

## Interagency Advisory on Interest Rate Risk Management

As part of our continued efforts to help our clients navigate through these volatile times, we recently sent out the attached checklist that briefly describes how c. myers helps satisfy the critical components for quantifying risk outlined in the recent interagency Advisory on Interest Rate Risk Management and thought you may be interested.

Our comments are drawn from working with nearly 500 credit unions, including about 25% of those over \$100M and 50% of those over \$1 billion in assets.

This checklist is provided as a quick reference; more extensive comments on the Advisory also are included should you want more detail. A key appears at the top of the checklist outlining components that are standard as well as optional services.

Remember that this Advisory serves as **guidance** and is *not* a list of requirements, as it highlights that the amount of analysis should be based on the institution's level of complexity. You can view a full copy of the Advisory at:

[http://www.ncua.gov/news/press\\_releases/2010/JR10-0107Attachment.pdf](http://www.ncua.gov/news/press_releases/2010/JR10-0107Attachment.pdf)

Please feel free to call me or any one of our principals at 800.238.7475.

Warm regards,

Sally Myers  
Chief Executive Officer  
c. myers corporation  
800.238.7475

## Check a few worries off your list..

= Standard     = Optional

Advisory on Interest Rate Risk	Comments
<input checked="" type="checkbox"/> "...boards...should understand and be regularly informed about the level and trend of their institutions' IRR exposure." (Pg. 2)	At your discretion, board members can participate in c. myers' review of the Independent Assessment—resulting in a better understanding of your credit union's unique IRR exposures.
<input checked="" type="checkbox"/> "When using earnings simulation models, IRR exposures are best projected over at least a two-year period." (Pg. 4)	C. myers' Interactive Decision Model (risk model) goes beyond two years; reporting risks to earnings and net worth over 4 and 5 years is standard.
<input checked="" type="checkbox"/> "...assess IRR exposures beyond typical industry conventions, including changes in rates of greater magnitude...[and]...reflect changing slopes and twists of the yield curve." (Pg. 5)	This has been standard for c. myers' clients for nearly 20 years. C. myers' risk model automatically simulates rate environments, including slopes and twists of the yield curve, experienced since the 1950s.
<input checked="" type="checkbox"/> "...stress scenarios should include but not be limited to: <ul style="list-style-type: none"> <li>■ Instantaneous and significant changes in the level of interest rates..." (Pg. 5)</li> </ul>	Extreme changes in rates have occurred throughout history, but not instantaneously. Therefore, results are based on a 12-month rate change. Upon request, instantaneous change can be simulated at no additional charge.*
<input checked="" type="checkbox"/> "...stress testing should include a sensitivity analysis to help determine which assumptions have the most influence on model output." (Pg. 6)	Credit risk and deposit sensitivity assumptions are stress tested with each simulation. Also included are three different levels of New Business contribution assumptions. By request, key rate drivers and prepayment assumptions for loans and investments are stress tested. Backtesting the reasons for changes in risk profile, including assumptions, is available at your request as well. For a nominal fee, a written summary of reasons for changes can be provided.*
<input type="checkbox"/> "Institutions are expected to have comprehensive policies and procedures governing all aspects of their IRR management process." (Pg. 3)	Make sure your policy is comprehensive and up to date. If you need help with your policy, c. myers offers policy support.**
<input type="checkbox"/> "...IRR implications of significant new strategies, products and businesses are integrated into IRR management process." (Pg. 3)	C. myers' models and services give you the ability to run an <b>unlimited</b> number of "what-ifs," each in as little as 1-4 minutes.
<input type="checkbox"/> "...well-managed institutions will consider earnings and economic perspectives when assessing the scope of their IRR exposure." (Pg. 3)	C. myers' risk model has simulated risks to earnings and net worth and has performed net economic value simulations for almost two decades.*
Related Proposed Interagency Guidance on Funding and Liquidity Risk Management	Comments
<input type="checkbox"/> "Comprehensive liquidity risk measurement and monitoring systems (including assessments of the current and prospective cash flows or sources and uses of funds) that are commensurate with the complexity and business activities of the institution." (Pg. 16)	C. myers' Liquidity Analysis Service simulates the monthly impact of the sources and uses of liquidity from the entire enterprise. It factors in your expectations along with "what-ifs" to show bad events occurring and potential, contingent responses to those events.

\* For more extensive information, please see our expanded commentary.

\*\* Reviewing policy is a standard service available for quarterly clients upon request.

# Advisory on Interest Rate Risk Management

## Expanded Commentary

### Yield Curve Modeling

Advisory on Interest Rate Risk	Initial Comments
“...assess IRR exposures beyond typical industry conventions, including changes in rates of greater magnitude...[and]...reflect changing slopes and twists of the yield curve.” (Pg. 5)	This has been standard for our clients for nearly 20 years. Our simulations represent rate environments, including slopes and twists of the yield curve, experienced since the 1950s.

#### Changes in Magnitude

C. myers’ modeling automatically simulates short-term rates ranging from 0% to 16% and long-term rates ranging from 2% to 14% (historically-based interest rates).

#### Changing Slopes and Twists of the Yield Curve

C. myers’ modeling automatically simulates yield curves ranging from -200 to +400 basis points (bps).

### Assumptions Documentation

Advisory on Interest Rate Risk
“When assumptions are adjusted from prior reporting periods, the changes and their effects on model outputs should be documented and clearly identified.” (Pg. 7)

Assumptions are documented in Section 7 of the Reference Database provided with each simulation. If major changes are made to a key assumption, the impact of the assumption change is automatically quantified under each of the history-based rate environments. The results are compared to the base-case results to help decision makers understand the importance of the assumption change. Many clients’ internal processes include documentation of the reasons for an assumption change. For an additional fee, c. myers can provide a written summary of the reasons for the change.

### Policy

Advisory on Interest Rate Risk
“At well-managed institutions, management compares stress test results against approved tolerances limits.” (Pg. 6)

Reaching consensus on policy limits/risk tolerance and managing within those limits are key components to any risk management process. If boards and managements don’t agree, in advance, on appetite for risk—it is almost certain that either business opportunities will be missed or risk beyond the board’s comfort level will be taken. We encourage decision makers to establish limits/tolerance levels that will actually be used in decision making and not simply to satisfy examiners. We find that when decision makers set limits to appease examiners, their decisions are not made in light of tolerances.

## NEV

Advisory on Interest Rate Risk	Initial Comments
<p>"...well-managed institutions will consider earnings and economic perspectives when assessing the scope of their IRR exposure." (Pg. 3)</p>	<p>C. myers' risk model has simulated risks to earnings and net worth and has performed net economic value simulations for almost two decades.</p>

C. myers simulates net economic value (NEV) for many of its clients. This capability has been available in the risk model for almost two decades. When c. myers simulates NEV for a credit union, there are two stress tests included.

One stress test shows the impact of changing the maturity of non-maturity deposits; the other stress test quantifies the impact of changing the credit perspective the market may have when purchasing loans. Keep in mind the following regarding NEV methodology:

- NEV ignores the impact to earnings from operating expense and non-interest income. Both of these factors play a major role in credit union earnings and net worth. Evaluating risk from the entire financial structure is essential for decision makers to have a sound early warning system.
- Value does not always equal earnings.
  - To illustrate the point, consider this question:  
 If a credit union's loan portfolio is valued at par today, what would earnings look like if the credit union replaced all of its loans and held all of the funds in overnights earning 25bps as of March 2010?  
  
 The earnings of the credit union would be dramatically reduced, resulting in a negative ROA and negatively impacting the ability to build net worth in the future. In this example, the NEV in the current environment would be the same with the loans or the overnights. In all rising rate environments, even if it was assumed that rates went up only 10bps, NEV would look better with the overnights, but earnings could be materially lower. Note that this would be true whether the loans are currently at a loss or a gain.
  - Material non-earning assets put pressure on earnings, but this pressure does not hurt economic value and usually helps NEV results in +300bp scenarios.
  - Non-maturity deposits valued at par is a common assumption. However, assuming shares at par ignores the actual rates on non-maturity deposits. In other words, NEV with shares at par does not change if the current share rate is 1% or 10%. Of course earnings, which build net worth, would be dramatically different.
- Using various logical, defensible assumptions regarding the maturity of non-maturity deposits can result in very different answers regarding the safety and soundness of a credit union.

As we simulate NEV for our clients, we caution them on the shortcomings noted above. To avoid some of the shortcomings of NEV, c. myers offers an alternative simulation methodology that combines risks to earnings, net worth and residual value. This methodology, which can be beneficial for credit unions with material exposure beyond 5 years, combines the benefit of evaluating the risk to earnings and net worth from the entire financial structure (including operating expense and non-interest income) and then closes out any remaining risk exposure beyond year 5 through valuing the remaining commitments.

## Static Versus Dynamic

### Advisory on Interest Rate Risk

"In general, simulation models can be either static or dynamic. Static simulation models are based on current exposures and assume a constant balance sheet with no new growth. In contrast, dynamic simulation models rely on detailed assumptions regarding changes in existing business lines, new business, and changes in management and customer behavior." (Pg. 4)

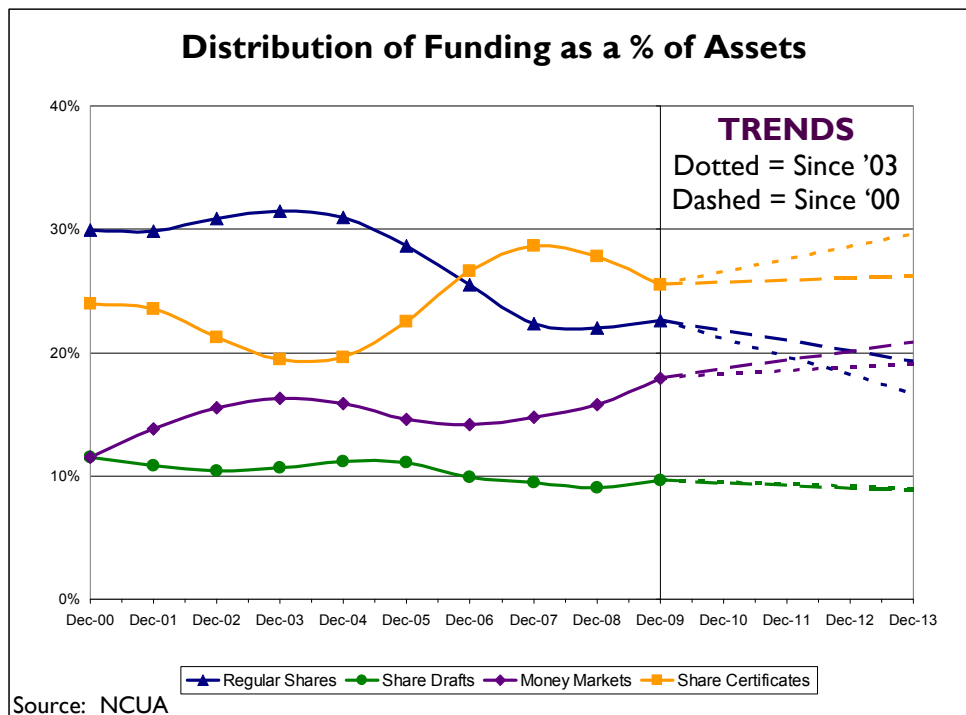
"Dynamic earnings simulation models can be useful for business planning and budgeting purposes. However, dynamic simulation is highly dependent on key variables and assumptions that are extremely difficult to project with accuracy over an extended period. Furthermore, model assumptions can potentially hide certain key underlying risk exposures. As such, when performing dynamic simulations, institutions should also run static simulations to provide ALCO or senior management a complete and comparative description of the institution's IRR exposure." (Pg. 4)

While we agree with the concerns about dynamic modeling outlined in the Advisory, we believe static (constant balance sheet) modeling also has significant flaws that can misrepresent risk.

Constant balance sheet modeling assumes that the balance sheet mix will never change regardless of external forces. In other words, as auto loans are running off, they will simply be replaced by auto loans at the then-current rate. Even when assuming no new growth, this simplified assumption can result in misleading decision information.

Another point to consider is a product line that is discontinued because it is hurting the credit union. A constant balance sheet will assume the problem product line will continue to be added to replace balances as they mature. It can be misleading to assume continued new volumes for products that are no longer offered.

The illustration of the change in deposit mix below is a good reminder of how the balance sheet structure does change. Keep in mind that constant balance sheet modeling ignores changes in depositor behavior (such as when interest rates change) because, as noted above, this approach assumes that the balance sheet mix will not change.



C. myers has the ability to model both static and dynamic balance sheets through the Interactive A/L Budget Model, which many credit unions use for budgeting and business planning. However, given the identified weaknesses of static and dynamic modeling, clients have been using the c. myers risk model to quantify risk for the last two decades.

The risk model is designed to support a multi-step approach to help decision makers quantify, understand, compare and manage risks. The first step is to isolate risks embedded in the credit union's existing commitments without intermingling assumptions regarding new business from runoff, growth or new lines of business. Including new business assumptions in the first step of the risk analysis can hide real risks or introduce risks that do not yet exist. The risk model methodology also factors in changes in depositor behavior, which is ignored by static balance sheet methods.

The second step in the process is to help decision makers understand the required contribution from new business to achieve net worth and asset targets. Once this foundation is established, "what-ifs" on new business can be performed.

We recommend isolating assumptions regarding new business and new lines of business through modeling "what-ifs." Again, this strategy for evaluating risk addresses the concern identified in the interagency Advisory that dynamic modeling has a high dependency on assumptions and can potentially hide underlying risk.

## Deterministic Versus Stochastic

### Advisory on Interest Rate Risk

"Both techniques [static and dynamic] are capable of incorporating assumptions about the future path of interest rates using simple deterministic scenario analysis, more sophisticated stochastic-path techniques, or Monte Carlo simulations." (Pg. 4)

One of the challenges with quantifying interest rate risk is that no one knows what interest rates will be in the future. Some models address this issue by calculating different interest rate paths that may occur. The key is making sure that the potential future level of interest rates is captured so that decision makers can be aware of the risk from a variety of possible future rate environments.

- The c. myers risk model methodology is different than either of the methods described in the Advisory, as it provides boards and managements with the ability to see risks to earnings and net worth under rate environments that have occurred since the early '50s. This history-based approach automatically includes short-term rates ranging from 0% to 16% and long-term rates ranging from 2% to 14%, as well as yield curves ranging from -200bps to +400bps.

To date, no client or regulatory authority has requested testing rate environments below 0% or above 16%.

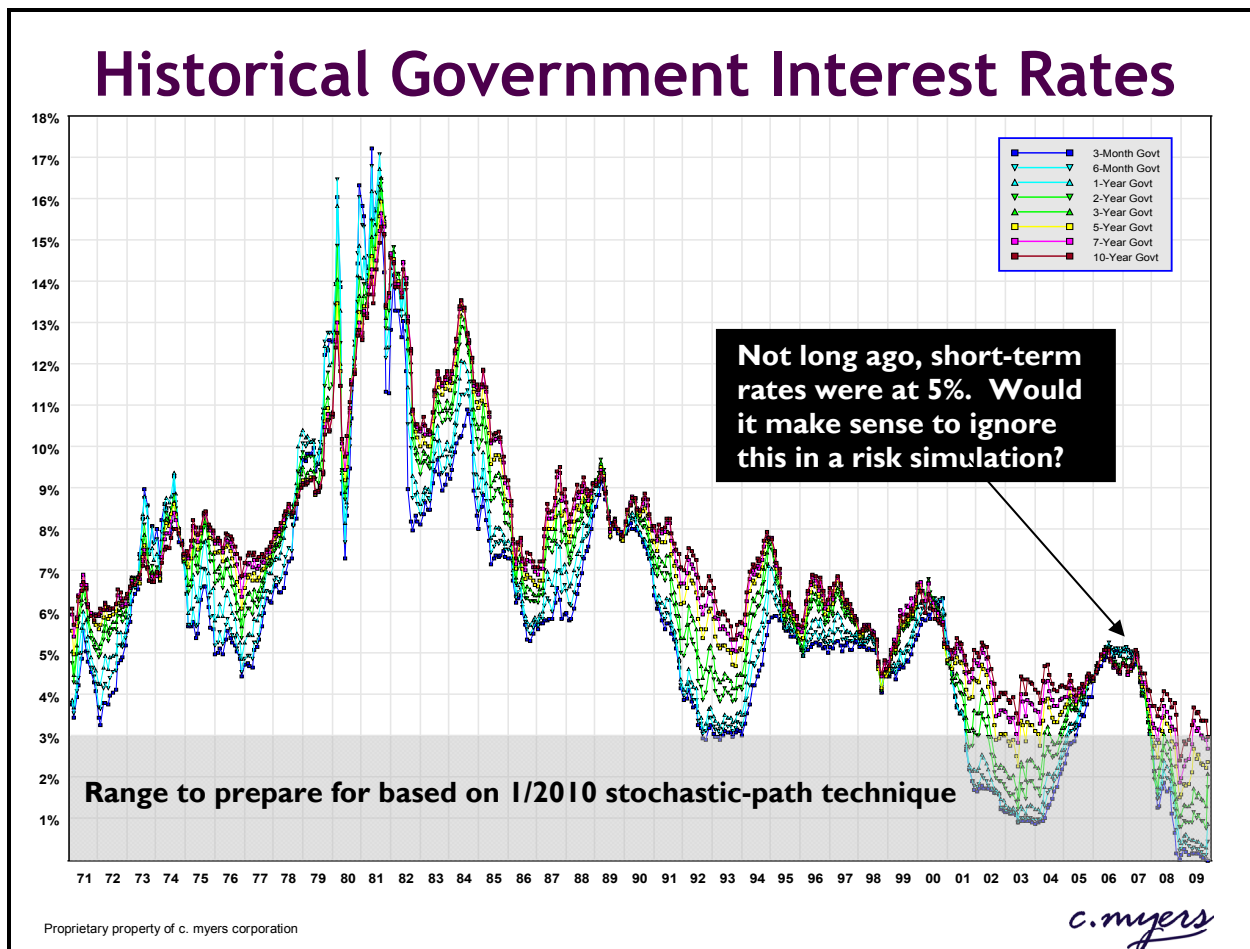
- Simple deterministic: Most common examples are 7 paths (current and +/-300) typically used by credit unions or 5 paths (current and +/-200) typically used by banks. In the Advisory, the agencies indicate a need to expand the paths that are evaluated: *Assess IRR exposures beyond typical industry conventions, including changes in rates of greater magnitude...[and]...reflect changing slopes and twists of the yield curve.*" (Pg. 5) We agree with this statement.
- Stochastic modeling: Stochastic modeling creates random paths that are influenced by probability. Typically, the user will set variables/parameters upon which the probability will be based. This will include looking at recent volatility in rates (typically back 1 or 2 years). While incorporating probability analysis may be appropriate in budgeting and business planning, it can be a weak foundation if used for risk quantification.

- One challenge of relying on probability is that, as recent events have reinforced, improbable events can destroy financial institutions. The stochastic method focuses attention on what is probable, encouraging credit unions to ignore the potential for improbable events to occur.
- Stochastic modeling typically assumes that the more stable (low volatility) rates have been, the more likely rates will remain stable in the future. We periodically evaluate stochastic modeling to see what information it would provide. As of January 2010, based on the volatility of short-term rates over the last two years, running a 1000-path stochastic model resulted in a 99% probability that short-term rates will barely hit 3% over the next two years.

This can result in boards and managements managing risks assuming short-term rates will not go above 3%. We believe this can be an inadequate level of rates to consider for risk analysis.

Putting technical risk management language aside, the range of rates used in risk management must pass the reasonableness test. If rates do go higher than 3% and a credit union experiences substantial losses, it would be hard to explain to members “we did not see it coming” or “our risk management process did not include rates going higher than 3%” when merely 2.5 years ago rates were at 5%.

We have found that many boards and managements value the early warning system provided by c. myers’ more comprehensive view of rates. See the graph of historical government interest rates below.



## Target Financial Structures

### Advisory on Interest Rate Risk

"In general, most economic value models use a static approach in that the analysis typically does not incorporate new business; rather, the analysis shows a snapshot in time of the risk inherent in the portfolio or balance sheet. However, some institutions have started to incorporate dynamic modeling techniques that provide forward-looking estimates of economic value." (Pg. 5)

C. myers offers the ability to simulate long-term risks to earnings and net worth inherent in a future structure. This is referred to as a Target Financial Structure. Target Financial Structures simulate the long-term risks to earnings and net worth from a future structure. Net Economic Value also can be simulated once a Target Financial Structure is completed.

Identifying risks to earnings and net worth of new business decisions under consideration is a key component of a prudent risk management process. It enables decision makers to understand, in-advance, the long-term risks embedded in their budgets and/or business plans.

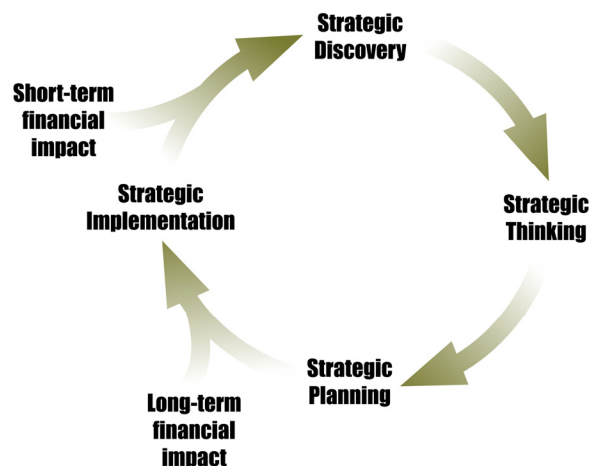
## Analytical Capabilities

### Advisory on Interest Rate Risk

"Institutions are encouraged to use the full complement of analytical capabilities of their IRR simulation models." (Pg. 4)

C. myers has worked with nearly 500 credit unions, 25% of those over \$100 million and 50% of those over \$1 billion, since 1991 and offers a full complement of analytical capabilities, including:

- Independent Assessment Service
  - Understanding of existing risk to earnings and net worth
  - Target Financial Structure – understanding risks to earnings and net worth embedded in budgets and/or business plans
- Net Economic Value (NEV)
- Income and Residual Value at Risk
- Liquidity Analysis
- Interactive A/L Budget Model & Budgeting Service
- Long-Term Financial Forecasting
- Modeling Capital Restoration Plans
- Anytime "What-ifs," simulated in as little as 1-4 minutes



Finally, c. myers' philosophy is based on linking strategy with desired financial performance. Numbers have little meaning without a distinctive strategy to guide them; strategies fall apart without the numbers to support them. The graphic at the right illustrates this continuous process.

Each year, we facilitate over 60 strategic planning sessions for credit unions across the country.