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Article from:

The Financial Reporter

June 2011 – Issue 85

Residual Margin Recalibration under the IASB Exposure Draft

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The current International Accounting Standards Board (IASB) Exposure Draft (ED) on insurance contracts establishes a building block model for the valuation of insurance liabilities, of which one of the building blocks is a residual margin. The ED calls for the residual margin to be set at contract issue as the amount which offsets any gain at issue that would otherwise be recorded, after accounting for fulfillment cash flows and an explicit risk adjustment. The residual margin is to be amortized over the coverage period, with no subsequent remeasurement or recalibration. Several comment letter respondents have suggested that the IASB consider the benefits of potentially re-determining the residual margin at subsequent reporting periods. The IASB recently discussed the topic of whether the residual margin should be locked in at inception as proposed in the ED or, if not, how it might be unlocked after inception.

The purpose of this article is to explore the re-determination of the residual margin and present examples of potential re-determination methods and their impacts. In general, the rationale for re-determining the residual margin is to achieve consistency with the other key components of the ED, namely the present value of fulfillment cash flows and risk adjustment, which are remeasured at each reporting date. The lack of re-determination of the residual margin may also result in more volatility in an insurer's reported results and could make it more difficult for financial statement users to assess the insurer's performance. In addition, redetermination of the residual margin results in a more appropriate representation of the economics of the insurer's business, particularly in the wake of significant changes to assumptions, than does a continued recognition of the residual margin on the basis of assumptions made at inception of the business.

The accounting model for related financial assets should be considered when deciding on an approach to residual margin re-determination for insurance contracts. If assets are measured at amortized cost, it would be appropriate to apply re-determination with respect to all assumptions. Conversely, if assets are measured at fair value, one would most likely remove from the calibration of the residual margin financial variables like

interest rate risk, thus allowing the change in discount rates caused by movements in market interest rates to flow directly to net income.

The analysis in this article is also applicable to the composite margin approach put forth by the Financial Accounting Standards Board (FASB).

PRODUCT DESCRIPTION

We modeled a simple 10-year level term life insurance product under the provisions of the ED, and have performed sensitivity tests to illustrate the impact of the potential residual margin re-determination. To enable a transparent view into the impacts of re-determination, we intentionally utilized a simple model:

- A single cell, male issue age 45 with face amount of \$50,000
- Guaranteed fixed-level annual premium payments for 10 years
 - \$4.5 per \$1000 of face (\$225 annually)
 - No explicit policy fee used to determine annual premiums
- Commission of 75 percent in year one and 5 percent thereafter
- No cash value
- No reinsurance

SELECTED KEY ASSUMPTIONS AND MODELING APPROACH

In determining the fulfillment cash flows, the ED calls for all assumptions to be best estimate without provision for adverse deviation (PADs), unlike US GAAP FAS 60 which utilizes PADs. Selected key assumptions used include the following:

Selected Key Assumptions	Best Estimate Value
Investment Yield	6%
Mortality	75% 2001 CSO
Lapse	5% annually
Non Commission Acquisition Expense	\$75 per policy (75% incremental)
Maintenance Expense	\$10 per policy with 3% inflation



Additional aspects of our model are described below:

- **Probability Weighting of Multiple Scenarios**
The ED calls for the fulfillment cash flows to be an explicit, unbiased and probability-weighted estimate of the future cash outflows less the future cash inflows that will arise as the insurer fulfils the insurance contract. The ED goes on to prescribe that the starting point for an estimate of cash flows is a range of scenarios that reflects the full range of possible outcomes. For the purpose of keeping this model simple enough to isolate certain specific aspects, we elected to use a single scenario, rather than multiple scenarios. Furthermore, given the product design and relative lack of sensitivity to equity markets, interest rates and other parameters that are typically modeled using multiple scenarios, we estimated the impact of this approximation to be relatively minimal. This approach is consistent with the recent IASB tentative decision to clarify that not all possible scenarios need to be identified and quantified, provided that the estimate is consistent with the measurement objective of determining the mean.
- **Risk Adjustment**
The ED describes three potential methods for the Risk Adjustment—Confidence Interval, Conditional Tail Expectation (CTE), and Cost of Capital. The ED requires the use of one of those

three methods, which is another aspect of the ED that attracted comments. For this model, we elected to utilize a simplified version of the Cost of Capital approach. In this simplified approach, the future annual economic capital values are estimated using proxy factors of 0.18 percent of face amount and 6.16 percent of premium. The risk adjustment at each valuation date is 6 percent of the Net Present Value of the future economic capital values.

- **Discount Rates**
While the IASB is now considering other more principle-based alternatives, the ED calls for a “bottom up” approach to the discount rate—that is the market-consistent risk-free rate, adjusted for the liquidity characteristics of the liability cash flows. For this model, we use a simplified approach for the discount rate—a fixed rate was used to discount all cash flows, regardless of duration. In other words, we did not use a spot rate curve to discount cash flows at varying rates by duration. We did utilize the risk-free rate as of a recent valuation date and selected a liquidity premium (37 basis points).

MODEL RESULTS – BASE CASE

In the base case model results, all future experience is assumed to emerge consistently with the initial assumptions. The chart below shows projected results in the income statement presentation format proposed by the ED. Consistent with the ED, the non-incremental acquisition expenses (\$19 in this example) in the first year are expensed immediately, creating a drag on income in the first year.

As shown, the total residual margin is determined at issue to be \$168, and is amortized over the coverage period. The principle-based ED does not prescribe the exact methodology for the amortization, but calls for the amortization to be “... a systematic way that best reflects exposure from providing insurance coverage. ...” In this example, we elected to amortize the residual margin in proportion to the change in the present value of future benefits in each year. We believe this reasonably represents the pattern by which the issuer is released from risk exposure, and therefore meets the amortization principles mentioned in the ED.

CONTINUED ON PAGE 14

In the model, invested assets are equal to baseline statutory reserves and required capital, with distributable earnings released as earned. Investment income is then modeled as an earned rate (we assume 6 percent as noted above) applied to those invested assets. For this particular exercise, we did not attempt to vary the invested assets for each sensitivity run. Therefore, investment income in the mortality shock scenario presented later remains unchanged from the base case.

The interest on insurance contract liabilities projections, which one would intuitively expect to be negative (as the discounting of insurance contract liabilities unwinds), is actually positive in most years since the present value of cash flows is negative in most years.

The total net income for the 10-year period is \$378.

Base Case	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Total</u>
<u>(a) Underwriting margin</u>											
Change in risk adjustment	6	5	5	5	5	5	4	4	4	4	43
Amortization of Residual Margin	13	14	15	15	15	16	17	18	20	22	168
Increase/Decrease of Residual Margin	-	-	-	-	-	-	-	-	-	-	-
<u>(b) Gains / losses at initial recognition</u>	-	-	-	-	-	-	-	-	-	-	-
<u>(c) Acquisition costs that are not incremental</u>	(19)	-	-	-	-	-	-	-	-	-	(19)
<u>(d) Experience variances and changes in estimates</u>											
Experience adjustments	-	-	-	-	-	-	-	-	-	-	-
Changes in estimates of cash flows	-	-	-	-	-	-	-	-	-	-	-
Changes in discount rates	-	-	-	-	-	-	-	-	-	-	-
Impairment losses on reinsurance assets	-	-	-	-	-	-	-	-	-	-	-
<u>(e) Interest on insurance contract liabilities</u>	6	9	7	5	3	2	2	0	0	0	33
<u>(f) Investment Income</u>	(1)	16	18	19	19	19	19	17	15	12	153
<u>Net Income</u>	4	44	44	44	43	42	41	40	39	37	378

In the model, invested assets are equal to baseline statutory reserves and required capital, with distributable earnings released as earned.

MODEL RESULTS—MORTALITY SHOCK

The first sensitivity run assumes that actual mortality experience in year six and beyond is 10 percent higher than our original assumption, or, in other words, a permanent mortality shock occurs beginning in year six. In this run, all other factors are assumed to emerge consistently with initial assumptions. The chart below shows how this scenario would be reflected in the income statement proposed by the ED in years six and beyond. The first five years of experience are not shown as those are assumed to have been already reported as shown in the base model results.

The first impact is that the residual margin amortization pattern is updated to reflect the new pattern of the present value of future benefits due to the increased mortality assumptions for years six–10. Note that consistent with the ED, while the amortization pattern is changed, there is no explicit adjustment or re-determination of the residual margin. The amortization pattern change has essentially no impact on the bottom line (changes in total amortization over five years versus the baseline are due to rounding).

The (\$11) adjustment shown on the “Experience Adjustment” line reflects the difference between the actual mortality experience and the mortality assumption for the current year only. The (\$47) adjustment shown on the “Changes in estimates of cash flows” line reflects the increased mortality expected to occur in future years as reflected in the updating of fulfillment cash flows based on new best estimate assumptions.

A key observation here is the impact of the expected mortality increase in all future years is immediately and fully recognized into income, causing net income in year six to be (\$16), or \$58 less than the year six income in the base case. In addition, the residual amortization pattern is essentially unchanged, such that the margin identified at issue continues to emerge, despite the identification of significant reductions to that margin based on adverse mortality experience and expectations.

The total net income for the 10-year period is \$317, which is less than the \$378 in the base case by \$61, reflecting the \$58 recognized in year six and minor changes in other items such as interest on insurance contract liabilities.

Mortality Shock	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Total</u>
<u>(a) Underwriting margin</u>											
Change in risk adjustment						4	4	4	4	4	43
Amortization of Residual Margin						16	17	19	20	22	168
Increase/Decrease of Residual Margin						-	-	-	-	-	-
<u>(b) Gains / losses at initial recognition</u>						-	-	-	-	-	-
<u>(c) Acquisition costs that are not incremental</u>						-	-	-	-	-	(19)
<u>(d) Experience variances and changes in estimates</u>											
Experience adjustments						(11)	-	-	-	-	(11)
Changes in estimates of cash flows						(47)	-	-	-	-	(47)
Changes in discount rates						-	-	-	-	-	-
Impairment losses on reinsurance assets						-	-	-	-	-	-
<u>(e) Interest on insurance contract liabilities</u>						2	0	(1)	(1)	(1)	29
<u>(f) Investment Income</u>						19	19	17	15	12	153
<u>Net Income</u>						(16)	40	39	38	37	317

CONTINUED ON PAGE 16

RE-DETERMINATION OF THE RESIDUAL MARGIN—PROSPECTIVE METHOD

As noted above, the examples provided to this point are consistent with the ED in that the total amount of residual margin was set at issue and remained unchanged regardless of changes in assumptions that may occur after issue. In other words, the residual margin was not re-determined. Only the amortization pattern changed, due to the change in assumed experience.

In the examples that follow, we explore two methods that could be used to re-determine the residual margin subsequent to issue, based on then-current assumptions.

The chart below presents one possible residual re-determination method, which we call the Prospective Method. In this example, the residual margin is recalibrated in year six to reflect changes in assumptions affecting the expected present value of fulfillment cash flows. The residual margin balance at the end of year six is adjusted downward by the amount in the line item for “Changes in estimate of future cash flows,” which is the change in the present value of expected future fulfillment cash flows arising from changes in assumptions updated during the reporting period (\$47 in this example). This adjustment is shown on the “Increase/Decrease of Residual Margin” line and generates additional income in the period.

A new amortization pattern for the remaining residual margin balance is established from the end of year six forward, again with amortization in proportion to the changes in the present value of future benefits for remaining periods.

As compared to the previous example, a greater amount of residual margin is released in the current year. This leaves less residual margin to amortize in future years, and therefore net income is lower in future years. Just as in the previous example, the total net income over the 10-year period is \$317, proving that this is only an adjustment to the timing of income, not the amount of income to be recognized.

The basic rationale for this approach is that it achieves a more balanced presentation of financial performance by adjusting the residual margin balance (and therefore, the future amortization of that margin) at the same time it reflects the impact of prospective changes to expected future cash flows that affect the measurement of the margin of the business. This also serves to dampen volatility of net income by mitigating the effects of adjustments in the current year and moderating changes in profitability in future years. An advantage of this approach is that the residual margin adjustment ties directly into the financial statement presentation (in this case, to “Changes in estimates of cash flows”), creating transparency as to the amount of residual margin re-determination.

Prospective Method	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
<i>(a) Underwriting margin</i>											
Change in risk adjustment						4	4	4	4	4	43
Amortization of Residual Margin						16	7	8	8	9	121
Increase/Decrease of Residual Margin						47	-	-	-	-	47
<i>(b) Gains / losses at initial recognition</i>											
						-	-	-	-	-	(19)
<i>(c) Acquisition costs that are not incremental</i>											
						-	-	-	-	-	
<i>(d) Experience variances and changes in estimates</i>											
Experience adjustments						(11)	-	-	-	-	(11)
Changes in estimates of cash flows						(47)	-	-	-	-	(47)
Changes in discount rates						-	-	-	-	-	-
Impairment losses on reinsurance assets						-	-	-	-	-	-
<i>(e) Interest on insurance contract liabilities</i>											
						2	0	(1)	(1)	(1)	29
<i>(f) Investment Income</i>											
						19	19	17	15	12	153
<i>Net Income</i>						31	30	28	26	24	317

RE-DETERMINATION OF THE RESIDUAL MARGIN—RETROSPECTIVE METHOD

Another approach, which we refer to as the Retrospective Method, is to perform the re-determination of both the amount of the residual margin and the amortization pattern as of time of issue, rather than as of the time of adjustment in future cash flow expectations (as of year six, in our example). This could be done in each reporting period, comparable to the manner in which true-up and unlocking exercises are performed for DAC amortization under FAS 97.

In this particular example, when it is concluded in year six that mortality will be 10 percent higher in that year and all future years, a new residual amortization amount and pattern is established from issue. In this case the new residual margin amount at issue, based on updated cash flow projections for years six through 10, is \$119, and a new amortization pattern from time of issue is established based on the new pattern of the changes in present value of future benefits. The amount of residual margin released in year six is the difference between the residual margin balance based on the original scale and

An advantage of this approach, particularly for U.S. companies, is that it leverages familiar and accepted concepts, approaches, and processes from US GAAP. ...

the balance based on the revised scale, both measured as of the end of year six. Once again, the total income of the 10-year period remains unchanged at \$317.

This method achieves the same basic result as the Prospective Method, adjusting the residual margin to reflect expected future cash flow changes and moderating volatility of net income. The amount of the residual margin adjustment, \$41, is consistent with the \$47 adjustment in the prior example. It is less since the retrospective method shifts amortization of the residual margin from the first five years to the second five years, based on the increased level of benefits in the second five years. An advantage of this approach, particularly for U.S. companies, is that it leverages familiar and

Retrospective Method	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
<u>(a) Underwriting margin</u>											
Change in risk adjustment						4	4	4	4	4	43
Amortization of Residual Margin						16	8	9	10	11	127
Increase/Decrease of Residual Margin						41	-	-	-	-	41
<u>(b) Gains / losses at initial recognition</u>						-	-	-	-	-	-
<u>(c) Acquisition costs that are not incremental</u>						-	-	-	-	-	(19)
<u>(d) Experience variances and changes in estimates</u>											
Experience adjustments						(11)	-	-	-	-	(11)
Changes in estimates of cash flows						(47)	-	-	-	-	(47)
Changes in discount rates						-	-	-	-	-	-
Impairment losses on reinsurance assets						-	-	-	-	-	-
<u>(e) Interest on insurance contract liabilities</u>						2	0	(1)	(1)	(1)	29
<u>(f) Investment Income</u>						19	19	17	15	12	153
<u>Net Income</u>						25	31	30	28	26	317

CONTINUED ON PAGE 18

accepted concepts, approaches, and processes from US GAAP. In addition, as compared to the Prospective Method, this approach may be viewed as a more natural extension of the building block method which already provides for the updating of assumptions and cash flow estimates each period.

CONCLUSION

We hope that this article has been informative in illustrating some of the considerations and impacts involved in locking-in or re-determining the residual margin. Assuming the residual margin and/or composite margin becomes part of IFRS and/or US GAAP, amortization and any permitted re-determination of these items will become an important part of the actuarial valuation process for insurance contracts. While the ED would only establish a residual margin for new business written after transition to IFRS, the IASB, in response to

numerous comments, has indicated an intention to permit residual margins to also be established for in-force business at transition, making the re-determination of residual margin a question of even greater impact.

The IASB and FASB held joint board meetings in March, 2011, in which the staff provided background information to the boards on margin re-determination. The boards discussed whether the residual or composite margin should be locked-in at inception as proposed in the ED and if not, how the margin might be unlocked. While the staff expressed an informal initial preference toward unlocking or re-determination for future estimate changes, the boards were not asked to make any decisions on this topic. Stay tuned for further developments in this area as the IASB seeks to come to a final decision on this and other issues related to insurance contracts by the third quarter of 2011. ■

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