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Guidance Note:

*Stress Testing – Credit Unions with Assets
Greater than \$500 million*

January 2018

Ce document est également disponible en français.

Applicability

This Guidance Note is for use by all credit unions with assets in excess of \$500 million.

This document outlines DICO's expectations with respect to stress testing and outlines the criteria DICO will consider when assessing the credit union's risk management, business planning, and capital and liquidity management processes.

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Introduction

Stress testing is a risk management technique used to evaluate the potential effects on a credit union's financial condition from exceptional but plausible events, and to attempt to determine the impact of situations where the assumptions used in managing a business break down.

Stress testing plays an important role in:

- providing forward-looking assessments of risk
- complementing existing risk management models
- improving capital and liquidity planning purposes
- aiding the board in setting the risk appetite of the credit union
- facilitating the development of risk mitigation or contingency plans

Stress testing alerts a credit union to adverse, unexpected outcomes related to a variety of risks and provides an indication of how much capital might be needed to absorb losses should shocks occur. It is particularly important after extended periods of economic stability, when complacency can lead to the underpricing of risk.

Stress testing techniques include scenario analysis, sensitivity analysis and reverse stress testing, which are described in Appendix 1.

Purpose of Stress Testing

Stress testing should be embedded in enterprise-wide risk management and should be integrated into the credit union's strategic and business planning process and Internal Capital Adequacy Assessment Process ("ICAAP"). Results of stress testing should feed into the decision-making process, including setting the credit union's risk appetite, setting exposure limits and capital targets, and evaluating strategic choices in longer term business planning.

A credit union's stress testing program should serve the following purposes:

Supporting Capital Management

Stress testing should form an integral part of a credit union's ICAAP and used to identify severe events or changes in market conditions that could adversely impact the capital position of the credit union.

Risk Identification and Control

Stress testing should be included in a credit union's risk management activities. In particular, it should be used to address all material enterprise-wide risks, and consider the concentrations and interactions between risks in stress environments that might otherwise be overlooked.

Stress testing also plays an important role in developing risk mitigation or contingency plans across a range of stressed conditions.

Providing a Complementary Risk Perspective to Other Risk Management Tools

Stress tests should complement other risk management tools that are often based on quantitative models using backward looking data and estimated statistical relationships. They provide future looking insights into the usefulness and validity of financial and risk management tools used by the credit union.

Stress testing allows for the simulation of potential shocks or changes in the economic environment, which may not have previously occurred, and helps to detect vulnerabilities. These may include risk concentrations or potential interactions between types of risk that could threaten the viability of the credit union but may be overlooked when relying solely on statistical risk management tools based on historical data.

Improving Liquidity Management

Stress testing is key tool for identifying, measuring and controlling liquidity risks. Stress testing helps in assessing a credit union's liquidity profile and the adequacy of liquidity buffers in case of both credit union-specific and market-wide stress events.

It is important that credit unions continually monitor the environment and be cognizant of events that may trigger a liquidity event, and have appropriate contingency plans in place to deal with such an occurrence.

DICO's Expectations

Credit unions are expected to be able to demonstrate and provide evidence that stress testing has been incorporated into their risk management, business planning and capital and liquidity management processes.

The nature and extent of stress tests should be appropriate for the size, complexity, risk profile and risk appetite of the credit union. Stress test assumptions should be documented and supported by appropriate rationale.

Role of the Board and Senior Management

Board and senior management involvement in the stress testing program is essential. The board has ultimate responsibility and oversight of the stress testing program and should:

- be aware of the key findings from stress tests, including the potential impacts of stress events on the risk profile of financial condition and risk profile of the credit union; and
- ensure that the credit union has established and implemented policies addressing stress testing requirements that are enterprise wide and that stress testing is appropriately used as a risk management tool.

Senior management is accountable for the program's implementation and management and for ensuring that the credit union has adequate plans to deal with remote but plausible stress scenarios. Senior management should:

- be able to identify and clearly articulate the credit union's risk appetite and understand the impact of stress events on the risk profile of the credit union;
- participate in the review and identification of potential stress scenarios, as well as contribute to the development and implementation of risk mitigation strategies; and
- consider a number of appropriate, well-understood, documented, utilized and sufficiently severe scenarios that are relevant to their credit union.

General Considerations for Stress Testing Programs

Stress testing programs should take account of views from across the credit union and should cover a range of perspectives and techniques.

The identification of relevant stress events and the appropriate use of stress testing results each require the collaboration of subject matter experts within the credit union. Credit unions should also use a range of techniques in order to achieve comprehensive coverage in their stress testing program, including quantitative and qualitative techniques to support and complement models and to extend stress testing to areas where effective risk management requires greater use of judgement.

Credit unions are expected to have policies and procedures governing the stress testing program. The operation of the program should be appropriately documented.

The assumptions and fundamental elements for each stress testing exercise should be appropriately documented, including the rationale for the scenarios chosen. The level of documentation should be based on the nature and purposes of the stress testing. For example, documentation of ad hoc sensitivity tests for tactical decisions may be less elaborate than the documentation of enterprise-wide stress tests used for strategic decision-making. An evaluation of fundamental assumptions should be performed regularly or in light of changing external conditions. The results of the assessments should also be documented and reviewed periodically, as appropriate.

Credit unions are expected to have an appropriate stress testing infrastructure in place, which is sufficiently flexible to accommodate different and possibly changing stress tests.

The credit union's stress testing infrastructure and information systems should reflect the size, complexity and risk profile of the credit union and be able to aggregate comparable risks and exposures across the credit union where appropriate. It should allow for regular reporting to senior management and the board in a timely manner throughout the fiscal year, and be sufficiently flexible to accommodate a timely increase in the frequency and number of ad hoc sensitivity tests to support management's response to changes in the environment.

Credit unions should maintain and update their stress testing framework. The effectiveness of the stress testing program, as well as the robustness of individual components, should be assessed regularly and independently.

Assessments of effectiveness should be qualitative and quantitative. Areas for assessment should include a review of the effectiveness of the program in meeting its intended purposes, documentation, data quality, assumptions used and board and management oversight.

In particular, there should be independent review (e.g. internal audit) of the design and effectiveness of the credit union's stress testing program.

Development of a Stress Testing Program

Stress tests should cover a range of material risks across all key business areas of the credit union. A credit union should be able to effectively integrate its stress testing activities to produce a complete picture of the significant risks facing the credit union.

Stress testing programs should examine the effect of shocks across all material and significant risk exposures facing the credit union.

Where relevant and material, such risks may include:

- credit risk
- concentration risk
- market risk, including:
 - general market
 - specific
 - cash flow mismatch
 - interest rate
 - foreign exchange
- liquidity risk
- contagion risk
- securitization risk
- operational risk
- other risks (e.g., strategic, reputation, legal)

The impact of stress tests is usually evaluated using one or more measures. Typical measures used are:

- required and available regulatory capital;
- asset and liability values;
- level of impaired assets and write-offs;

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- accounting profit and loss; and
- liquidity and funding gaps.

Stress testing programs should apply across the credit union businesses and cover a range of scenarios, including contagion, historical and non-historical scenarios of the credit union and the external environment.

Stress tests should be developed through open, constructive and creative dialogue. This will improve the likelihood of identifying possible hidden vulnerabilities and avoid underestimating the likelihood and severity of extreme events and having a false sense of security about a credit union's resilience.

Credit unions should assess the impact that severe shocks and periods of sustained economic downturns have on security values and their potential impact on the credit union, including its ability to react to adverse events in a reasonable period of time.

Stress tests should also be used to identify, monitor and control risk concentrations. The scenarios should cover key areas of the credit union, including both on and off-balance sheet assets and contingent and non-contingent risks. Actions beyond contractual obligations that might be undertaken to preserve reputation should also be considered.

Stress tests should feature a range of severities, including events capable of generating the most damage, whether through the size of loss or through loss of reputation. A stress testing program should also determine what scenarios could challenge the viability of the credit union (reverse stress tests). Such tests may be useful in uncovering hidden risks and interactions among risks.

Stress tests should be geared towards events and business areas that might be particularly damaging for the credit union. Areas which benefit in particular from the use of stress testing are financial products and investment opportunities that indicate exceptionally good risk/return trade-off and new financial products and markets which have not experienced severe strains.

Credit unions should also conduct reverse stress tests. A reverse stress test starts with a specified outcome that challenges the viability of the credit union. An example would be where, over a short time period, the credit union incurs a very large loss that challenges its viability.

The analysis would then work backward (reverse engineered) to identify a scenario or combination of scenarios that could bring about such a specified outcome. The reverse stress test induces credit unions to consider scenarios beyond normal business settings that would include events with contagion and systemic implications.

Credit unions should consider the impact of a reduction in market liquidity on asset valuation and the important interrelations between various factors, including but not limited to:

- price shocks for specific asset categories and run down of corresponding asset liquidity;
- the possibility of significant losses damaging the credit union's financial

strength;

- growth of liquidity needs due to liquidity commitments;
- diminished access to secured or unsecured funding markets; and
- securitization risks.

Specific Areas of Focus

The following risks have proven to require specific attention as a result of financial market turmoil. As such, stress testing should be used where the following specific risks are material:

- Risk Mitigation
- Securitization and Warehousing Risks
- Reputation Risks
- Counterparty Credit Risk
- Risk Concentrations

Risk Mitigation

Stress testing should facilitate the development of risk mitigation or contingency plans across a range of stressed conditions. Risk mitigating techniques, like reinsurance, hedging, netting and the use of collateral, should be challenged and assessed systematically under stressed conditions, when markets may not be fully functioning, and multiple institutions simultaneously could be pursuing similar risk mitigating strategies. Stress testing should also reflect constraints on management action and should not place undue reliance on the timeliness of mitigating actions.

Securitization and Warehousing Risks

The stress testing program should explicitly cover complex and customized products such as securitized exposures. Stress tests for securitized assets should consider the underlying assets, their exposure to systemic market factors, relevant contractual arrangements and embedded triggers, and the impact of leverage, particularly as it relates to the subordination level in the issue structure.

The stress testing program should also cover pipeline and warehousing risks. These are market, credit and funding risks arising in the period prior to securitization or sale, which may arise from the need to hold assets for longer periods than originally planned when markets are disrupted. A credit union should include such exposures in its stress tests regardless of their probability of being securitized. Many of the risks associated with pipeline and warehoused exposures emerge when a credit union is unable to access the securitization or other markets due to either credit union specific or market stresses.

Reputation Risks

To maintain confidence of members and the general public, credit unions should have an approach to assess the impact of its reputational risks. Credit unions should carefully assess the risks associated with commitments to off-balance sheet vehicles and the possibility that assets will need to be taken on balance sheet for reputational reasons. Therefore, in its stress testing program, a credit union should include scenarios assessing the size and soundness of such vehicles relative to its own financial, liquidity and regulatory capital positions. This analysis should include structural, solvency, liquidity and other risk issues.

Counterparty Credit risk

A credit union may have significant exposures to leveraged counterparties that may be particularly exposed to specific asset types and market movements. Under normal conditions, these exposures are typically completely secured, resulting in zero or very small net exposures. In the case of severe market shocks, however, these exposures may increase abruptly. A credit union should ensure that its stress testing approaches related to derivative counterparties are robust in their capture of related risks.

Risk Concentrations

Stress testing should consider risk concentrations, which include exposures to:

- a single counterparty, borrower or group of connected counterparties;
- industry or economic sectors concentrations;
- geographic regions; and
- similar collateral types.

Stress testing should also consider risk concentrations resulting indirectly from actions to mitigate risks, such as holding derivatives to manage interest rate risk.

Minimum Liquidity Stress Testing Requirements

DICO expects larger, more complex credit unions to develop comprehensive liquidity testing programs that consider multiple scenarios of varying degrees of stress and time horizons. DICO's assessment of an effective stress testing program will focus on the credit union's design of exceptional but plausible scenarios that capture elements of the following, where relevant to the credit union:

- Credit union specific events (for example, events leading to loss of wholesale funding access, inability to draw on commitments from other entities)
- Market-wide disruptions
- Combination of both

Stress Testing Metrics

The LCR, NSFR and NCCF are metrics introduced by Basel Committee on Banking Supervision (“BCBS”) and adopted by regulatory bodies in Canada including the Office of Supervision of Financial Institutions (“OSFI”) and provincial credit union regulators help measure, monitor and manage the level of liquidity at a credit union beyond the simple liquidity ratio under minimum stress assumptions. Credit unions with assets in excess of \$500 million are required to complete an updated LCF, NSFR and NCCF template on a monthly basis effective January 2018.

1. Liquidity Coverage Ratio (LCR)

The LCR aims to ensure that the credit union has an adequate stock of unencumbered high-quality liquid assets (HQLA) that consists of cash or assets that can be converted into cash at little or no loss in value to meet potential liquidity needs for a 30-calendar day liquidity stress scenario.

DICO expects that, at a minimum, the LCR should be no lower than 100% on an on-going basis such that the stock of unencumbered HQLA should enable the credit union to survive to Day 30 of the stress scenario, by which time it is assumed that appropriate corrective actions will be taken by management and/or the supervisor, or that the credit union can be resolved in an orderly fashion.

2. Net Stable Funding Ratio (NSFR)

The NSFR helps the credit union maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. DICO expects that, at a minimum, the NSFR should be at least 100% on an on-going basis such that the amount of available stable funding is sufficient to cover required stable funding needs. A sustainable funding structure is intended to reduce the likelihood that disruptions to a credit union’s regular sources of funding will erode its liquidity position in a way that would increase the risk of its failure and potentially lead to broader systemic stress.

The NSFR aims to limit over-reliance on short-term wholesale funding, encourages better assessment of funding risk across all on- and off-balance sheet items, and promotes funding stability. In addition, the NSFR approach offsets incentives for credit unions to fund their stock of liquid assets with short-term funds that mature just outside the LCR’s 30-day horizon.

3. Net Cumulative Cash Flow (NCCF)

The NCCF measures a credit union’s cash flows beyond the 30-day horizon in order to capture the risk posed by funding mismatches between assets and liabilities. The metric helps identify gaps between contractual inflows and outflows over a 12-month time horizon and highlights potential liquidity shortfalls a credit union may need to address. The NCCF identifies a horizon for net positive cash flows in order to capture the risk posed by funding mismatches between assets and liabilities. By utilizing this type of cash flow analysis, credit unions may be able to better mitigate the risk of disruption to market confidence and maintain the ability to meet short-term liabilities in a liquidity crisis.

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The NCCF analysis offers further perspective into the maturity profile of the credit union's liquidity adequacy. The credit union should set a threshold for the minimum time frame that the NCCF value remains a positive value.

Guides for computing the LCR, NSFR and NCCF are available on DICO's website.

Credit unions should also consider using these metrics, appropriately modified, when conducting additional liquidity testing scenarios. At a minimum, credit unions should develop one additional stress scenario under each of these metrics using more conservative assumptions than those outlined with particular emphasis on their individual material balance sheet categories and exposures.

These assumptions should include:

- Limits in the availability/timing of liquidity reserves with Centrals / Leagues
- Reduced availability of wholesale secured and unsecured funding, including asset sales and securitization vehicles
- Higher run-off rates on less stable retail deposits with particular emphasis on concentrated sources of funding, large deposits, brokered deposits and non-standard deposits (e.g. internet deposits).

In addition, credit unions are expected to create at least one scenario that results in a liquidity position that requires the activation of their contingency funding plan.

Reporting

Credit unions with assets in excess of \$500 million are required to submit to DICO an updated LCR, NSFR and NCCF template at the end of each financial quarter starting with the credit union's first financial quarter end in 2018. In addition to the quarterly submission to DICO, credit unions should be prepared to submit the most recent monthly templates when requested.

Reporting templates in Excel format are available on DICO's website.

DICO Assessment Process

As part of its on-going review process, DICO undertakes an assessment of the inherent risks within each significant activity undertaken by a credit union and evaluates the quality of risk management applied to mitigate these risks.

DICO expects to see evidence that stress testing has been integrated into the credit union's risk management, business planning and capital and liquidity management processes.

In assessing the credit union's stress testing program, DICO will:

- review and evaluate the extent of the program and the nature of board oversight;

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- evaluate whether the scenarios used are consistent with the credit union's risk appetite;
- assess whether the frequency and timing of stress testing is sufficient to support timely management action;
- assess whether the stress testing program and selected scenarios are appropriate for the size, complexity and risk profile of the credit union;
- evaluate the scope and severity of stress testing;
- evaluate how stress testing analysis is integrated into the credit union's decision-making process;
- evaluate board reports and the extent of board deliberations on findings and recommendations;
- evaluate the effectiveness of the program in identifying material vulnerabilities; and
- review management (and/or board) actions in response to stress testing results.

This assessment will also form part of DICO's examination criteria when considering the quality of capital management policies and practices when reviewing the credit union's Internal Capital Adequacy Assessment Process (ICAAP).

Appendix 1

Scenario Testing

Scenario testing uses a hypothetical future state of the world to define changes in risk factors affecting a credit union's operations. This will normally involve changes in a number of risk factors, as well as ripple effects and other impacts that follow logically from these changes and related management and regulatory actions. Scenario testing is typically conducted over the time horizon appropriate for the business and risks being tested.

Sensitivity Testing

Sensitivity testing typically involves an incremental change in a risk factor (or a limited number of risk factors). It is typically conducted over a shorter time horizon, for example an instantaneous shock.

Sensitivity testing requires fewer resources than scenario testing and can be used as a simpler technique for assessing the impact of a change in risks when a quick response or when more frequent results are needed.

Reverse Stress Testing

Reverse stress tests start with a known stress outcome and then ask what event or series of events could lead to such outcome.