SOCIETY OF ACTUARIES®

Article from

Reinsurance News

November 2018

Issue 92

Redefining the Role of Reinsurance in a PBR World

By Alijawad Hasham, Bryan Amburn and Olivia Yang

In this world of technological, regulatory and market changes, the role of reinsurance is quickly evolving, not least due to the introduction of principle-based reserving (PBR). PBR is meant to right-size statutory reserves by shifting the focus from prescribed assumptions to ones derived from company experience with necessary guardrails for conservatism. While the fundamental purpose of reinsurance does not change, PBR creates for reinsurers various opportunities and challenges. In this article we explore the changing reinsurance landscape as a result of PBR through the lenses of capital management, volatility protection and assumption-setting.

CAPITAL MANAGEMENT

Capital management has long been one of the traditional uses of reinsurance. Such use has often revolved around the redundant reserves associated with Regulation XXX and AG-38 (AXXX) business. Financial reinsurance, captive reinsurers and coinsurance all serve as a means to help companies manage the capital strain of the excess "humped-back" statutory reserves over the economic reserves.

Financial reinsurance (that is, XXX and AXXX securitizations) has been sought by companies with a large enough scale. These securitizations largely function by obtaining capital, often, prior to AG-48, in the form of a Letter of Credit in the amount of the excess reserve, which is then paid back upon the release of the redundant reserves. The advent of PBR and right-sizing of reserves implies a lack of redundancy, and thereby significantly reduces the need for these financial transactions.

Another capital efficient means of managing redundant reserves has been to use a captive reinsurer. Captive reinsurer-based solutions have taken various forms. In a credit-linked note (CLN) structure, a captive and special purpose vehicle (SPV) would exchange a surplus note (SN) for a CLN in the amount of the excess reserve; the coupon difference is paid to a financing provider as a fee, in exchange for the financing provider covering the SPV's cash flow shortfall if the captive redeemed the CLN to pay reinsurance claims. In an excess of loss (XOL) structure, a captive enters into an XOL agreement with an XOL provider, who then pays claims up to the excess reserve once economic reserve assets are depleted. Captive reinsurance tends to be less expensive and allows for more efficient use of capital.

For both financial and captive reinsurer solutions, the advent of AG-48, which sets the minimum standard for economic reserves to mirror PBR, removes much of the capital incentive to transact when statutory reserves themselves are governed by PBR. Companies may still want to explore the financing of the mezzanine layer (that is, PBR less pure best-estimate liability), but that may be too thin for the benefits to outweigh the costs of transacting and setting up a structure.

The final and most common reinsurance arrangement that provides aid in capital management is traditional coinsurance with a reinsurer. Large first-year allowances aids in the surplus strain of initial acquisition expenses, and the ability to cede off a proportional amount of the reserve allows for less capital to be committed to establishing reserves.

Under PBR, this form of reinsurance continues, although some of the dynamics are changing. In particular, the need to reinsure will now be tied more so to a company's mortality experience and the level of their credibility. Companies lacking credibility in their claims experience either due to the size of their in-force portfolio that is relevant, or a significant recent change to their underwriting, target market(s) or distribution channel(s), may find themselves needing to hold reserves greater than what would otherwise be their best-estimate

Figure 1
Impact of mortality credibility on the Deterministic Reserve (DR)

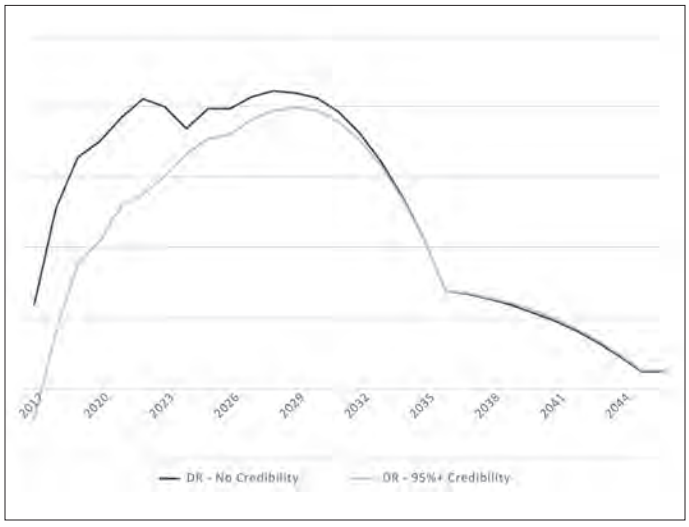
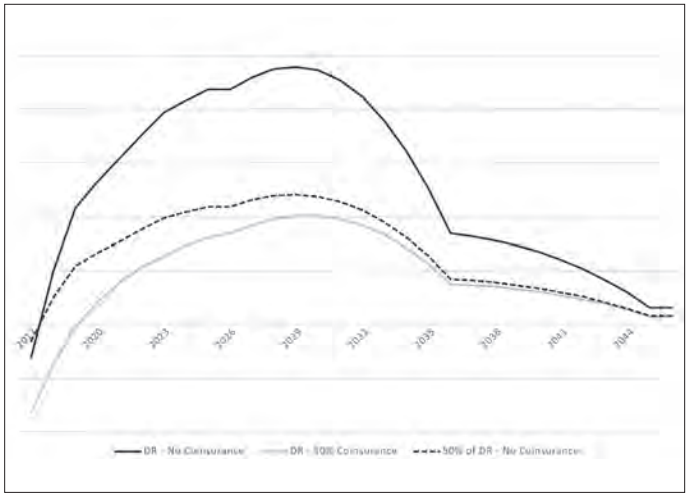


Figure 2
Effect of Coinsurance on the Deterministic Reserve



liability (see Figure 1, pg. 28), and with an incentive to seek relief through coinsurance. They may also look to reinsurers for support with their assumption-setting which is explored later in the article.

As mentioned previously, prior to PBR the reserve credit taken was proportional to the percent of coinsurance ceded. This will not be the case under PBR where the modeled reserve (Deterministic or Stochastic Reserve) dominates. Within PBR, modeled reserves are calculated both with and without reinsurance, with the reserve credit being equal to the difference between the calculations. Depending on the relationship of premiums, allowances and ceded death benefits, the reserve credit may be higher or lower than the proportional amount coinsured, as illustrated in Figure 2.

This raises another dynamic that is new in a PBR world—the need to bring reinsurers into the product development process earlier. Prior to PBR, product cash flows had no impact on the reserves held, but that is no longer the case under PBR where product design and reinsurance agreements are going to impact the balance sheet. This will lead to a more iterative approach between direct companies and reinsurers in pricing (compare Figures 3a and 3b).

VOLATILITY PROTECTION

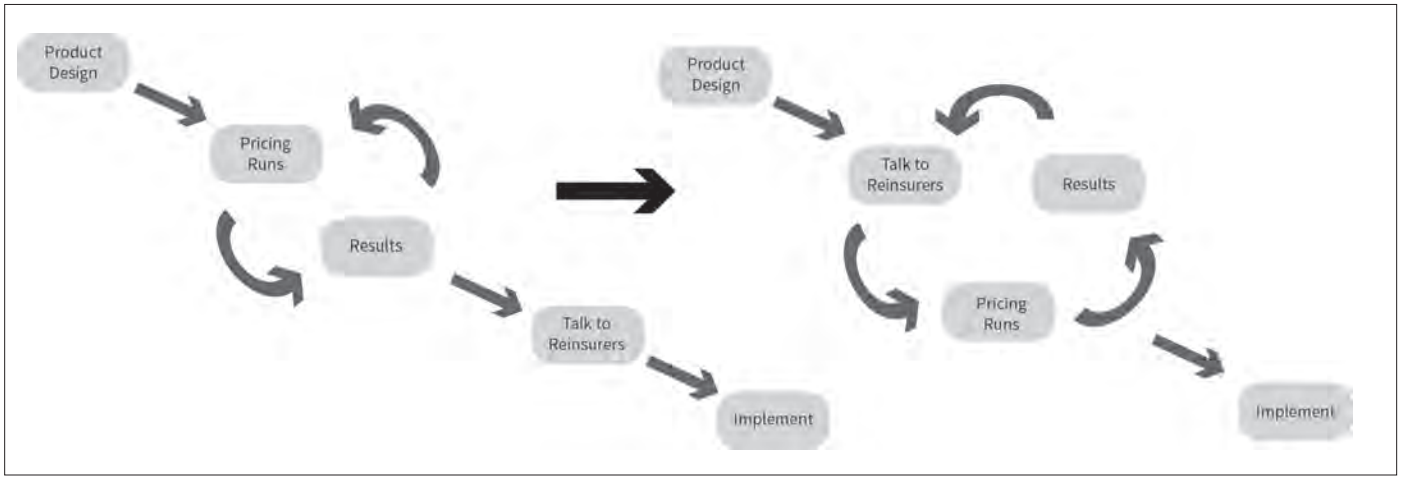
The other key traditional use of reinsurance is volatility protection. Reinsurance provides a means to protect earnings from volatility generated by worse-than-expected experience, large claims, seasonality and other factors.

Under PBR, the role of reinsurance serving as volatility protection continues but is enhanced. Of note is how volatility protection extends beyond the economic income statement into the statutory balance sheet and surplus due to the assumptions in the modeled reserves not being locked in at issue. When experience does not emerge in line with expectations and assumptions need to be revised going back to issue, reinsurance mitigates the impact from such an assumption update.

Reinsurance's impact on volatility has another potentially interesting side-effect under PBR—on assumption-setting. Credibility is defined as being amount-based in the Valuation Manual (VM-20 §9.C.4.a), but does not specify whether that is gross or net of reinsurance. While a theoretical argument may be made for it to be net of reinsurance, since that is the

Figure 3a
Pricing Process—Pre-PBR

Figure 3b
Pricing Process—Under PBR



amount a direct-writer would need to pay to settle a claim, there may be internal inconsistencies in using a net amount with credibility measures as defined in the Valuation Manual. This is more so the case with the Bühlmann Empirical Bayesian Method where industry parameters have been estimated on a gross-of-reinsurance basis. A thorough analysis of this concept is beyond the scope of this article.

Another area that has drawn significant attention is the treatment of Yearly Renewable Term (YRT) reinsurance rates as a non-guaranteed element (NGE) of the modeled reserve and any related potential evolutions to the structure of YRT reinsurance in a PBR world. The Valuation Manual (VM-20 §8.C.7) provides general guidance on assumption-setting for the NGE in reinsurance cash flows that "the company shall assume that the counterparties to a reinsurance agreement are knowledgeable about the contingencies involved in the agreement and likely to exercise the terms of the agreement to their respective advantage, taking into account the context of the agreement in the entire economic relationship between the parties." This implies the actuary should assume that the counterparty is likely to act efficiently.

Given the vague guidance, a wide range of approaches may be taken to model the YRT reinsurance rates in the modeled reserve. It is not uncommon for a direct-writer to assume less than 100 percent reaction from the reinsurer to adverse mortality, or to assume no change to the current scale of reinsurance rates, and this may be where there is a disconnect in the approach to modeling non-guaranteed YRT rates between ceding companies and reinsurers. Such a difference in treatment may draw the attention of the regulators. If the direct writer assumes that the reinsurer will immediately adjust the YRT rates to equal the modeled reserve mortality and therefore achieve break-even, the reserve credit for the reinsurance is effectively limited to half the tabular cost of insurance.

The modeling of non-guaranteed YRT rates was discussed by the NAIC Life Actuarial Task Force (LATF) and the American Academy of Actuaries at the 2018 Summer NAIC meeting. While no definitive guidance was given, a desire for a common approach to modeling non-guaranteed YRT rates was shared among the regulators who reacted to the discussion. The chair of LATF said it will be a priority to reach consensus on additional requirements for inclusion in the 2020 version of the Valuation Manual.

The complexities surrounding the treatment of YRT rates within PBR may lead to potential variants in the structure of YRT reinsurance. There has been some market interest in quotes for rate scale guarantees or lower caps. But it is important to recognize that such explorations are not "one size fits all." The interplay between the cost of the assumed increase in YRT premiums and the impact of guaranteed premiums on the VM-20 reserves can produce varying impacts on profitability. Because any guarantees will carry higher capital charges that will be reflected in the rates, YRT reinsurance with such structures may cease to be an inexpensive method to protect against volatility.

ASSUMPTION-SETTING

Reinsurers have a long history of assisting direct-writers with assumption-setting, in particular for mortality, given their rich claims experience. In a PBR world, this role can influence reserves held by direct-writers. The Deterministic and Stochastic Reserves require that the mortality assumption is informed by company experience, and the level of prudency on the assumption is linked to the underlying credibility. At the same time, the Valuation Manual (VM-20 §9.C.2) recognizes the need to enhance the reliability of the mortality assumption for companies that do not have credible experience on their own, and explicitly mentions reinsurance as a source.

This opens up new dimensions on how reinsurance is applied and when direct-writers engage with reinsurers during the product design journey. However practical challenges remain.

i). Relevancy: Not all of a reinsurer's claims experience is applicable, or relevant, to any single direct-writer as direct-writers function in certain target market(s), through certain distribution channel(s), and within certain underwriting methodologies. The result of these is a mix of policyholder demographics that would vary from company to company.

Reinsurance on the other hand is an amalgamation of the drivers of mortality mentioned above, and any assessment of relevancy needs to isolate them. Therein lie practical limitations since these splits have not always been captured within reinsurance administration systems to the level required to easily enable this. In addition to underlying drivers of mortality, reinsurance drivers such as first dollar quota share versus excess reinsurance need to be considered since they impact mortality experience.

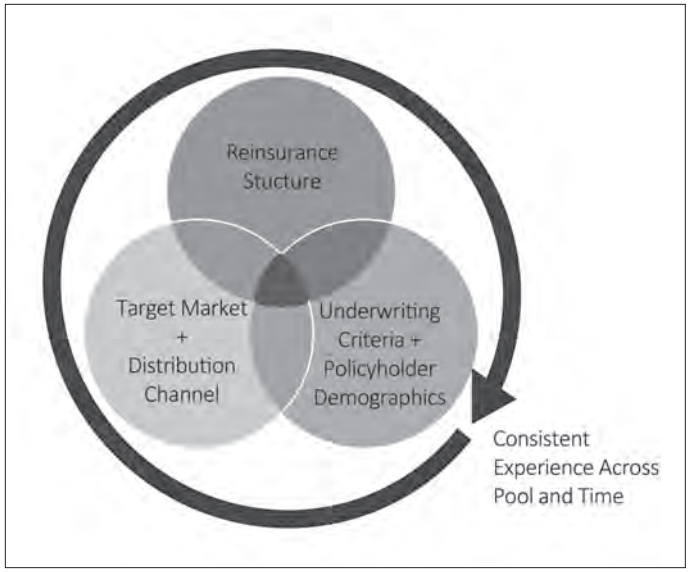
Finally, it should be noted that for any reinsurance experience study to be sound, there needs to be consistent experience across pool and time. The interplay of reinsurance relevancy drivers is captured in Figure 4.

ii) Confidentiality: Reinsurers not only need to assess what data they **may** be willing to share with direct-writers due to intellectual property and anti-trust concerns, but also what they **can** share given confidentiality constraints on certain data.

iii). Burden of proof: While the Valuation Manual clearly places responsibility of the assumptions on the qualified and appointed actuaries, when parts of the assumption come from an external source, the lines get blurred. Justification of assumptions in VM-31 will require direct-writers and reinsurers to work closer than they previously have on assumption-setting. The level of justification required by regulators and auditors will also influence reinsurers' appetite to engage in this space.

As demonstrated in this article, the role of reinsurance is being redefined in interesting ways as a result of principle-based reserving, while still maintaining its original purpose. And the evolution is still in its infancy. Many are watching with interest, awaiting the realization of the potential for reinsurance to play a larger role as companies explore product innovation and risk sharing enabled by a reserving framework built on a first-principles basis.

Figure 4
Relevancy Drivers



Alijawad Hasham, FSA, MAAA, is senior valuation actuary, vice president at Swiss Re. He may be contacted at *Alijawad_Hasham@swissre.com.*

Bryan Amburn, FSA, MAAA, CLU, is the director of Life Actuarial and chief life actuary for Farm Bureau Life Insurance Company of Michigan. He may be contacted at *bamburn@fbinsmi.com.*

Olivia Yang, FSA, CERA, MAAA, is a senior consultant at Oliver Wyman. She may be contacted at *Olivia.Yang@oliverwyman.com.*