



NCUA
National Credit Union Administration

2018 Capital Planning – Observed and Leading Practices

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2018 Range of Capital Planning Practices • February 2019

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Introduction

Background

The National Credit Union Administration (NCUA) places a high level of importance on capital planning at its largest credit unions. Capital planning requires each covered credit union¹ (credit union) to consider its own risk exposures, establish capital adequacy goals to support these risks, and develop a capital contingency plan. The NCUA's review of capital plans assesses each credit union's capital adequacy analysis, risk management, and governance practices.

While heightened expectations in these areas apply to all covered credit unions, NCUA understands not all credit unions are the same, nor will they adopt the same methods and approaches when developing their capital plans and surrounding governance processes. NCUA expects each credit union will clearly demonstrate internal capital adequacy assessment processes (ICAAP) that meet regulatory requirements and accompanying supervisory guidance², and are commensurate with the credit union's size, risk profile, and financial condition.

Keeping credit union differences in mind, and in an effort to provide a measure of regulatory relief, in April 2018, the NCUA Board approved revisions to Part 702, Subpart E of the NCUA Rules and Regulations (Rule). Under the revised Rule, credit unions are subject to tiered regulatory requirements based, generally, on credit union size, complexity, and financial condition. The Rule changes further emphasize the iterative nature of capital planning as well as NCUA's supervisory approach for setting ICAAP expectations for each credit union's unique circumstances.

The Rule adopted a "maturity model" approach, which assumes as a credit union grows in size and risk profile, increased expectations of capital planning practices applied are more attainable and cost feasible. The Rule follows NCUA's incremental approach to supervising ICAAP and stress testing expectations at credit unions of varying size and complexity.

¹ Credit unions with \$10 billion or more in assets as of their March 31st Call Report (of a given calendar year) are covered by NCUA Rules and Regulations Part 702, Subpart E – Capital Planning and Stress Testing in the following calendar year.

² In September 2014, NCUA issued supervisory guidance to credit unions subject to the capital planning requirements of Part 702, Subpart E of the Rules and Regulations. The supervisory guidance was entitled Principles of Capital Policy and Planning and was accompanied by Supervisory Letter 14-05, which provided guidance to NCUA/ONES staff in evaluating credit union capital planning submissions. Previously issued NCUA guidance on the subject matter can be found at: <https://www.ncua.gov/regulation-supervision/regulatory-compliance-resources/capital-planning-stress-testing-resources>



Purpose & Expectations

This white paper highlights leading and lagging practices observed across capital plans reviewed by the Office of National Examinations and Supervision (ONES) as of October 31, 2018. The purpose of sharing this information is so a credit union can benchmark its own unique practices against those of its peers. Under the Tiered expectations³ set forth in the revised Rulemaking, NCUA expects credit unions will continue to refine and enhance their capital analysis, risk management, and corporate governance activities supporting the analysis. The guidance provided in this white paper will assist credit unions in understanding NCUA's expectations with respect to capital adequacy analysis and the supporting enterprise activities. Additionally, ONES' supervisory assessment, risk ratings, and CAMEL ratings will incorporate the results of capital plan reviews.

Practices identified as leading or sound represent views at the time of this publication. NCUA anticipates leading practices will continue to evolve as new data becomes available, economic conditions change, new products and businesses introduce new risks, and estimation techniques advance.

Each year's guidance builds upon the previous year by revisiting and identifying observed enhancements in corporate governance and risk management activities supporting capital analysis processes. This includes the strength and reasonableness of the capital adequacy analysis itself. In order to make this annual guidance useful to incoming and incumbent credit unions, some of the guidance is purposefully redundant with prior year observations.

³ Guidance for tiered expectations for sound capital planning is outlined in the [2014 Guidance](#) and in the [April 2018 Rule](#).



Effective Capital Policies and Governance Framework

Governance Framework Should Support Effective Challenge

For purposes of risk management activities, the principle of conservatism is critical to ensure that decision makers are informed of the plausible array of risks arising from credit union activities. The quality of governance practices is considered a key element determining whether conservatism is embedded in capital planning. Credit unions that institute clear lines of authority between risk taking and risk oversight functions are more transparent in their communication of material risks, demonstrate effective challenge of capital analysis, and exhibit stronger alignment with capital goals and stated risk tolerance levels. Credit unions following lagging practices do not effectively align corporate governance structures in a manner enabling necessary independence of oversight, and perspective, relative to risk management activities essential to supporting sound capital planning.⁴

Sound corporate governance supporting ICAAP establishes independence between risk taking and risk oversight functions. Leading institutions demonstrated business-line risk management activities overseen by an independent risk oversight function, commonly referred to as a second line of defense. The independent risk oversight function is adequately staffed and staff has sufficient skills and stature to challenge the capital planning processes, analysis, and interpretation of results. The risk oversight function's stature was sufficient to compel a conservative representation of business line risk in capital analysis and report matters of difference with respect to capital adequacy directly to the board.

As of the date of this publication, most credit unions have not instituted a true independent risk oversight function. Instead, credit unions attempt to foster internal challenge and diversify risk assessment perspectives by establishing committees at the management and board levels. Albeit not a leading practice, NCUA sees this as an enhancement over assigning capital planning and analysis activities to a business line unit, such as the finance/treasury division. The added benefits of distributing board and management level responsibilities into various committees allows for separation of responsibilities, which leads to greater transparency and perspective relative to risks facing the institution. NCUA considers a committee-based second line of defense a developmental state, and will continue to evaluate these approaches during the examination and reviews of capital planning and analysis practices.

⁴ Covered credit unions should have mature or maturing enterprise level risk management functions possessing the appropriate resources and independence to oversee organizational wide risk assessment, control, and reporting activities. These activities would include, but not be limited to, robust data governance and MRM functions, as well as a centralized approach to both financial and operational risk assessment, categorization, and aggregation. Risk management activities essential to supporting sound capital analysis are described in additional detail in the Risk Management Fundamentals section of this document.



Capital Analysis Roles

Review of credit union capital planning activities indicate the tactical job of capital analysis remains primarily a function of the finance department, or middle office function within the finance function. Typically, this is accompanied by a corresponding committee structure to review the finance function's capital planning and analysis activities. Review and approval at the board and management committee levels does provide some degree of effective challenge to the line of business production of capital analysis. However, leading observed practices included independent risk management functions overseeing risk assessment through effective model risk management (MRM) practices while conducting independent risk analysis to challenge the business-line assessment results. Segregated organizational roles within the capital planning and analysis process brought alternative perspectives, and aided in linking risk and strategic decision making at the board and senior management level.

The observed leading practice identifies the governance and controls specific to capital analysis including functions exercising effective challenge. This practice is further improved upon when risk takers are identified and shown to be independent of those preparing capital analysis. Leading institutions incorporated an executive level position overseeing discrete staff to challenge and report capital analysis results. This collective group may fall within the greater enterprise risk management (ERM) framework of the credit union. We observed a credit union took incremental steps towards this leading practice by separating roles for financial risk analysis and financial risk taking under the Finance division. This is viewed as a developmental step in moving towards a governance structure more conducive to providing independent, effective challenge and was considered progressive, and commensurate with the credit union's size and risk profile.

Additionally, leading practices provided well-documented process flows and organizational charts. These charts clearly identify specific responsibilities over the risk assessment, measurement, internal control, and forecasting aspects of ICAAP. Leading practices included regular updates of flow charts and procedural documentation as processes and accountabilities change.

In accordance with the approach fostered in recent revisions to the Rule, ONES will continue to align the expectations and assessment of capital planning and analysis activities, and the risk management framework with the size and risk of the credit unions. Accordingly, an evaluation of the strength, stature and independence of enterprise level risk management functions supporting and challenging capital planning and analysis activities, conducted by other business units within the institution, will be factors when assigning supervisory risk and CAMEL ratings.



Capital Policy – Goals and Limits

Most credit unions continue to use “reactive” approaches to analysis of capital adequacy where static capital goals or limits are established, scenario analysis is conducted, and residual remaining capital is compared to the static goals and limits. In most cases, credit unions express capital limits in a graduated way to denote the corresponding level of concern and actions that would occur as risk to capital is elevated in internal scenarios or as actual loss of capital. These graduated limits with escalation triggers are an improvement over capital analysis focused on compliance with a singular breach limit relative to static net worth ratio goals.

Most credit unions have established capital limits or targets based on the scenario tested. In these instances, credit unions establish a capital limit for a baseline scenario and set a lower limit for adverse scenarios. This practice does not set a clear capital adequacy standard as elements of actual adverse conditions may not align with modelled scenarios. It also makes it impractical to establish capital contingency triggers. This practice also makes governance over capital limits and subsequent actions unclear. Specifically, the practice may not clarify when and if capital actions will merely be “considered” by the board or “requires” action when a breach of a capital limit is observed. These observations imply credit unions view capital planning and ICAAP results primarily from a business management perspective rather than a risk management perspective.

The risk management perspective views any modeled or actual breach of a stated capital policy limit as a signal, and triggers a report to the board. This would indicate inherent risk to capital is greater than the board’s risk tolerance or risk appetite. Therefore, management should evaluate risk drivers in the scenario contributing to the breach and offer recommendations to mitigate the risk. NCUA expects credit unions to use capital planning and analysis as a forward-looking risk management tool. We will continue to evaluate the structure and intended use of capital policy limits and actions going forward.

Other lagging practices observed in this area included establishing limits based primarily on regulatory capital minimums or without consideration of the credit union’s capital needs as implied by its own risk profile, business strategies, stress test analysis, and/or sensitivity to changing market conditions. While the regulatory minimum limit to maintain “well capitalized” status may be an anchor point, most credit unions have now evolved to better align capital goals and minimum limits with starting net worth positions and board desired tolerance levels for sensitivity of capital and earnings at risk.



In summary, credit unions, generally have not implemented a proactive approach to capital analysis that includes, for instance, evaluating scenario risk drivers that may contribute to breaches of approved limits or risk appetites. Proactive approaches assess capital adequacy with respect to material risks and current aggregate risk exposure in relation to stated board approved risk appetites.

Capital Policy – Capital Contingency Plans

A capital policy should describe the credit union’s capital adequacy decision-making process and capital contingency plans when capital standards or risk appetites are at risk of breach. The capital policy and capital plan should incorporate actionable protocols in the event there is a breach of a scenario stressed capital goal or real-time targeted capital level.

The range of contingency plans proposed by credit unions to deal with shortfalls in their capital continues to improve. Strong contingency plans demonstrate a credit union has considered a variety of actions or strategies to mitigate risk, and to assess the efficacy of these actions under stressful conditions. Unlike business plans, sound capital plans acknowledge severely unfavorable events can occur and erode capital, thereby impacting the credit union’s financial health, its obligations with third parties, and its routine operations. As a leading practice, NCUA observed contingency plans that:

- Provide an extensive series of actions/strategies to be considered;
- Provide context of feasibility;
- Document unfavorable scenarios, contingency actions, and potential impact to capital;
- Speak to the timing and impact to capital of each action; and
- Link actions to triggers in policy.

Lagging practices ignored breaches of capital policy limits within scenario analysis. In past years, we observed some instances where breaches did not lead to the development, discussion and execution of capital contingency actions. NCUA considers this a significant weakness in board and management governance as well as policy effectiveness. Review of this lagging practice will be an elevated area of focus during future supervisory assessments of governance over capital planning activities.

Additionally, as noted above, current observations indicate most credit unions continue to look at capital limits and available capital actions as “considerations only,” particularly when a baseline or adverse scenario analysis forecasts a breach of a limit. NCUA expects credit unions take proactive actions addressing capital and risk exposures before they materialize by utilizing the stress testing and capital analysis as a basis for enhancing capital reserves or reducing risk exposures.



In summary, capital limits and contingency plans should be set based upon observations gleaned in the risk assessment and capital planning processes. Credit unions should not look at scenario development and capital planning process as a “desktop exercise”. Credit unions should approach capital limits and scenario design so there is clear alignment with the boards’ strategic objectives. Where scenario analysis identifies capital inadequacy, immediate and appropriate capital or de-risking decisions should be made and documented in the capital plan and/or supporting documentation.

Capital limits and scenario design should be aligned with the boards’ strategic objectives, and where scenario analysis identifies capital inadequacy, immediate and appropriate capital or de-risking decisions should be made and documented in the capital plan and/or supporting documentation.

Internal Audit and Capital Planning Controls

All credit unions now incorporate reviews of capital planning activities into their internal auditing plans; however, approaches to planning and conducting audit activities continues to vary. In most cases, audits focused heavily on “compliance.” The primary emphasis of these reviews focus on adherence to both NCUA Rules and Regulations, and credit union operational controls and policy requirements. While this is an important aspect of the overall assurance function, independent assessment of the capital analysis and risk management practices are also important. In some limited cases, leading practices were observed where audits assessed the effectiveness and strength of the policies, controls and practices for capital planning and analysis.

Leading practices include expanding the audit scope and review procedures to evaluate the strength and depth of governance, risk management, internal control, and modeling processes supporting the credit union’s capital analysis. While compliance type audits of each credit union’s capital planning practices are an expectation set forth in NCUA’s September 2014 supervisory guidance, a leading practice is the addition of risk-focused audit procedures on the credit unions’ capital planning programs.

Another leading practice includes the employment/contract of auditors knowledgeable in technical elements of capital planning and analysis. In 2017 and 2018, NCUA observed in-house internal auditing staff completing more auditing activities over capital planning. In many cases, it was evident audit staff conducting the audit were capable of providing an assessment of compliance with regulatory requirements. However, we did not see evidence of an independent assessment of the strength of the policies, as well as underlying capital planning and analysis activities conducted. In contrast, the results and conclusions of audit activities over capital planning co-sourced with outside auditing professionals, skilled in the various facets of technical capital analysis and risk management activities, were more informative and useful in strengthening processes.



In summary, weaker auditing practices continue to focus heavily on compliance with regulatory requirements. Similarly, NCUA notes weaknesses in the audit plans and procedures for evaluating the effectiveness of policies, processes and internal controls over capital analysis. NCUA will continue to focus on credit union audit plans for scoping and assessing material aspects of the capital planning and analysis process, and the depth and effectiveness of audits completed.



Risk Management Fundamentals

Risk Culture

It is imperative the board of directors ensure and foster a culture which embraces an enterprise wide approach to risk management, and aligns capital planning and analysis activities within the overall risk management framework.

Leading risk culture practices support independent enterprise risk oversight with stature equal to the lines of business and internal audit. These risk cultures are more successful in applying effective challenge to capital analysis and capital adequacy. Lagging risk cultures do not support strong and independent risk oversight and use a system of committees in a cursory attempt at effective challenge. Lagging risk cultures produce capital analysis results heavily weighted toward representation of the line of business and financial reporting views of risk.

Risk Identification and Assessment

In order to assess capital adequacy effectively, a credit union must first have a sound process in place to identify the nature and degree of risks in their balance sheet and business practices. To this end, several credit unions have implemented risk assessment processes as part of their enterprise-wide risk oversight programs. Leading risk identification and assessment processes provide meaningful analytical input and context to the capital adequacy assessment process. These processes leverage an organizational wide assessment and register of risk exposures and identify where the credit union takes risks within the business line's activities. The business lines review and opine on the evaluation of inherent risk, risk management, and residual risk determinations. Lagging risk assessment practices apply a "compliance review" to risk controls. At best, such processes determine if the credit union follows policies and procedures, but provides little useful information regarding the credit union's risk with respect to capital adequacy.

Model Risk Management

Model risk management (MRM) practices supporting capital analysis continue to evolve at credit unions. A leading practice is for an independent risk management function to own and operate the MRM function. In most cases the evolution of MRM continues to be limited to models utilized in the capital analysis process and do not expand the function to include all models in use at the credit union. Most credit unions continue to cite this as a future area of improvement in their capital plan.



At most credit unions, the finance area conducts MRM activities with some oversight by a management level committee. This practice can present conflicts depending on the credit union's implementation. For example, if the model owner and model users are involved in the validation of models used in capital analysis, and if these validations are used as part of the MRM risk oversight process, then a conflict of interest would exist requiring mitigation.

Several credit unions use a committee to oversee third party validations and review validation results while other credit unions collaborate with an external risk oversight resource. Recent observations included segregation of financial risk analysis, model development, and model validation activities to separate risk management positions reporting to the same executive office. NCUA considers these as reasonable transitional practices as credit unions grow in size and complexity. For material business lines and activities with more complexity, credit unions should strive for functional independence of MRM and validation activities.

Well thought-out MRM ensures the risks represented in capital analyses are conservatively applied and reported, and are consistent with the risk within each of the credit union's books of business and strategic direction. These MRM programs include:

- MRM policies and standards;
- Model documentation describing processes such as model development, model risk rating, model validation, ongoing model monitoring, and model change control;
- Standard reporting on model inventory, model revisions, model risk ratings, model validation schedules, model performance tracking, model issues documentation, and issue remediation status;
- MRM staff with appropriate experience and resources commensurate with the complexity and materiality of the credit union's asset types and business lines; and,
- Requirements to ensure models undergo a conceptual review and validation for all intended purposes.

During 2018, observed leading practices included active, frequent reviews of models and refreshments of underlying foundational data sets that influence model behavioral assumptions and calibrations. In contrast, NCUA observed lagging practices where underlying sample data sets were not reviewed and refreshed often, or did not span at least one economic cycle. These contributed to less informative model outcomes.

NCUA frequently observed instances of inadequate conservatism. For example, model risk assessments lacked independence from the front line users or developers of the modeling solutions and sufficient expertise was not evident within the in-house MRM function. Where sufficient independence and/or technical abilities were lacking in credit union management and staff responsible for MRM activities, it was clear model



risk reviews conducted had a more business line centric perspective rather than a risk management perspective. Observations of lagging model risk assessment and management practices included the following:

- Conducting MRM activities by a committee of front line business managers and a dedicated MRM office was not in place. The deployment of challenge models was limited and therefore, quantitative assessment of methodologies and outcomes of the capital analysis was limited to discussion and opinion versus empirical analysis;
- Model risk reviews of inputs and assumptions did not comprehensively identify key loss drivers such as default speed, loss severity, and magnitude of past management actions or benchmark areas against actual historical experience. Similarly, credit unions did not appropriately discuss, support or document these model risk review assumptions and rationale;
- MRM staff rarely conducted an independent review when scenario based model outcomes and subsequent sensitivity analysis demonstrated unusual relationships to key market variables;
- Lack of clarity within model documentation as to how the conceptual design of the model frameworks and approaches aligned with the unique nature of the business lines and risk profile of the individual credit union.
- Lack of independent back-testing on model performance and, when performed, the back testing was often not sufficiently granular to reveal insights which could result in enhancements to modeling approaches;
- Insufficient internal review and understanding of validation approaches to ensure the conceptual soundness of modeling approaches and methodologies where credit unions outsourced the validation of high risk/high impact models to third parties; and
- MRM policies were unclear or overly subjective in outlining criteria and triggers surrounding when full scope model validations would be required and how often.

Assessing the rationale and conservatism of management overlays also falls under the scope of MRM. Model overlays may be necessary for sound capital analysis. Using model overlays to compensate for insufficient data, methodology weaknesses, or other matters that call for a degree of conservatism is a sound practice. Leading practices include a thorough explanation of the reason for the overlay, description of the overlay used, and additional sensitivity and outcomes analysis clearly comparing the overall results of the analysis both pre- and post-overlay application. NCUA observed significant improvement in documentation and explanation within the body of the



capital plans that incorporated model overlays into the analysis. In most cases observed, well-supported model overlays resulted in a more conservative outcome than out of the box model results. NCUA considers this a leading practice.

Risk Data

The discipline of assessing capital adequacy soundness requires data aggregation, timely and accurate reporting of portfolio positions, and observation of portfolio details during varying economic cycles, including times of stress. Risk data systems need to aggregate and report on credit, market, and some operational risks from both internal and external sources. Leading practices take a strategic approach to enterprise data and accommodate the unique needs of risk data. This strengthens the ability of credit union management and boards to make sound risk-driven decisions.

All credit unions need to develop policies and clear internal accountabilities focused on enhancing data governance activities as part of their capital planning and stress testing buildouts. This is a topic of increasing importance, which NCUA will more thoroughly consider in future supervisory reviews of credit union risk and capital analysis programs.

Operational Risk

Capital exposure to operational and other “non-financial” risks has proven difficult to assess and quantify. Techniques used by credit unions to assess operational risk ranged from the use of overlapping qualitative assessments, use of Basel II approaches, designing scenarios with operational risk components, adding an operational risk charge, and performing standalone analysis of potential exposures arising from non-financial and operational risks. Lagging practices omitted depth of discussion, or analysis on operational risks and demonstrate minimal insight for capital adequacy analysis.

Integration with Strategic Business Planning and Operations

A credit union should conduct its capital adequacy assessment process and hold the results in concert with the company’s strategic planning and ERM endeavors. Integration of the capital adequacy process with the key strategic initiatives planned by the credit union’s board is crucial to ongoing capital analysis, and understanding and making critical business and risk management decisions.

Capital plan submissions show evolving practices in this area. In most cases, baseline capital analysis uses the same modeling platforms, balance sheet growth assumptions, and pricing forecasts as those used in the credit unions’ strategic planning and budgeting endeavors. Leading practices in capital planning include a detailed synopsis of planned strategic endeavors and transparent discussion as to how the anticipated



risks, costs, and planned benefits of these endeavors are encapsulated in the scenario analysis presented in the plan.

In most capital plans, it is not clear how the credit union integrated capital adequacy analysis into strategic planning and board policy outside of scenario testing. In some cases, credit unions seemed to treat planning and analysis more as a desktop exercise completely separate and distinct from the credit union's strategic planning and decision-making. Moving forward, NCUA's review of credit union capital planning activities will focus on the transparency of how capital planning and analysis integrates with ongoing strategic planning, board policy, and business operations.



Capital Analysis

NCUA’s review and assessment of capital analysis focuses on the credit unions’ overall capital planning activities. Our review and assessment of capital analysis techniques takes into account the specific risk and financial profile of each credit union along with the unique products and business practices. Accordingly, we found credit unions display a wide range of practices in their analysis of capital adequacy including scenario design, origination balance forecast, pre-provision net revenue (PPNR) modeling and provision expense modeling.

Scenario Design

When using scenario testing to analyze capital under unfavorable conditions, the choice and design of the scenarios is a critical activity. At a high level, scenarios should be a byproduct of identifying and assessing material risks to capital. Scenario design should leverage risk assessments and target vulnerabilities unique to the credit union’s balance sheet and business model while considering potential adverse events for the asset or liability class beyond the credit union’s own experience. Credit unions should design conservative scenarios relevant to their size, complexity, risk profile, and business practices. Lagging practices observed in scenario design included the use of NCUA’s prescribed supervisory stress test scenarios or other “off the shelf” scenarios. While these scenarios can serve a purpose when combined with internally developed supplemental scenarios reflective of a credit unions’ unique operational and risk profile, the supplemental scenarios were often observed as not being sufficiently conservative, and/or not reflective of each credit union’s unique risk profile and/or business practices.

Scenario design should leverage risk assessments and target vulnerabilities unique to the credit union’s balance sheet and business model and consider potential adverse events for the asset or liability class beyond the credit union’s own experience.

Modeling Practices

NCUA observed various approaches with respect to forecasting asset and share growth, and loan origination. Leading practice for loan origination forecasts used relevant economic and business drivers to project future balances and ensure consistency across various scenarios. Where deemed necessary, some credit unions used conservative model overlays to account for large variances in modeled outcomes and historical trends or dynamics, which were difficult to model such as historical changes in business strategy. The combined use of statistical models and well-supported and conservative model overlays provided more consistency, control, and auditability as opposed to relying solely on management judgment and extrapolating historical trends.



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Similarly, NCUA observed the combined use of statistical models, and well-supported and conservative model overlays used in forecasting major components of non-interest income and expense. NCUA considers this a leading practice over the use of management judgment or the use of static forecasts across scenarios. The management judgment approach further weakens the analysis over the forecast horizon when the credit unions uses aggressive management actions absent support of statistical models or historical observations.

Use of statistical based models was a leading practice we saw adopted by more credit unions in 2018. In most cases, production and non-interest income/expense model estimates required the use of overlays and/or modification after business line review. Increased use of statistical based models was encouraging.

Leading practices for modeling PPNR and provision expense include explicit forecasts for loans entering into non-accrual status and the joint modeling of prepayment and default. The direct modeling of non-accrual loans increases transparency of asset quality changes and permits a direct means to calculate lost interest income. Credit unions perform this practice by modeling non-accrual entrants as a stand-alone item, or as a distinct state in a credit transition matrix. An additional leading practice observed was the joint modeling of prepayments and default in a single model. This provided for greater consistency in the response of material asset classes to economic factors.

NCUA observed these ongoing lagging PPNR and provision modeling practices:

- Lack of conservatism in model assumptions for key loss drivers such as default speed, loss severity, and magnitude of management actions in comparison to historical experiences observed during the last recession. Also the rationale for these assumptions were not appropriately discussed, supported, and/or documented;
- Lack of sufficient discussion and documentation explaining the selection of certain modeling frameworks and techniques, and the manner in which they were conceptually aligned with the specific risks and business practices of the products and behaviors being modeled;



- Insufficient review and refreshing of data sets serving as the foundation for model drivers and outcomes. In one observation, models used to forecast default and loss related to a portfolio material to the credit union's balance sheet had not been refreshed/updated for over seven years. During that time, the portfolio had grown significantly and underwriting practices had fluctuated from liberal to conservative. The underlying performance data of the portfolio during this period of growth coupled with the variation in underwriting practice is extremely valuable in forecasting borrower behaviors and scenario based outcomes;
- Lack of consideration to potential increases in credit risk exposure. In instances where variable rate loan portfolios were considered material in relation to overall assets and capital, applied modeling methodologies did not take into account the potential increased credit risk exposure, which could arise as a result of payment shock to borrowers during periods of increasing market interest rates and/or the expiration of introductory rates;
- Insufficient model documentation and discussion on the absence of key variables such as loan to value (LTV), loan age and unemployment rate for various models in capital plans provided to senior management, model risk staff, and the board of directors;

Finally, a subset of credit unions have started contemplating the potential impact transitioning to Current Expected Credit Loss (CECL) standards will have on provision expense in capital planning and stress testing. NCUA considers this a forward-looking leading practice. Despite the fact mandatory adoption of CECL for non-PBE's is still two years away, credit unions should look forward with respect to understanding the potential capital implications of adopting the standards and adjusting strategies and capital at risk exposure limits as necessary.

Sensitivity Analysis

The techniques used by credit unions to assess sensitivity of the variables in their analysis varied considerably. Some credit unions sought to focus separately on credit risk variables and interest rate risk variables. In the case of credit risk, credit unions adjusted changes in charge-off losses and recoveries directly, or made changes based on macro-economic variables such as unemployment or the home price index. Credit unions directly attributed interest rate risk variables in terms of increased deposit rate sensitivity or to shifts in deposit mix. Some credit unions analyzed the impact of sensitivity from changes in multiple variables such as growth assumptions, changes in probabilities of default, yield curve changes, interest rate shocks, and changes in asset maturities or prepayments.



NCUA recognizes many different factors may affect modeling results. Credit unions are encouraged to assess, identify, and prioritize the set of variables to which performance is most sensitive and poses the greatest risk to capital. Understanding and documenting a range of potential outcomes provides insight into the inherent uncertainty and imprecision around pro forma results.

It is a sound practice to assess the sensitivity of estimates (such as capital ratios, losses, revenues, and assets and liabilities) to modeling key assumptions, stressed conditions, and uncertainty. This allows assessment of a range of potential outcomes for each scenario given the uncertainty associated with assumptions and inputs. This use of sensitivity analysis enables a more complete capital adequacy assessment, especially when applied to all unfavorable scenarios.

A credit union should also evaluate the sensitivity of material model inputs to key assumptions to evaluate model performance, assess the appropriateness of assumptions, and understand uncertainty associated with model output.

A credit union should ensure it presents the key sensitivities to senior management and the board in advance of decision-making around the credit union's capital plan and capital actions. Sensitivity analysis should also inform senior management, and, as appropriate, the board of directors about the potential uncertainty associated with models employed for the credit union's projections under stress.

Reverse Stress Testing

The purpose of reverse stress testing is for management and the board to decouple the capital analysis completed from past experience and strategic expectations, and explore the magnitude of shock necessary to breach the credit union's capital limits. The magnitude of shock should be considered with respect to the credit union's weaknesses and threats, and consider the sufficiency of capital contingency actions during times of stress.

For example, if a credit union has a capital limit of 10% under expected conditions; reverse stress testing techniques help inform the degree to which conditions must change for capital to breach this limit. Such information helps decision makers understand the magnitude of how adverse changes may lead to a capital breach and the implementation of capital contingency plans. One only has to consider recent history to conceptualize the value of reverse stress testing. During the Great Recession most were aware of a significant bubble in real estate, but many failed to incorporate in their risk analysis the possibility of asset valuation declines of up to 50 percent or more as well as contagion risk between various asset classes and structure.



Most credit unions use a simplistic approach to reverse stress testing and continue to layer adverse incidents into a scenario until breaching the supervisory stress test ratio (5%). While this simple approach helps executives and directors conceptualize reverse stress testing, this technique often leads to scenarios which may seem absurd, or are so extreme credit union solvency would not be a primary issue in that environment. A better practice is to produce reverse stress test results around the credit union's self-identified limits. This enables decision makers to conceptualize capital adequacy in the context of the environment and plan accordingly.

Conclusion

NCUA sees capital planning as a prudent practice for credit unions. The evaluation of capital at risk is a rigorous and substantive expectation. Through the Rule and the companion guidance, NCUA set increased expectations for credit unions' evaluation and assessment of capital risk to an enterprise-wide level. As a credit union's management and the board of directors gain more experience with the application of contemporary capital planning practices, NCUA will continue communications with credit unions to promote the evolution of the capital planning process.
