Canadian Institute of Actuaries | Institut canadien des actuaires

EDUCATIONAL NOTE

Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations

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Ce document est disponible en français.

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Preamble

This educational note provides guidance to actuaries who decide to use alternative settlement methods for hypothetical wind-up and solvency valuations.

An educational note on this subject was originally issued on September 18, 2013 and was subsequently updated April 23, 2020. This educational note has been updated to reflect the changes to references following the revisions as of December 1, 2022 to Part 3000 of the *Standards of Practice* effective December 1, 2022. This educational note is otherwise unchanged from the prior note.

Process

The creation of this cover letter and educational note has followed the Actuarial Guidance Council's (AGC's) protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material Other Than Standards of Practice and Research Documents*, this educational note has been prepared by the Committee on Pension Plan Financial Reporting (PPFRC) and has received final approval for distribution by the AGC on April 11, 2023.

Responsibility of the actuary

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Your feedback

Questions or comments regarding this educational note may be directed to the chair of the PPFRC.

Introduction

Due to capacity constraints within the Canadian group annuity purchase market, pension plans with very large liabilities may have difficulty purchasing a single group annuity to settle their immediate and deferred pension liabilities in the event of a plan wind-up. While there is no explicit quantum that can be used to describe "large" in the context of a group annuity purchase, on a non-indexed or indexed basis, the actuary would obtain guidance on the description of "large" (i.e., capacity thresholds or thresholds) from the most recently published educational note and/or educational note supplement on assumptions for hypothetical wind-up and solvency valuations.

It is difficult to predict how the benefits of members who are entitled to an immediate or deferred pension would be settled in the event of an actual wind-up for plans with liabilities significantly above the thresholds noted above. Notwithstanding this fact, paragraph 3240.06 of the *Standards of Practice* states that "For a hypothetical wind-up valuation, the actuary may assume that benefits would be settled by the purchase of annuities regardless of any limitation of capacity in the market for group annuity contracts."

Thus, in performing a hypothetical wind-up or solvency valuation of such a plan the actuary may assume that the benefits would be settled through a single annuity purchase, even if such a purchase would not be practical. If choosing to follow this approach, the actuary would estimate the theoretical cost of purchasing the annuity by applying the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated as if there were no capacity constraints. In this situation, the actuary would disclose the practical difficulties associated with actually settling liabilities in this manner.

Alternatively, in performing a hypothetical wind-up or solvency valuation of such a plan, the actuary may make a reasonable hypothesis for the manner in which the benefits may be settled, which would be consistent with the postulated wind-up scenario. Such a hypothesis may contemplate an exercise of regulatory discretion or change in legislation to permit the settlement of benefits in an alternative manner. In making such a hypothesis, the actuary would consider relevant legislative requirements, regulatory guidance and applicable precedents (e.g., an exercise of regulatory discretion or enacting of special legislation under similar circumstances). For greater certainty, the actuary would only contemplate an alternative settlement method if such method and the assumptions used are permissible under legislation, or if the actuary has reason to believe that it would likely be acceptable to the regulator, even if such method may require a change to legislation upon actual wind-up.

Paragraph 3260.29 of the *Standards of Practice* states that:

> When describing the assumptions for methods of settlement for a hypothetical wind-up or solvency valuation, the actuary would describe any related limitations. For example:
>
> - If the settlement method assumes that annuities would be purchased but it might not be possible to purchase annuities on actual wind-up of the plan due to capacity limitations; or
> - If the settlement method assumes the exercise of regulatory discretion, a change in law, or a plan amendment for which there is no specific authority.

If an alternative settlement method is contemplated, the actuary would

- provide a clear description of the applicable legislative requirements and/or regulatory policies for settling benefits upon wind-up;
- provide a detailed description of the hypothesis for the method in which benefits would be settled and the rationale for using this method;
- note the existence of any permissive regulatory policy, relevant precedents, or discussions with the regulators if the alternative settlement method is not expressly permitted under legislation;
- acknowledge any conflicts with legislative requirements for settling benefits on wind-up;
- provide comments on changes to the nature of member entitlements, if any, as a result of the alternative settlement method; and
- discuss the implications of the alternative settlement method on the benefit security of members, relative to a single annuity purchase.

The actuary would also disclose the liabilities determined under the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated on the basis that there were no capacity constraints.

Possible alternative settlement approaches that may be considered include

1. the purchase of a series of annuities over a period of a few years;
2. the establishment of a replicating portfolio in trust to provide for the payment of pension benefits over an extended period of time;
3. lump sum payments to plan beneficiaries; or
4. an assumed modification to the terms of the benefit promise (e.g., substituting fixed rate increases for benefits indexed to consumer price index (CPI) increases).

Other settlement approaches, including combinations or variations of the above approaches, may be appropriate in certain situations.

The rationale for using an alternative settlement approach to determine hypothetical wind-up and/or solvency liabilities would be to estimate the cost of settling benefits in a realistic manner. The use of an alternative settlement approach may result in liabilities and/or funding requirements being either higher or lower than those produced by assuming the benefits could be settled through a single annuity purchase (based on the prevailing guidance issued by the PPFRC and assuming no capacity constraints).

Considerations associated with each of the four approaches described above are noted below.

1. Purchase of a series of annuities

For plans with liabilities that are less than five times the capacity thresholds noted above, it may be reasonable to assume that the liabilities would be settled through a series of annuity purchases over a period of five years or less.

In calculating the estimated cost of settling the liabilities in this manner, the actuary would assume that the same proportion of each member's benefit entitlement would be settled through each annuity purchase. The actuary would reflect the fact that, in the interim, the plan would continue to pay the portion of the pension benefits that have not been settled.

In calculating the estimated cost of the initial annuity purchase, the actuary would apply the prevailing guidance with respect to annuity purchase pricing, as published by the PPFRC, calculated on the basis that there were no capacity constraints.

In calculating the estimated cost of annuity purchases in subsequent years, the actuary would consider making adjustments to the discount rate underlying the annuity purchase price to reflect the expected development of the relevant yield curve(s) implied by the forward interest rate(s).

The actuary would make an appropriate provision for the investment-related and administration-related expenses that would be expected to be incurred up to and including the time of the final annuity purchase.

The liability would be determined as the present value of the series of annuity premiums, and pension payments expected to be paid from the pension fund. The present value would typically be determined based on yields on high-quality, zero-coupon fixed-income securities with terms that match the expected timing of the annuity purchases and partial pension payments. The expenses associated with this settlement method would be reflected by making an explicit allowance for expenses and/or by using a net discount rate.

The liability resulting from assuming that benefits would be settled through a purchase of a series of annuities would typically be similar to the liability that would result if it were assumed that benefits were settled through the purchase of a single annuity, based on the prevailing guidance issued by the PPFRC and assuming no capacity constraints.

2. Establishment of a replicating portfolio

An alternative approach to settling benefits may be the establishment of a portfolio of assets that produces cash flows that match the expected benefit payments to plan members.

Paragraph 3240.17 of the *Standards of Practice* states that "The actuary may assume settlement by means of a replicating investment portfolio if permitted by law or any regulatory policy or guideline, or where it is anticipated that annuities could not be purchased due to group annuity capacity limitations.

The assumed replicating portfolio would provide for an appropriate level of security for the pension benefits covered."

In developing the expected benefit cash flows, the actuary would

- reflect plan-specific mortality experience or reflect the experience of groups with similar characteristics such as occupation, demographics and pension size;
- make an appropriate allowance for future mortality improvements on a fully generational basis; and
- make reasonable best-estimate assumptions regarding the exercise of any remaining options by the plan members (e.g., with respect to the timing of commencement of pensions).

In considering the portfolio of assets that would need to be established, the actuary would assume that the primary asset class used is investment-grade fixed-income investments, including a substantial allocation to high-quality fixed-income investments. Since the timing of some benefit cash flows are likely to extend beyond the maturity of available fixed-income investments, the actuary would need to consider how additional fixed-income investments to match these later cash flows would be obtained through re-investing cash flows from the portfolio in the future. The actuary would make reasonable assumptions regarding the level of expenses that would be associated with establishing and maintaining such a portfolio and administering the ongoing payment of benefits.

Under the replicating portfolio approach, there would typically be no recourse to additional funding from the plan sponsor or any other entity if the initial assets set aside prove to be insufficient to provide the benefits. Consequently, the actuary would include a margin for adverse deviations to ensure a high probability that the benefit promises will ultimately be met. The margin would include provisions for contingencies such as, but not necessarily limited to, longevity experience, inflation experience, asset defaults and/or downgrades and reinvestment risk due to cash flow mismatches.

In the absence of legislative requirements or an applicable regulatory policy, the actuary would make an assumption regarding the size of the margin that the regulator would likely require in an actual wind-up scenario, considering any precedents or indications from regulators. The actuary would provide meaningful disclosures regarding the benefit security implications of the settlement method based on either stochastic modelling or stress testing. The actuary would provide at least one of the following two disclosures:

- A quantification of the probability of all the benefit promises being met based on the size of the selected margin and the assumed distribution of outcomes.
- The effect of adverse experience, with respect to each material assumption, on benefit security. The material assumptions would generally include longevity, inflation, asset defaults/downgrades and reinvestment rates. For example, a meaningful disclosure may be whether the asset portfolio would be sufficient to pay all the benefits if the life expectancy of members was one year higher than assumed, with all other experience being exactly in accordance with the valuation assumptions.

The actuary would discuss the effect of the approach on the benefits promised to plan members, the risks associated with this settlement method and any intergenerational differences in the level of security.

3. Lump sum payments to members

Under this approach, the actuary would assume that all members would be *required* to receive a lump sum payment in lieu of their entitlement to a deferred or immediate periodic pension.

The lump sum approach alters the nature of the benefit entitlement and transfers all the investment risk and longevity risk from the pension plan to the plan members.

The actuary would consider whether the mandatory lump sum amounts would be higher than the pension commuted values provided for under Section 3500 of the *Standards of Practice* in order to compensate members for the transfer of risk. Alternatively, the actuary may consider the possibility of providing for a lump sum amount sufficient for each member to purchase an individual annuity without substantial loss of the original entitlement.

The actuary would discuss the effect of the approach on the benefits promised to plan members, particularly the change in the nature of their benefit entitlements (e.g., the potential immediate disruption to the monthly pensions being paid to retired members), the transfer of risk to the members and the tax consequences of receiving a lump sum. The actuary would provide an indication of the level of benefit loss, if any, members may experience if they were to use the lump sum amount to purchase an individual annuity.

A variation of this alternative is that some or all members may be given the option to receive a lump sum payment in lieu of their entitlement to a deferred or immediate periodic pension when such option would otherwise not be available. The actuary would make an appropriate assumption about the proportion of members electing such an option. Under this method, the actuary would consider whether the options provided to the members result in additional liabilities due to anti-selection and would make appropriate allowances.

4. Assuming modifications to benefit terms

Paragraph 3240.18 of the *Standards of Practice* state that:

> The actuary may incorporate assumptions as to the exercise of regulatory discretion, a change in law, or a plan amendment which would be required to enable a practical settlement of benefits. When making such assumptions, the actuary would consider any relevant regulatory policy, guidance, or precedent.
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> For example, for a plan where pensions are indexed with the Consumer Price Index and where it is impractical to purchase annuities indexed with the Consumer Price Index, the actuary may assume that annuities would be purchased with indexing at a fixed percentage rate of comparable value to indexing in accordance with the plan provisions.

Under this approach, certain plan terms are altered in order to allow for the settlement of benefits through an annuity purchase. For example, while it may not be possible to purchase a group annuity covering liabilities related to pensions indexed to the CPI at a reasonable price (i.e., exceeds the threshold for indexed group annuities), it is likely possible to purchase a group annuity of this size that covers pensions indexed at a fixed rate if the fixed rate price is within the threshold for non-indexed group annuities. This variation of the plan terms may be expressly permissible under legislation or could occur through the exercise of regulatory discretion or legislative change.

Where such a modification of plan terms is contemplated, the actuary would discuss the effect of the modification on plan members. Where plan members would be exposed to additional risk as a result of the assumed modifications, it may be appropriate to contemplate some compensation being paid to plan members for this additional risk. For example, if CPI-linked indexation is being replaced by a fixed annual percentage increase, plan members would be exposed to the risk of inflation. In this situation, it may be appropriate to assume that the fixed increase percentage would be higher than the best estimate of future inflation levels.

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