

## 7000 – Social Security Programs

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## **7100    Scope**

01. Part 1000 applies to work within the scope of this part 7000.
02. The standards in part 7000 apply to an actuary when performing or reviewing, advising on, or opining on work related to social security programs.
03. In Canada, the social security programs include the Canada Pension Plan (CPP), the Québec Pension Plan (QPP), the Old Age Security (OAS) program, and other similar plans that fall under the definition of social security program.
04. The standards in part 7000 do not apply to programs established solely or primarily for government employees, to workers' compensation programs, or to programs that primarily provide health insurance or property and casualty insurance.

## 7200 General

### 7210 Circumstances affecting the work

.01 The actuary's work on the valuation of benefit liabilities or other items contained in the financial statement of a social security program, or on the financing arrangements of a social security program, should take into account the circumstances affecting the work.  
[Effective February 1, 2018]

.02 The circumstances affecting the work would include

- terms of the relevant statute, regulations, and other binding authorities;
- relevant accounting standards and policies; and
- terms of an appropriate engagement under which the work is being performed;

and the circumstances affecting the work may include the financing policy of the social security program.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may include the provision of advice on the financing of the social security program, its financial condition, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the social security program relevant to the work of the actuary. These policies may include a formal or informal financing policy, an accounting policy, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of

- use of a specified asset value or method of asset valuation; and
- use of a specified financing method based on a pre-determined financing objective.

.06 Objectives of financing specified by the terms of an appropriate engagement may include, but are not limited to, a specific funding target, the security of benefits, a principle of equity among generations, and/or a stable contribution rate over the long term.

.07 The actuary would take into account established practice (if relevant) when no law exists with regard to certain benefit provisions or financial measures (for example, the basis for future indexation of retirement benefits).

## 7220 Data

- .01 Where sufficient, reliable, and relevant data are not available for the valuation of a specific benefit, the actuary should make appropriate assumptions and/or introduce appropriate methods to compensate for any perceived deficiencies in the data.  
[Effective October 15, 2017]
- .02 Sufficient, reliable, and relevant data may not be available to the actuary in various circumstances, for example,
- a newly established social security program;
  - the relevant statute may have been amended to provide a new or revised benefit;
  - an applicable policy of the social security program may have been recently revised; or
  - the social security program administration practices may have recently changed.
- .03 Where the data are not sufficient, not fully reliable, and/or not sufficiently relevant to expected future experience for a specific benefit, the actuary may consider taking one or more of the following actions:
- introducing appropriate assumptions regarding missing, incomplete, or unreliable data; and
  - adjusting data and historical experience for the purpose of the work, as appropriate, to remove any perceived distortions, such as the effect of historical inflation or one-time benefit changes.
- .04 For a newly established or substantially changed social security program, the actuary would take into account other relevant information, including relevant experience of comparable social security programs.

## 7300 Valuation

### 7310 Methods

- .01 The actuary should value the social security program assuming that it continues indefinitely as a going concern. [Effective October 15, 2017]
- .02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]
- .03 The actuary's work should take into account the benefits, relevant policies, and administration practices of the social security program, as of the calculation date, and should take into account any virtually definitive amendment to these items that is expected to have a material effect on benefits, unless the circumstances affecting the work require otherwise. [Effective February 1, 2018]
- .04 The actuary would use a valuation methodology that is consistent with the financing method used for the social security program. Two methods are available:
- An open group methodology, under which contributions and benefits of both current and future participants are considered, is most appropriate for pay-as-you-go and partially funded social security programs and may also be used for social security programs that are meant to be fully funded; and
  - A closed group methodology, under which only current participants are considered, with or without their assumed future benefit accruals and contributions, is only appropriate for a fully funded social security program that is meant to be fully funded.
- .05 For a social security program that is meant to be fully funded, the actuary would:
- Measure the funded status of the social security program under a closed group methodology; and
  - If also using an open group methodology, disclose the relationship between the social security program's current assets and the present value of its future contributions and the present values of its current and anticipated future liabilities over the projection period.

- .06 Based on the circumstances affecting the work, the actuary may judge an alternative valuation methodology to be more appropriate. That approach would be used with justification communicated in the report.

- .07 The projection period used in the actuary's work should be sufficient considering the circumstances affecting the work. [Effective February 1, 2018]

#### **Amendments and subsequent events**

- .08 The actuary's valuation of the social security program would reflect all virtually definitive amendments of which the actuary is aware on the calculation date, including those amendments with an effective date after the calculation date. Where the circumstances affecting the work require otherwise, the actuary may exclude the effect of a known virtually definitive amendment, but the actuary would disclose the effect of such amendment.

#### **7320 Assumptions**

- .01 The actuary should select assumptions that reflect the projection period and the expectation that the social security program will continue indefinitely as a going concern, but may adjust such assumptions to reflect short-term considerations, where appropriate. [Effective October 15, 2017]
- .02 The actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, mandated by law or by the circumstances affecting the work, and should provide the rationale for the decision made with respect to the inclusion or exclusion of margins. [Effective February 1, 2018]
- .03 Where a social security program has a policy or history of providing ad hoc adjustments to contributions or to benefits, or a periodic update of parameters of the program, such as the maximum insurable earnings, the actuary should recognize such policy or history when valuing the social security program by selecting assumptions consistent with such policy or history as appropriate, unless a virtually definitive decision to discontinue such adjustments or updates has been taken by the social security program. The actuary should value the social security program with and without any assumed ad hoc adjustments. [Effective October 15, 2017]

- .04 The actuary would consider any automatic balancing mechanisms that exist in a social security program when selecting the assumptions. The actuary would consider to what extent the social security program is “immunized” from the volatility of some variables by the automatic balancing mechanisms.

### **7330 Economic Assumptions**

- .01 The needed economic assumptions may include
- the discount rate;
  - the expected rate of investment income;
  - the expected investment and administrative expenses;
  - the expected rate of general inflation;
  - the expected real wage growth;
  - the expected labour force participation rate; and
  - the expected unemployment rate.
- .02 The economic assumptions needed would depend on the nature of the benefits that are being valued, and may vary by year.
- .03 The actuary would develop and disclose separate nominal assumptions, but may prefer to complete the calculations using rates that are net of inflation, net of expenses or net of some other factor.
- .04 When determining the best estimate assumption for the expected rate of investment income, the actuary would take into account the expected pattern of risk-free rates of return, the expected additional investment return on the assets of the social security program at the calculation date, if any, and the expected investment policy after that date. The actuary would provide justification for the expected additional investment return. Possible justifications include
- additional returns over risk-free rates expected to be earned on non-risk-free fixed income assets of the type and quality owned on the reporting date and expected to be acquired pursuant to the investment policy of the social security program;
  - additional returns over risk-free interest rates expected to be earned on other types of investments, including publicly traded common or preferred equities, private placements, real estate, and private equity; and
  - projected composition of the investment portfolio in future years.

In establishing the assumption for the expected rate of investment income, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

- 05 The expected investment expenses would depend on the investment policy of the social security program and the types of investments held and projected to be held in the future.
- .06 The assumed expected rate of investment income need not be a flat rate but may vary from period to period.

### **7340 Non-economic Assumptions**

- .01 When setting non-economic assumptions, the actuary would reflect all material contingencies.
- .02 The needed non-economic assumptions may include
- the benefit take-up rates;
  - the expected fertility rate;
  - the expected migration rate; and
  - the expected mortality and morbidity rates.

### **7350 Margins for Adverse Deviations**

- .01 The actuary should not include any margins for adverse deviations when the circumstances affecting the work require a best estimate calculation. [Effective February 1, 2018]
- .02 The actuary should include one or more margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive. The overall provision for adverse deviations resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective February 1, 2018]
- .03 If the actuary is required by the circumstances affecting the work to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary may use such imposed assumption, but the actuary should disclose that the margin is outside of the appropriate range and disclose the reason for using such margin. [Effective February 1, 2018]

- .04 Examples of situations where the circumstances affecting the work might require an unbiased calculation include
- the legislation governing the social security program requires an unbiased calculation; or
  - the social security program's financing policy requires the use of best estimate assumptions.
- .05 Examples of situations where the circumstances affecting the work might require the inclusion of one or more margins for adverse deviations include
- the relevant legislation or financing policy requires inclusion of margins for adverse deviations; or
  - the level of uncertainty or volatility around a particular assumption is high, and not considered to be sufficiently mitigated by the underlying adaptability of the social security program.
- .06 Where the actuary includes a margin for adverse deviations, the actuary would provide the rationale for inclusion of the margin and for the selection of the specific amount of the margin. The rationale may include considerations such as
- the financing policy of the social security program;
  - the relative importance placed on the balancing of competing interests (e.g., benefit security versus cost of the social security program);
  - the level of uncertainty inherent in the assumption;
  - the level of reliability or credibility of the data or historical information upon which the assumption is based;
  - the asset/liability mismatch risk; and
  - the legislative or other restrictions on the ability to mitigate past adverse experience.

### 7360 Sensitivity Testing

.01 The actuary should perform sensitivity testing of adverse scenarios to illustrate plausible material risks to which the social security program may be exposed and to aid in the understanding of the effect of adverse changes to assumptions. [Effective October 15, 2017]

.02 The actuary may also perform sensitivity testing of favourable scenarios.

- .03 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the valuation. The actuary may consider the use of testing of integrated sensitivity scenarios, for example, the effect of a deep and prolonged recession.
- .04 Assumptions tested may include, but are not limited to, the following:
- investment rate;
  - real wage growth;
  - labour force participation rates; and
  - mortality rates.

## 7400 Experience Analysis

- .01 The actuary should conduct an experience analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective October 15, 2017]
- .02 The actuary should conduct a reconciliation of the main results of the social security program valuation between the prior calculation date and current calculation date. The reconciliation should include an analysis and itemization of the changes in the methodology and assumptions used, legislative amendments that occurred, or other components of the valuation that contributed to the change in the main results. [Effective October 15, 2017]
- .03 The actuary's analysis would include all significant experience variations. At a minimum, the actuary's analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the social security program, gains or losses due to investment returns on the social security program's assets, legislative changes, and any other areas where the difference between actual and expected experience is significant.

## 7500 Reporting on the Valuation of a Social Security Program

- .01 For work pursuant to this part, the actuary should prepare a report that:
- states the calculation date and the report date of the actuarial opinion given;
  - identifies the legislation or other authority under which the work is completed;
  - describes the significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
  - describes the sources of the participants data, program provisions and policies, and assets, if any, and the dates at which they were compiled;
  - describes the data used for the valuation and any limitations thereof, and any significant assumptions made about insufficient or unreliable data;
  - describes the social security program's provisions, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendments on the program's financial condition;
  - describes the social security program's source(s) of financing;
  - describes any automatic balancing mechanisms of the social security program;
  - describes any definitive or virtually definitive amendment, policy change or change to administration practice, confirms whether or not such amendment or change has been reflected in the valuation, and identifies the effect of such amendment or change on the program's financial condition;
  - discloses any subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
  - describes the nature and extent of material risks faced by the social security program, and the approach taken by the actuary to assess those risks;
  - states that the assumptions are best estimates, where that is the case, or discloses the aggregate provision for adverse deviations in the results, where the assumptions include margins for adverse deviations;

- describes the methodology used to assess the financial condition of the social security program at the calculation date. The description of the methodology should specify:
  - whether it is based on a closed or open participants group, and
  - how any automatic balancing mechanisms, if present, are incorporated;
- presents the projections of the components of the program's cash flows, including the contributions, benefits, administrative expenses, and investment income, if any;
- presents the key results of the valuation with and without any assumed ad hoc adjustments;
- states the key contribution rates required for the social security program, if applicable;
- describes and quantifies a reconciliation of the actual and expected experience with respect to the assets, if applicable, expenditures, and key contribution rates or other indicators of the social security program from the prior calculation date to the current calculation date; and
- describes sensitivity or scenario testing performed for key assumptions and reports the results of such testing.

Depending on the terms of the engagement, the report should:

- state the prior calculation date and next calculation date, as applicable;
- describe the social security program's assets, if any, including their market value, the assumptions and methods used to value the assets, and a summary of the assets by major category;
- state the financial condition of the social security program; and
- if the social security program is meant to be fully funded, state:
  - its funded status at the calculation date under a closed group methodology;
  - if also using an open group methodology, the extent to which the social security program's current assets and the present value of its future contributions cover the present values of its current and anticipated future liabilities over the projection period under an open group methodology;

and describe the differences between the above two measures. [Effective February 1, 2018]

.02 The report should provide the following five statements of actuarial opinion, all in the same section of the report and in the following order:

- A statement regarding the data, which would usually be, “In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.”;
- A statement regarding the assumptions, which would usually be, “In my opinion, the assumptions used for the purpose of the valuation are reasonable and appropriate, both individually and in aggregate.”;
- A statement regarding the methods, which would usually be, “In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.”;
- If applicable to the mandate, a statement certifying the required key contribution rates or other measures to finance the social security program. The statement may take the form of:

“Based on the results of this valuation, I hereby certify that the [name(s) of key contribution rate(s) and/or other measure(s)] to finance the [name of social security program] is [X.XX]% for the year [YYYY] and thereafter”;

- A statement regarding conformity to accepted actuarial practice, which should be, “This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada.”  
[Effective October 15, 2017]

.03 The report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation and to enable stakeholders, policymakers, and other interested parties to make informed decisions regarding the social security program.  
[Effective October 15, 2017]

.04 There are several measures the actuary may use to present the results, including

- projected cash flows and ending positions,
- discounted cash flows, and/or
- contribution rates required.

- .05 The actuary may be asked to answer questions regarding the financial condition of the social security program, such as the estimated effect from changing an assumption used in the most recent valuation. In such instances, the actuary would specify the purpose and scope of the work and any limitations or constraints that apply to the interpretation of the results of the work compared to the results of the most recent valuation. If an actuarial opinion is required for such work, the actuarial opinion would be similarly adjusted.
- .06 The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate. In such case, the actuary would disclose such deviation in the report, and if practical, useful, and appropriate under the terms of the engagement, report the results of applying accepted actuarial practice.