



AMERICAN ACADEMY *of* ACTUARIES

Memorandum

TO: Larry Bruning, Chair, NAIC Life and Health Actuarial Task Force

FROM: Sheldon Summers, Chair, American Academy of Actuaries¹ Life Reinsurance Work Group

SUBJECT: Reinsurance of a Universal Life (UL) Secondary Guarantee Provision

DATE: March 14, 2009

In a March, 2008 report, the Academy's Life Reinsurance Workgroup, in response to a request from LHATF, presented several examples of reinsurance arrangements that may require deposit accounting under the Accounting Practices and Procedures Manual, SSAP 61, but appear to accommodate being valued appropriately under principle-based reserving (PBR). Here we will focus on the first example in that report: reinsurance of a Universal Life (UL) secondary guarantee (ULSG) provision only, when there is no specified charge in the policy for the guarantee or when the reinsurance premium exceeds the specified charge. The 2008 report noted that some regulators may deny reserve credit for such reinsurance for the following reasons:²

- a) The secondary guarantee is embedded in a broader UL contract. Reinsurance of the guarantee only might be deemed not to reinsure all of the significant risks inherent in the product (A-791, paragraph 2.f), or
- b) If the reinsurer charges more than the policy's direct premium for the guarantee, some might argue that the arrangement "involves the ... payment by the ceding insurer to the reinsurer of amounts other than from income realized from the reinsured policies" (A-791, paragraph 2.e).

In this report, we consider two reinsurance designs for the secondary guarantee only and analyze whether those designs present any special difficulty under VM-20.³

¹ The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

² Neither the March 2008 report nor this report take a position in support of or against these interpretations of A-791.

³ References to VM-20 are to the exposure draft dated 1/22/09.

UL Secondary Guarantee Reinsurance Examples

Underlying direct contract:

A UL contract which is guaranteed to remain in force even if policyholder account value has diminished to zero, provided that certain conditions are met. The analysis below is general in that it applies: 1) to shadow-account ULSG designs as well as to ULSG designs with the guarantee conditioned on payment of a minimum premium, and 2) to ULSG designs with or without a specified premium for the guarantee.

For UL and ULSG policyholders, mortality risk is mitigated by the policy's maximum Cost of Insurance (COI) rates, by policy provisions or insurance law preventing recovery of prior losses through nonguaranteed elements, and by the potential mortality anti-selection that the insurer might induce by raising mortality charges significantly or lowering interest crediting rates below levels justified by investment experience.

Thus the secondary guarantee protects primarily against the risk of poor investment performance, depressing account values and causing annual premium costs to escalate. In a fixed UL product, that risk may arise principally from prolonged low interest rates driving crediting rates toward their contractual minima. In a variable UL product, that risk could arise from market volatility, fund selection or poor fund long-term performance.

Reinsurance Arrangement

The ceding company pays the reinsurer a premium for the reinsurance cover. In return, the reinsurer pays the ceding company a specified benefit contingent on the policyholder account value having fallen to zero while direct coverage remains in force due to the secondary guarantee.

Reinsurance premium. Alternatives include any reinsurance premium design that is a function of elements that would require PBR valuation modeling in the absence of the reinsurance. Provided that the reinsurance premium is so designed, it should present no extraordinary modeling considerations.⁴

Reinsurance benefit. The two benefit designs considered here are:

- Design 1: The benefit is a recurring payment made (e.g., monthly) when the direct contract remains in force by virtue of the secondary guarantee, with the payment amount a function of expected mortality cost or of COI charges in the direct contract. For example, the benefit could be a percentage, perhaps varying by duration or risk classification factor, of the policy's monthly COI charge, or it might be tabular factors specified in the reinsurance contract times insured face amount.
- Design 2: The reinsurer reimburses the ceding company for a death claim incurred when the direct insurance coverage remains in force by virtue of the secondary guarantee. The reimbursement could be for all or a portion of the direct death benefit amount.

Sensitivity of the Reinsurance Arrangement to Investment and Mortality Risk

Both of the ULSG reinsurance designs considered here are sensitive to investment performance, as is the value of the secondary guarantee to the policyholder.

Mortality experience can also affect the reinsurance arrangement, in aggregate through potential impact on COI rates and individually through a death claim on a reinsured policy. COIs affect account value, influencing whether the guarantee is triggered. An incurred death either terminates reinsurance premium if the guarantee has not been triggered, or, if it has, terminates the reinsurer's payment stream (Design 1) or creates a reinsured death claim (Design 2).

⁴ For example, the reinsurance premium could be a percentage of policyholder account value, or it could a percentage, perhaps varying by duration or risk classification factor, of the direct contract's Cost of Insurance charge, net amount at risk, or face amount.

In Design 1, the risk of high insured-group mortality (for example, through normal mortality volatility, pandemic or a prolonged shift to a higher mortality level) remains principally with the ceding company. For the reinsurer, as for the direct policyholder, the risk of high mortality will likely be mitigated by contractual, legal and practical limitations on direct-company changes to the policy nonguaranteed elements. In addition, an insured death that occurs after the secondary guarantee has been triggered is economically beneficial to the reinsurer because it ends the reinsurance benefit stream. So, in Design 1, the reinsurer's principal mortality risk may lie in the opposite direction than that for the ceding company, namely in prolonged lower mortality than anticipated, lengthening the period for which the reinsurer must pay a benefit after the guarantee has been triggered.

In Design 2, additional elements of mortality risk are shifted to the reinsurer, and the fortunes of ceding company and reinsurer become more aligned with respect to mortality risk. The reinsurer incurs risks of higher than anticipated mortality for policies in the guarantee while the direct company incurs this risk on its retained portion (if any) for those policies as well for policies when policy account value is above zero. Both reinsurer and ceding company may benefit economically from lower than anticipated mortality.

Treatment under Current PBR Proposal

Under the current VM-20 proposal (VM-20-PBR-Life_ED6.pdf), the following should apply:

- a) For the ceding company, the change in the calculated reserve due to the impact of this reinsurance treaty can accurately reflect the change in its liability, since the ceding company can model all the cash flows associated with the reinsurance based on direct cash flows that it must already model in PBR. Specifically:
 - i. The reinsurance premium is determined from elements (account value, COI or net insured amount) that are modeled within a direct PBR valuation.
 - ii. The reinsurance benefit trigger, namely, zero account value combined with the policyholder's satisfaction of conditions under the secondary guarantee, must be modeled in the direct ULSG case.
 - iii. The reinsurance benefit amount is determined from factors specified in the reinsurance treaty combined with elements modeled in the direct case (insurance amount or COIs).
 - iv. For the Stochastic Reserve calculations, the primary risk that this reinsurance structure covers is the risk of long-term low interest rates and their interplay with crediting rates and guarantees, which must be modeled in the direct case.
 - v. The only additional complexity imposed by the reinsurance, to the extent there is such, is that the ceding company must assess how it would manage nonguaranteed elements, e.g., crediting rates and COIs, taking into account its reinsurance coverage.
- b) For the assuming company, an analysis similar to (a) above applies as well.
 - i. The elements required to value the assumed business are essentially identical to those required in modeling ULSG designs as a direct writer or ceding company.
 - ii. An additional complexity for the assuming company is that it must model nonguaranteed elements (crediting rates and COIs) that it likely does not control.
- c) For both ceding and assuming companies:
 - i. The modeling of these designs (and all reinsurance) requires the use of the "knowledgeable counterparties" provision in Section 8.D of VM-20. In the subject designs, this provision could apply materially to the modeling of the credited interest rates and COI rates by both ceding and assuming company.
 - ii. In setting prudent-estimate assumptions and assumptions for non-guaranteed elements, each company must view product risks from its perspective and select margins that serve to increase its calculated liability appropriately, taking into account all modeled factors as well

as the current status of the reinsured block (for example, proportion of in force for which the guarantee is in effect or nearly so). As noted in the discussion of Design 1, applying this view could imply mortality margins for the assuming company opposite of those for the direct writer.

- d) The question is raised whether these reinsurance designs are likely to require stochastic modeling of mortality experience under VM-20 Section 8.A.6. We believe that in general they will not. A prudent estimate of direct mortality should generally be sufficient for modeling the reinsurance cash flows unless some special consideration is present in the reinsurance arrangement, such as a treaty cap on total benefits paid or some other aggregate feature causing mortality tail risk to have a disproportionate impact on results. We note that once the secondary guarantee is triggered, the reinsurance benefit is fundamentally an annuity (Design 1) or simple life insurance (Design 2), which generally would not call for stochastic mortality modeling.
- e) The reinsurance arrangement's impact on the Stochastic Reserve may differ from its impact on the Deterministic Reserve. This simply reflects the different impact that a secondary guarantee may have on the Stochastic versus Deterministic Reserve in a situation without reinsurance. For example, in the direct case without reinsurance, the secondary guarantee to the policyholder may have greatest value (and greatest cost to the direct writer company) in scenarios involving prolonged periods of low interest rates; consequently, the impact of the guarantee may appear more in the Stochastic Reserve than the Deterministic. In similar fashion, reinsurance of that guarantee may have greater value for the ceding company in the Stochastic Reserve than the Deterministic.

Taking the above into account, the Work Group believes that the reinsurance designs discussed present no extraordinary difficulties beyond those attending valuation of the direct ULSG product under current PBR VM-20. Under current PBR, the actuary should be able to value the cash flows of the example reinsurance designs in a manner that is entirely consistent with, and as effective as, the valuation of the ULSG design without reinsurance.

Caveat: A third component to the valuation, a net premium reserve, may be added to VM-20 at a future date but was not available for consideration in this review. The application of that component to the ULSG design will need specification and review, and could affect the Work Group's conclusions.