Guideline

Title	Stress Testing Guideline for Plans with Defined Benefit Provisions
Publication type	Guideline
Topics	Governance Investment of pension funds
Plans	Defined benefit plans
Year	2011

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Accompanying documents

- Stress Testing Guideline for Plans with Defined Benefit Provisions (letter)

Introduction

Stress testing is a key tool for plan administrators (Administrators) to use in managing the risks in their pension plans. It encourages the Administrator to identify and consider possible adverse events that could impact their pension plan and it can lead to decisions that may be required to minimize or avoid unfavourable outcomes. It can also assist employers in determining what may be required in order to ensure that the current benefits provided by a plan can continue to be supported. The process provides forward- looking results that will assist Administrators in their decision-making process.

The Administrator of a pension plan is defined in section 7 of the *Pension Benefits Standards Act, 1985*. Depending on the type of pension plan, the Administrator may be the employer, a Pension Committee, a Board of Trustees or a similar body that is established to manage the affairs of the plan.

This guideline sets out OSFI's expectations on the use of stress testing by Administrators. Although there is no regulatory requirement for an employer to conduct stress testing on their pension plan, it is viewed as a positive way to identify and manage risks. OSFI does not expect stress testing reports to be filed with our office. When OSFI assesses a pension plan's overall level of risk, evidence that the Administrator uses stress testing would support good controls with respect to asset management.

I. Stress Testing Defined

Stress testing involves the simulation of different shocks and scenarios that could impact a plan's funding policy, investment policy, and benefit levels. It may also identify risks to the employer's overall ability to fund a plan.

The techniques within stress testing vary but typically include sensitivity and scenario testing as well as reverse stress testing.

Sensitivity testing

> involves a change in one risk factor (or a limited number of risk factors). By moving one risk factor and keeping all others constant, it is easier to understand the impact of the plan's exposure to that particular risk. For example, in the course of preparing an actuarial report, the Administrator may ask the plan actuary to identify the impact of a change in the discount rate on the plan's liabilities. The Administrator would then understand the impact of such a change on the plan's financial position as well as funding requirements. Sensitivity analysis is a technique that is usually conducted over a relatively short period of time and allows for quick results which is useful when more frequent analysis is needed.

Scenario testing

uses a hypothetical situation, which may include a worst case scenario. In this type of test, multiple risk factors are changed simultaneously (under a well-defined event). This may include hypothetical shocks based on recent events. Parameters could include a wide range of economic scenarios as well as funding and investment policy assumptions. It could also include an asset/liability risk profile including a range of different assumptions based on demographic or design changes as well as the impact of contributions at different levels. Scenario testing may require more time and analysis than sensitivity testing, and is typically conducted over a period of time that is appropriate for the specific risks that are being tested.

Reverse stress testing

begins by identifying the types of losses that could result in a pension plan becoming unsustainable and then seeks to determine what types of scenarios would generate those losses. In this way, reverse stress testing challenges the Administrator to consider the risks that could potentially jeopardize the health of their pension plan. Such tests may reveal hidden risks and interactions between other risks that otherwise would not be identified.

II. Pension Plan Risk

Administrators are in the best position to identify the risks that affect their pension plan. While each pension plan is unique, a major risk that many Administrators face is plan funding.

Funding requirements consist of payments for the current service cost of the pension plan and special payments that are required to repay any going concern unfunded liability or solvency deficiency. The current service cost tends to be fairly stable as a percentage of payroll or per hour cost. Funding requirements that may give rise to more concern are those that result from the presence of a going concern unfunded liability or solvency deficiency.

In going concern valuations, the plan actuary selects the assumptions based on professional judgment, standards of practice and regulatory guidance. Going concern unfunded liabilities may be funded over 15 years.

Solvency funding requirements are difficult to predict. Assumptions are largely prescribed under actuarial standards of practice and regulatory requirements. The discount rate is one of the most significant assumptions in solvency valuations and, as it can vary on a monthly basis, the resulting funded position of the plan can be very volatile if assets and liabilities are not well matched.

Stress testing exercises should therefore test both the solvency and going concern valuations. Administrators may wish to emphasize the solvency funding requirement during periods when solvency funding may impact the plan's funding requirements, since they are more difficult to predict. For example, scenarios that measure the impact of changes in interest rates, or a loss on assets, may assist the Administrator in anticipating possible future funding requirements.

III. Benefits of Stress Testing

In general, stress testing will provide the Administrator with awareness and clarity on the different risks that a pension plan may face. It gives the employer a 'heads up' of new possible risks that may occur in the future.

Key benefits of stress testing are that it may:

- Provide an understanding of the possible downside of various investment strategies,
- Demonstrate the impact of various scenarios, including those that could increase the employer's funding requirements even to a level that could jeopardize the viability of the plan,
- Identify risks that are outside of regular business practices and strategies,
- Assist in quantifying the risks in a pension plan,
- Provide information on the impact of a change in a risk factor,
- Assist in the decision-making process,
- Assist in mitigating otherwise unforeseen negative impacts on the plan.

In order to take full advantage of the benefits of conducting stress testing, risks that are material to the plan or sponsor should be considered for the selection of scenarios. After analyzing the results, the Administrator can evaluate possible mitigation strategies to reduce risks to the pension plan.

OSFI recognizes that the degree of stress testing conducted by Administrators will vary between pension plans depending on the size of the plan in relation to the employer as well as the nature of risks inherent in the plan.

OSFI expects that some form of stress testing would be conducted for most pension plans. It is up to the Administrator to assess what types of stress testing exercises are appropriate for their plan.

For plans that have never performed stress testing, smaller plans in particular, the sensitivity testing now required under CIA Standards of Practice for pension actuarial reports may provide a good introduction to the process.

IV. Risk Factors that help determine the importance of Stress Testing

In general, a plan's vulnerability to future adverse experience and the importance of implementing stress testing increase in conjunction with the following factors:

- **The degree to which the plan is already under funded.**
- **Whether it is a negotiated contribution plan:** These plans are especially vulnerable to future adverse experience because employer contributions are set by collective agreement and are a function of membership, number of hours or other factor(s)linked to the productivity of the industry in which participating employers operate.

  For example, a negotiated contribution plan providing early retirement subsidies would be particularly susceptible to a business downturn, which might trigger both a greater number of early retirements (and, therefore, a larger cost to the plan) than what was assumed for valuation purposes, and a reduction in contributions. Taken together, these two outcomes would exacerbate an already weak financial position. Stress testing could include projections to verify whether funding requirements will be met under different scenarios.
- **Exposure of the plan's investments to the following:**

  1. **Market risk:** the risk that the value of an investment will decrease due to changes in market factors such as equity prices, interest rates, or foreign exchange rates.

     In the context of defined benefit pension plans, exposure to market risk reflects potential impacts on plan assets and plan liabilities. For example, the funded position of a plan with a high proportion of assets allocated to equities will generally be more sensitive to interest rate changes than a plan whose investment portfolio has a high proportion of fixed income instruments and is structured to closely match the plan's liabilities.

2. **Liquidity risk:** the risk that plan assets cannot be sold or traded quickly in the market (for example to meet higher than expected benefit payments) without incurring a material loss.

3. **Credit (Default) risk:** the risk of a loss to the plan arising from a borrower (for example a corporation whose bonds were purchased by the plan) who does not make payments as promised.

- **Maturity of the plan:** As the plan matures (retired member liabilities grow relative to active member liabilities), the size of a deficit and the cost of financing it increase as a proportion of payroll, making the plan more difficult for the plan sponsor to support financially.

- **Size of the plan relative to the employer:** Administrators of relatively large plans would be expected to conduct more in-depth stress testing since the cost of these plans will tend to have a substantial impact on the corporate operations.

- **Complexity of plan provisions:** The presence of significant early retirement subsidies, indexation or other special features, will make a plan more prone to a greater variety of risks, which may entail additional funding requirements.

  This is especially true for plans providing benefits that are subject to the Administrator's consent, if their valuation does not recognize the plan's administrative practice.

- **Anticipated plan amendments that improve benefits:** These may produce or add to a deficit, and entail additional funding requirements.

- **Use of aggressive going concern assumptions or methods:** Such practices reduce the amount of current funding and are likely to, over time, lead to additional funding requirements.

- **Plan size:** Generally, small plans are more impacted by adverse experience. For example, the impact of deviations between actual and expected demographic experience may be more significant for smaller plans.

- **Likelihood of business downturns:** As previously noted, this factor is especially problematic for negotiated contribution plans and plans providing significant early retirement subsidies. A surge in early retirements due to a downturn may lead to more retirement benefit payments than expected and entail additional funding requirements.

V. Risk factors that may be covered in Stress Testing

Once the Administrator decides to conduct stress testing on their plan, the factors below may be considered in order to assess the impact of the change(s) on the plan. It is important to recognize that some risk factors are highly volatile while others will experience gradual trending or even continual change.

In selecting testing parameters, the Administrator should recognize the interrelationship between some risk factors. For example, higher rates of inflation can be especially problematic for a plan providing indexed benefits if the plan sponsor's underlying business is adversely affected by higher inflation rates, thereby limiting the sponsor's financial resources specifically when additional funding requirements may arise.

- **Solvency discount rates:** Changes in this key and potentially volatile factor can have a significant impact on funding requirements for most plans.
- **Return on investments:** Investment returns can be highly volatile. Consideration should be given to reflecting the impact of volatile investment returns on the plan's assets. A plan's funded position will improve or deteriorate depending on whether the actual return is greater or less than the going concern or solvency discount rates.
- **Inflation:** This is a key factor for plans providing indexed benefits and for plans providing benefits that are based on final or best average salary.
- **Plan demographics:** Changes to the respective proportions of liabilities for active members and retiree benefits will have an impact on funding requirements. For example, a business slowdown could lead to a reduction in active members, which means that the cost arising from adverse plan experience would increase as a percentage of the sponsor's payroll. Expectations regarding the likelihood of new members joining the plan should be considered.

- **Early Retirements:** A plan providing significant early retirement subsidies may, as previously noted, be negatively impacted by an unexpected surge in early retirements. This problem may be compounded for plans providing benefits that are subject to consent, if the administrative practice has been for consent to be routinely granted. In this situation, scenario testing may also assist the Administrator in deciding whether or not to grant consent benefits.
- **Longevity:** Future increases in life expectancy may exceed what is assumed in the plan valuation.
- **Disability:** A plan providing income disability benefits from the fund may be negatively impacted by an unexpected surge in the incidence of disability.
- **Administrative and asset management expenses:** Actual expenses could exceed what is assumed in the valuation basis.
- **Work levels:** For negotiated contribution plans, the ability to fund a shortfall may be affected where contributions are fixed and work levels decline or if a major participating employer withdraws.

VI. Role of the Administrator

The Administrator should be able to:

- appreciate the employer's tolerance of risk,
- consider and choose relevant scenarios for the plan,
- interpret the results of the stress testing exercise in order to understand the plan's risks; and,
- implement risk mitigation strategies that are appropriate for the plan.

If the review and consideration of the stress testing exercise is delegated to a sub- committee or a consultant, there should be clear evidence of reporting to ensure that recommendations or decisions made are communicated. Minutes of meetings held should document the stress testing results and the decisions that stemmed from the results. These results and decisions should ultimately be shared with the employer's Board of Directors or the Board of Trustees, whichever is relevant.

VII. Time and Frequency of Stress Testing

OSFI recognizes that the time and frequency of stress testing will vary between pension plans and that it is the responsibility of the Administrator to determine the type, timing and frequency of such tests. OSFI expects that some form of stress testing will be conducted for most plans.

External market conditions, the economy, resources available to the plan and the risks faced by each pension plan will assist in determining the scope and frequency of stress testing conducted for a plan.