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## *Educational Note*

# **Annuity Purchase Discount Rate Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates Between July 31, 2009 and December 30, 2009**

**Committee on Pension Plan Financial Reporting**

**November 2009**

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members in the pension practice area.*

## Memorandum

**To:** All Pension Actuaries

**From:** Tyrone G. Faulds, Chairperson  
Practice Council

Michael Banks, Chairperson  
Committee on Pension Plan Financial Reporting

**Date:** November 6, 2009

**Subject:** **Educational Note – Annuity Purchase Discount Rate Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between July 31, 2009 and December 30, 2009**

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This educational note provides guidance on non-indexed group annuity purchase discount rate assumptions to be used for hypothetical wind-up and solvency valuations and revises the guidance provided in the April 9, 2009 educational note, Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between December 31, 2008 and December 30, 2009 with effect from July 31, 2009.

The Committee on Pension Plan Financial Reporting (PPFRC) would like to express its gratitude to Desjardins Financial Security, Great-West Life, Industrial Alliance, Manulife, Standard Life and Sun Life Financial for providing the committee with pricing information used in developing this educational note.

In accordance with the Institute’s Policy on Due Process for the Approval of Guidance Material other than Standards of Practice, this educational note has been prepared by the PPFRC and has received final approval for distribution by the Practice Council on November 2, 2009.

As outlined in subsection 1220 of the Standards of Practice, “*The actuary should be familiar with relevant Educational Notes and other designated educational material.*” That subsection explains further that a “practice which the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation.” As well, “Educational Notes are intended to illustrate the application (but not necessarily the only application) of the Standards, so there should be no conflict between them.”

If you have any questions or comments regarding this educational note, please contact Michael Banks at his CIA Online Directory address, [Michael.Banks@mercercor.com](mailto:Michael.Banks@mercercor.com).

TGF, MB

## 1. INTRODUCTION

The April 9, 2009 educational note, Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates between December 31, 2008 and December 30, 2009 provided guidance regarding an appropriate discount rate for estimating the cost of purchasing annuities. In accordance with this guidance, an appropriate discount rate for a non-indexed group annuity would be determined as the unadjusted yield on Government of Canada (GoC) long-term bonds (CANSIM series V39062) increased arithmetically by the following number of basis points (bps), in conjunction with the UP94@2015 mortality tables:

<b>NON-INDEXED GROUP ANNUITY PURCHASE DISCOUNT RATE GUIDANCE PROVIDED IN APRIL 9, 2009 EDUCATIONAL NOTE</b>		
<b>Valuation Dates</b>	<b>Type of Purchase</b>	<b>Increase to GoC Bond Yield</b>
February 29, 2008 to October 30, 2008, inclusive	i. Immediate with a total premium greater than \$15 million ii. Immediate with a total premium less than \$15 million iii. Deferred	i. 110 bps ii. 110 bps, less a deduction which grades linearly from 40 bps for a total premium of zero to zero for a total premium of \$15 million iii. 70 bps <sup>1</sup>
October 31, 2008 to December 30, 2009, inclusive	i. Immediate with a total premium greater than \$15 million ii. Immediate with a total premium less than \$15 million iii. Deferred	i. 140 bps ii. 140 bps, less a deduction which grades linearly from 40 bps for a total premium of zero to zero for a total premium of \$15 million iii. 100 bps <sup>1</sup>

<sup>1</sup>. See the April 9, 2009 educational note regarding the caution that should apply to the guidance on discount rates for deferred annuitants.

## 2. PROCESS FOR OBTAINING UPDATED PURCHASE PRICING DATA

Over the past few years, guidance regarding group annuity purchase discount rates has been provided on an annual basis, based on a survey of actual purchases that occurred in the previous year. In the April 9, 2009 educational note, the PPFRC observed that, given the significant change in annuity pricing that occurred in 2008, it was apparent that further significant change could occur at any time. Also, it appeared that annuity pricing was exhibiting considerable volatility in early 2009. As a result, the PPFRC has been working on obtaining more frequent data with a view to adjusting the guidance on a more timely basis if the need arises.

In order to assist the PPFRC with obtaining data on a more frequent basis, six insurers have agreed to provide quotes periodically, on a confidential basis, on illustrative blocks of business. The insurers that agreed to provide this information are Desjardins Financial Security, Great-West Life, Industrial Alliance, Manulife, Standard Life and Sun Life Financial.

The PPFRC prepared data for two illustrative blocks of business for non-indexed pensions that were then provided to the insurers. One illustrative block is intended to be representative of a large purchase (i.e., with a total premium greater than \$15 million) and the other illustrative block is intended to be representative of a small purchase (i.e., with a total premium less than \$15 million).

The characteristics of the illustrative blocks of business are as follows:

**Large Purchase (approximately \$35 million total premium)**

Retirees

• Number	229
• Average age	66
• Average monthly lifetime pension	\$700
• Number with bridge pension payable to age 65	44
• Average monthly bridge pension	\$322

Deferred vested

• Number	95
• Average age	46
• Average monthly lifetime pension at age 65	\$642

**Small Purchase (approximately \$5 million total premium)**

Retirees

• Number	24
• Average age	66
• Average monthly lifetime pension	\$710
• Number with bridge pension payable to age 65	5
• Average monthly bridge pension	\$412

Deferred vested

• Number	37
• Average age	46
• Average monthly lifetime pension at age 65	\$678

Using these data, the insurers indicated that they would provide realistic quotes (i.e., as though the quotes truly represent blocks of business they are bidding on) as of agreed upon dates. Based on the quotes, the PPFRC then calculated the implicit discount rate underlying each quote.

The insurers indicated that it would not be appropriate, for competitive reasons, for the PPFRC to disclose the individual discount rates underlying the insurer quotes, including the discount rate associated with the most competitive quote. Also, the insurers indicated that, in their view, it is not appropriate to rely solely on the most competitive illustrative

quote for purposes of establishing group annuity purchase discount rate assumptions because the capacity at which group annuities can be transacted at the best illustrative price might be limited. After lengthy discussions, the PPFRC and the insurers agreed that, for purposes of providing guidance on group annuity purchase discount rates, it would usually be appropriate to reference the average of the discount rates for the three most competitive quotes.

In accordance with the process described above, the insurers provided quotes on the illustrative blocks of business based on pricing conditions as at July 31, 2009.

### **3. ANALYSIS OF PRICING INFORMATION AS AT JULY 31, 2009**

For the retiree group of the large illustrative block of business, the average of the discount rates for the insurers that provided the three most competitive quotes as at July 31, 2009 was 4.51%, in conjunction with the UP94@2015 mortality tables. This average discount rate is 50 bps higher than the yield on GoC long-term bonds (series V39062) of 4.01% as at July 31, 2009. While a spread of 50 bps differs significantly from the guidance of 140 bps contained in the April 9, 2009 educational note, it is consistent with

the actual spreads observed by PPFRC members in recent group annuity purchases (limited in number),

the substantial narrowing of the spreads during the period since the release of the April 9, 2009 educational note between the yields on GoC bonds and the yields on fixed income instruments other than GoC bonds, and

discussions with the insurers about the current pricing environment.

Based on this information, the PPFRC has concluded that the spread between non-indexed group annuity purchase discount rates and the yields on GoC long-term bonds has narrowed significantly since the beginning of the year.

The illustrative quotes did not reveal material differences between the discount rates underlying immediate versus deferred pensions. In prior studies, the discount rates for deferred pensions were generally lower than the rates for immediate pensions. However, at the time that this educational note was prepared the yield curve was steeper than it had been during the previous few years, which suggests that the investments backing annuities with long durations, such as deferred pensions, could likely earn higher yields than the investments backing annuities with shorter durations. Based on discussions with the insurers, the PPFRC has concluded that, for recent deferred group annuity pricing, the higher yields that the insurers could earn on the investments backing the deferred pensions may offset any factors causing lower discount rates for deferred pensions in the past.

The illustrative quotes also did not reveal material differences between the discount rates underlying the large versus small blocks of business. While these differentials will be monitored in the future, the PPFRC concluded that there is not sufficient evidence at this time to change the historical relationships observed in previous studies between the discount rates underlying large versus small purchases.

#### 4. CONCLUSIONS

Based on the analysis described above, the PPFRC has concluded that the guidance provided in the April 9, 2009 educational note for estimating the cost of purchasing non-indexed group annuities should be revised. An appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity would be determined as the unadjusted yield on GoC long-term bonds (series V39062) increased arithmetically by the following number of basis points, in conjunction with the UP94@2015 mortality tables:

<b>NON-INDEXED GROUP ANNUITY PURCHASE DISCOUNT RATE REVISED GUIDANCE</b>		
<b>Valuation Dates</b>	<b>Type of Purchase</b>	<b>Increase to GoC Bond Yield</b>
February 29, 2008 to October 30, 2008, inclusive	i. Immediate with a total premium greater than \$15 million ii. Immediate with a total premium less than \$15 million  iii. Deferred	i. 110 bps  ii. 110 bps, less a deduction which grades linearly from 40 bps for a total premium of zero to zero for a total premium of \$15 million  iii. 70 bps <sup>1</sup>
October 31, 2008 to July 30, 2009, inclusive	i. Immediate with a total premium greater than \$15 million ii. Immediate with a total premium less than \$15 million  iii. Deferred	i. 140 bps  ii. 140 bps, less a deduction which grades linearly from 40 bps for a total premium of zero to zero for a total premium of \$15 million  iii. 100 bps <sup>1</sup>
July 31, 2009 to December 30, 2009, inclusive	i. Immediate and deferred with a total premium greater than \$15 million ii. Immediate and deferred with a total premium less than \$15 million	i. 50 bps <sup>1</sup>  ii. 50 bps, less a deduction which grades linearly from 40 bps for a total premium of zero to zero for a total premium of \$15 million <sup>1</sup>

<sup>1</sup>. See the April 9, 2009 educational note regarding the caution that should apply to the guidance on discount rates for deferred annuitants.

If the actuary is using the UP94@2020 mortality tables, the above discount rates would be adjusted in an appropriate manner.

Where an actuary considers that a plan's hypothetical wind-up or solvency obligations could be settled by the purchase of individual annuities, yields based on relevant

individual annuity quotations could be reflected in establishing the annuity purchase discount rate assumption.

With the exception of the revisions to the guidance contained in this educational note, actuaries would continue to reference the April 9, 2009 educational note for guidance with respect to the selection of assumptions for hypothetical wind-up and solvency valuations with effective dates between December 31, 2008 and December 30, 2009.

The PPFRC intends to continue monitoring group annuity pricing with a view to adjusting the guidance to actuaries if the need arises. More specifically, it is anticipated that illustrative quotes on a similar basis to those obtained at July 31, 2009 will be obtained as of September 30, 2009 and quarterly thereafter. As this process becomes more routine, it is anticipated that any change in guidance will be communicated more rapidly. Actuaries may use the discount rates indicated above for valuations with effective dates up to December 30, 2009, pending such further guidance or other evidence of change in annuity pricing.

Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the member in the pension practice area.