Article from

Financial Reporter

December 2017
Issue 110

GAAP Targeted Improvements: Unlocking 2.0

By Steve Malerich

In August, FASB affirmed its earlier decisions to require that the benefit reserve[1] for traditional contracts be calculated using current assumptions without provision for adverse deviation and to review and update the assumptions at the same time each year using a retrospective "catch-up" method of accounting for changes.

Under the retrospective method, the net premium ratio represents the actuary's current estimate of the proportion of lifetime revenue that is needed to fund lifetime benefits. To achieve that objective, it is necessary to replace expected experience with actual experience as it emerges.[2]

RETROSPECTIVE DISTORTIONS

In an earlier article ("Retrospective Noise," *The Financial Reporter*, September 2017) I illustrated the noise that can result from the retrospective method when experience is consistently better or worse than assumed. I suggested that we might reduce the frequency and severity of noise if we can find a way to minimize or avoid the deferral of persistent, biased variances. The article ended by making explicit an assumption that is implicit in current practice for unlocking universal life assumptions:

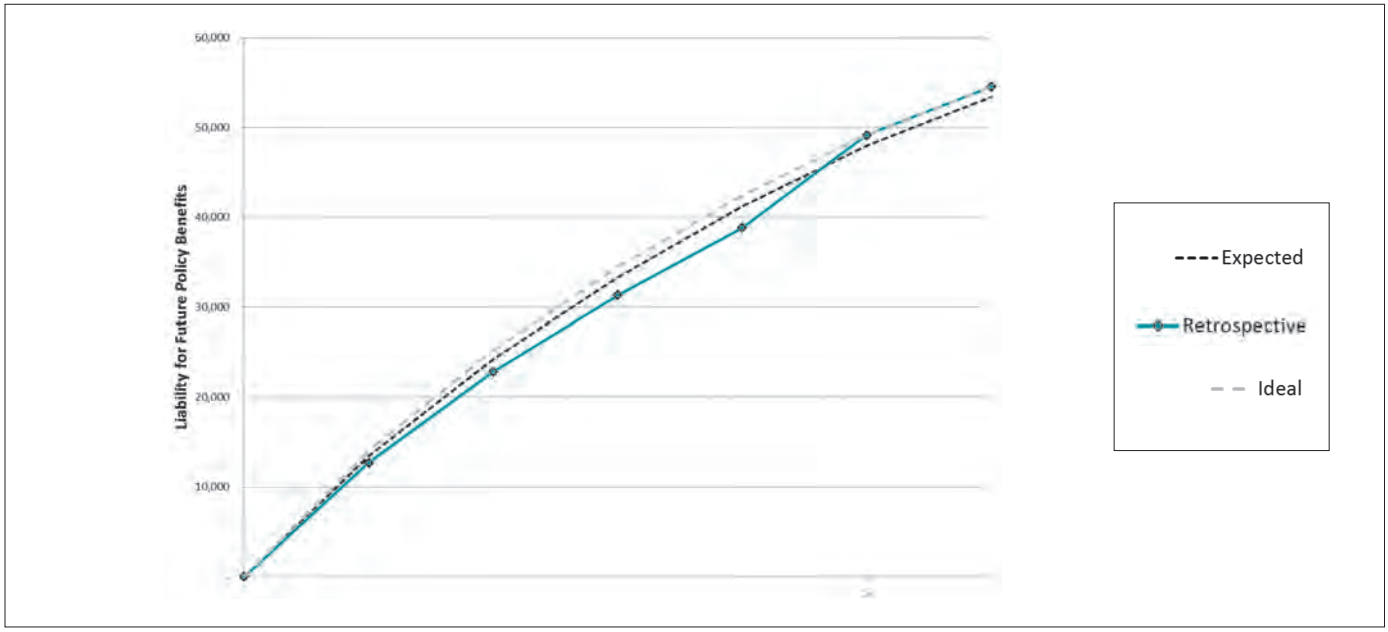
> *With respect to expected future experience, actual experience is given zero credibility until the valuation actuary decides otherwise when updating assumptions.*

Assuming zero credibility in actual experience might be appropriate for a while, but it gradually moves toward absurd. It is certainly absurd once we recognize a need for change but before we actually construct a new assumption.

In discussing alternatives, some FASB members recognized our concern about earnings volatility but noted that in a business as inherently uncertain as long-duration insurance contracts, earnings volatility is to be expected; earnings in any one reporting period can never say much about the overall performance of the business in the way that a retrospective net premium ratio can.

In that discussion, some support for an alternative came from the tendency of the retrospective method to distort the reserve balance when experience deviates from expected over several periods. Figure 1 illustrates this tendency. In this example of a traditional term insurance contract with consistently adverse experience, the original valuation assumption increasingly underestimates the reserve against both expected and ideal measures until the assumption is changed in year five.

Figure 1
Tendency of Retrospective Method to Distort Reserve Balance



(In this and subsequent illustrations, "Expected" shows what would happen if experience exactly follows the original assumption, "Ideal" shows what would happen if the original assumption had correctly anticipated actual experience, and "Retrospective" shows the effect of actual experience when different from the original valuation assumption.)

Rather than moving closer to ideal, replacing expected experience with actual in the reserve calculation without simultaneously updating the assumption moves the reserve away from ideal. Though not always obvious, this tendency arises any time experience is consistently better or worse than expected, even if we're unable to see the trend among random fluctuations.

Even as FASB is considering changes to insurance accounting, the Actuarial Standards Board is preparing an Actuarial Standard of Practice (ASOP) on setting assumptions. Though not yet approved, the exposure draft stated in paragraph 3.1.3(a):

> The actuary should consider to what extent it is appropriate to use assumptions … that have a known tendency to significantly underestimate or overestimate the result.

As illustrated in Figure 1, GAAP reserving assumptions have that tendency if they are carried forward unchanged while experience is trending away from the assumption. Before marrying that tendency to another large class of business (traditional long-duration contracts), it's time to look for an alternative.

CRITERIA FOR EVALUATING ALTERNATIVES

Practically, we know that it is impossible to divine the future from a small number of variations from expected cash flows. That does not mean we should assume no connection between past and future experience.

Any alternative, however, must still comply with applicable standards. In particular, it must meet all the requirements of the retrospective method and it must consider credibility of actual experience in relation to the data supporting the existing assumption—and of the existing assumption in light of actual experience.

Ideally, an alternative approach to unlocking would:

- Reduce or eliminate the tendency to underestimate or overestimate the reserve,
- reasonably balance the credibility of actual experience and of the existing assumption,
- reduce or eliminate the need to reverse prior reserve adjustments when making an explicit assumption change,
- provide a simple connection between past and projected experience until sufficient data exists to support an explicit assumption change, and
- self-correct for random fluctuations from an underlying pattern.

Further, if it reduced the reserve offset to variances from expected benefits (biased or random), earnings variances could more easily be explained in relation to actual cash flows.

AN INTERIM ASSUMPTION ADJUSTMENT

After considering some alternatives, I propose that the retrospective unlocking method can be improved with a simple formulaic adjustment of the projection assumption. The adjustment can be implemented in the form of a present value of excess (future) claims calculated in relation to the accumulated value of (actual) excess claims. As of the valuation date:

$$PV(Excess\ Claims) = PV(Basis) \times Significance(t) \times \frac{AV(Excess\ Claims)}{AV(Basis)}$$

Exactly how this adjustment is applied will depend on system capabilities and professional judgment. As a simple tool for a specific purpose, consistency is more important than precision, however that might be defined. In the examples that follow, I simply added it to the present value of model claims in both the net premium ratio and the reserve calculation. (Model claims and model gross premium are both calculated without any adjustment.)

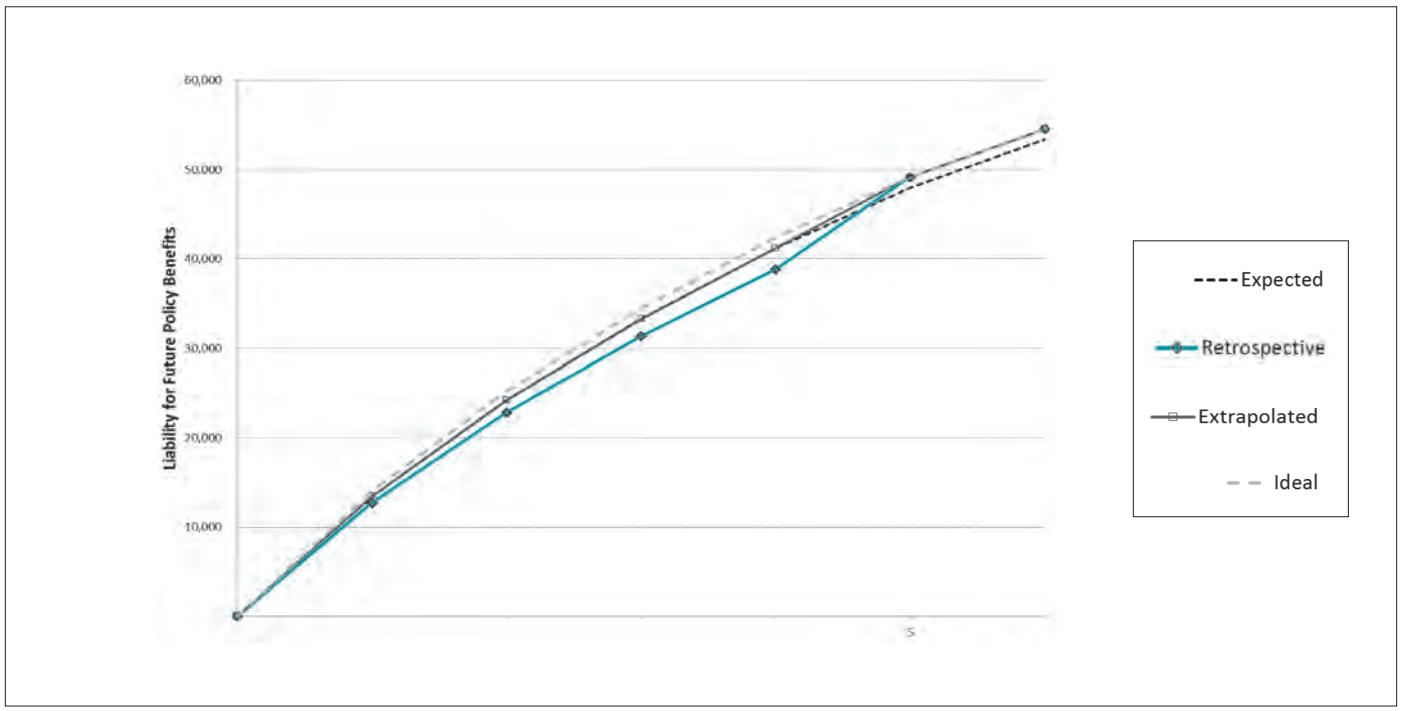
$$Net\ Premium\ Ratio = \frac{AV(Actual\ Claims) + PV(Model\ Claims) + PV(Excess\ Claims)}{AV(Actual\ Gross\ Premium) + PV(Model\ Gross\ Premium)}$$

$$Reserve = PV(Model\ Claims) + PV(Excess\ Claims) - Net\ Premium\ Ratio \times PV(Model\ Gross\ Premium)$$

In the adjustment formula, a reasonable **basis** and **significance** function must be chosen for the extrapolation and t represents time since issue. The familiar retrospective approach can be expressed as a special case of this formula, where **significance** is a constant zero making the adjustment equal to zero regardless of **basis**.

In my examples, I use the amount of insurance in force as a basis and a constant 100 percent significance factor. I believe the

Figure 2
Extrapolated Adjustment to Term Insurance Illustration



amount in force to be a reasonable basis for most traditional life insurance contracts. Later (under ASOP 10, with Chart 7) I'll explain why a flat 100 percent significance factor or something that grades quickly to 100 percent might be best.

Similar to the familiar approach, this approach replaces expected experience with actual. Unlike the familiar approach, the modification regularly adjusts the present value of expected benefits in relation to actual variances from expected experience. At the time of an assumption change, the accumulated value of excess claims is reset to zero.

Any basis for this extrapolation should normally be independent of the funding pattern. In most or all cases, it should also avoid a magnifying adjustment, as would likely occur if expected claims were used for any long-duration contract.

ILLUSTRATIONS

Based on my experience with various traditional and universal life insurance products, I chose the amount of insurance in force as a basis for testing traditional life insurance. With further research, we may find alternative bases that perform better for this or for other products.

Figure 2 adds the extrapolated adjustment to Figure 1's term insurance illustration. Rather than drifting away from ideal, the extrapolated reserve stays close to expected until the assumption is changed. Both approaches converge with ideal once the assumption is updated.

Figure 3 illustrates earnings for the full 20-year term period of the same contract as Figures 1 and 2. As seen in the previous article, retrospective spreads the cost of excess claims over the life of the business but, when the assumption is changed, reverses the deferred portions. By adjusting projected claims, extrapolated does not defer any of the excess costs and therefore has no need to reverse anything.

Statistically, the traditional retrospective approach represents an extreme. In this case, the distribution encompasses possible implications to future experience of actual deviations from the valuation assumption. Except when we have reason to expect future experi-

Figure 3
Earnings for Full 20-Year Term Period

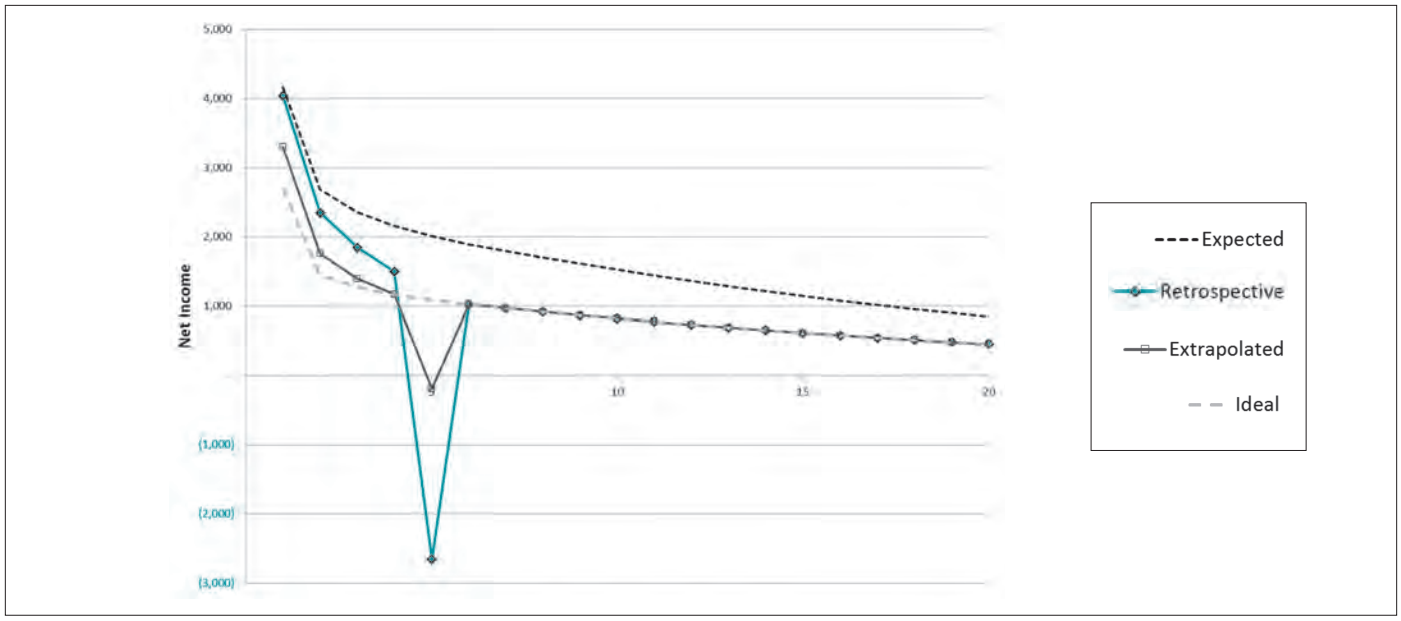
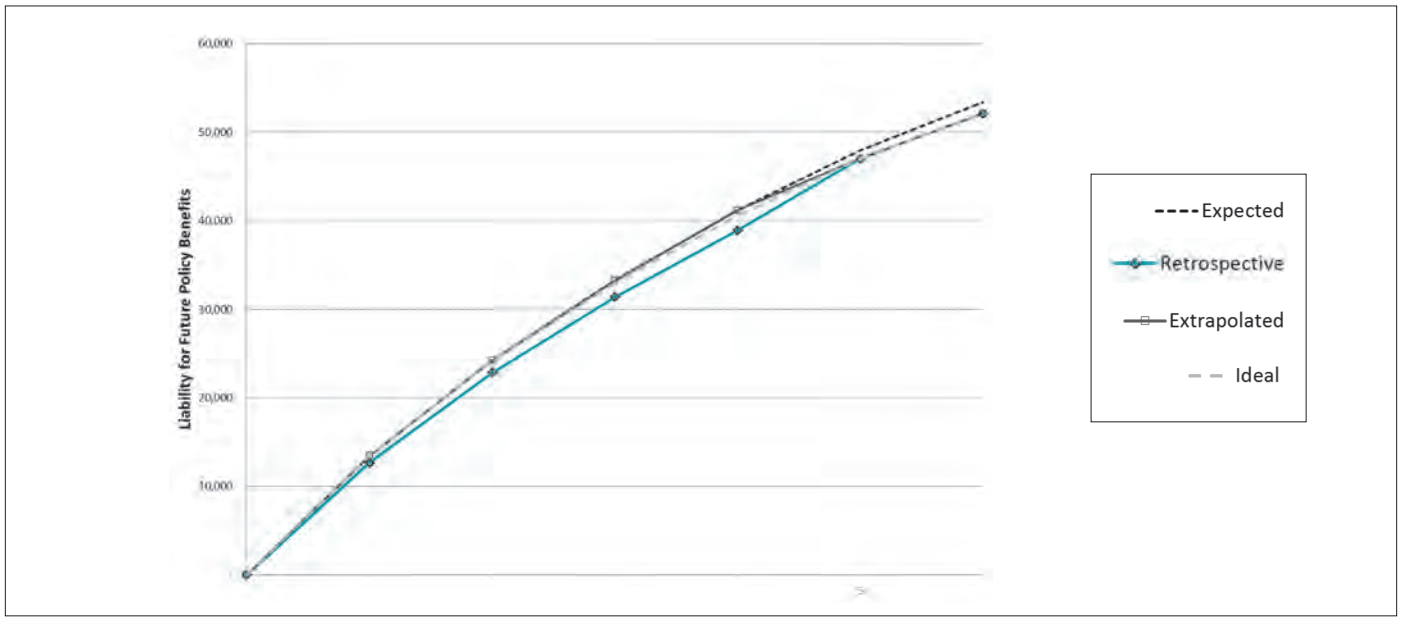


Figure 4
Liability With Gradual Merging of Early Experience



ence to vary in the opposite direction of past experience[3], any assumption change will move consistently with actual experience. (Hence, my assertion that the traditional approach is a statistical extreme.)

An extrapolated approach moves toward the mean of the distribution. In moving toward a mean, we expect to reduce the magnitude of the later assumption change but increase the likelihood of having to adjust in the opposite direction.

Figures 4 and 5 illustrate the same term insurance product, but with adverse early experience gradually merging with expected ultimate experience. Again, the assumption is changed in year five to match the actual experience.

This time, the ideal reserve is slightly below expected since a larger portion of the premium funds early claims. The retrospective reserve is still significantly lower and requires a significant catch up to align with ideal when the assumption is changed in year five. The extrapolated reserve again stays close to expected until the assumption change.

As before, retrospective shows its tendency to understate the reserve when actual claims are higher than expected. In contrast, extrapolated slightly overstates the reserve relative to ideal.

In Figure 5, early claims exceed expected by a larger proportion than the lifetime excess. While retrospective again defers a substantial portion of the excess claim cost, extrapolated passes the full cost of each excess to earnings. When the assumption is changed in year five, retrospective requires a large adjustment to reverse most (but not all) of the deferred excess while extrapolated requires a small positive adjustment. In this case, the new assumption is less severe than the extrapolated adjustment.

In practice, we won't know at the time of unlocking whether we're dealing with a permanent or temporary deviation from the original assumption. Considering credibility, we might prefer an assumption that does not require a large change in the reserve. This will be much easier if we haven't deferred a large portion of the cost of past variances.

The examples have so far been limited to situations where experience deviates from expected right from the start and the typical retrospective approach spreads most of the excess cost over future accruals. Reversal of such deferral often dominates the unlocking adjustment, making for an especially stark contrast between reported earnings, earnings at the time of change and (sometimes) earnings after the change.

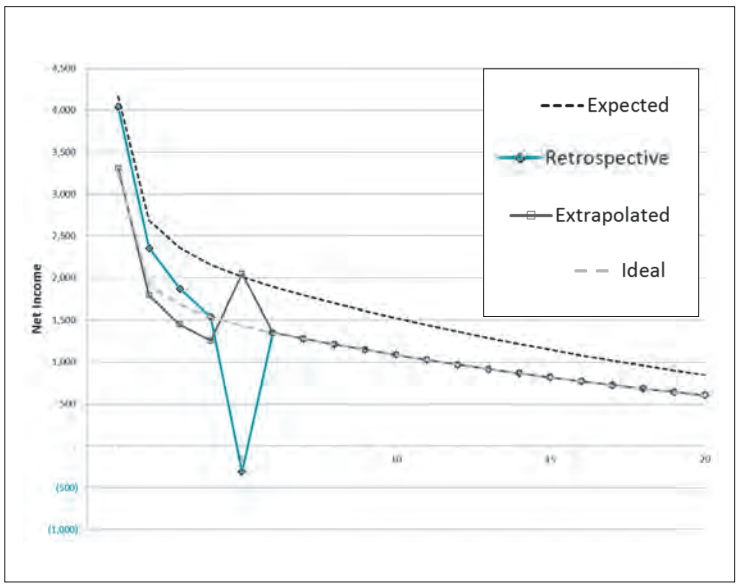
The next example, in Figure 6, returns to the whole life product illustrated in Part 1 of this series of articles.[4] In this example, experience begins to deviate from expected after five years and the divergence is so slow that it takes 10 more years to credibly develop an alternative assumption.

Before the assumption change, retrospective matches more than 80 percent of accumulated claim variances to revenue before the change. Reversal of the deferred 20 percent is small in proportion to the change in projected benefits and we see little difference between extrapolated and retrospective unlocking.

ACTUARIAL STANDARDS OF PRACTICE

I said earlier that any modification must comply with applicable standards. The American Academy of Actuaries' "Applicability Guidelines for Actuarial Standards of Practice" list several ASOPs that might apply in determining the reserve assumptions. Among them, ASOPs 10 and 25 are both relevant to this exercise, as will be the coming standard mentioned earlier on setting assumptions.

Figure 5
Earnings With Gradual Merging of Early Experience



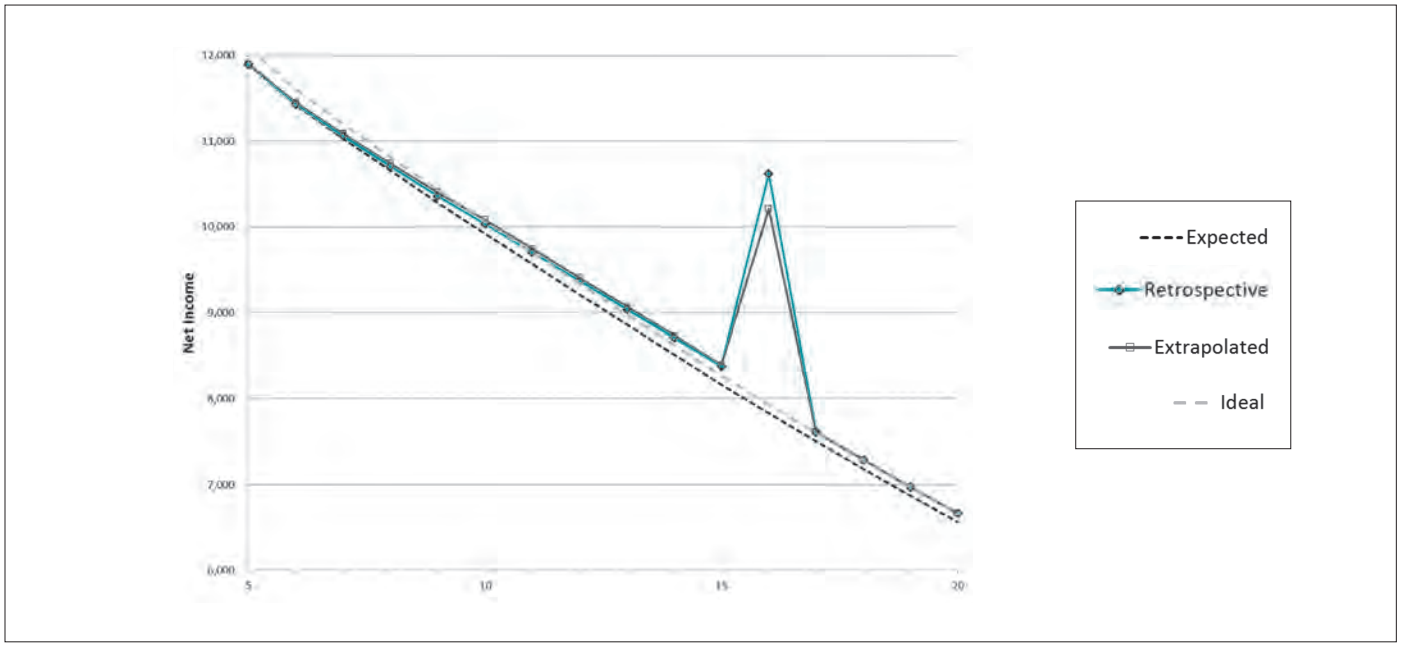
ASOP 10, Methods and Assumptions for Use in Life Insurance Company Financial Statements Prepared in Accordance with U.S. GAAP

ASOP 10's section 3.3 (Best Estimate Assumptions) says that the actuary "should consider the company's actual recent experience data, if, in the actuary's judgment, it is relevant and credible."

Since GAAP requires that actual experience be included in the reserve calculation, actual experience is unquestionably relevant to this GAAP reserve in a way not shared by other valuation methods. (See "Other Situations Using Current Assumptions" section) We must wonder, however, just how credible a simple extrapolation from actual experience might be. But we must also consider that making no adjustment implies zero credibility. Can we really say that zero credibility is appropriate, and remains so as experience accumulates?

My suggested formula includes two factors that help to account for credibility. There is an explicit, time-dependent significance multiplier. And the choice of basis can contain an implicit element of credibility by deliberately choosing a basis that shrinks throughout the projection. Keep in mind that these are not explicit credibility measures, but they are practical tools to help account for credibility.

Figure 6
Whole Life Earnings



In Figures 1–6, I used a flat 100 percent significance factor and a basis that, because of lapses, declines steadily throughout the projection. Figure 7 combines Figure 5's experience with a significance factor that grades to 100 percent over four years.

This highlights a danger of being too cautious with this factor. A low non-zero factor still defers a substantial portion of the cost of early variances, but that deferral is gradually reversed as the factor grades up and experience continues to deviate consistently from assumed. Though this would still reduce distortion of the balance sheet, it might be difficult to explain earnings.

If the selected basis declines significantly in the projection, then a rapid rise of the significance factor to 100 percent seems appropriate and desirable. If the basis is more stable (or increasing), then a longer grading might be appropriate.

ASOP 25, CREDIBILITY PROCEDURES

In the context of ASOP 25, the combination of an adjustment basis and a significance factor is a credibility procedure. We must carefully consider the ASOP's requirements around credibility procedures when deciding on parameters for the extrapolation formula.

Keep in mind, however, that a 100 percent significance factor is not synonymous with assigning 100 percent credibility to actual experience. With a suitable basis, the existing assumption still dominates projected claims.

OTHER SITUATIONS USING CURRENT ASSUMPTIONS

As Figures 1 and 4 help to highlight, if the retrospective method is applied without any adjustment to projected cash flows, it has a tendency to underestimate or overestimate the reserve when experience is inconsistent with the valuation assumption.

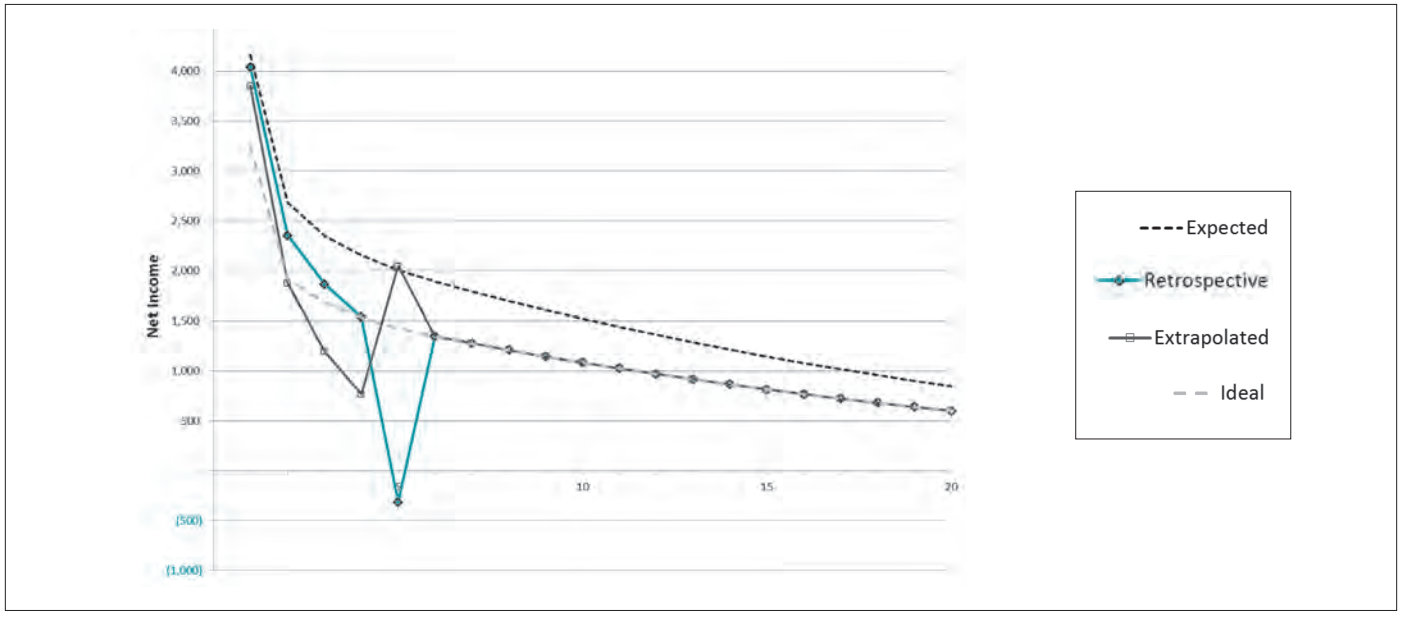
This makes the adjustment important to the GAAP benefit reserve in a way that doesn't matter to other reserving requirements. In GAAP loss recognition and in statutory cash flow testing, for example, adverse claims today do not reduce the gross premium reserve or the amount of assets needed to fund future benefits.

Still, best estimate is best estimate and it might be inappropriate to adjust a best estimate projection for one purpose and ignore the adjustment for another. To reconcile the conflicting concerns, it can help to recognize a dual purpose of the significance factor—to account for the credibility of actual experience and to counteract the retrospective method's tendency to over or under estimate the reserve. Without the latter concern, we can justify a lower significance factor for situations where there is no such tendency.

OTHER ASSUMPTIONS

My testing has been limited to traditional life insurance, where benefits are fixed by contract terms and a claim is a one-time event. Further research will be needed to determine whether or how this technique might work for claim costs of contracts with different characteristics.

Figure 7
Significance Factor Grades to 100 Percent Over Four Years



FASB's proposed changes link interest assumptions (valuation discount rate) for traditional contracts to observable market rates, eliminating actuarial judgment except for the initial determination of appropriate rates to observe.

There is still some ambiguity in what expenses can or should be included in the reserve calculations. Whatever expenses might be included, FASB decided in August to permit lock-in of expense assumptions. This will be a company-wide election; each reporting entity will decide, as a matter of accounting policy, whether to lock-in expense assumptions or keep them current. For any company that chooses the locked-in approach, actual expenses will be irrelevant except to inform assumptions for new cohorts.

Lapse or surrender rates are the only other assumption significant to traditional contract valuation. Unlike deaths, lapses and surrenders typically have a greater effect on subsequent cash flows than on immediate cash flows. Even with cash surrender benefits, the effect of surrender variances on projected cash flows is likely to be at least as significant as the current variance from expected surrender benefits. We'll look at lapses and surrenders in Part 3 of this series. ■

Steve Malerich, FSA, MAAA, is a director at AIG. He can be reached at *steven.malerich@aig.com*.

ENDNOTES

1 In accounting language, this is the "liability for future policy benefits." This is also called the "active life reserve," a distinction that is especially important to contracts such as guaranteed renewable disability income and long-term care insurance for which a separate "disabled life reserve" is established upon inception of a claim.

2 FASB does not insist that actual experience be included immediately as it occurs. Rather, they expect us to exercise judgment in determining whether experience warrants immediate update. At the latest, however, we must incorporate actual experience into the calculation during the annual assumption review process.

3 As an example, consider the early to mid-1990s after AIDS emerged as a serious concern. Actuarial estimates of the AIDS cost on existing life insurance contracts peaked in the early 1990s. By the mid-1990s, experience was proving to be less dire than anticipated. Attributing the improvement to new treatments that delayed but didn't prevent death, we changed the slope of expected mortality for AIDS exposure, thinking that patients would live longer (reducing near-term mortality) but remain in the insured pool (increasing medium-term mortality).

4 For this article, I refined the projections to more realistically reflect quarterly patterns. As a result, Figure 6 is different from Part 1's Chart 3 despite using the same product and the same assumptions.