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Volatility From FASB Changes to Traditional Liabilities (Part 3)

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In the first two parts of this series we looked at how the targeted improvements promulgated by the Financial Accounting Standards Board (FASB) in ASU 2018-12 will impact reserve volatility for traditional nonparticipating contracts resulting from changes in cash flow assumptions. Part 1 looked at the impact of changing cash flow assumptions when the reserve discount rate is unchanged since the contract was issued. Part 2 looked at the impact of changing cash flow assumptions when the reserve discount rate has changed since the contract was issued. Part 3 will look at the isolated impact of changing the discount rate.

ASU 2018-12 changes the accounting for traditional nonparticipating contracts by requiring cash flow assumptions to be reviewed for possible revision at least annually and requiring true-ups of actual experience relative to the assumptions at least annually. The impact of these changes to cash flows on the reserve is partially reflected by retrospectively unlocking the net premium ratio (or deferred profit liability for limited payment contracts), and the net effect is reported in net income.

Discount rate updates are handled differently. The discount rate must be updated each reporting period. The discount rate is defined as a current "upper-medium grade (low-credit-risk) fixed-income instrument yield," which is generally interpreted as a single-A-rated instrument yield. Changes in discount rate do not impact the net premium ratio or deferred profit liability, which are always calculated based on the rate locked in at issue. The change in present value of future benefits net of present value of future net premiums resulting from a change in discount rates is reported in other comprehensive income (OCI), not net income.

UPDATING THE DISCOUNT RATE

Although updating the reserve discount rate will increase the volatility of the reserve, it may decrease volatility in the financial statements. Under targeted improvements, changes in discount rate will be reflected in the reserve every reporting period, with the reserve impact reported in OCI. Many invested assets backing traditional nonparticipating liabilities tend to be available-for-sale securities, whose change in fair value is also reported in OCI. So if the liability and asset durations are well matched, reporting the impact of discount rate changes in OCI may reduce noneconomic noise in OCI that occurs under current US GAAP, since only the asset side of the balance sheet is revalued through OCI when interest rates change. But the offset from liability OCI may not be complete.

We can see this by looking at the duration of the liability, taking into account all cash flows and comparing that to the duration of the liability using net premiums. The value of the liability on a pure cash flow basis, that is, a gross premium valuation, is:

$$GPV_t = \sum_{u=0}^{\infty}(B_{t+u} - GP_{t+u}) \times (1+i_t)^{-u}, \text{ where}$$

GPV_t = The gross premium reserve at time t

B_{t+u} = The assumed benefit payment (including any expenses impacting the reserve) at time t+u, as measured at time t

GP_{t+u} = The assumed gross premium to be received at time t+u, as measured at time t

i_t = The liability discount rate as determined at time t

(I am assuming a single discount rate for simplicity, but the result should generalize to a yield curve.)

The change in gross premium liability for a change in discount rates is:

$$\frac{dGPV_t}{di_t} = \frac{-1}{(1+i_t)} \times \sum_{u=0}^{\infty} u \times (B_{t+u} - GP_{t+u}) \times (1+i_t)^{-u}$$

The modified duration is thus:

$$Modified\ duration\ (GPV_t) = \frac{1}{(1+i_t) \times GPV_t} \times \sum_{u=0}^{\infty} u \times (B_{t+u} - GP_{t+u}) \times (1+i_t)^{-u}$$

This is the common "mean term" formula for calculating Macaulay duration multiplied by the $1/(1+i_t)$ factor.

But the net premium liability is used for financial reporting purposes, using net premiums instead of gross premiums. The net premium is, of course, the gross premium at each period multiplied by the net premium ratio. So we get:

$$V_t = \sum_{u=0}^{\infty}(B_{t+u} - NPR_t \times GP_{t+u}) \times (1+i_t)^{-u}$$

The change in net premium liability for a change in discount rates is:

$$\frac{dV_t}{di_t} = \frac{-1}{(1+i_t)} \times \sum_{u=0}^{\infty} u \times (B_{t+u} - NPR_t \times GP_{t+u}) \times (1+i_t)^{-u}$$

The modified duration of the net premium reserve is:

$$\frac{1}{(1+i_t)\times V_t}\times\sum_{u=0}^{\infty} u\times(B_{t+u}-NPR_t\times GP_{t+u})\times(1+i_t)^{-u}$$

Looking at the duration as a mean term calculation, the duration of the gross premium reserve is the mean term of the benefits minus gross premiums, while the duration of the net premium reserve is the mean term of the benefits minus net premiums. Net premiums are less than gross premiums unless the net premium ratio is 100 percent, in which case they are equal. So as long as premiums are paid in advance of benefits, the early cash flows (which get a smaller "weight" u in this formula) are larger under the net premium reserve calculation than under the gross premium reserve calculation. As long as the gross premium reserve is positive, this will generally cause the duration of the net premium reserve to be smaller than the duration of the gross premium reserve.

So even if the asset and liability durations are matched on a pure cash flow basis, the change in asset fair values reported through OCI when interest rates change will tend to be greater than the change in liabilities reported through OCI. The effect will tend to increase for lower net premium ratios.

A similar effect will occur for limited payment contracts. This can be seen by recognizing that the deferred profit liability (DPL) will not be impacted by changes in interest rates, essentially having a modified duration of zero. But the fair value of invested assets backing the DPL will be impacted by changes in interest rates. So, again, the overall liability duration as reported in the financial statements will likely be less than the invested asset duration, even if both are perfectly matched on a cash flow basis.

Other elements can also impact the reported OCI matches between assets and liabilities. For example, some assets are reported at amortized cost rather than fair value, and for these assets, no OCI will be reported for interest rate changes. Also, the durations of the assets and liabilities on a pure cash basis may not be perfectly matched. Further, there may be

The overall liability duration as reported in the financial statements will likely be less than the invested asset duration.

some basis risk due to the fact that the reserve discount rate is based on single-A yields, while the invested assets may include assets of various types and credit grades. There will also be no OCI match for surplus assets or for assets backing products whose valuation was unaffected by ASU 2018-12, such as investment contracts, universal life-type contracts and participating contracts.

CONCLUSION

Under targeted improvements, the liability for traditional nonparticipating contracts will become more volatile. Some of this volatility will reduce volatility in the financial statements to the extent that the liability volatility is matched with the asset volatility that already exists under today's accounting. Since the impact of interest rate changes on liabilities will not perfectly match the impact on assets, it will be important to understand and explain these results. ■

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