Second Revised Exposure Draft

Second Revised Exposure Draft for Capitalized Value of Pension Plan Benefits for a Marriage Breakdown (Section 4300)

Actuarial Standards Board

June 2010

Document 210036

Ce document est disponible en français

800-150 Metcalfe, Ottawa ON Canada K2P 1P1 613.236.8196 613.233.4552 secretariat@asb-cna.ca www.asb-cna.ca

Actuarial Standards Board
Conseil des normes actuarielles

Memorandum

To: All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries and other interested parties

From: Charles C. McLeod, Chairperson
Actuarial Standards Board

Date: June 9, 2010

Subject: **Second Revised Exposure Draft for Capitalized Value of Pension Plan Benefits for a Marriage Breakdown (Section 4300)**

Comment deadline: August 20, 2010

EXECUTIVE SUMMARY

The above document was approved by the Actuarial Standards Board (ASB) on June 3, 2010. As a result of comments received, it contains some changes to a previous exposure draft published in December 2009. In addition, however, it contains a response to comments on the previous exposure draft, both as to the process followed by the ASB and to the assumptions recommended by the ASB. We believe the information provided will illustrate that the ASB has given many opportunities to members to express their opinions and that there has been a genuine effort by the ASB to listen to, and take into account those opinions. It also explains why the ASB is recommending specific assumptions, in particular the use of the BEIR (the Break Even Inflation Rate – the difference between the yields on non-indexed and real return Government of Canada Bonds) as the basis for the inflation assumption, and it responds to those who think the use of the BEIR is inappropriate (see Appendix).

The principal assumptions recommended in this Second Revised Exposure Draft, as well as those contained in the current standards and some other reports are:

Discount rate

Recommended Assumption	First 20 years: Yield on long-term Government of Canada bonds plus 50 bp	After 20 years: 5.50%
Current Standards	First 15 years: Yield on long-term Government of Canada bonds plus 50 bp	After 15 years: 6.00%

First Revised Exposure Draft	First 15 years: Yield on long-term Government of Canada bonds plus 50 bp	After 15 years: A weighted average (depending on the age of the individual) of (a) the rate to be used for the first 15 years and (b) a fixed rate of 5.50%
Recommendations of the Marriage Breakdown Working Group (March 2009)	First 15 years: Yield on long-term Government of Canada bonds	After 15 years: A weighted average (depending on the age of the individual) of (a) the rate to be used for the first 15 years and (b) a fixed rate of 6.25%

Inflation rate (prices)

Recommended Assumption	First 20 years: BEIR	After 20 years: 2.25%
Current Standards	First 15 years: BEIR plus 0.25%	After 15 years: 2.75%
First Revised Exposure Draft	First 15 years: BEIR less either 0.00% or 0.25%	After 15 years: A weighted average of (a) the rate to be used for the first 15 years and (b) a fixed rate of 2.00%
Recommendations of the Marriage Breakdown Working Group (March 2009)	First year: Current inflation rate Second to fifth years: Linear interpolation between rates for first year and sixth year	Sixth year and later: 2.50%

BEIR is defined as the difference between yields on non-indexed and real-return long-term Government of Canada bonds.

This Second Revised Exposure Draft reflects the following:

We believe that the public interest (in this case, fairness to **both** parties in a marriage breakdown – the individual receiving the pension and the individual receiving the capitalized value) is better served by the ASB's recommendations than by the recommendations of some marriage breakdown practitioners in their report of March 2009 – recommendations that, in the ASB's opinion, overestimate capitalized values through the use of an assumed inflation rate that is too high and an initial assumed interest rate that is too low, i.e., less than what a reasonably well-informed investor can earn with low risk.

In addition, the ASB does not believe that the interests of the public and the credibility of the actuarial profession are well-served by differences between the pension commuted value standard and the marriage breakdown standard unless there is a valid justification for such differences.

INTRODUCTION

This Second Revised Exposure Draft was approved by the Actuarial Standards Board (ASB) on June 3, 2010. It replaces the revised exposure draft (the "First Revised Exposure Draft") that was published in December 2009 (document 209131: http://www.actuaires.ca/members/publications/2009/209131e.pdf) which in turn replaced an earlier exposure draft (the "Original Exposure Draft") that was published in June 2008 (document 208043: http://www.actuaries.ca/members/publications/2008/208043e.pdf and document 208045: http://www.actuaries.ca/members/publications/2008/208045e.pdf). The notice of intent was published in March 2008 (document 208020: http://www.actuaries.ca/members/publications/2008/208020e.pdf).

A revised mortality table, the UP-94 table, projected to 2020 with scale AA, was promulgated by the ASB on September 22, 2009 with an effective date of January 1, 2010. This memo considers all other aspects of section 4300.

Following the publication of the First Revised Exposure Draft, the ASB received 19 comments from 16 members, as well as a submission from the Committee on Actuarial Evidence of the Canadian Institute of Actuaries (CIA). There were two main themes in the comments received:

1. Criticism of the process followed by the ASB, in particular that the ASB had not adopted the March 2009 recommendations of the Marriage Breakdown Working Group (MBWG) and was recommending assumptions that were not supported by a large number of practitioners in the actuarial evidence field. For example, one comment read: "… there is a dangerous precedent set if the ASB overrides the best judgment of the majority of the practitioners in a practice area when standards for that practice are being set."
2. Criticism of the specific assumptions recommended by the ASB, in particular basing the inflation assumption on the BEIR.

The ASB thanks all those who responded. The ASB and the Designated Group decided to issue a Second Revised Exposure Draft for two main reasons:

1. To incorporate some changes to the recommended assumptions as a result of some comments made on the First Revised Exposure Draft,
2. To provide a more detailed rationale than was contained in the cover memo to the First Revised Exposure Draft as to why the ASB is recommending specific assumptions and, at the same time, to explain why the ASB does not agree with some of the recommendations made by some marriage breakdown practitioners, in particular those contained in the March 2009 report of the Marriage Breakdown Working Group (the MBWG report).

BACKGROUND

In June 2008, two exposure drafts on related subjects were published by the ASB. One was for Revised Standards of Practice for Pension Commuted Values (section 3800). Final Standards for section 3800 were approved and published by the ASB in December 2008.

The second was for revised Standards of Practice for the Capitalized Value of Pension Plan Benefits for a Marriage Breakdown (section 4300).

In September 2008, Michael Kavanagh, Chairperson of the CIA's Committee on Actuarial Evidence, wrote to the ASB, saying:

> "I propose that the decision on the new Marriage Breakdown Standard be delayed. I would like to set up an Actuarial Evidence community task force to recommend a revision to the marriage breakdown standard as the official response by the Actuarial Evidence Committee by early next year, say March 31, 2009."

The ASB decided in October 2008 to accept Michael Kavanagh's proposal, i.e., to defer consideration of any revisions to the current Marriage Breakdown Standard until it had received the proposal of the Committee on Actuarial Evidence. At the same time the ASB provided the Committee on Actuarial Evidence and its Working Group with some guidance, saying in particular,

> "In the case of the discount rate assumption, the ASB accepts that the "replacement theory" approach contained in the memo attached to the exposure draft distributed in June 2008 makes sense for the Marriage Breakdown Standard, and, therefore, a discount rate basis, reflecting a replacement theory approach, is appropriate. For other assumptions, there should be a valid justification if the recommended assumptions are different from those in the Pension Commuted Values Standard."

In March 2009, the Marriage Breakdown Working Group (the MBWG) submitted its report. The MBWG report recommended assumptions for mortality and inflation that were different from those that had been adopted for pension commuted values. There followed a number of discussions between representatives of the ASB and representatives of the MBWG. Eventually the ASB concluded that there was no valid justification for having different mortality assumptions for pension commuted values and for marriage breakdown calculations, and that the starting point for the inflation assumptions for both calculations should be the BEIR. The First Revised Exposure Draft was published in December 2009.

As many people know, the revision of section 4300 has a long and controversial history. This is reflected in the large number of papers and reports that have been produced on this subject. The major documents reviewed and considered by the ASB are as follows:

> March 2008 Report by the Task Force on Pension Value Consistency (document 208019: http://www.actuaries.ca/members/publications/2008/208019e.pdf).
>
> June 2008 Exposure Draft (with accompanying memo) on Revised Standards for the Capitalized Value of Pension Plan Benefits for a Marriage Breakdown (Section 4300) (document 208045:

http://www.actuaries.ca/members/publications/2008/208045e.pdf and document 208043: http://www.actuaries.ca/members/publications/2008/208043e.pdf).

December 2008 Final Standard (with accompanying memo) for Pension Plan Commuted Values (section 3800) (document 208082: http://www.actuaries.ca/members/publications/2008/208082e.pdf and document 208083: http://www.actuaries.ca/members/publications/2008/208083e.pdf).

March 2009 report by the AE Working Group (The "MBWG report") (http://www.actuaries.ca/ASB/AE_Working_Group_Report_e.pdf).

Two reports that were released by the Bank of Canada in the fall of 2004:

- *Real Return Bonds: Monetary Policy Credibility and Short-Term Inflation*, an article published in the Bank of Canada Review, http://www.bankofcanada.ca/en/review/autumn04/r04-4-eb.html
- *Real Return Bonds, Inflation Expectations and the Break-Even Inflation Rate* published as Working Paper 2004 – 43. http://www.bankofcanada.ca/en/res/wp/2004/wp04-43.pdf

December 2009 (First) Revised Exposure Draft on Revised Standards for the Capitalized Value of Pension Plan Benefits for a Marriage Breakdown (Section 4300). (document 209131: http://www.actuaries.ca/members/publications/2009/209131e.pdf)

Comments made following the publication of the First Revised Exposure Draft.

In addition, the ASB reviewed the current Standards of Practice for Section 4300, partly as a reasonableness check (are the proposed changes compared to the current Standards reasonable?) and partly because in May 2008 the Committee on Actuarial Evidence wrote to the ASB:

> "The current economic assumptions applicable to Marriage Breakdown valuations are very well accepted both externally (plan members, spouses, the family law bar and judges) and internally (within the Actuarial Evidence practice area) and there is no pressure from the affected parties for major changes to the economic assumptions …".

As will be noted, the recommended assumptions described in this Second Revised Exposure Draft are not very different from the current Standards.

CONSISTENCY WITH SECTION 3800 – COMMUTED VALUE OF A PENSION

As noted above, the view of the ASB has been, and continues to be, that the assumptions contained in Section 4300 should be the same as those in Section 3800 unless there is a valid justification for a difference.

The reasons for the ASB's view are that section 4300 - the capitalized value of pension plan benefits for a marriage breakdown - is very closely related to section 3800 of the Pension Standards – the commuted value of a pension. Although sections 3800 and 4300 apply to different types of work, both cover essentially the same thing – the value of a pension. Both involve the use of three principal assumptions – mortality, inflation (for

indexed pensions) and the discount rate – and the selection of those assumptions transcends specific practice areas.

Some actuaries may or do consider that the same standard should apply to both types of calculation. If an individual simultaneously terminates from his/her pension plan and his/her marriage breaks down, why should two calculations on the same day produce different values of the individual's pension?

Unfortunately there have been, and continue to be, differences in opinion between actuaries as to what those assumptions should be. This presents the ASB with a problem. If the ASB was to recommend, say, one mortality assumption for pension commuted values and a different mortality assumption for marriage breakdown, both the ASB and the Canadian actuarial profession would have a credibility issue – how do we explain this? If instead the ASB recommended the same mortality assumption for both sets of calculations, some people would not agree with the assumption. The ASB's conclusion was that, even though some actuaries would not agree with some of the assumptions recommended, it was more important for the overall credibility of the Canadian actuarial profession to have consistency of assumptions between sections 3800 and 4300, unless there was a good reason for a difference.

The ASB has noted that a number of provinces require the use of the pension commuted value standard for certain purposes in connection with marriage breakdowns. Quebec requires that marriage breakdown calculations be performed using the pension commuted value standard. Some other provinces (e.g., Alberta) do not specify how pensions are to be valued for purposes of equalization of family property, but require that if the parties agree to divide the pension at source, then the non-member spouse should receive a portion of the commuted value of the member's pension determined using the pension commuted value standard. As described later (see page 13), an additional paragraph has been added to the text of the Standards to point out that the Standards do not apply when applicable legislation mandates a different basis.

PROCESS FOLLOWED BY ASB

A number of comments received were critical of the process followed by the ASB, in particular that the ASB had not adopted many of the recommendations of the MBWG – recommendations that are supported by a number of practitioners in the marriage breakdown practice area. We believe that this is the first time that the ASB has not adopted many of the recommendations of those practicing in a particular practice area and we do not expect such a situation to be a common one. In the paragraphs above, we have tried to explain how this situation has arisen and, to avoid repetition, would highlight only the following:

1. The desire for consistency with the pension commuted value standards has been a key principle followed by the ASB. Although sections 3800 and 4300 apply to different types of work, both cover essentially the same thing – the value of a pension.
2. The selection of assumptions for mortality, interest rates and inflation transcends specific practice areas.
3. The revision of section 4300 has a long and controversial history. Both before and after the ASB's formation, there have been many discussions with actuarial evidence practitioners to listen to and take into account their opinions.

4. Although the ASB should listen and has listened to comments made, the (ultimate) responsibility for the adoption of Standards of Practice is that of the Actuarial Standards Board. Members of the ASB should only adopt Standards that they consider to be in the public interest, and that have been developed in accordance with the ASB's policy on due process (for the adoption of Standards of Practice).

SUMMARY OF RECOMMENDATIONS

1. Discount Rate

Recommended assumptions

For the first 20 years, use the yield on long-term Government of Canada bonds plus 50 bp. The long-term Government of Canada bond yield is defined as the average yield on long-term (over 10 years) marketable Government of Canada bonds, as per CANSIM V122487.

After 20 years, use a fixed rate of 5.5%.

For comparison, the assumptions contained in the current standards and other reports are:

Current Standards

For the first 15 years: the yield on long-term Government of Canada bonds plus 50 bp.

After 15 years: a fixed rate of 6%.

First Revised Exposure Draft

For the first 15 years: the yield on long-term Government of Canada bonds plus 50 bp.

After 15 years: a weighted average (depending on the age of the individual) of (a) the rate to be used for the first 15 years and (b) a fixed rate of 5.50%.

Recommendations of the MBWG (March 2009)

For the first 15 years: the yield on long-term Government of Canada bonds.

After 15 years: a weighted average (depending on the age of the individual) of (a) the rate to be used for the first 15 years and (b) a fixed rate of 6.25%.

Rationale

In the case of the discount rate assumption, the ASB accepted that a "replacement theory" approach made sense for the Marriage Breakdown Standard (as opposed to the "economic value" approach that was a major consideration in setting the discount rate assumption for the Standards of Practice – Pension Plans, section 3800).

A replacement theory approach is considered to be an investment strategy that allows for the replacement, as far as possible, of the expected pension payments. (The expected pension payments, which are independent of the actual or assumed investment strategy, would be determined reflecting expected mortality and, for an indexed pension, expected inflation.). The use of a replacement theory approach requires a great deal of judgment about the kinds of things that a reasonably well-informed, diligent investor would do to replace a pension. The reality is that most non-members' spouses will receive assets in lieu of their share of the member spouse's pension. These assets will often be real estate, e.g., the principal residence or a share thereof. The non-member spouse may have no

interest in replicating or replacing the foregone pension. So the replacement method concept is not well-defined and it requires judgments about what people might reasonably do, not what they often do in practice.

The MBWG report (implicitly) assumed that the non-member spouse would choose to invest his/her money in a long-term bond fund managed through an exchange traded fund (ETF), and developed a model to reproduce the effects of doing so. ETF's are managed to track a bond index, not to replace expected pension payments. The ETF underlying the MBWG recommendation is the $70 million iShares Canadian Long Bond Index Fund (XLB).

There are a number of other investment strategies that an individual might follow. One investment strategy that would replace the expected pension payments is the purchase of strip bonds whose maturity dates and amounts match the timing and amounts of the expected pension payments. Such a strategy protects an individual from market volatility, and from the risk of having to reinvest funds when interest rates are lower than today – except beyond the term where strip bonds are not widely available. Strip bonds of different maturities (for terms of at least 20 years) are available in sufficient quantities for individual investors, and expenses are lower than on an ETF. In addition, there is no reinvestment risk until the maturity of the strip bonds.

The recommended assumption (for the first 20 years) of the yield on long-term Government of Canada bonds plus 50 bp can be achieved by investing in provincial strip bonds. Following research and enquiries with some institutions offering self directed registered retirement savings plan (RRSP's), the Designated Group concluded that strip provincial bonds, yielding on average about 50 bp more than Government of Canada strip bonds after expenses, are available in sufficient quantities for individual investors. More specifically, during the period 1948 to 2006, in years when the Consumer Price Index (CPI) was between 0% and 4%, provincial bonds have yielded an average of 55 bp more than Government of Canada bonds. With the investment in long strip bonds, there is also a small additional yield pick-up (assumed to be about 5 bp) since, under a normal yield curve, yields on stripped bonds or coupons at later durations are greater than the average yield over the whole term of the bond of the principal and all coupons.

Expenses of about 10 bp were assumed (following a survey of some brokerage firms), resulting in an addition of about 50 bp (55 bp plus 5 bp less 10 bp) to the yield on long-term Government of Canada bonds.

As noted above, the MBWG recommended an interest rate, net of expenses, equal to the yield on long-term Canada bonds. The ASB thought that a non-member spouse interested in replacing a pension should be able to get something closer to the yield on long-term provincial bonds.

Other factors influencing the ASB's recommendation were:

- The recommendation should be **fair to both parties** – the individual receiving the pension and the individual receiving the capitalized value. We believe that the ASB's recommended basis (i.e., the long-term Government of Canada bond yield plus 50 bp) is fairer to both parties than the MBWG's recommendation of long-term Government of Canada bond yield with no addition. We say this not merely for the reasons given above, but also because we see an issue of fairness if the non-member spouse receives

a risk free value (Government of Canada plus zero) while the spouse remaining in the pension plan does not have an iron clad guarantee in respect of his/her pension.

- The ASB noted that the proposed discount rate (i.e., long-term Government of Canada bond yield plus 50 bp) is the same as that in the current section 4300 – which the ASB was advised in May 2008 was well accepted in the courts (see Background on page 5).
- The current Pension Commuted Value Standard uses yields based on Government of Canada bonds plus 90 bp. The ASB considered the 40 bp difference between the 90 bp adjustment for the Pension Commuted Value Standards and the 50 bp adjustment for marriage breakdown to be justifiable in light of the different approaches used, namely an economic value approach for Standards of Practice – Pension Plans, section 3800 and a replacement theory approach for marriage breakdown calculations.

In practice, a very large number of investment strategies are possible and may be followed, but with less certainty of their replacing the expected pension payments. For example, an individual could decide to invest in equities. The expected returns would likely be higher, but there would be greater risk.

Discount rate basis after 20 years

A financial economics approach would use a long-term yield (based on current yields) as long as they are reasonably available but, for the average individual, investment opportunities for very long terms are limited. For this reason, and since a replacement theory approach is being followed, a fixed rate of 5.5% is recommended after 20 years.

The fixed rate of 5.5% was derived as the sum of the following three components:

the long-term inflation assumption of 2% (see below), plus

an expected difference of 3.0% between the yield on long-term Government of Canada bonds and expected inflation, plus

50 bp, reflecting additional yields, net of expenses, through investing in provincial bonds.

Of these three components, the second was the most difficult to quantify. Looking backward, the differences have varied considerably depending on the time period studied. Consequently, the Designated Group recommends that the ASB review the rate of 5.5% from time to time and adjust it whenever there is a significant change in the economic conditions. For example, as described later, the long-term inflation assumption of 2% assumes that the Bank of Canada maintains its current target rate for inflation of a range from 1% to 3%.

Once one moves away from a financial economics approach, there is no single right answer for the long term discount rate. In the First Revised Exposure draft, the ASB attempted to narrow differences with the MBWG recommendations by adopting some of the recommendations of the MBWG report. Some of the comments received suggested that it was inappropriate to use parts but not all of the MBWG's recommendations. The approach recommended in this Second Revised Exposure Draft, i.e., GOC plus 50 bp for 20 years and 5.5% thereafter is simpler (it avoids the complexity of an age-dependent discount rate), it reflects the availability to the individual investor of fixed income

instruments for periods up to 20 years, and the financial effect of the change, compared to the First Revised Exposure Draft, is very small.

Finally the recommended long term rate of 5.5% appears reasonable compared to the long term discount rate of 6% in the current section 4300, in light of the general downtrend in interest rates in recent years. The increase to 6.25% recommended by the MBWG seems harder to justify.

As noted above, the MBWG recommended a long term rate of 6.25%. The development of this assumption, compared to the ASB's recommended 5.5% is as follows:

	ASB	MBWG
Long term inflation	2.0%	2.5%
Real return on GOC bonds	3.0%	3.65%
Adjustments (invest in other than GOC bonds, expenses, other)	0.5%	0.10%
Total	5.5%	6.25%

The difference in the long term inflation assumption is discussed later. The difference in adjustments is caused mainly by the MBWG assuming higher expenses through investing in an exchange traded bond fund (ETF) – see above. The MBWG adjustments also included 10 bp to allow for the effect of compounding the long term inflation rate and the real return on GOC bonds.

The MBWG report (page 13) recommended a 3.65% assumption for the real return on GOC bonds as a result of using the following steps:

- Over the period 1948 to 2006, the average real rate of return for federal long term bonds was 3.14%.
- "The real return is inversely correlated to the level of inflation (i.e., the lower the rate of increase in Consumer Price Index (CPI), the higher the real rate of return). In periods when inflation is bracketing the 2% target inflation rate (0% to 4%), the average real rate of return on bond yields is approximately 4%."
- Allowing for shocks in CPI rates, an assumed real rate of return of 3.65% was developed.

As noted above, the real return on GOC bonds has varied considerably depending upon the time period studied. The MBWG report looked at the average over the period 1948 to 2006. The ASB focused on the period since 1991 because that was when the Bank of Canada adopted its current inflation-targeting framework. Even in the period since 1991, real returns have ranged from a low of about 1.5% to a high of about 5%. The ASB selected 3% as being in the middle of this range.

2. Inflation Rate (Prices)

Introduction

It is proposed that the inflation assumption be described in the Standards of Practice as an explicit assumption (so that all projected pension payments, whether indexed or not, would be discounted at the same interest rate) as opposed to an implicit assumption (i.e.,

one discount rate for non-indexed pensions, and another discount rate for indexed pensions) as is the current practice for both the Marriage Breakdown and Pension Standards. This is a matter of presentation only and it should have no effect on the calculated value.

Expected pension payments (for an indexed pension plan) would be determined after allowing for expected inflation.

General Approach

For the first 20 years, use the Break-Even Inflation Rate (BEIR), where BEIR is defined as the difference between yields on non-indexed (CANSIM V122544) and real-return (CANSIM V122553) long-term Government of Canada bonds.

After 20 years, use a fixed rate of 2.25%

For comparison, the assumptions contained in the current standards and other reports are shown below. It should be noted that some of these are implicit and reflect the difference between the discount rates for non-indexed and indexed pensions:

Current Standards

For the first 15 years, the BEIR plus 0.25%.

After 15 years, a fixed rate of 2.75%.

First Revised Exposure Draft

For the first 15 years, the BEIR, possibly reduced by up to 0.25%.

After 15 years, a weighted average of (a) the assumption for the first 15 years and (b) 2%.

Recommendations of the MBWG (March 2009)

First year: current inflation rate.

Sixth year and later: a fixed rate of 2.5%.

Second to fifth years: linear interpolation between rates for first year and sixth year.

Rationale

The ASB recommends that the inflation rate for the first 20 years be based on the BEIR.

- This is similar to the approach that was adopted for the Standards of Practice – Pension Plans, section 3800. (Incidentally, the Designated Group read again the comments made when section 3800 was being reviewed/revised in 2008 and could find only two comments that objected to the use of the BEIR in connection with section 3800.)
- The BEIR represents the market's long term view of the value of inflation protection.
- The current section 4300 bases the inflation assumption on the BEIR.
- Expected pension payments (reflecting expected mortality and expected inflation) are independent of the investment strategy adopted.

The comments in the appendix (response to criticisms of the use of BEIR) expand upon why the ASB considers that the use of the BEIR is valid.

Consideration was given to applying a reduction to the BEIR. This is because the BEIR includes a premium paid to guarantee protection against inflation. The ASB concluded that no reduction was appropriate. The individual receiving the pension will have protection against inflation so, to be consistent and fair, the individual not receiving the inflation protection should receive something of equivalent value, i.e., no reduction to the BEIR.

The fixed rate of 2.25% after 20 years was selected as the sum of two components:

> A fixed inflation rate of 2% which is the mid-point of the current Bank of Canada target range of 1% to 3%. In addition, as noted in the appendix, in the 18 year period from 1992 (the year following the adoption of a target range of 1% to 3% by the Bank of Canada) to 2009 inclusive, inflation averaged 1.83%, slightly below the midpoint of the range, plus
>
> An additional 0.25%. As noted above, for the first 20 years, no adjustment was made to the BEIR to reflect the fact that it includes a premium paid to guarantee protection against inflation – assumed to be about 0.25%. Since the individual not receiving a pension will not have the protection against inflation that the person who does receive the pension will have, the former should have something of equivalent value, i.e., no reduction to the BEIR in the first 20 years and an increase of 0.25% in the assumed inflation rate of 2% after 20 years.

The Designated Group recommended that the ASB review the fixed rate of 2.25% from time to time, and adjust it whenever there is a significant change in the Bank of Canada target rate.

The recommended fixed rate of 2.25% compares with a fixed rate of 2.75% in the current Standard. Although the reduction is relatively large, the ASB still considers a long term fixed rate of 2.25% reasonable for the reasons given above. The current rate of 2.75% was set when inflation targeting by the Bank of Canada had been in place for only a short time and followed a period when Canada had been experiencing higher inflation rates.

The latest recommendations are slightly different from those of the First Revised Exposure Draft. The changes have been made partly to reflect comments by members (in particular that the inflation assumption should not be based on the age of the member) and partly to be consistent with the changes made to the discount rate assumption (see above).

3. Change in average wage index

Paragraph 4330.14 of the current Standards of Practice requires the assumption that the rate of change in a wage index be 1% higher than the rate determined for Consumer Price Index (CPI) indexing.

No change to this is proposed (in the Second Revised Exposure Draft the corresponding requirement is in paragraph 4330.12). A similar requirement is contained in the Standards of Practice – Pension Plans, section 3800. The MBWG report recommended that the requirement remain at the current level until the next modification of the Standard.

4. Rounding

Paragraph 4330.10 of the current Standards of Practice requires that the interest rates determined in accordance with subsection 4330 be rounded to the nearest multiple of 0.25%. The Second Revised Exposure Draft (see paragraph 4330.18) proposes that rounding be done to the nearest multiple of 0.10%.

This change would be more accurate than the current rounding to the nearest 0.25%. It is consistent with what was adopted in the final Standards of Practice – Pension Plans, section 3800. It was also recommended in the MBWG report.

5. Time lag

Paragraph 4330.10 of the current Standards of Practice requires that the yields on Government of Canada bonds that are used to determine the discount rate be based on the CANSIM rates in the second calendar month preceding the month in which the calculation date falls.

It is proposed to reduce the time lag to one month (see paragraph 4330.08 of Second Revised Exposure Draft) for consistency with the Standards of Practice – Pension Plans, section 3800.

6. Other changes

A new paragraph (4310.05) has been added that states "The standards in this section 4300 do not apply when applicable legislation mandates a different basis for the calculation of the value of a pension for family property purposes at the breakdown of the marriage of a plan member."

The last sentence of paragraph 4330.17 in the current Standards of Practice (which reads: "In so doing, the actuary would take account of long term historical averages and not give undue weight to recent experience") has been deleted. The ASB concluded that specific guidance on this paragraph should be provided by Educational Notes.

IS A STANDARD OF PRACTICE NECESSARY?

Some of the comments received suggested that a standard was not required, and/or that guidance could be provided by an Educational Note issued by the CIA.

The ASB considered this suggestion, particularly in light of the fact that in some provinces the basis for marriage breakdown calculations is prescribed by legislation. The ASB concluded that a standard was desirable for the following reasons:

1. The existence of standards reduces the likelihood of disputes arising over the value of pensions, which helps to minimize the related actuarial and legal fees – a result which is in the public interest.

2. Standards for pension plan commuted values were adopted when provincial pension legislation required the determination of commuted values, and the CIA considered it appropriate and in the public interest to develop standards for that purpose. Similarly, provincial family law typically requires the inclusion of the value of pensions in family property for purposes of equalization on marriage breakdown, and it is in the public interest for appropriate standards to be established for such valuations.

CONCLUDING REMARKS

We believe that the public interest is better served by the ASB's recommendations than by the MBWG's recommendations – recommendations that, in the ASB's opinion, overestimate capitalized values by mandating the use of an inflation rate that will usually be too high and an interest rate that will usually be too low, i.e., less than what a well-informed investor can earn with low risk.

The ASB believes that the public interest is better served by capitalized values for indexed pensions that are consistent with the pricing of real return bonds.

Finally the ASB does not believe that the interests of the public and the credibility of the actuarial profession are well-served by differences between the pension commuted value standard and the marriage breakdown standard for which no valid justification exists.

FEEDBACK

Comments on this Second Revised Exposure Draft are invited by August 20, 2010. Please send your comments, preferably in an electronic format, to Chris Fievoli at his CIA Online Directory address, Chris.Fievoli@actuaries.ca with a copy to Charles McLeod at his CIA Online Directory address, charlesmcleod@sympatico.ca.

No specific forums for submitting comments are planned regarding this Second Revised Exposure Draft, other than the receipt of written comments at the above addresses.

PROPOSED TIMELINE AND EARLY IMPLEMENTATION

The ASB hopes to issue the final version of these Standards of Practice in late 2010, with an effective date about six months after publication. Early implementation is likely to be prohibited.

APPENDIX

1. Response to criticisms of the use of BEIR

Some of the comments on the First Revised Exposure Draft were very critical of the use of the BEIR. For example, one person wrote:

> *"The ASB is proposing … that the BEIR be used as the best-estimate of future inflation rates for the next 15 years, despite direct evidence, including evidence from the Bank of Canada, that regardless of what value the market puts on inflation protection, BEIR was never intended to predict, and is a terrible predictor of, future inflation in the near term. BEIR may be appropriate for "Economic Value" determination, but has no place for "replacement Value" determination."*

The decision by the ASB to use the BEIR followed significant research, as described below.

Background

The Bank of Canada adopted an inflation-targeting framework in 1991. The first real return bond (RRB) was issued in December of that same year.

Inflation-targeting was implemented as a series of 5-year agreements between the Bank of Canada and the Government of Canada. The first agreement (1991) called for inflation to be reduced to 2%, the midpoint of a 1%-3% target range, by the end of 1995. The 1996 agreement continued the 1%-3% range and the 2% midpoint. Subsequent agreements in 2001 and 2006 did the same.

The current agreement expires in 2011. There is no guarantee, commitment or indication that the agreement will be renewed in the same form. In the interest of transparency the Bank of Canada released a document in November, 2006, identifying some of the changes that would be considered for future renewals; in particular

- a reduction in the target range, and
- a change from inflation rate targeting to price-level targeting (with price level targeting, if inflation is above the 2% target for a period of time the Bank of Canada would attempt to bring inflation below the 2% target for a period of time rather than simply bringing the inflation rate back to the 2% target).

The Bank of Canada has done an excellent job of respecting its targets. From 1992 to 2009 inclusive (18 years), inflation averaged 1.83%, slightly below the midpoint of the range. The actual inflation rate was outside the target range in five of the 18 years; three times below the bottom of the range (1%) and twice above the top of the range (3%).

The first RRB was issued in 1991 with a 4.25% (real) coupon and a 30 year term to maturity. There are currently five series maturing at five year intervals, from 2021 to 2041 inclusive. No RRB has ever matured. None has a maturity date before December, 2021. The total amount outstanding is approaching $30 billion.

The Bank of Canada's Views on the BEIR

The BEIR is the difference between the nominal yield to maturity on bonds issued by the Government of Canada and the real yield to maturity on real return bonds (RRBs) issued

by the Government of Canada with the same term to maturity (or duration). The BEIR is thought to be influenced by inflation expectations over the relevant time horizon. More accurately, it is a measure of the price of purchasing inflation protection.

One person commented that the:

> "*BEIR is a terrible estimator of expected inflation in the near term. This is documented in different economic literature. For example, in a study by the Bank of Canada, published in the Bank of Canada Review, August 2004, the author states*
>
> > '*The BEIR demonstrates no clear advantage in forecasting near-term inflation. Over all horizons examined, survey measures and even past inflation rates yield smaller forecasting errors than the BEIR.*'"

This commentator stated that using the BEIR as the assumed inflation rate during the 15 years following the valuation date "*will put actuaries at risk of being embarrassed at the very least, and possibly publicly discredited, as experts*".

These views are surprising since actuarial evidence practitioners have used BEIR + 0.25% as their 15 year inflation assumption since 1993 without any suggestion of embarrassment or discreditation. For example (as stated earlier), in 2008 the actuarial evidence practitioners suggested that the economic assumptions in the current Standard of Practice be retained.

Is the BEIR a Poor Estimator of Future Inflation?

The Bank of Canada was frequently cited (by the commentator noted above) as the principal authority for his conclusion that the BEIR is a poor estimator of future inflation rates. The Bank of Canada released two reports in the fall of 2004.

Real Return Bonds: Monetary Policy Credibility and Short-Term Inflation, an article published in the Bank of Canada Review, and

Real Return Bonds, Inflation Expectations and the Break-Even Inflation Rate published as Working Paper 2004 – 43.

These two documents (hereinafter referred to as the Bank of Canada Reports – links to the documents are on page 5) have the same authors, cover the same period and reach the same conclusions. The first appears to be a shorter, more accessible version of the second. While the views expressed are those of the authors it is reasonable to conclude that the Bank of Canada generally supports the authors' conclusions since the authors were employed by the Bank of Canada and since their views were published by the Bank of Canada.

The Bank of Canada Reports examine the relationship between the BEIR, inflation rates and inflation expectations from 1992 to 2003, inclusive. During this period,

- the RRB market grew from one issue with $4 billion outstanding to three issues with $17 billion outstanding, and
- the remaining term to maturity of the earliest-maturing RRB declined gradually from 30 years to 18 years, with an average of 24 years.

At no time, however, did the authors (of the Bank of Canada Reports) compare the BEIR to actual inflation rates over the period the BEIR was attempting to forecast. This would have been impossible as the BEIR produced an estimate of expected inflation levels for periods ending in 2021 while actual inflation was observable only until 2003. As the authors observed:

> "*In Canada, RRBs are issued only with long maturities, and thus the relatively short span of RRB history does not permit a comparison of the BEIR with the realised average rate of inflation over a 30-year horizon*".

Instead, the authors compared the BEIR in a given year to the rate of inflation in the one, two and three subsequent years and concluded that the BEIR was not a good estimator of **short-term inflation**.

Viewed objectively, this finding is neither surprising nor relevant. One would not expect a 24-year inflation expectation to accurately predict next year's inflation rate. More importantly, since the First Revised Exposure Draft recommended that the BEIR be used as the assumed rate of inflation for the 15 years following the calculation, comments (on the First Revised Exposure Draft) about the BEIR's inability to predict **short-term** inflation are not relevant.

Far from criticising the BEIR's inability to predict short-term inflation, the authors of the Bank of Canada Reports observed:

> "*These results are actually reassuring, in the sense that the BEIR does not simply reflect changes in short-term expected inflation.*"

The Bank of Canada Reports cite several studies attesting to the ability of the BEIR to forecast short-term inflation in the UK, where short-term indexed bonds make such studies possible.

> "*…There is some evidence from the United Kingdom in favour of using interest rate measures for forecasting inflation. Scholtes (2002) finds that the forecast accuracy of the BEIR, constructed using indexed-linked gilts (U.K. inflation-linked bonds) with a 2-year maturity, outperforms survey measures of expected inflation at a 2-year horizon. Other measures of inflation expectations derived using indexed-linked gilts in the United Kingdom have also been shown to possess predictive power for inflation at the 1- to 4-year horizon (Breedan 1995; Bair and Campbell 1997).*"

To conclude on this point, when the BEIR has been compared to inflation over the relevant time horizon it has done a creditable job, although long-term BEIRs may be poor predictors of short-term inflation. Since, however, the ASB is not advocating the use of the BEIR as a short-term inflation assumption, there is no conflict between the ASB's proposals and the Bank of Canada's research.

<u>The BEIR and Inflation Expectations</u>

The principal objective of the Bank of Canada's study was to see if the BEIR was a reliable estimator of long-term inflation **expectations**, not to see if it was an effective forecaster of future inflation rates. The authors conclude:

> "*Because of the potential distortions and the difficulty accounting for them, it is premature to consider the BEIR a reliable measure of long-run inflation*

expectations. Despite these findings, the BEIR should not be completely dismissed. If distortions and premiums can be ruled out, or better accounted for, the BEIR would be a useful measure for monitoring policy credibility. It represents a more timely and market-based alternative to survey measures and should, along with the continued development of the RRB market, eventually become a more reliable indicator of long-term inflation expectations."

To put these observations in context, the Bank of Canada has an interest in inflation expectations that transcends its interest in future inflation rates. The difference between long-term inflation expectations and the Bank of Canada's 2% target is a measure of the confidence that economists have in the bank's commitment to the target. The bank's main concern is its credibility with economists and decision makers (is it serious about achieving its target?), as opposed to its ability to forecast inflation.

The authors of the Bank of Canada papers compared the BEIR to surveys of inflation expectations and concluded that the BEIR did not coincide with the survey results. Between 1992 and 1997 the BEIR was higher and more volatile than the survey results. Between 1998 and 2003 the BEIR was less volatile than it had been earlier and closer to other measures of inflation expectations. However the correlation between the BEIR and the other measures of inflation expectations was quite low. Hence the authors concluded that the BEIR was not yet a reliable indicator of inflation expectations.

The fact that the BEIR differs from other measures of inflation expectations says little or nothing about whether the BEIR is a useful estimator of future inflation rates. The authors point out that

"*Differences between survey measures and the BEIR may reflect flaws in either measure*."

Until it is possible to compare BEIRs and survey results to actual levels of inflation over long periods of time, there is no way to tell which is the better predictor of future inflation rates.

Finally, the Bank of Canada Reports were generally optimistic about the BEIR becoming a more effective indicator of inflation expectations as the RRB market developed, particularly if adjustments were made for inflation risk premiums and other factors.

2. Comments on the MBWG's recommendations regarding inflation

The inflation assumption proposed by the Marriage Breakdown Working Group is as follows (this assumes that indexation occurs once a year).

- At the first indexation date following the calculation date, the actuary would assume the annual increase in the CPI for the twelve months ending in the second month preceding the calculation date.
- At the sixth indexation date following the calculation date, and subsequently, the actuary would assume a 2.5% rate of increase in the CPI.
- For the second through fifth indexation dates following the calculation date, the actuary would assume inflation rates determined by linear interpolation.

The MBWG report (page 10) ignores the BEIR because

> "*…determining the Price Indexing rate by considering the yields on Government of Canada real rate of return bonds is flawed because of the poor availability of such bonds. This has resulted in artificially high prices.*"

The ASB's response to comments of its recommended use of the BEIR appeared earlier.

To support the assumption that the CPI will increase by 2.5% per annum after the fifth year, the Working Group pointed to the Bank of Canada's target range (1% to 3%) but stated that "*It is obvious that economic shocks will occasionally push the CPI very far away from the control range.*" The MBWG report noted the bank's practice of trying to move the actual rate of inflation back to the 2% midpoint over six to eight quarters. The MBWG report assumed that "*the average rate of price inflation over long periods will be somewhat more than 2%*" and recommended a fixed 2.5% ultimate inflation assumption.

The ASB could not reconcile the MBWG's recommendation of 2.5% with the facts that:

- the Bank of Canada is committed to achieving the 2% target,
- the average inflation rate has been 1.83% since the Bank of Canada adopted inflation-targeting in 1991, and
- the BEIR, which in the opinion of the Working Group over-estimates inflation rates due to its reliance on "flawed" RRB markets, has averaged 2.38% during the last 15 years.

At this point we have an 18 year record showing how the Bank of Canada has implemented inflation-targeting. This historical record cannot be reconciled with the MBWG's recommendations. If one examines the behaviour of the CPI since inflation-targeting was adopted in 1991, one finds that inflation has averaged 1.83% with negative serial correlation. This means that when inflation exceeds the 2% target in one year it is more likely to be below the 2% target in the following year. The MBWG's view that a gradual five year move to 2.5% is the likely consequence of the Bank of Canada's current inflation targets is inconsistent with actual experience since 1991.

The MBWG's proposed basis in the period immediately following the calculation date has deficiencies also. Consider three estimates of the inflation rate in the year following the calculation date;

- the basis proposed by the MBWG, i.e. 80% of the most recent actual annual increase in the CPI for the period immediately prior to the calculation date, plus 20% of 2.5%.
- the Bank of Canada's 2% target rate; and
- the BEIR.

The RMSEs (Root Mean Squared Errors) for the three estimates are as follows:

The Root Mean Squared Error Associated With Different Estimators of Next Year's Inflation Rate

	Estimator		
Period	MBWG basis	2%	BEIR
1998 – 2009	1.4%	0.9%	0.9%
1995[(1)] – 2009	1.3%	0.8%	1.1%

[(1)] The Cansim series currently used to calculate the BEIR only goes back to January, 1995.

Although the MBWG criticises the use of the BEIR as a predictor of inflation, the MBWG's recommended basis would actually have been worse.

4300 CAPITALIZED VALUE OF PENSION PLAN BENEFITS FOR A MARRIAGE BREAKDOWN

4310 SCOPE

.01 The standards in this section 4300 apply to an actuary's advice when the capitalized value of a pension plan's benefits is needed for calculating the value of family property at the breakdown of the marriage of a plan member.

.02 For the purposes of this section 4300, "plan" means "pension plan" and is broadly defined, including not only a plan that is registered under the federal Income Tax Act but also an unregistered plan, such as a retirement compensation arrangement and an unfunded pension plan.

.03 The standards in this section 4300 do not apply when the purpose of the calculation is to calculate an amount, in respect of a pension benefit, to be paid~~:~~

by the plan to the plan member or beneficiary as a result of the plan member's death or termination of membership, or

by a party other than the plan in connection with litigation other than in respect of a marriage breakdown.

.04 The standards in this section 4300 may provide useful guidance for similar calculations for other deferred compensation arrangements, such as a partnership retirement buy-out agreement, a sick leave buy-out plan, and a retirement lump sum allowance, but they do not provide useful guidance for current compensation arrangements such as group life and disability insurance.

~~.04~~.05 The standards in this section 4300 do not apply when applicable legislation mandates a different basis for the calculation of the value of a pension for family property purposes at the breakdown of the marriage of a plan member.

4320 METHOD

.01 *The benefits to be valued are the plan's benefits in respect of the member (including survivor benefits vested in the member's spouse) at the calculation date or calculation dates.*

.02 *The value of the member's benefits is the capitalized value of the benefits to be valued, but assuming that the member has no spouse. The value of the survivor benefits vested in the member's spouse is the excess, if any, of*

the capitalized value of the benefits to be valued over

the value of the member's benefits. [Effective January 1, 2004]

Principle

.03 The capitalized value would conform to the intent of applicable family law. The capitalized value may, thus, differ from the corresponding transfer value from a registered pension plan. Transfer values typically include only unconditional rights, whereas property under family law typically includes both vested and contingent rights. Thus, such contingent rights as early retirement rights, bridging benefits, and ad hoc inflation adjustments are property to be considered in a ~~valuation~~ calculation for marriage breakdown purposes.

.04 The standards in this section will often produce more than one result, by taking account of alternative possibilities for

pension commencement age,

future increases in accrued benefits before and after retirement,

allocation of value earned before marriage,

inclusion or exclusion of non-vested benefits, or

special circumstances, such as buy-back or transfer of benefits.

.05 If the actuary has reason to believe that the plan's financial position is so weak that payment of the capitalized benefits is doubtful, then the actuary would so report, making clear that allowance for this factor could significantly reduce the present values calculated, given that such present values have been calculated assuming that the plan would meet its obligations. In making that assessment, the actuary would take into account any benefits payable under provincial pension guarantee legislation. The actuary would take into account further the extent to which plan benefits are provided through a retirement compensation arrangement and/or an unfunded pension plan.

.06 The terms of the actuary's engagement may determine some or all of

the relevant law or jurisdiction,

the calculation date or calculation dates,

retirement age, but only if established as a matter of fact pursuant to an agreement of the parties or a determination by the court, and

inclusion or exclusion of the effect of income taxes.

Benefits to be valued

.07 The benefits to be valued would include all of the plan's contractual benefits, including pre- and post-retirement death benefits, and any contractual inflation protection and non-contractual inflation protection.

.08 The benefits to be valued would exclude spousal survivorship benefits, except to the extent that these may have vested upon retirement prior to the calculation date.

.09 The form of plan benefits that would be valued would be the most favourable of any optional form available to the member with no spouse. For example, a 15-year guaranteed pension option would have a greater value than a 5-year guaranteed pension option for a member with impaired mortality. However, if the applicable law disregards a particular optional form of plan benefit, then the actuary may omit that option in calculating the capitalized value.

.10 The benefits may include or exclude any non-vested benefits. Non-vested benefits may be included in the values, or may be illustrated separately, and would be valued without discount for the possibility of future forfeiture. Separately from the illustrated values, the report may contain comments including suggestions for recognizing the contingent nature of non-vested benefits. The references in this paragraph to inclusion of values of non-vested benefits apply in jurisdictions where the inclusion of such values depends on the plan provisions applicable to a deferred vested member. In other jurisdictions, the inclusion of such values depends on the extent to which continued employment is assumed.

.11 The capitalized values would include ancillary benefits that are provided by the plan as of the calculation date and are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, such as unreduced early retirement benefits.

.12 The actuary would disclose whether or not the benefits valued include benefits that will be provided by the plan after the calculation date and that are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, for example

a future increase in benefits as a result of a collective bargaining agreement, or

a future increase in benefits as a result of an adopted plan amendment.

.13 The benefits referred to in paragraph 4320.11 are those payable by the plan as a going concern, and not those payable on plan wind-up, if different, unless the plan has been fully wound up or partially wound up with respect to the plan member.

.14 Where various legal interpretations for a specific question appear possible, the actuary would obtain clarification of such unclear matters from the instructing lawyer or from another authoritative source. If that is not possible, the actuary would ~~provide a description of any conflicting viewpoints~~advise that various interpretations exist, and would report ~~either~~ the effects of these interpretations ~~values that represent both possible interpretations,~~ or report values that, in the actuary's opinion, are most consistent with accepted actuarial practice.

Calculation date

.15 The calculation date may be single or multiple, depending on the circumstances and applicable law. The possibilities include

the date of separation,

the date of marriage or commencement of cohabitation,

the date of trial, and

the report date.

.16 If the ~~selection~~ use of an alternative calculation date, close to the calculation date, would significantly affect the capitalized value, then the actuary would so report. Examples are

the date at which the member becomes eligible for early retirement with unreduced benefits, and

the date at which the plan is amended to enhance its benefits.

Applicable standards

.17 The applicable standards are those in effect at the calculation date. If there are two or more calculation dates, however, and if the standards applicable to one differ from the standards applicable to another, then the actuary would use the same standards for all calculation dates. The choice of standards would be governed by the latest of the calculation dates, except that the choice would be governed by the base calculation when the actuary selects an alternative calculation date, close to the calculation date, in accordance with the previous paragraph.

Future service

.18 If the member's employment terminated before the calculation date and was not reinstated at the report date, then the actuary would include nothing in the capitalized value on account of assumed service after the calculation date, even if reinstatement is possible after the report date. The actuary may, however, report a useful alternative calculation that assumes reinstatement.

.19 If the member's employment terminated between the calculation date and the report date and was not reinstated at the report date, then the actuary may, with disclosure, exclude from the capitalized value any non-vested benefits forfeited by the termination of employment.

Effect on capitalized value of minimum benefits

.20 In calculating the capitalized value, the actuary would take account of any minimum benefit related to member contributions:, for example

the so-called "50% minimum employer contribution rule", and

a minimum benefit equal to the member's contributions accumulated with interest.

.21 The minimum benefit would not necessarily be limited only to the value determined on a termination of employment assumption. The capitalized value would incorporate the relevant minimum benefit rule according to the event.

Effect on capitalized value of salary increases after the calculation date

.22 If the pension is an earnings-related benefit, then the possibilities are

> the capitalized value takes account of all the member's salary increases – general increases, promotional increases, and seniority increases – after the calculation date.
>
> the capitalized value takes account of the member's salary increases which result from general (as opposed to promotional and seniority) salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of promotions or seniority increases, which the member earns after the calculation date.
>
> the capitalized value does not take account of the member's salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of salary increases, which depend on the member's continued employment after the calculation date.

.23 The assumed salary increases after the calculation date would be consistent with the prescribed economic assumptions, except that salary increases revealed by subsequent events would be substituted for the corresponding assumed increases.

Effect on capitalized value of non-contractual indexing of pensions and other benefit adjustments

.24 In calculating the capitalized value, the actuary would assume continuance of the plan's established practice or current policy, if any, for non-contractual indexing for inflation of pensions after pension commencement age and of vested deferred pensions before pension commencement age, unless there is explicit reason not so to assume. The actuary would report

> the established practice or current policy, and
>
> the indexation assumption.

.25 If that assumption is doubtful, then the actuary would also report the numerical effect on the capitalized value of helpful alternative assumptions.

.26 In the case of a final or best average earnings plan, there would be no allowance made for indexing of vested deferred pensions before pension commencement age in the period for which salary increases are projected after the calculation date.

Effect on capitalized value of income tax

.27 Income tax may be taken into account in the calculation. If it is to be taken into account, then the actuary would do so by calculating the average income tax rate based upon the member's anticipated retirement income computed in "current" dollars, including accrued and projected future pension income, Canada Pension Plan, Old Age Security and other anticipated income, and continuance of the tax environment at the report date or the calculation date; i.e., assuming continuation of the existing tax rates, brackets, surtaxes and clawbacks, applied to the projected income on retirement expressed in "current" dollars. The actuary would disclose which date was used and if the tax environment is as at the report date, would disclose the use of any tax provisions that have not yet been enacted.

.28 The actuary may report useful alternative calculations~~,~~ that take income tax into account.

4330 ASSUMPTIONS

.01 *The actuary should select all assumptions, except those depending upon interpretation of applicable law.* [Effective January 1, 2004]

~~Death~~ Mortality rates

.02 *The actuary should assume ~~death~~ mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations, modified, if appropriate, to reflect the member's or the member's spouse's impaired health, if medically determinable.* [Effective ~~January 1, 2004~~Month XX, 200X]

.03 Tobacco use (or lack of tobacco use) would not, in itself, be sufficient reason to modify the ~~death~~ mortality rates identified above.

.04 Use of unisex ~~death~~ mortality rates would not be appropriate except that it may be appropriate in situations where the plan member has terminated employment and has elected, or has the option to elect, a transfer value that was or would be calculated under a unisex basis.

Retirement age

.05 If the retirement age is a matter of fact (i.e., one agreed by the parties or determined by the court), then the actuary would report the selection of the assumed retirement age as such.

.06 The retirement of the member before the report date does not necessarily preclude assumption of a different retirement age.

.07 Unless paragraph 4330.05 applies, the actuary would usually assume and report the results for a range of useful retirement ages, based on data at the calculation date, which would include

the earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member's service ceases at the calculation date,

the earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member continues in service either to that age or to an earlier age after the calculation date,

if there is an upper limit to the number of years of credited service, the earliest age at which the member has attained, or will attain, that upper limit and becomes entitled to a pension whose amount is not reduced on account of early retirement, and

the normal retirement age.

~~Valuation interest rates~~Economic assumptions

.08 *The actuary should select economic assumptions that depend on the reported rates for the applicable CANSIM series for the calendar month immediately preceding the month in which the calculation date falls*~~The choice of valuation interest rate would vary depending on whether the pension is non-indexed, partially indexed, or fully indexed~~.

.09 *The actuary should determine from the CANSIM series the following four factors:* ~~index may be the Consumer Price Index (CPI), a wage index, an index based on an excess interest method, or a modification or a mixture of these indices.~~

CANSIM Series	Description	Factor
V122487	average long (>10 yrs) Government of Canada bond yields (final Wednesday of month)	G_L
V122544	long-term Government of Canada benchmark bond yield, annualized (final Wednesday of month)	b_L
V122553	long-term Government of Canada real return bond yield, annualized (final Wednesday of month)	r_L
$(1 + b_L) / (1 + r_L) - 1$	break-even inflation rate	BEIR

Note that the factors determined above do not reflect the reported CANSIM series, but the annualized value of the reported figure.

Inflation and Indexing~~Pension that is non-indexed~~

.10 *The actuary should calculate the projected benefit obligation for a pension that is fully indexed to increases in the Consumer Price Index using an expected inflation rate of EI. For pensions that are partially indexed to increases in the Consumer Price Index, the actuary should derive inflation rates in a like manner by applying to the stipulated inflation rates the partial indexing formula of the plan*~~valuation interest rate during the 15 years following the calculation date is the month-end value of the nominal interest rate (i.e., the rate compounded semi-annually) on long-term Government of Canada bonds (CANSIM series B14013) in the second calendar month preceding the month in which the calculation date falls, adjusted by~~.

~~adding 0.5%,~~

~~converting the resulting nominal interest rate to the equivalent effective annual interest rate, and~~

~~rounding to the nearest integral multiple of 0.25.~~

.11 *The actuary should determine the expected rate of inflation EI as*~~valuation interest rate after those 15 years is 6%~~

first 20 years $EI_{0\text{-}20} = BEIR$

after 20 years $EI_{20+} = 2.25\%$

EI should be rounded to the nearest multiple of 0.01%.

~~Pension that is indexed to the CPI~~

.12 ~~The valuation interest rate during the 15 years following the calculation date is the month-end value of the real interest rate (i.e., the rate compounded semi-annually) on long-term Government of Canada real return bonds (CANSIM series B14081) in the second calendar month preceding the month in which the calculation date falls, adjusted by~~*Where increases in pensions are related to increases in the average wage index, the actuary should assume that the average wage index will increase at rates that are one percentage point higher than EI.* [Effective Month XX, 2010]

~~adding 0.25%,~~

~~converting the resulting nominal interest rate to the equivalent effective annual interest rate, and~~

~~rounding to the nearest integral multiple of 0.25%.~~

.13 Where the plan so provides, ~~T~~the indexing in any of the above arrangements may be modified by~~valuation interest rate after those 15 years is 3.25%.~~

applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years, or

prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease.

The actuary would then adjust the expected inflation rate for a year to reflect the probability and extent of modification for that year.

~~Pension that is indexed to a wage index~~

.14 If ~~a~~ the pension is indexed using an "excess investment return" approach, the expected indexation rate would be determined using the "floor rate" and the interest rates determined ~~to the rate of change in a wage index, the valuation interest rate would be 1% less per annum than the rate determined for CPI indexing under~~ in accordance with paragraph~~s~~ 4330.182 to produce an expected indexation rate consistent with excess interest situations~~and 4330.13~~.

~~Pension that is indexed ad hoc~~

.15 For a pension in a plan that has a policy or a history of ~~-~~indexing on an ad hoc basis, the actuary would determine an ~~valuation~~ indexation~~interest~~ rate ~~based on an assumed rate of indexing determined in accordance with paragraph 4330.18~~consistent with the indexing policy or history. 4330.18

~~Other adjustments~~

.16 *The capitalized value of a fully- or partially-indexed pension ~~w~~should be at least equal to the capitalized value applicable to a non-indexed pension in the same amount and having similar characteristics.* [Effective Month XX, 2009]~~adjusted, if necessary, to be as large as the corresponding value of an otherwise similar non-indexed pension. That adjustment may be necessary if the indexing decreases the pension~~.

Interest rates

.17 *The actuary should calculate two interest rates, one applicable to the first twenty years following the calculation date, and the second one applicable to all years thereafter.*~~indexing in any of the above arrangements may be modified by~~

~~applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years, or~~

~~prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease. The actuary would then adjust the interest rate for a year to reflect the probability and extent of modification for that year. In so doing, the actuary would take account of long-term historical averages and not give undue weight to recent experience.~~

.18 *The actuary should determine the interest rates as*~~If the pension is indexed to the CPI on some basis other than the full CPI, the capitalized value would be reasonably related to the capitalized value for pensions that are non-indexed and that are indexed to the CPI.~~

first 20 years $i_{0\text{-}20} = G_L + 0.50\%$

after 20 years $i_{20+} = 5.50\%$

Prior to calculating the capitalized value, the actuary should round the rates of interest determined in accordance with this paragraph to the nearest multiple of 0.1%.

.19 *The actuary should calculate the capitalized value of a pension using a two-tier interest rate of*~~If the pension is indexed using an "excess investment return" approach, the valuation interest rate would usually be the lesser of the "floor rate" and the valuation interest rates determined under paragraphs 4330.10 and 4330.11.~~

$i_{0\text{-}20}$ *for the first twenty years, and*

i_{20+} *thereafter.* [Effective Month XX, 2010]

Assumptions selected by client

.20 The actuary would obtain instructions from the client with respect to assumptions dependent upon the interpretation of applicable law.

.21 The actuary would report his or her reliance on an assumption selected by the client.

4340 REPORTING: EXTERNAL USER REPORT

.01 Here is model text if the actuary reports without reservation with regard to marriage breakdown.~~:~~

> I have determined the capitalized value of the pension benefits and prepared this report in accordance with accepted actuarial practice in Canada, for purposes of settlement of a division of pension benefits resulting from marriage breakdown under the [Family Law Act] of [province]. In my opinion, the capitalized values are appropriate for this purpose.
>
> Respectfully submitted,
>
> [actuary]
> Fellow, Canadian Institute of Actuaries