

# Your ALM Model Validation

*Get the Most from Your Validation Analysis*

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# Outline

- Introductions
- Purpose for an ALM Model Validation
- Regulatory Background
- Preparing for a Model Validation
- The McQueen Validation Process
- Takeaways

# Why Have Your Model Validated?

- Financial institutions rely heavily on quantitative analysis and models for financial forecasting and decision making.
- Model validation is a process to test and verify that a particular model is performing as expected, and functioning consistent with its design objectives.

# Reasons for a Model Validation

- Detect potential model limitations
- Isolate model assumption weaknesses
- Expose data errors, incorrect model usage or deterioration in performance
- Identify corrective actions
- Improve decision making

# Regulatory Background

- Office of the Comptroller of the Currency's (OCC) Bulletin 2011-12: Supervisory Guidance on Model Risk Management (replaced OCC 2000-16 Model Validation)
- OCC Bulletin 2010-1: Interagency Advisory on Interest Rate Risk Management.
- NCUA Letter No. 12-CU-05: Interest Rate Risk Policy and Program Requirements. (NCUA Regulation 12 CFR Part 741)
- **NCUA Letter No. 16-CU-08: Revised Interest Rate Risk Supervision.**

# Revised Interest Rate Risk Supervision

NCUA LETTER TO CREDIT UNIONS  
NATIONAL CREDIT UNION ADMINISTRATION  
1775 Duke Street, Alexandria, VA 22314

DATE:	October 2016	LETTER No.:	16-CU-08
TO:	Federally Insured Credit Unions		
SUBJ:	Revised Interest Rate Risk Supervision		
ENCL:	<ul style="list-style-type: none"><li>(1) <a href="#">Fact Sheet: Revised Interest Rate Risk Supervision</a></li><li>(2) <a href="#">Revised Examiners Guide</a></li><li>(3) <a href="#">Interest Rate Risk Review Procedures Workbook</a></li><li>(4) <a href="#">Guide to Using NCUA's Interest Rate Risk Exam Procedures Workbook</a></li></ul>		



Dear Board of Directors and Chief Executive Officer:

Effective January 1, 2017, NCUA will institute changes to the agency's interest rate risk review procedures and adopt a standardized measurement of interest rate risk to scope and rate interest rate risk assessments more efficiently and effectively. Field staff will implement these changes using the enclosed *Interest Rate Risk Review Procedures Workbook and Guide to Using NCUA's Interest Rate Risk Procedures Workbook*. NCUA also revised the chapter of the *Examiner's Guide* that provides comprehensive and educational interest rate risk information. You should review all of these materials to learn more about the agency's supervisory expectations. You also may access this material on the new [Examiner's Guide webpage](#).

# NCUA's Interest Rate Risk (IRR) Examination Workbook

Go to: Tab D: Measurement Systems

Go to: Step B: Model Validation (page 55)

## Model Validation

Has the ALM model been validated by the credit union (i.e., mathematical integrity, user inputs, system output and reports, etc.) to confirm that the model produces accurate forecasts of earnings and valuations? If so, what documentation is available to support the validation?

# NCUA Exam Criteria

## System Input Review

- Knowledge of staff running the model
- Reconcile input data to CU's general ledger
- Rules of account set-up and aggregation
- Accuracy of contractual rate/term data
- Source and accuracy of external data

# NCUA Exam Criteria

## Assumption Reviews

- Process of developing assumptions
- Reviewing and approving key assumptions
- Periodic review of assumptions for relevance, applicability, and reasonableness

# NCUA Exam Criteria

## System Output & Reporting

- Include range of interest rate scenarios
- Accuracy of measurements and risk exposure
- Timeliness of reporting
- Compliance to board policies and risk limits
- Documentation of variance analyses
- Understandable management reports

# Things to Consider Before You Start



# Define What CU Expects to Accomplish

- Comprehensive (full) model analysis
- Model assumption review (more limited)
- Net Economic Value (NEV)
- Net Interest Income (NII)
- Static vs. dynamic balance sheet
- Identify interest rate shock scenarios
- Assess IRR results and variances

# Preparing for IRR Model Validation

- Save all data files used in your validation run
- Variable rate data, maturity dates, product codes
- Participation loans and third-party data
- Define non-maturity deposit assumptions
- Provide general ledger trial balance
- Save all model settings, assumptions, model output and management reports

## **We look at literally everything.**

- Have performed ALM Validations for over 20 models
- Have been told that we are more thorough than clients expect
- **Caution:** Comments are not for everyone! Ask for clarification for your specific needs.

## McQueen ALM Validation Process

### **Process starts with a document request list.**

- ALM policy & limits
- Meeting minutes
- Detailed files
- Model inputs & assumptions
- Assumption support
- Model output (static report)
- Board reports
- Examiner Comments
- Prior model validation report
- Internal controls & use
- Source for investment values
- Balance sheet & income statement
- Additional reports
  - Assumption Sensitivity
  - Core Deposit Study
  - Back-testing
  - Non-parallel Testing
  - Prepay Speed Analysis
  - What-if Growth Model Runs

McQueen ALM Validation Process

**Review Steps**

- Policy & Limits
- Data Set
- Model Effectiveness
- Model Use
- Assumptions & Support
- Internal Communication
- Output Reasonableness

McQueen ALM Validation Process

## **Policy & Limits**

- Responsibilities assigned
- Includes appropriate limits
- Exceptions to policy are covered
- Annual board approval

## McQueen ALM Validation Process

### **Data Set**

- Reconciled to balance sheet
- Appropriate fields are utilized
- Complex holdings are modeled correctly
- Model captures all repricing characteristics

McQueen ALM Validation Process

## Model Effectiveness

- Robust enough?
- Are summary data used?
- Is there a sufficient number of categories?
- Time horizon covered?

## McQueen ALM Validation Process

### **Model Use**

- Static & growth reports
- Reporting frequency
- Non-parallel runs
- Assumption sensitivity analysis
- Back-testing
- What-if analysis

McQueen ALM Validation Process

## **Assumptions & Support**

- Reasonable inputs
- Source of prepay speed assumptions
- Beta sources (replacement rates)
- Non-maturity deposit retention

## McQueen ALM Validation Process

### **Internal Communication**

- Effective ALM meeting minutes
  - Trend analysis
  - Risk testing vs. limits
  - NOT cookie cutter approach
- ALM board training
- Reports prepared internally
- Policy exceptions

## McQueen ALM Validation Process

### **Output Reasonableness**

- Source for investment values
- Considerable analysis regarding output
- Comparison to known results from McQueen model
- Deep look at complex positions

## McQueen ALM Validation Process

### Common Findings

- Investment values calculated in the ALM model differ from bond accounting or broker values
- Inconsistent prepay speed assignments (fast, slow or remain unchanged in all scenarios)
- Overly optimistic non-maturity deposit repricing assumptions
- Very long assumed non-maturity deposit terms
- Extremely high value assigned to non-maturity deposits
- Weak meeting minutes
- Little or no support for model assumptions
- Policies do not call for non-parallel testing, static balance sheet analysis, back-testing or assumption sensitivity analysis
- Loan caps, floors and reset dates not captured
- Policy limits do not provide an adequate early warning signal
- Little or no board training
- Insufficient number of loan categories
- Tiered money market accounts not identified

# Back-Testing Results

Back-testing model results is one method to compare model output to actual outcomes. Back-testing can include:

- Net interest income
- Mortgage prepayments
- Dividend repricing behavior

# Action Items & Takeaways

- Review NCUA's new IRR exam workbook
- Audit data files for accuracy before validation
- Establish model validation plan with ALCO
- Identify suitable ALM partner for validation
- Initiate model validation process

# Action Items & Takeaways

- Document validation process and results
- Evaluate assumptions in your modelling
- Address any material or critical findings
- Discuss and document any model changes
- Communicate with ALCO/Board

Questions?

# THANK YOU

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