



SOCIETY OF ACTUARIES

Article from:

The Financial Reporter

September 2012 – Issue 90

Revenue Recognition, Part 2: Earned Premiums and Experience Deviations

By Jim Milholland



Jim Milholland FSA, MAAA, is a retired partner from Ernst & Young, LLP. He can be reached at actuary@milholland.com.

The most recent discussions of the International Accounting Standards Board (IASB) and of the Financial Accounting Standards Board (FASB) confirm their interest in the approach to revenue recognition that was presented in the article “Presentation of Comprehensive Income takes Center Stage,” in the June 2012 *Financial Reporter*. In papers written by the IASB and FASB staff, the approach is called the “earned premium” approach. This paper explains what is meant by earned premium. It then explores what happens under this approach when experience is different from expected. As was the case in the previous article, it must be emphasized that the IASB and the FASB have not made decisions about revenue recognition and that the approach described here may or may not appear in the final standards. Also as before, although the IASB tentatively made some decisions that differ from those made by the FASB, the concepts in these papers apply to reporting comprehensive income under either set of decisions. In particular, although the examples do not consider the IASB’s risk adjustment, the concepts apply equally well when the measurement of the liability includes a risk adjustment and a residual margin.

EARNED PREMIUMS

The revenue, or earned premium, for an accounting period is the amount that the liability provides for expected claims and expenses for the period. Referring back to the June article, Table 1 below is Table 9 from that article, with the addition of a total column. The table shows the progression of the liability for a portfolio of 20-year endowment contracts when the experience is the same as expected. The example ignores acquisition costs.

The term “repayments” refers to cash surrenders and maturities, in keeping with the terminology adopted by the staff in discussions about contracts with investment components. The terminology may be prejudicial to the debate about whether the amounts should be included in revenue and expenses or whether they should be treated like deposits. This debate is discussed further below.

Table 1 demonstrates what is already well known, namely that the amounts that contribute to building the liability, premiums and interest credited to the liability,

Table 1: Movement in the Liability

Year	1	2	3	4	51015 20	Total
Beginning liability	0	27,883	54,107	78,772	101,994	198,951	268,904	318,033	0
plus premium	31,000	27,890	26,483	25,144	23,870	18,370	14,069	10,689	375,103
plus interest credited	1,080	2,338	3,597	4,784	5,905	10,607	14,029	16,420	203,347
minus expenses	500	450	427	406	385	296	227	172	6,050
minus insurance benefits	339	396	467	505	540	556	464	-0	8,761
minus margin released	324	344	403	437	470	527	517	153	8,895
minus repayments	3,034	2,814	4,119	5,358	6,537	11,595	15,637	344,817	554,744
Ending liability	27,883	54,107	78,772	101,994	123,836	214,953	280,158	-0	-0

ity, are equal in the end to the amounts that are taken from the liability to provide for benefits and expenses (assuming actual experience equals expected). Thus the use of expected benefits and expenses as revenue can be seen as a way to allocate the contributions to accounting periods.

This perspective has certain appeal to accountants. In the premium allocation approach for short duration contracts, the premium will be allocated to the accounting periods during the coverage term in relation to the expected pattern of incurred claims. If claims are expected to occur more or less uniformly over the period of coverage, revenue each period is a ratable part of the premium. If claims have a distinct pattern, say they are weather-related and skewed to certain parts of a calendar year, then the premium is allocated according to the expected pattern of claims. Therefore more premiums are earned in the months in which claims are typically heaviest. For contracts using the building blocks approach, the earned premium approach results in allocating the contributions in a pattern that corresponds to the pattern of expected benefits and expenses. It is broadly conceptually consistent with revenue recognition for contracts that use the premium allocation approach.

The other appeal is that the earned premium approach is broadly consistent with the concepts found in the emerging general accounting standard *Revenue from Contracts with Customers* (RCC). The central idea in the exposure draft of RCC is that the consideration from the customer is recognized as revenue when the reporting entity satisfies its performance obligation to the customer. When the performance takes place over time, revenue is recognized over time in relation to the proportion of the value of the asset transferred or the service provided, to the total to be transferred or provided. The service provided by an insurance contract is the coverage, and the expected claims and expenses are the measure of the relative value transferred in that period. The pre-claims liability is akin to a performance obligation as that term is used in RCC.

Of course the amount allocated is not just premiums, but the sum of premiums collected and interest

credited to the liability. That amount is hereinafter referred to as the total contribution. The name “earned premium” may be a misnomer. Perhaps, it should be labeled “compensation for insurance coverage,” with an explanatory note that the compensation comprises both premiums and interest credited to insurance liabilities. If the investment component is excluded from the presentation in the statement of comprehensive income, then the note should say the compensation comprises the part of premiums and interest credited to insurance liabilities that are used to provide for insurance coverage and excludes the part that relates to the investment component.

INCLUDING OR EXCLUDING THE INVESTMENT COMPONENT

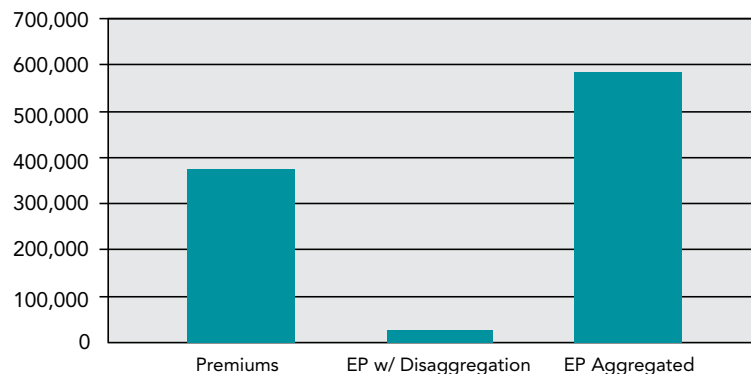
The IASB and the FASB have tentatively decided that the elements attributable to the investment component should be excluded from the amounts presented in comprehensive income. This disaggregation for presentation in the statement of comprehensive income applies even though the contract is not unbundled for measurement purposes. In the boards’ view, cash values, endowments and perhaps even dividends are not insurance features as they do not represent significant additional benefits to the policyholder on the occurrence of an insured event. These amounts are repayments of a portion of the policyholder’s contributions. To see the totality of premiums and amounts paid to policyholders, users of financial statements will have to refer either to the reconciliation of the ending liabilities to the beginning liabilities in the financial statement notes or other disclosures outside the financial statements.

The boards’ decision is not popular with many actuaries. They believe that the contract features do not need to be unbundled for separate measurement nor disaggregated for presentation since they are integral to providing insurance. Some actuaries argue that life insurance cash values, for example, are better characterized as unearned revenue than as a deposit, because if the contract is not terminated the cash value will be used to settle the performance obligation (i.e., pay claims).

CONTINUED ON PAGE 14

Actuaries are also concerned that investors want to see premiums and other volume information, and this format may be difficult for investors to understand.

Total Revenue Reported Over Contract Life



The final decision is obviously very important to the amount of revenue reported. The chart above shows the amount of revenue reported over the life of the contracts under the earned premium approach (EP) with and without disaggregation of the investment component. The amount of premiums collected from the policyholders is also shown as a benchmark figure.

The relationships in the chart are influenced by the fact that the contracts are endowment policies. If the investment component is not separated, nearly 60 percent of the revenue is reported in the final year when the contracts mature and the endowments are paid.

WHEN EXPERIENCE DIFFERS FROM EXPECTED

The example in Table 1 shows how revenue is recognized when experience is the same as expected. Experience almost always differs, and insurers make changes in the estimates of future cash flows. How can differences be handled so that the amount of revenue that is reported is a proper reflection of the amounts that compensate for the insurance benefits? One answer that seems the most conceptually consistent is illustrated in the following example.

Returning to the example of the 20-year endowment contracts, suppose that there are fewer deaths in the

fourth year. The amount of benefits paid is less, but because there are a greater number of contracts, the liability at the end of the fourth year is greater than the projected year-end liability at the beginning of that year. The difference in the liability is a result of the fact that, even without a change in the underlying assumptions, the mortality rates and surrender rates, the amounts of expected future cash inflows (premiums) from the fifth year on is greater than had been expected, but the cash outflows will be greater than had been expected. These differences are legitimately considered a change in estimate.

Suppose further that the number of lapses is less than expected. The amount of repayments in the fourth year is less than expected, but there will be more contracts remaining in force to terminate by death or cancellation at a later date. The effect on the liability is a change in estimate using the same logic for the effects of a difference in mortality.

But what about the current period difference between the actual and the expected amounts of repayments? Arguably, keeping with the concept that the cash value is akin to a deposit, there should be no income effect from a policyholder deciding to keep his policy rather than to surrender it, or to surrender his policy rather than to keep it. This point of view is used in the following analysis.

Using the example of the 20-year endowment contract, the effects of differences in experience from assumptions can be illustrated by comparing three calculations.

- **Original** - The first is the example where experience is the same as expected.
- **Revised** - The second is the example where the liability is calculated at the start under the original assumptions, but it is revised at the end of the year for the effects of the difference in experience from the assumptions.
- **Hindsight** - The third is calculated as if the actuary knew from the outset what the experience would be in the fourth year. This calculation serves as a benchmark to compare what the insurer would have reported had it known in advance what the experience would be to what it actually reports if it starts with one set of assumptions and has to change midstream.

Table 2 displays the fourth year mortality rates, Qx, and the fourth year cancellation rates, Wx, underlying the original calculation and the revised calculation.

Table 2: Original vs. Revised Inputs

Change occurs in year four		
	Original	Revised
Qx	0.00072	0.00036
Wx	0.05	0.03

As noted, the revised calculation has the original assumption at the beginning of year four, but cash flows and decrements during the fourth year are based on the revised inputs, which represents the situation when experience deviates from assumptions.

The progression in the liability is shown in Table 3. For these purposes, it is necessary to show the progression

in the present value of the cash flows apart from the progression of the margin.

The revised calculation starts the same as the original, but the revised calculation has adjustments to the value of future cash flows and to the margin at the end of the fourth year. The adjustment to cash flows brings the liability in line with the hindsight calculation. The revised calculation and the hindsight calculation are both prospective valuations of the same future expected cash flows from the end of year four forward, after factoring in that there have been lower than expected numbers of deaths and cancellations as compared to the original calculation.

Similarly the revised margin starts the same as the original, but at the end of the fourth year is adjusted for the effect of differences in mortality and lapses. This adjustment does not bring the margin into line

Table 3:	Progression in the Liability Yr. 4		
Movement in discounted cash flows	Original	Revised	Hindsight
Beginning value	70,947	70,947	70,589
plus premium	25,144	25,144	25,144
plus interest credited	4,784	4,784	4,766
minus expenses	406	406	406
minus insurance benefits	505	505	253
minus repayments	5,358	5,358	3,209
PVCFs before change in estimate	94,606	94,606	96,633
change in estimate	0	2,026	0
Ending value	94,606	96,633	96,633
Margin			
Beginning margin	7,825	7,825	8,081
margin released	437	437	224
adjustment for change in estimate	0	-2,026	0
difference in repayments	0	2,150	0
Ending margin	7,388	7,511	7,857
Total Liability	101,994	104,144	104,489

CONTINUED ON PAGE 16

with the hindsight calculation. The margin absorbs the difference between actual and expected mortality. The margin is not a prospective calculation and hence, with the adjustments, it is not the same as if the actuary had anticipated the lower lapses and mortality in the fourth year from the outset of the contracts.

The revised margin is also adjusted for the difference in repayments, i.e., the difference between the amounts

actually paid for cancellations and the amounts originally expected to be paid. Without this adjustment, the margin and total liability would be much more different from the hindsight calculation than they are.

It is insightful to see how performance compares under the three calculations.

Table 4: Comparison of Comprehensive Income for Years 4, 5 and In Total

	Year 4				
Comprehensive Income	Original	Revised	Hindsight	Rev. - Orig.	Hind. - Rev.
Revenue	1,348	1,348	882	0	-465
Investment income	5,299	5,299	5,299	0	0
Benefits	505	253	253	-253	0
Interest credited	4,784	4,784	4,766	0	-18
Expenses	406	406	406	0	0
Net income	952	1,204	757	253	-447

	Year 5				
Comprehensive Income	Original	Revised	Hindsight	Rev. - Orig.	Hind. - Rev.
Revenue	1,395	1,423	1,445	28	22
Investment income	6,445	6,590	6,590	145	0
Benefits	540	551	551	12	0
Interest credited	5,905	6,031	6,031	126	0
Expenses	385	393	393	8	0
Net income	1,011	1,038	1,060	27	22

	Total				
Comprehensive Income	Original	Revised	Hindsight	Rev. - Orig.	Hind.- Rev.
Revenue	23,706	24,072	24,005	366	-67
Investment income	218,054	222,601	222,601	4,547	0
Benefits	8,761	8,659	8,659	-101	0
Interest credited	203,347	207,450	207,383	4,103	-67
Expenses	6,050	6,141	6,141	91	0
Net income	23,602	24,423	24,423	821	-0

The revenue in each case is taken from the progression of the liability. It is the sum of the expected benefits and expenses and the margin released. Investment income is interest on invested assets and cash flows. Profits are not distributed, so the asset base, which is cumulative cash flows, exceeds the liability by the amount of retained profit and the remaining margin. The interest credited is from the progression of the liability, which is the unwind of the cash flow discounting. The margin is amortized without interest, for simplicity.

Benefits are the actual amounts and so differ from the progression of the liability in the fourth year for the revised and hindsight calculations. Repayments are not shown, in keeping with disaggregation, but in the fourth year they are different from the expected amount in the progression of the liability.

In year four, the revised calculation differs from the original only by the difference between actual and expected death claims. The hindsight calculation differs from the revised calculation by the amount of revenue. This difference in revenue is a reflection of the fact that the hindsight calculation anticipates the lower amount of death claims in year four and hence releases less into revenue.

In year five, the revised calculation and the hindsight calculations reflect that there are more contracts than anticipated in the original calculation. The revised calculation has the same cash flows as the hindsight calculation throughout (not just year five). The difference in revenue is a consequence of adjusting the margin (in the revised calculation) midstream, at the end of year four, rather than knowing in advance (in the hindsight calculation) what the pattern of benefits would have been.

Total comprehensive income is of course the same between the revised and the hindsight calculations, as they use the same cash flows. The change in the present value of future cash flows at the end of year four makes the revised value the same as for the hindsight calculation, but the corresponding adjustment to the margin does not result in the same revised margin as in the hindsight calculation. Hence the revised calculation



has different timing and amounts of revenue recognized throughout the 20-year life of the contracts. The total difference in revenue of 67 is equal to the difference in the interest credited in the first four years, i.e., before the date of the adjustment.

It is worth repeating that the total revenue in the revised calculation is much closer to the hindsight calculation than it would have been if the difference in the actual and expected amounts of repayments had been taken into comprehensive income in year four rather than offset by an adjustment to the margin. This observation supports the rationale that the difference in repayments should not affect net income.

SUMMARY

The analyses show that the approach to reporting comprehensive income described in the previous article can be made to work when the experience is different from the original assumptions. It will be interesting to follow the discussions of the IASB and the FASB to see if they settle on the approach described here. ■