Actuarial Standards Board
Conseil des normes actuarielles

Final Standards

Final Standards – Addition of New Subsection 3270 to the Practice-Specific Standards for Pension Plans – Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements

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Statements of opinion

.20 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified but would be followed to the extent practicable.

.21 While a separate statement regarding assumptions would generally be included in respect of each purpose of the valuation, the statements regarding assumptions may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding assumptions applies to each of the valuation's purposes.

.22 While a separate statement regarding methods would generally be included in respect of each purpose of the valuation, the statements regarding methods may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding methods applies to each of the valuation's purposes.

3270 Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements

Purposes

.23 For a statutory funding valuation that specifically requires the use of stochastic models to comply with pension plan funding requirements in accordance with the law or any regulatory policy or guideline, the disclosure of model inputs and outputs are meant to

- Assist the users of the report or work product to understand the assumptions and methods used in the model and the distribution of outcomes from the model; and
- Enable another actuary to assess whether the assumptions and methods used in the model and the distribution of outcomes from the model are reasonable.

Model Inputs

.02 The actuary reporting on the results of a statutory funding valuation using stochastic models for the purposes of complying with specific regulatory pension plan funding requirements (e.g., under the New Brunswick Shared Risk Plans Regulation) should disclose the following model inputs:

- Risk management goals, funding policy, deficit recovery plan and funding excess utilization plan or other such policies that require contingent calculations, reflected in the stochastic analysis;
- Number of scenarios and time period over which the scenarios are forecast;
- Methodology used in the stochastic modelling, including the approach to interest rate forecasting and development of the funding liability discount rate;
- Projected experience decrement assumptions and whether or not these are deterministic or stochastic. If the latter, the volatility for the decrements and a description of the model used to simulate scenarios;
- Future valuations' decrement assumptions, if applicable;
- Assumptions for the new entrants into the plan, including population growth assumption and new entrant profiles;
- Methodology for wage increases, if relevant, including increases in the year's maximum pensionable earnings and the defined benefit limit prescribed under the *Income Tax Act (Canada)*;
- Frequency of valuations over the projection period;
- Anticipated expenses charged to the pension fund, broken down separately into
    - Administration expenses (including actuarial, audit, legal, etc.); and
    - Investment management fees, to the extent they are not already reflected in the return assumptions;
- Confirmation of how the discount rate used in valuing the liabilities is affected by the economic scenario. For example, if the discount rate is linked to long-term corporate bond yields, confirmation that the discount rate is adjusted to be consistent with the forecasted scenario, and a description of how that adjustment is made;

- Rationale for any variance in and any relationships among the equity returns, inflation, bond yields, or other economic variables;
- Description of any methodology to vary the standard deviations of and correlations among economic variables;
- For the federal bond yield curve, the initial yield at one-year, 10-year, and 30-year terms;
- The initial credit spreads for provincial and investment-grade corporate bonds at the one-year, 10-year, and 30-year terms, if applicable; and
- The rationale for any trend in bond yields (including any assumption of normalization of the yield curve). [Effective July 1, 2019]

.03 For each of the model inputs listed above, the actuary would indicate material changes and reasons for changes relative to the previous valuation.

Model Outputs

.04 To assist users of the report to understand the model outputs and assess their reasonableness, the following summary of forecasted economic variables should be disclosed as a minimum:

- For inflation and all asset class returns (and wage increases if they incorporate a stochastic component different than inflation):
  - Mean of the annualized compounded value over the entire period;
  - Average annual standard deviation; and
  - Average correlation matrix among these variables over the entire period.
- For the federal bond yield curve, the mean yield at the end of the projection period at the one-year, 10-year, and 30-year terms;
- The mean credit spread for provincial and investment-grade corporate bonds at the end of the projection period at the one-year, 10-year, and 30-year terms, if applicable;
- For at least every other year over the first 10 years and at least every five years thereafter, the following distribution information for the total portfolio return after investment management fees:
  - Percentiles 5%, 25%, 50%, 75%, 95%, mean, and standard deviation; and
- The initial discount rate and mean of the discount rate at the end of the projection period. [Effective July 1, 2019]

.05 The following average forecasted key demographic summary statistics should be disclosed at a minimum of every other year for the first 10 years and every five years thereafter:

- Total number of active participants and their average age, average service, and average projected salary, if relevant;
- Total number of inactive members and the total amount of annual pensions being paid; and
- Mean total liability and active/inactive liability split. [Effective July 1, 2019]

.06 The actuary should provide the following statistics for the projected liability, projected assets, projected funded status, and any other key output from the model upon which the actuary expresses an opinion (e.g., open group funded ratio):

- Percentiles 5%, 25%, 50%, 75%, 95%;
- Mean;
- The average of those values that are below the 5th percentile of the range of values produced by the entire set of modelled scenarios or above the 95th percentile, according to which side of the distribution should be considered unfavorable. As an example, values below the 5th percentile should be expected to be used for value of assets and funded status, whereas values above the 95th percentile should be expected to be used for liabilities; and
- The corresponding average for the values below the 2.5th or above the 97.5th percentile.

These statistics should be provided as a minimum for every other year for the first 10 years and every five years thereafter. [Effective July 1, 2019]

Disclosure Statements

.07 The actuary signing a report on the stochastic modelling should include the following statements:

- While the actuary believes that the model inputs are reasonable at the time this report has been prepared, other reasonable model inputs could be used, resulting in potentially very different distributions of forecasted outcomes; and
- The disclosures in this report have been prepared in compliance with Subsection 3270, Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements. [Effective July 1, 2019]

.08 The actuary signing a funding report requiring stochastic modelling should provide the following statement, with appropriate reference to any separate stochastic modelling report:

- The funding valuation assumptions are consistent with the stochastic model inputs. [Effective July 1, 2019]