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GAAP Targeted Opportunity
Improving GAAP Through Annual True Up

By Steve Malerich

I n the past few issues of *The Financial Reporter*, I intro-duced "Unlocking 2.0" (December 2017), a technique for dynamically adjusting a valuation assumption in response to actual experience. The technique is designed to minimize the "Retrospective Noise" (September 2017) caused when the reserve is updated for actual claims more frequently than assumptions are changed. In "Unlocking Persistency" (March 2018) I suggested that it might be best to hold the net premium ratio constant in between annual assumption reviews, updating it earlier only for especially large lapse variances.

In this article, I show how Unlocking 2.0 can also help to strengthen professional judgment while solving another old problem in a new way.

TRUE UP FOR ACTUAL MORTALITY EXPERIENCE

Figure 1 shows quarterly income for the first 10 years of a 20-year term insurance contract with persistent adverse claim experience. True up for actual experience is performed only once each year and the mortality assumption is changed at the beginning of year six. (Except for the timing differences, this is the same situation shown in Figure 3 in "Unlocking 2.0.")

Figure 1
Persistent Adverse Mortality Experience
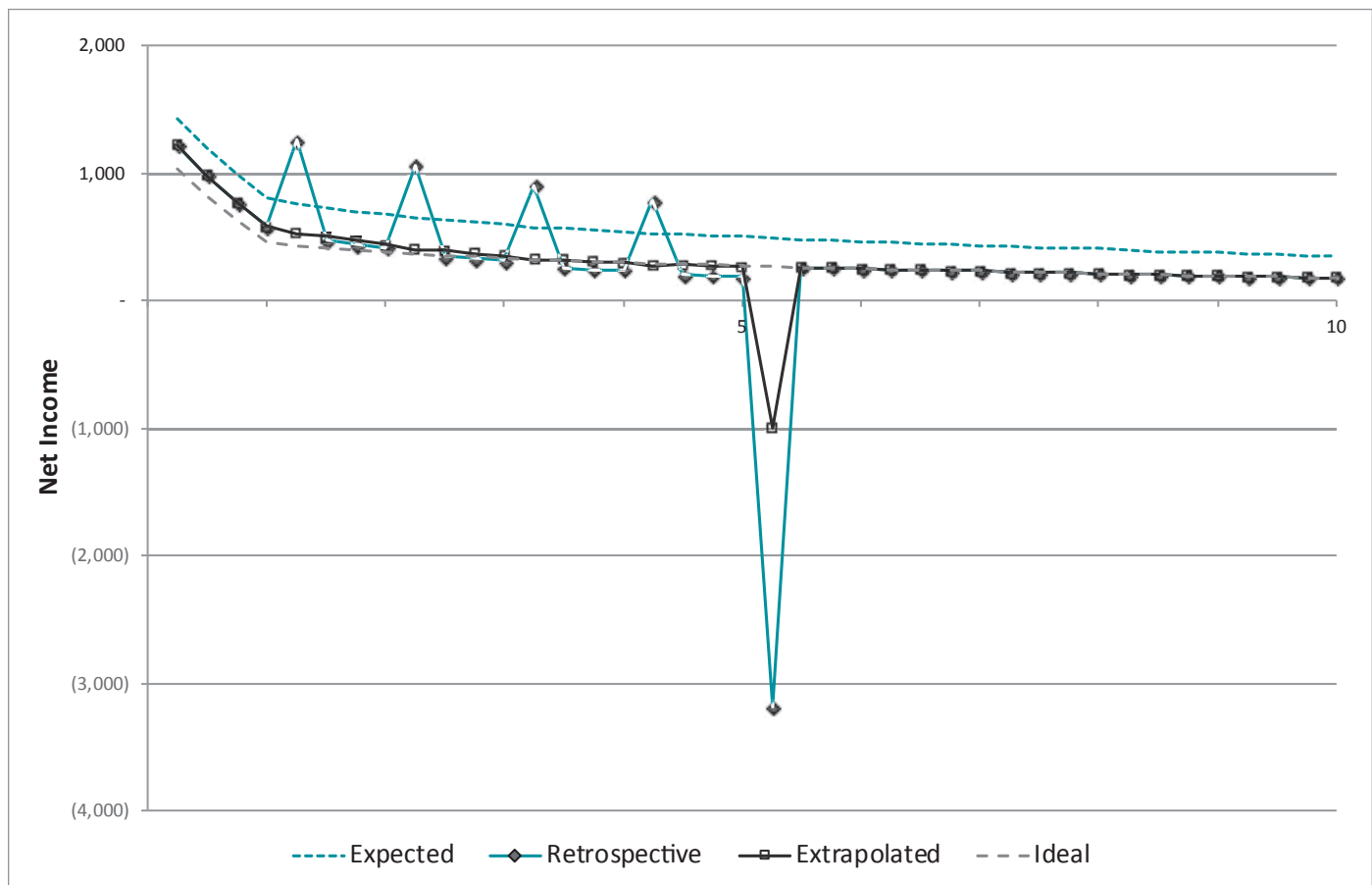
With an annual true up, the traditional retrospective approach saves the deferral of excess claim costs for the annual unlocking process. If there is no assumption change, the amount reported as unlocking is really just a deferral of part of the year's variance. This makes the unlocking quarter look especially good, and the reason it looks so good is that experience was so bad during the preceding year. The opposite would be true with favorable experience; the quarter with the true up would be especially bad because claims were so good.

This perverse result led to the common practice of true up for actual experience every quarter—to keep the true up tied to its cause. With Unlocking 2.0's extrapolated adjustments, however, the perverse effect practically disappears from the annual true up. (In the absence of a full assumption change, the extrapolation adjusts projected claims as a constant percent of a chosen basis, with the percent determined as the ratio of accumulated claim variances to an accumulation of the basis.)

THE BENEFITS OF ANNUAL TRUE UP

Quarterly true up has never been a strict requirement and it will not become one under the targeted improvements. Unlocking 2.0 eliminates a significant reason for quarterly true up. Pairing it with annual true up could also:

- Help to shorten the monthly or quarterly close process by moving the update for actual experience into the annual assumption review process.

- Minimize disclosure volatility by allowing random variances to offset over the course of a year before including them in the net premium ratio.

- Allow time to evaluate the possible causes of experience variances, strengthening the valuation actuary's judgment in responding to them.

Close time—With immediate true up for actual experience, each quarter's reserve calculation depends on actual cash flows and certain accruals (such as the change in claim liabilities) for the quarter. That adds time to the process. Allowing for controls around that information adds more time. Altogether, the extra time might not be long, but with constant pressure to shorten close times and to better understand results, even a slight improvement can be significant.

Disclosure volatility—Including variances in the net premium ratio as they occur adds volatility to the ratio. With the new disclosure requirements, this could appear as instability in our valuation estimates. Though Unlocking 2.0 reduces reserve volatility, it could magnify volatility in the net premium ratio and

hence the appearance of instability. Annual updates would allow random fluctuations to offset, thereby minimizing the effect.

Evaluate experience—Immediate true up leaves the valuation actuary with only a few days to consider whether actual claim experience warrants a change in the projection. That's too little time for adequate analysis before making such a decision. In my experience, we seldom bother. Instead, we immediately adjust the history and wait for a regular annual assumption review before asking the question, "Do I have enough experience to credibly support an assumption change?"

If the answer is affirmative, we change an assumption. If the new assumption is directionally consistent with actual experience, the true up and the assumption change will have opposing effects on the reserve. If they're separated in time, this creates volatility. If they're paired in time, it reduces the magnitude of whatever we need to explain.

More often, the answer will be negative. For techniques, such as a gross premium reserve, that do not reduce the reserve for adverse experience or increase it for favorable experience, stopping with this answer is not a serious problem. For a current-assumption retrospective net premium reserve, however, this question ignores the tendency to over or under state the reserve for a favorable or adverse trend, respectively. With such a reserve method, we should next ask, "Can I confidently ignore this experience when projecting future experience and therefore adjust my reserve to partly offset its cost?"

It would be practically impossible to reliably answer this question every quarter within a normal close process. Outside of the quarterly close and with a full year of experience, we will have more time to consider possible causes and to make this judgment. Unless we can identify a cause that is both unusual and temporary, we should answer this question in the negative and use some technique, such as the Unlocking 2.0 extrapolation, to adjust projected claims consistent with actual experience.

In the rare event that we do identify an unusual and temporary cause, we can prevent it from inappropriately affecting the projection by excluding a portion of the variance from the excess claims ratio or by making a manual adjustment to the extrapolation formula's significance factor.

Thus, annual true up gives the actuary three possible practical conclusions to draw from actual experience:

1. There is enough experience to warrant a formal assumption change.

2. There is not enough experience to warrant a formal assumption change but neither can actual experience be dismissed as irrelevant to future experience.

3. The year's variance had a truly extraordinary cause and can be reasonably ignored in the projection of future claims.

Framed in this way, I expect that we'll find the second conclusion to be most common. It is in this situation that the extrapolation adjustment will be most valuable. It effectively minimizes the risk of over or understating the reserve for favorable or adverse trends even when such trends are not yet obvious.

TRUE UP FOR ACTUAL LAPSE EXPERIENCE

As described in "Unlocking Persistency," I do not anticipate using any technique short of a full assumption change to adjust projected lapses in light of actual experience. In part, that's because it would be difficult to define a reasonable extrapolation technique for lapse experience. And, as shown in the earlier article, the distortions that make extrapolation important for claims are generally much less significant with lapse variances. Without the smoothing effect of an extrapolated adjustment, we must also consider the timing of true up for actual lapse experience.

Figure 2 shows quarterly income for the first 10 years of a 20-year term insurance contract with early lapses significantly lower than expected. True up for actual experience is performed only once each year and there is no need for an assumption change since experience converges with the original assumption after a few years. (Except for the timing differences, this is the same situation shown in figure 1 in "Unlocking Persistency.") Before true up, a fixed net premium ratio is applied to the present value of expected gross premiums in the determination of reserves for actual business in force each quarter.

Figure 2
Favorable Early Lapse Experience
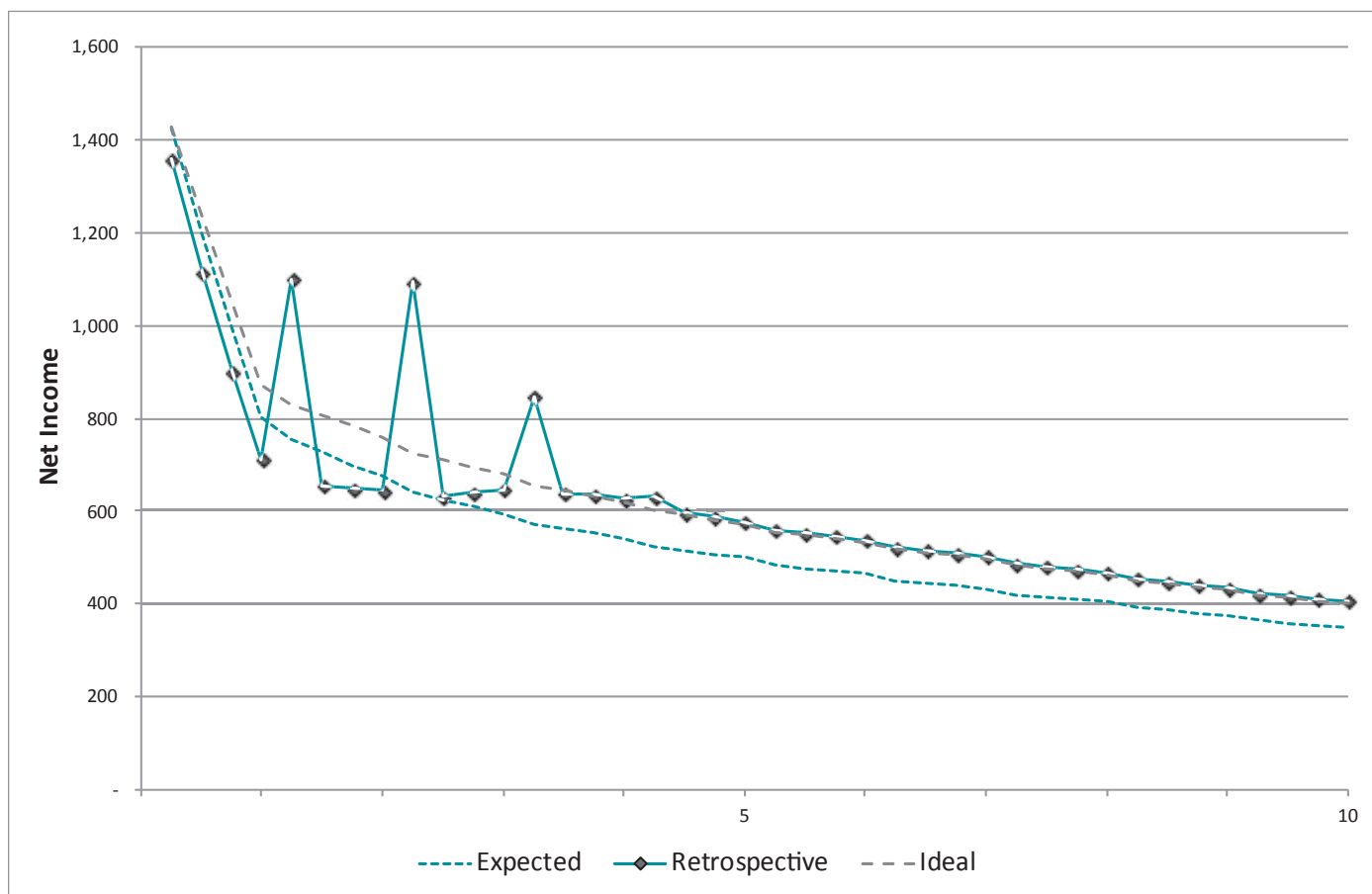
In this example, significant favorable persistency produces similar distortions to Figure 1's retrospective true up in the first few years.

Lapse variances of six percent and three percent of in force in the first two years, respectively, mean higher reserve accruals each quarter are followed by a significant reserve release when the net premium ratio is adjusted for the actual experience. In the third year, lapses are just one percent of in force below expected and the true up is relatively insignificant.

In my testing, that one percent deviation from annualized lapse rates seems to be a rough threshold during the early years of a cohort. Smaller variances can generally wait for an annual true up of the net premium ratio without producing large true up adjustments. Larger variances can produce a large true up adjustment. Above the threshold, an immediate true up of the net premium ratio for the unexpected change in amount in force may be needed to avoid the later distortion. In my testing of both 20-year term and whole life insurance, this volatility almost disappears after about the first 10 years of the cohort, even for

large lapse variances. By then, the amount of accumulated history stabilizes the net premium ratio despite the effect of the variance on projected claims and premium.

CONCLUSIONS

In articles published over the past year, we have seen that significant earnings volatility around assumption changes and true up for actual experience is not an unavoidable consequence of retrospective unlocking. With this article, we have now seen that a solution to the volatility problem can bring other practical benefits, including the opportunity to strengthen our professional judgment when calculating traditional insurance contract liabilities. ∎

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