



REGULATORY GUIDELINE
Stress Testing

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I. PURPOSE

This regulatory guideline is a Regulatory Guidance Document as contemplated by the Standards of Sound Business Practice (the Standards). It supplements and expands upon section 2.1, *Financial Management* of the Standards and must be adhered to by Saskatchewan credit unions.

The Standards specify the principles and requirements for an effective financial management framework. This guideline provides information and identifies requirements and expectations pertaining to an effective stress testing program.

II. BACKGROUND

Stress testing is a risk management technique used by financial institutions as part of their overall risk management function. Stress testing is used to evaluate the potential effect of situations where the assumptions underlying established business models break down.

Stress testing plays an important role in:

- providing forward-looking assessments of risk
- overcoming limitations of existing risk management models
- feeding into capital and liquidity planning procedures
- aiding the board in setting the risk tolerance of the credit union
- facilitating the development of risk mitigation or contingency plans

Stress testing alerts a financial institution 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 prosperity, when complacency can lead to the underpricing of risk. Stress testing includes scenario analysis, sensitivity analysis and reverse stress testing, which are described in Appendix 1.

III. OVERVIEW AND PURPOSE OF STRESS TESTING

Stress testing is embedded in a credit union's internal capital adequacy assessment process (ICAAP). Stress testing should be enterprise-wide and forward-looking. Implemented appropriately, stress testing will be integrated with the credit union's strategic and business planning function, operational departments, and enterprise risk management function. Like ICAAP, stress testing is not intended to be a regulatory compliance exercise.

The results of stress testing should feed into the credit union's decision making process, including setting the credit union's risk appetite, exposure limits and capital targets, and evaluating strategic choices in longer term business planning. A stress testing program should serve the following purposes:

SUPPORTING CAPITAL MANAGEMENT

Stress testing forms an integral part of a credit union's ICAAP where it is used to identify severe events or changes in market conditions that could adversely impact the organization.

RISK IDENTIFICATION AND CONTROL

Stress testing should be included in a credit union's risk management activities. In particular, stress testing is used to address all material risks, and consider the interactions between risks in stress environments that might otherwise be overlooked.¹ A stress testing program should be actionable, and play a central role in the development of risk mitigation and contingency plans.

PROVIDING A COMPLEMENTARY RISK PERSPECTIVE TO OTHER RISK MANAGEMENT TOOLS

Smaller credit unions with less complex lines of business and high levels of capital may determine that it is appropriate to utilize simple financial models and qualitative risk management methodologies to evaluate risks. Conversely, larger credit unions with more complex lines of business are likely to incorporate more complex quantitative analysis into their stress testing program. Stress testing results should provide insights about the usefulness and validity of financial and risk management models used by credit unions.

Stress testing allows for the simulation of shocks or changes in the economic and financial environment which have not previously occurred. Stress tests help to detect vulnerabilities such as risk concentrations that could threaten the viability of the credit union, but which may be overlooked when other risk management tools are used.

IMPROVING LIQUIDITY MANAGEMENT

Stress testing is a central tool used to identify, measure and control liquidity risks. Stress testing is a useful tool for 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 event², and have appropriate contingency plans in place to deal with such an occurrence.

IV. DEVELOPMENT OF A STRESS TESTING PROGRAM

Credit unions should consider the following when developing a stress testing program that is appropriate for the size and complexity of the organization.

Stress tests should cover a range of material risks across key areas of the credit union. A credit union should integrate effectively across the organization to deliver a complete picture of significant risks facing the credit union.

¹ Risk concentrations may arise along different dimensions, including but not limited to a single counterparty, borrower or group of connected counterparties or borrowers; concentrations in regions or industries; concentrations in off-balance sheet exposure; and contingent exposure or non-contractual obligations due to reputational reasons. In addition, concentrations may arise based on correlated risk factors that reflect more situation-specific factors, such as previously undetected correlations between market and credit risks.

² A liquidity event is a situation where a credit union is unable to generate or obtain sufficient cash (or equivalent) in a timely manner at a reasonable price to meet its commitments as they fall due.

Stress testing programs should examine the effect of shocks across the most material and significant risks facing the credit union, taking into account interrelations among them.

Where relevant and material, such risks include:

- credit risk
- risk concentrations
- operational risk
- market risks, including for example:
 - general market risk
 - cash flow mismatches
 - interest rate risk
 - foreign exchange risk
- liquidity risk
- contagion risk
- inflation risk
- securitization risk (where applicable)
- other risks (strategic, reputation, and legal and regulatory)

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

- tier 1 and risk-weighted capital levels
- liquidity gaps
- asset and liability values
- level of impaired assets and write-offs
- profit and loss

Stress testing programs should apply across business lines and cover a range of scenarios including contagion, historical scenarios of the credit union, and the external economic environment.

Credit unions should monitor and assess the risk of contagion, as the financial difficulties or reputational damage at one or more credit unions may negatively impact other credit unions within the system. Credit unions should assess the impact that severe shocks and periods of harsh and sustained economic downturns have on security values, and the effect on the credit union. It is also important for credit unions to test their ability to react to adverse events in a reasonable period of time.

It is important to use stress tests to identify, monitor and control risk concentrations. The scenarios should cover key areas of the credit union including balance sheet 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 size of loss or through loss of reputation. A stress testing program should also include scenarios that could challenge the viability of the credit union.

Stress tests should be geared toward events that might be particularly damaging for the credit union (e.g. a real-estate downturn or a large decrease in capital), including events that may damage the organization's reputation. 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. One example of such a stress test would be that over a short time period, the credit union incurs a very large loss that challenges its viability. The analysis would then work backward to identify a scenario or combination of scenarios that could bring about such an outcome.

The reverse stress test requires credit unions to consider scenarios beyond normal business settings that would include events with systemic implications. For example, a credit union with a large exposure to agricultural business loans would work through a scenario that would lead to widespread losses across the province.

Credit unions should take into account the impact of a reduction in market liquidity on asset valuation. Credit unions should enhance their stress testing procedures by considering important interrelations between various factors, including:

- price shocks for specific asset categories
- the drying-up 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
- securitization risks

Stress tests should include scenarios appropriate for the credit union based on the size, complexity and unique circumstances of the organization.

Credit unions are unique in that they generally operate within a limited geographic trading area. Credit unions also vary greatly in terms of size and complexity of their individual business models. As such, management should include stress testing scenarios appropriate for their credit union's size, complexity and unique set of circumstances. Scenarios may include demographics and viability of communities, and a downturn in important sectors for which the credit union has significant loan or deposit concentration.

V. SPECIFIC AREAS OF FOCUS

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

- risk mitigation
- risks to reputation
- 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. The performance of risk mitigating techniques such as the use of derivatives should be challenged and assessed under stressed conditions when markets may not be fully functioning, and when such techniques may not be available or appropriate. Stress testing should also reflect constraints on management during periods of stressed conditions.

REPUTATION RISKS

To maintain the confidence of members and the public, credit unions should have an approach to assess the impact of reputational risks on the organization.

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, credit unions should include scenarios assessing the size and soundness of off-balance sheet vehicles relative to its own financial, liquidity and capital positions. This analysis should include structural, solvency, liquidity and any 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, yielding zero or very small net exposures. In the case of severe market shocks, however, these exposures may increase abruptly.

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
- geographic regions
- similar collateral types, and exposures arising from credit risk mitigation techniques

Stress testing should also consider risk concentrations resulting indirectly from actions taken to mitigate risks (e.g. holding derivatives to manage interest rate risk).

VI. ROLE OF THE BOARD AND SENIOR MANAGEMENT

Board and senior management involvement in the stress testing program is essential. The board has ultimate responsibility for the overall stress testing program and oversight of its application. The board must be aware of the key findings from stress tests, including the impact of stress events on the risk profile of the organization. Senior management is accountable for the program's implementation, management and ensuring that the credit union has adequate plans to deal with remote, but plausible stress scenarios.

The board must ensure that it has adopted policies requiring implementation of a stress testing program that covers all areas of the credit union and that stress testing is used appropriately as a management tool.

VII. 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 both require the collaboration of subject matter experts from departments within the organization. Larger, more complex credit unions should consider incorporating more complex quantitative methods into their stress testing program.

Credit unions should have written 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 reasoning and judgments underlying the chosen scenarios. The level of documentation should be based on the nature and purpose of the stress test. For example, documentation of ad hoc sensitivity tests for tactical decisions may be less elaborate than the documentation of stress tests used for strategic decision making. An evaluation of fundamental stress testing assumptions should be performed regularly or when external conditions change. The results of the assessments should also be documented and reviewed periodically.

Credit unions should have a robust infrastructure in place which is flexible to accommodate different and possibly changing stress tests.

A credit union's stress testing infrastructure should be commensurate with the nature and complexity of the organization and its risk profile. Complexity can vary, ranging from simple sensitivity tests to complex stress tests, which aim to assess the impact of stress events on measures like earnings and risk-weighted capital. Stress tests may be performed at varying degrees of aggregation, from the level of an individual financial product to the aggregate credit union level.

The stress testing program should allow for reporting to senior management and the board in a timely manner throughout the fiscal year. The stress testing infrastructure should be sufficiently flexible to accommodate an 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 as appropriate. The effectiveness of the stress testing program should be assessed regularly and independently.

Assessments of effectiveness should be qualitative and quantitative. Areas for assessment should include effectiveness of the program in meeting its intended purposes, documentation, data quality, assumptions used, and board and management oversight. In particular there should be an independent review (e.g. by internal audit) of the design and effectiveness of a credit union's stress testing program.

VIII. SUPERVISORY CONSIDERATIONS

As a credit union's stress testing program is imbedded within its ICAAP, stress testing reviews will occur during the regular credit union review process as part of the ICAAP review. The Corporation 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.

The Corporation uses the results of credit unions' stress testing programs as important information and integrates the results into its assessment of the inherent risks, risk controls, and oversight of a credit union's business activities. Additionally, the Corporation may occasionally conduct an analysis of the impact of system-wide stress scenarios.

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

- verify that stress testing forms an integral part of the ICAAP and of the credit union's liquidity management framework
- evaluate the effectiveness of the program in identifying relevant vulnerabilities
- review and evaluate key assumptions used in stress tests
- assess and, if necessary, challenge the scope and severity of stress testing scenarios. This includes evaluating whether chosen scenarios are consistent with the risk appetite the board has set for the credit union.
- assess whether the stress testing program and chosen scenarios are appropriate for the size and complexity of the credit union, and whether they include severe shocks and periods of severe and sustained downturn
- examine the credit union's future capital requirements under adverse scenarios. In particular, the Corporation will consider the results of forward-looking stress tests for assessing the adequacy of capital buffers.
- examine whether credit unions carry out, from time to time, standardized:
 - sensitivity tests for individual business units/financial products given evolving market conditions or
 - scenario tests for use by the Corporation to assess system wide vulnerabilities
- assess whether the frequency and timing of stress testing is sufficient to support timely management action
- evaluate how the stress testing analysis impacts the credit union's decision making process, including strategic business decisions of the board and senior management
- review the range of board and management actions planned in response to the results of the stress testing exercise, and be able to understand the rationale for the credit union's decision to take or not to take remedial actions. The Corporation may challenge whether such actions will be available during a period of stress, and whether the credit union will realistically be able and willing to take such actions.

IX. RESOURCES FOR CREDIT UNIONS

OSFI Guideline E-18 - Stress Testing

Bank for International Settlements Consultative Document – Principles for sound stress testing practices and supervision

APPENDIX 1

Scenario testing: A scenario is a hypothetical story or future state used to help a person think through a complex problem or system.

Scenario testing uses a hypothetical story or future state to define changes in risk factors affecting an organization'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 short 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 is required.

Reverse stress testing: Reverse stress tests start from a known stress test outcome (such as breaching regulatory capital ratios, illiquidity or insolvency) and then asking what events could lead to such an outcome for the organization.