below four percent and an interest rate sensitivity measure of:

- More than 200 basis points as having high risk. Such an institution will typically receive a 4 or 5 rating for the S component.[3]

[3] According to the interagency uniform CAMELS ratings system, 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 supervisory action

- 100 to 200 basis points as having significant risk. Such an institution will typically receive a 3 rating for the S component.

- 0 to 100 basis points 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 reflected in OTS's NPV Model.

OTS characterizes an institution with a post-shock NPV ratio of between four percent and six percent and an interest rate sensitivity measure of:

- More than 400 basis points as having high risk. Such an institution will typically receive a 4 or 5 rating for the S component.

- 200 to 400 basis points as having significant risk. Such an institution will typically receive a 3 rating for the S component.

- 100 to 200 basis points as having moderate risk. Such an institution will typically receive a 2 rating for the S component.

- 0 to 100 basis points as having minimal risk. Such an institution will typically receive a rating of 1 for the S component.

OTS characterizes an institution with a post-shock NPV ratio of between two percent and ten percent and an interest rate sensitivity measure of:

- More than 400 basis points as having significant risk. Such an institution will typically receive a 3 rating for the S component.

- 200 to 400 basis as having moderate risk. Such an institution will typically receive a 2 rating for the S component.

- Less than 200 basis points as having minimal risk. Such an institution will typically receive a rating of 1 for the S component.

OTS characterizes an institution with a post-shock NPV ratio of more than ten percent and an interest rate sensitivity measure of:

- More than 400 basis points as having moderate risk. Such an institution will typically receive a 2 rating for the S component.

is tied to regulatory capital. See12 CFR Part 565. 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 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.

- Less than 400 basis points as having minimal risk. Such an institution will typically receive a rating of 1 for the S component.

In Table 2 the numbers in parentheses represent the S component ratings that you would typically use as starting points in your analysis, assuming there are no deficiencies in the institution's risk management practices.

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

Internal vs. OTS Risk Measures

In applying the guidelines described above, you will encounter three general types of situations regarding the availability of risk measures.

- If the institution does not have internal NPV measures, but does file Schedule CMR, use the NPV measures produced by OTS. For such institutions, you must be aware of the importance of accurate reporting by the institution on Schedule CMR. This is important particularly for items for which the institution provides its own market value estimates in the various interest rate scenarios, such as for mortgage derivative securities. You must also be aware of circumstances in which OTS measures may overstate or understate the sensitivity of an institution's financial instruments.

- If the institution does produce its own NPV measures, you will have to decide whether to use the institution's or OTS's risk measures.

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

  — If the institution's NPV measures place it in a different risk category than OTS measures, you should determine which financial instruments are the source of that discrepancy and consult with the Regional Capital Markets group or the Washington Risk Management Division. If you judge that the institution's valuations for those instruments are more reliable than OTS's, use the institution's results rather than OTS's for those financial instruments in calculating NPV in the various interest rate scenarios.

  — If you have reason to doubt *both* the institution's own measures and those produced by OTS, you may modify either or both measures to arrive at reasonable NPV measures. You should do this only after consultation with the Regional Capital Markets group or the Washington Risk Management Division. In deciding whether to rely on an institution's internal NPV measures, you must ensure that the institution's measures are calculated in a way that is broadly consistent with OTS calculations. OTS describes the major

methodological points to consider in TB 13a, Part II. B, *Systems for Measuring Interest Rate Risk*.

- The institution does not calculate 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, you will review whether IRR measurement and management tools the institution uses to comply with § 563.17[illegible] Depending on your findings regarding the institution's general level of risk and its risk management practices, you might reconsider the appropriateness of the institution's continued exemption from filing Schedule CMR.

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 – you must assess all significant facets of the institution's risk management process. To aid in that assessment, refer to Appendix B of TB 13a, Sound Practices for Market Risk Management. These sound practices suggest the style of management practices institutions of varying levels of sophistication may use. Because there is no formula for determining the adequacy of such systems, you must make that determination on a case-by-case basis. You must consider the following eight factors, among others, in assessing the quality of an institution's risk management practices.

- Oversight by Board and Senior Management. Assess the quality of oversight provided by the institution's board and senior management. That assessment may have many facets, as described in TB 13a, Appendix B, Sound Practices for Market Risk Management.

- Prudence of Limits. Assess the prudence of the institution's board approved IRR limits. Ordinarily, a set of IRR limits should concern you 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. Depending on the level of concern, such limits may deserve criticism or an adverse S component rating.

- Adherence to Limits. Assess the degree to which the institution adheres to its IRR limits. Frequent exceptions to the board's limits may indicate weak IRR management practices. Similarly, recurrent changes to the institution's limits to accommodate exceptions to the limits may reflect ineffective board oversight.

- Quality of System for Measuring NPV Sensitivity. 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 IRR.

- Quality of System for Measuring Earnings Sensitivity. OTS places considerable reliance on NPV analysis to assess an institution's IRR. You should consider other types of measures in evaluating an institution's risk management practices. In particular, you may view use of a well-supported earnings sensitivity analysis as a favorable factor in determining an institution's

component rating. In fact, you should encourage all institutions to measure the interest rate sensitivity of projected earnings. Despite inherent limitations,[4] such analyses can provide useful information to an institution's management.

- Methodologies used in measuring earnings sensitivity vary considerably among different institutions. Institutions should have clear descriptions of the methodologies and assumptions used in their models. The type of rate scenario used is of particular importance. Examples are instantaneous shocks, gradual movements, consistent with forward yield curve. Also important are assumptions regarding new business (that is, type of assets, dollar amounts, and interest rates). In addition, institutions should clearly describe formulas for projecting interest rate changes on existing business (for example, ARMs, transaction deposits). Institutions should also explain and support any major differences from analogous formulas used in OTS's NPV Model.

- Integration of Risk Management with Decision Making. Consider the extent to which management uses the results of an institution's risk measurement system in making operational decisions. Examples are changes in portfolio structure, investments, derivatives activities, business planning, funding decisions, and 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.

- Evaluate whether management considers the effect of significant operational decisions on the institution's level of IRR. 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 decisionmaking and not be generated solely to avoid examiner criticism. In the absence of such a decision-making process, criticism in the report or an adverse rating may be appropriate.

- Investments and Derivatives. Consider the adequacy of the institution's risk management policies and procedures regarding investment and derivatives activities. See Part III of TB 13a, Investment Securities and Financial Derivatives, for a detailed discussion.

- Size, Complexity, and Risk Profile. Under the interagency uniform ratings descriptions, evaluate an institution's risk management practices relative to the institution's size, complexity, and risk profile. 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 the same characteristics should have more rigorous risk management practices. However, OTS would not hold it 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.

[4] 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.

Combining Assessments of the Level of Risk and Risk Management Practices

Use the guidelines described in the two previous sections to assess an institution's level of risk and the quality of its risk management practices. This section provides guidelines for combining these two assessments into a S component rating for the institution.

The interagency uniform ratings descriptions specify the criteria for the S component ratings in terms of the level of risk and the quality of risk management practices. 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]

Thus, if market risk is less than well controlled (that is, 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 (that is, 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 3. That table summarizes how various combinations of assessments about an institution's level of IRR and quality of risk management practices translate into a suggested rating.[5]

Note two important caveats about this table. First, the two dimensions are not totally independent of one another, because we evaluate the quality of risk management practices relative to an institution's level of risk (among other things). Thus, for example, you are more likely to assess an institution's risk management practices as well-controlled if the institution has minimal risk than if it has a higher level of risk. Second, the ratings shown in Table 3 provide a starting point, but you have broad discretion to exercise judgment and deviate from them.

Examiner Judgment

Blind adherence to the guidelines is undesirable. You have a responsibility to exercise judgment in assigning ratings based on the facts you encounter at each institution. This section provides a nonexhaustive list of factors you might consider in applying the S rating guidelines to a particular institution.

Judgment in Assessing the Level of Risk

In assessing the level of IRR, the likelihood that you will deviate from the guidelines in Table 2 increases 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 percent and 199 basis points and one where

[5] You will rarely, if ever, encounter some of the combinations of risk management quality and level of risk shown in the table (for example, an institution with unacceptable risk management practices, but a minimal level of risk). For the sake of completeness, however, OTS shows all cells of the matrix.

they are 3.99 percent and 201 basis points. The guidelines in Table 2, however, suggest a 2 rating for the former and a 4 for the latter. Clearly, you must interpret the row and column boundaries of the cells in the table as transition zones or gray areas, rather than as precise cut-off points, between suggested ratings. As such, you will more commonly deviate from the stated guidelines in the vicinity of cell borders than in the interior. Open-ended cells are another instance where you will more commonly deviate from the guidelines. For example, in assessing an institution whose sensitivity measure is well beyond 400 basis points, you might very well determine that its level of risk is higher than the guidelines in the rightmost column of Table 2.

TABLE 3
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=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

*Evaluate quality of risk management practices relative to an institution's size, complexity, and level of IRR.

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

In applying the guidelines in Table 2, many considerations may cause you to reach a different conclusion than suggested by the guidelines. Such considerations include the following:

- The trend in the institution's risk measures during recent quarters.
- 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 a period of volatile interest rates.)
- Your level of comfort with the overall accuracy of the available risk measures as applied to the particular products of the institution.
- The existence of items with particularly volatile or uncertain interest rate sensitivity for which you want to allow an added margin for possible error.
- The effect of any restructuring that may have occurred since the most recently available risk measures.

- Other available evidence that causes you to favor a higher or lower risk assessment than that suggested by the guidelines.

Judgment in Assessing the Quality of Risk Management Practices

Base conclusions about the quality of risk management practices, in part, on the institution's level of risk, with less risky institutions requiring less rigorous risk management practices. Considerations listed in the previous section, Judgment in Assessing the Level of Risk, may therefore cause you to modify your 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, you may wish to reassess the quality of the institution's risk management practices considering these changes.

Supervisory Action

If you need to take supervisory action to address IRR, discuss the problem with management and obtain their commitment to correct the problem as quickly as practicable.

If deemed necessary, 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, require amendment and resubmission. 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 IRR increases between examinations, consider whether the increase warrants a downgrade of the S component rating or the composite rating. Require quarterly progress reports, if necessary (more frequently if the situation is severe). Where appropriate, require the institution to develop the capacity to conduct its own modeling.

Validation of OTS's NPV Estimates

If the post-shock NPV ratio and the decline in the NPV ratio indicate that an association may have excessive IRR, you should take steps to ensure the accuracy of OTS's NPV estimates.

You should check the data reported on Schedule CMR for reporting errors that can invalidate the NPV estimates. If you detect errors, the institution should correct the Schedule and recalculate NPV estimates.

Methods to Reduce Interest Rate Risk

Institutions that project declines in earnings and net portfolio value when interest rates increase may lower exposure by increasing the duration of liabilities or decreasing the duration of assets. The

institution can accomplish this through portfolio restructuring or hedging. Examples of measures such institutions might undertake include the following:

- Increase the proportion of short term and adjustable-rate loans in the portfolio.
- Replace short-term funding with longer-term deposits and borrowings.
- Retain core deposits which are typically less interest rate sensitive than CDs.
- Use derivative instruments, such as futures, options, interest rate swaps, and caps, to lower exposure to IRR. Management should have a thorough understanding of these instruments before using them.

Although the majority of thrift institutions are exposed to rising interest rates, there are a number of institutions that are exposed to falling rates. These institutions could lower their exposure by restructuring their portfolios to lengthen the duration of their assets or decrease the duration of their liabilities.

OTS publishes *Selected Asset and Liability Pricing Tables* on a quarterly basis. The tables provide estimated economic values of selected assets and liabilities as calculated by OTS's Net Portfolio Value Model in each of the interest rate scenarios described in TB 13a. Use the data in the tables to estimate the effect on the association's NPV sensitivity of buying or selling a particular asset or liability.

Evaluating Prudence of Interest Rate Risk Limits

The basic principle to 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 Interest Rate Risk. Refer to Table 2.

Examples of Evaluating the Prudence of Interest Rate Risk Limits

The following examples illustrate how to evaluate an institution's IRR limits. In each example column [b] shows the IRR limits approved by the institution's board of directors. These specify a minimum NPV Ratio for each of the interest rate scenarios shown in column [a]. Column [c] shows the NPV Ratios currently estimated for the institution for each rate scenario.

Institution A has a detailed set of IRR limits for 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 TB 13a.

To assess the prudence of Institution A's IRR limits, evaluate the risk measures permitted under those limits relative to the guidelines for the Level of Interest Rate Risk in Table 2. The post-shock NPV ratio permitted by the institution's board limits is 7.00 percent (from the +200 basis points scenario in column [b], Institution A). 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.

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

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 (13.00% - 11.50%). This is the difference between the NPV ratios in the 0 basis points and +200 basis points scenarios in column [c].

Referring to Table 2, 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 basis points column. The rating suggested by Table 2 is, therefore, a 1, and you can probably consider Institution A's risk limits prudent.[6]

Institution B has identical IRR 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 basis points (13.00% - 8.50%).

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

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
+400	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

For purposes of applying the guidelines in Table 2 to the limits, the post-shock NPV ratio of 7.00 percent permitted by the institution's board limits falls into the 6% to 1[illegible]% row. Its *current* sensitivity measure, however, falls into the Over 400 B.P. column of Table 2. The rating suggested by the guidelines is therefore a 3, and you can consider Institution B's risk limits not 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.

Institution C has the same current NPV ratios as Institution B. Its board of directors established the institution's IRR limits as a single minimum NPV Ratio of six percent 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 six percent. The *current* sensitivity measure, like that of Institution B, is 450 basis points.

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

In applying the Table 2 guidelines to the limits, Institution C's post-shock NPV ratio is in either the 4% to 6% or the 6% to 10% row. Its sensitivity measure is in the Over 400 B.P. column of Table 2. The rating suggested by the table is, therefore, a 3 or a 4, and so you can consider Institution C's risk limits *not* sufficiently prudent.

Institution D
Limits and Current NPV Ratios

[a] Rate Shock (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
-300	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 IRR already exceeds the board limits. The current NPV ratios in the +200 and +300 scenarios are below the board's 3.50 percent minimum. While you would very likely express concern about that aspect of the institution's risk management process, you might still view the limits themselves as prudent.

To determine whether the institution's limits *are* prudent, use the post-shock NPV ratio of 3.50 percent permitted by the limits and the institution's current sensitivity measure of 75 basis points (4.00% - 3.25%). In applying Table 2, 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 basis points column. The rating suggested by Table 2 is therefore a 2, and if Institution D's sensitivity measure has been consistently low, you might view its risk limits prudent. Because of the critical importance of the sensitivity measure in this determination, you might well arrive at a different conclusion if you lack assurance that the institution can maintain that measure at its current, low level.

Thus, if the sensitivity measure has been volatile in the past or if you have concerns about the quality of the institution's risk management practices, you might well conclude that the risk limits are not sufficiently prudent.

REFERENCES

Code of Federal Regulations (12 CFR)

§ 563.176 Interest Rate Risk Management Procedures

Office of Thrift Supervision Bulletins

TB 13a Interest Rate Risk, Investment Securities, and Derivatives Activities

Other References

The OTS Net Portfolio Value Model

Selected Asset and Liability Price Tables

Interest Rate Risk Exposure Report