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Minor Amendment to Educational Note

Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice

Committee on Property and Casualty Insurance Financial Reporting

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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 P&C insurance area.

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Memorandum

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

From: Tyrone G. Faulds, Chair
Practice Council

Pierre Dionne, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: June 9, 2011

Subject: **Minor Amendment to Educational Note: Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice**

The Committee on Property and Casualty Insurance Financial Reporting has revised the attached Educational Note. The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare an evaluation of the runoff of the claim liabilities when claim liabilities are discounted.

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 Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on June 9, 2011.

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."

Additional guidance on discounting is available in Educational Note 210079 – Discounting, published by the CIA in November 2010.

If you have any questions or comments regarding this educational note, please contact Pierre Dionne at his CIA Online Directory address, pdionne@ccr.fr.

TGF, PD

INTRODUCTION

The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare a comprehensive report on the valuation of the policy liabilities and an evaluation of the runoff of the claim liabilities.

When claim liabilities are derived on an undiscounted basis, the most common means used by actuaries to evaluate the runoff is through a comparison of the estimated ultimate incurred amounts at successive valuation dates. Another common approach is to compute the calendar year runoff as the amounts paid during the calendar year, plus the change in outstanding amounts from the prior valuation, which is consistent with the calculation of the calendar year incurred claims in the insurer's income statement. These approaches must be modified or replaced in order to properly evaluate the runoff when the claim liabilities are derived on a discounted basis, in accordance with accepted actuarial practice.

The guidance provided in this note may be appropriate for the valuation of the runoff of other liabilities, including self-insured retention.

This document is divided into three sections:

discussion of the basic approaches to the evaluation of runoff of claim liabilities,

an accident year runoff model, and

allocation of investment income between liabilities and surplus.

1. BASIC APPROACHES TO THE EVALUATION OF RUNOFF OF CLAIM LIABILITIES

1.1 Undiscounted Basis

The runoff, or calendar year emergence, is generally computed in one of two ways, both of which should produce the same result.

(a) Emergence in *t* with respect to accident years *t-1* and prior

= (Ultimate amounts estimated at *t-1*) – (ultimate amounts estimated at *t*)

This calculation can also be done on a policy year or underwriting year basis, except that the second term must be adjusted to exclude the portion of policy year *t-1* that is earned in calendar year *t*.

(b) Emergence in *t* with respect to accident years *t-1* and prior

= (Claim liabilities at *t-1*) – (Paid during *t)* – (Claim liabilities at *t*)

This calculation can also be done on a policy year or underwriting year basis, except that the second and third terms must be adjusted to exclude the portion of policy year *t-1* that is earned in calendar year *t*.

The choice of (a) or (b) depends on the available data, regulatory or management requirements, if any, and the actuary's preference.

1.2 Discounted Basis

Equation (a) above, or the comparison of the estimated ultimate incurred amounts, may provide useful information regarding the discounted claim liabilities, but this approach is not readily

adjusted to encompass the effect of the time value of money, and the provision for adverse deviations.

Equation (b) in item 1.1 above would be modified by

discounting the amounts in the second and third terms to time *t-1* (i.e., calculate the present value of the cash flows); or

subtracting a term for the portion of the investment income earned during calendar year *t* on assets supporting the liabilities.

These adjustments should produce equivalent results but the second approach is simpler, both in terms of the calculations and the presentation. The models presented in sections 2 and 3 of this document are based on the second approach.

For the purposes of the Appointed Actuary's report, it would be useful to identify the components of the runoff (i.e., the contribution of the undiscounted claim liabilities, changes in the discount rate, and changes in the provision for adverse deviations).

2. ACCIDENT YEAR RUNOFF MODEL

The model is best illustrated through a simple calendar year (CY) example, as shown below.

EXCESS (DEFICIENCY) DURING CY 6 – BY ACCIDENT YEAR					
Accident Year	**Paid Losses During CY 6** **(1)**	**Discounted Claim Liabilities 31/Dec/6** **(2)**	**Discounted Claim Liabilities 31/Dec/5** **(3)**	**Investment Income in CY 6 On Unpaid Claims** **(4)**	**Excess (Deficiency) During 6** **(5)**
1	2,000	3,000	6,000	270	1,270
2	3,000	7,000	12,000	570	2,570
3	4,000	10,000	17,000	810	3,810
4	6,000	19,000	26,000	1,350	2,350
5	16,000	29,000	44,000	2,190	1,190
Subtotal	**31,000**	**68,000**	**105,000**	**5,190**	**11,190**
6	40,000	44,000	-	1,320	
Total	**71,000**	**112,000**	**105,000**	**6,510**	

(Amounts in $000s)

(1) From exhibit—table 1.

(2) From exhibit—table 2.

(3) From exhibit—table 2.

(4) From exhibit—table 2 = average lines CY 5 and CY 6 for each accident year x annual yield.

In this example, for accident year 5, the average outstanding claims was (29,000 + 44,000)/2 or 36,500. In the example, the annual yield was 6%. So, 6% x 36,500 = 2,190. (Results presented in table 3.)

(5) From exhibit—table 4: line CY 6 [(3) + (4)] – [(1) + (2)].

Section 3 of this document addresses the methodology and assumptions underlying the allocation of the investment income in column (4) above.

The model may be expanded to monitor the runoff over a period of time as shown in tables 5 and 6.

3. ALLOCATION OF INVESTMENT INCOME BETWEEN LIABILITIES AND SURPLUS

The investment income attributable to policy liabilities should be determined. If the assets are allocated (e.g., surplus vs. operations), then the runoff would be calculated consistent with that allocation. The basis for allocation would be consistent with the investment policy of the company and the basis used by the actuary in discounting the policy liabilities. The basis for allocation would be properly documented. In a situation where there is no formal allocation, the default yield rate would be based on the same calculation as used in the P&C-1 or P&C-2 exhibit 10.60. The actuary is referred to the Educational Note on Discounting (Document 210079—November 2010) for guidance on different approaches to select a discounting rate.

The investment income attributable to policy liabilities can be obtained by

multiplying the selected yield rate by

the average of the starting and ending values of

\+ net unpaid claims

\+ net unearned premium

– gross DPAC

\+ premium deficiency provisions

\+ unearned commissions

– agents, brokers and policyholders receivables

– instalment premiums.

If the default yield rate is used for the allocation, then the investment income attributable to policy liabilities would be compared to the overall investment income. If necessary, the investment income on policy liabilities (using the total investment income as a cap) would be reduced and the yield for runoff purposes would be recalculated. This will happen if the invested assets are less than the policy liabilities less the respective receivables. If the overall investment income is negative, then the resulting negative yield should be used for runoff purposes, i.e., the runoff is penalized, again subject to cap, i.e., the negative investment income on policy liabilities would be capped per the overall negative investment income.

A simple approach to calculate the investment income attributable to assets backing the net unpaid claims is to multiply the investment yield by the mean net claim liabilities.

If necessary, the calculation of the investment income attributable to assets backing the net premium liabilities can be performed in a similar manner. The investable assets are considered to be equal to the net unearned premium plus the premium deficiency provisions and unearned

commissions, reduced by gross DPAC, agents, brokers and policyholders' receivables and instalment premiums.

EXHIBITS

Table 1—Paid Losses During the Calendar Year (CY)

	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1	42,000						42,000
2	18,000	43,000					61,000
3	10,000	16,000	44,000				70,000
4	4,000	8,000	12,000	40,000			64,000
5	3,000	5,000	9,000	15,000	39,000		71,000
6	2,000	3,000	4,000	6,000	16,000	40,000	71,000

Table 2—Discounted Claim Liabilities

	Accident Year							
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**	**Annual Yield**
1	48,000						48,000	7.50%
2	29,000	47,000					76,000	7.00%
3	18,000	29,000	43,000				90,000	6.50%
4	11,000	19,000	29,000	42,000			101,000	6.50%
5	6,000	12,000	17,000	26,000	44,000		105,000	6.00%
6	3,000	7,000	10,000	19,000	29,000	44,000	112,000	6.00%

Table 3—Investment Income on Unpaid Claims

	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1	1,800						1,800
2	2,695	1,645					4,350
3	1,528	2,470	1,398				5,400
4	943	1,560	2,340	1,365			6,210
5	510	930	1,380	2,040	1,320		6,180
6	270	570	810	1,350	2,190	1,320	6,510

Table 4—Excess (Deficiency)

	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							—
2	3,700						3,700
3	2,530	4,470					7,000
4	3,940	3,560	4,340				11,840
5	2,510	2,930	4,380	3,040			12,860
6	1,270	2,570	3,810	2,350	1,190		11,190

Table 5—Cumulative Excess

	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							
2	3,695						
3	6,223	4,470					
4	10,165	8,030	4,340				
5	12,675	10,960	8,720	3,040			
6	13,945	13,530	12,530	5,390	1,190		

Table 6—Cumulative % Excess Ratio							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							
2	7.70%						
3	12.96%	9.51%					
4	21.18%	17.09%	10.09%				
5	26.41%	23.32%	20.28%	7.24%			
6	29.05%	28.79%	29.14%	12.83%	2.70%		