PRINCIPLE-BASED RESERVE (PBR) ALLOCATION AND REINSURANCE

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PBR pre-reinsurance-ceded reserve

To address the need in statutory financial statements for a pre-reinsurance ceded reserve and a statement credit for reinsurance ceded, VM-20 Section 8.D provides that:

1. The minimum reserve pursuant to Section 2 is a post-reinsurance-ceded minimum reserve. The company also shall calculate a pre-reinsurance-ceded reserve as specified in § 8.D.2 below, for financial statement purposes where such a pre-reinsurance- ceded amount is required. Similarly, where a reserve credit for reinsurance may be required, the credit for reinsurance ceded shall be the excess, if any, of the pre- reinsurance-ceded minimum reserve over the post-reinsurance-ceded minimum reserve. Note that due allowance for reasonable approximations may be used where appropriate.
2. The pre-reinsurance-ceded minimum reserve shall be calculated pursuant to the requirements of this *Valuation Manual* VM-20, using methods and assumptions consistent with those used in calculating the minimum reserve, but excluding the effect of ceded reinsurance.

VM-20 Reserve Allocation

- The § 2 minimum reserve is a post-reinsurance-ceded reserve.
  - Determined at the Product Group level (Term, Universal Life with Secondary Guarantees (ULSG) and Other)
  - Includes explicit direction on the method to allocate the Product Group amount to policies within the Product Group,
  - Allocate in proportion to policy-level Net Premium Reserve (NPR) less any NPR credit for reinsurance on the policy.

VM-20 Credit for Reinsurance

- § 8.D defines “credit for reinsurance” as the excess, if any, of pre-reinsurance over post-reinsurance
  - Does not explicitly address policy- or treaty- level allocation.
- Competing Interpretations:
  1. There is flexibility in the allowable methods of policy-level allocation of pre-reinsurance reserve and therefore in credit for reinsurance.
  2. An aggregate pre-reinsurance reserve by Product Group is calculated and, in the manner of § 2.C, allocated to the policy in proportion to policy-level NPR without subtracting any NPR credit. The policy-level credit for reinsurance would then be calculated using its definition in § 8.D.1 applied to policy-level pre- and post-reinsurance-ceded reserve.

Potential issues for LATF to consider

- The process for allocating credit for reinsurance to reinsurance treaties is not explicitly addressed in VM-20.
- If interpretation #2 from prior slide is applied (we may call that the § 2.C method, for short), then there may be instances where a "credit for reinsurance" is allocated to policies that are not reinsured.
- Allocating a portion of the aggregate reinsurance credit to policies without reinsurance could complicate the process of treaty-level allocation and also complicate reconciliation between annual statement schedules, some of which use policy-type splits and some which require treaty-level splits.
- Other methods for allocating pre-reinsurance reserves and, thus, reinsurance credit, may avoid the anomaly above and more easily support allocation of a reinsurance credit to treaty.

Pre-reinsurance or Credit for Reinsurance in Blue Book

- Schedule S, Part 1. Pre-reinsurance amount assumed, by treaty and type of reinsurance.
- Schedule S, Parts 3-5. Reserve credit taken, by treaty, type of reinsurance ceded, and type of business ceded. Potential consequences for regulatory collateral, where required. Should reconcile to Exhibit 5 "Reinsurance ceded" amounts
- Exhibit 5, Aggregate reserve for life contracts. Pre-reinsurance amount by NPR basis. Credit for reinsurance amounts are reported in aggregate as "Reinsurance ceded".
- VM-20 Reserves Supplement. Pre- and post- reinsurance amount by product types (currently, term life, ULSG, non-par WL, par WL, UL without SG, VUL, Variable Life, Indexed Life, other). Reserves ceded, equal to pre- minus post-, is also shown.
- Supplemental Term and Universal Life Insurance Reinsurance Exhibit. Pre-reinsurance reserves and reserve credit taken, by treaty cession. Potential consequences for calculation of shortfall and RBC.

Uses Beyond Blue Book

- Direct impact on required collateral, where such requirements apply.
- Regulators and other users of financial statements use the information to assess risk concentration and extent of financial exposure to particular counterparties (including affiliates).

Simplified illustration of the issue

Base case for illustration

- 3 blocks of business, all in a single Product Group

Block	*NPR*	*Modeled Reserve*
A	100	90
B	100	110
C	100	130
Grp Total	300	330

- General assumptions/simplification:
  - Ignore adjustment for due and deferred premiums
  - Pre-reinsurance aggregate reserve = aggregate reserve without reinsurance
  - All blocks pass stochastic exclusion test, so modeled reserve = deterministic reserve
- We assume a quota share coinsurance for simplicity of illustration, but the issues apply to any form of reinsurance.

Example 1: 50% coinsurance on Block C

Reserves without reinsurance

Pre Reinsurance Reserve

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv
A	100	90		110
B	100	110		110
C	100	130		110
Grp Total	300	330	330	330

- Allocation of Product Group PBR minimum reserve to each policy, and thereby to each block, is in proportion to NPR, per VM-20 2.C.
  - Block A: 330*(100/300)=110
  - Block B: 330*(100/300)=110
  - Block C: 330*(100/300)=110

Example 1: 50% coinsure Block C

Post Reinsurance Reserve

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv
A	100	90		106
B	100	110		106
C	50	65		53
Grp Total	250	265	265	265

- For simplicity, we assume that the NPR and modeled reserve for Block C exactly scale under 50% coinsurance.
- Again, PBR minimum reserve is allocated in proportion to NPR, in this case post-reinsurance NPR.

Example 1: Calculated reinsurance credit

Credit for Reinsurance (= Pre- minus Post- , per VM-20 §8.D.1)

Block	*Pre-Reins. Reserve*	*Post-Reins. Reserve*	*Credit for Reinsurance*
A	110	106	4
B	110	106	4
C	110	53	57
Grp Total	330	265	65

- If only 57 reinsurance credit is assigned to the 50% coinsurance treaty in Schedule S, where should the remaining 8 be reported?
- Allocation of pre-reinsurance reserve based on pre-reinsurance NPR.

Example 2:

Same three blocks, 50% coinsurance on Block A

Reserves without reinsurance

Pre Reinsurance Reserve

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv
A	100	90		110
B	100	110		110
C	100	130		110
Grp Total	300	330	330	330

- Exactly as in Example 1.
- Same block NPR and modeled reserve, pre-reinsurance.
- Allocation based on pre-reinsurance NPR.

Example 2: 50% coinsure Block A

Post Reinsurance Reserve

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv
A	50	45		57
B	100	110		114
C	100	130		114
Grp Total	250	285	285	285

- For simplicity, we assume that the NPR and modeled reserve for Block A exactly scale under 50% coinsurance.
- Again, PBR minimum reserve is allocated in proportion to NPR, in this case post-reinsurance NPR.

Example 2: Calculated reinsurance credit

Credit for Reinsurance (= Pre- minus Post- , per VM-20 §8.D.1)

Block	*Pre-Reins. Reserve*	*Post-Reins. Reserve*	*Credit for Reinsurance*
A	110	57	53
B	110	114	-4
C	110	114	-4
Grp Total	330	285	45

- If a reinsurance credit of 53 is assigned to the 50% coinsurance treaty in Schedule S, where should the -8 be reported?
- Allocation of pre-reinsurance reserve based on pre-reinsurance NPR.

- Alternatives to consider

Allocation alternatives

- VM-20 § 2.C allocates a pre-reinsurance amount and a post- reinsurance amount, and differences pre- and post- to impute the reserve credit.
- Options to Consider:
  i. For the aggregate Product Group reserve, subtract pre- and post-reinsurance, to derive an aggregate credit;
  ii. Allocate the aggregate credit on some basis that relates clearly to the impact of each treaty on the insured policies.
  iii. Add allocated credit to allocated post-reinsurance minimum reserve to impute a gross, pre-reinsurance reserve by policy or block.

- **For option ii above, a variety of allocation bases could be considered, including: NPR credit, impact on modeled reserve, impact on larger of modeled & NPR, standalone impact of a treaty on the Product Group's PBR minimum reserve in aggregate, etc.**

Allocation based on a view of “reinsurance impact”

Calculate component impact of the reinsurance by block

	Pre-Reinsurance			Post-Reinsurance			Component impact		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)= (1) - (4)	(8)= (2) - (5)	(9)= (3) - 6)
Block	*NPR*	*Modeled Reserve*	*Max(NPR, Modeled)*	*NPR*	*Modeled Reserve*	*Max(NPR, Modeled)*	*NPR*	*Modeled Reserve*	*Max(NPR, Modeled)*
A	100	90	100	50	45	50	50	45	50
B	100	110	110	100	110	110	0	0	0
C	100	130	130	100	130	130	0	0	0
Column total	300	330	340	250	285	290	50	45	50

- This slide illustrates possible computing components used to allocate an aggregate credit based on the reinsurance’s impact on NPR, or on modeled reserve, or on higher of NPR and modeled reserve.
- Values relate to Example 2 in the prior slides.

Allocate credit based on NPR credit

Allocate by NPR credit & impute pre-reinsurance rsv

Block	(1) Pre-Reins. Reserve	(2)= (1)-(3)) Derive Aggreg Credit	(3) Post-Reins. Reserve	(4) NPR Component Credit	(5) Allocate the Aggreg Credit	(6)= (3)+(5) Imputed Pre-Reins Reserve
A	110		57	50	45	102
B	110		114	0	0	114
C	110		114	0	0	114
Grp Total	330	45	285	50	45	330

- Table illustrates allocation using the NPR credit component (col. 7 on Slide 20).
- For this simple example, allocation on cols. 7 or 9 of Slide 20 would produce the same credit allocation and imputed pre-reinsurance reserve. In more complicated cases, the results might vary.

- Concluding remarks

Observations

- Under the § 2.C method where the aggregate pre-reinsurance reserve is allocated to each block based on the block's NPR, blocks with no reinsurance could be impacted with their reserves either increasing or decreasing.
- Under the NPR credit or stand-alone credit methods, the aggregate reserve credit is allocated only to the blocks that have reinsurance ceded, so policies and blocks without reinsurance will have a pre-reinsurance reserve that is identical to the post-reinsurance minimum
- HOWEVER:

Impact of Assumed Reinsurance – Example 3

- Consider a case where no business is ceded but a company doubles the volume of business in Blocks B and C, either through reinsurance-assumed or simply through aggressive growth of those blocks.

Base case

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv
A	100	90		110
B	100	110		110
C	100	130		110
Grp Total	300	330	330	330

Doubling blocks B and C

Block	NPR	Modeled Reserve	PBR Rsv	Allocated PBR Rsv	
A	100	90		114	<== Reserve for block A is impacted
B	200	220		228	
C	200	260		228	
Grp Total	500	570	570	570	

Impact of Assumed Reinsurance – Example 3

- The change in the mix of business in a Product Group, either by assuming inforce business or writing new business, can also impact the reserves of a Block that had no change in its business.
- In the example on the prior slide, the reserves for Block A increased by 4 due to the increase in business in Blocks B and C.

Summary Comments

- Changes in volume or mix of business in one block within a Product Group can affect reserve amounts or credit for reinsurance allocated to other blocks that have not changed. This can occur whether due to reinsurance ceded, reinsurance assumed, the writing of new business, or inforce experience.
- Reinsurance of inforce blocks, assumed or ceded, has the potential to cause sharp changes in business mix from one reporting period to the next, with potential impact on “unrelated” blocks.

Questions for LATF

- **Does LATF consider this an important matter to address? If so, with what speed?**
- If this is to be addressed,
  - The final bullet of Slide 19 lists several alternative bases that could be used to allocate credit for reinsurance. The list is not exhaustive; other methods may merit consideration, including any other allocation methods used elsewhere in the Valuation Manual.
  - The Life Reinsurance Work Group believes that additional input would be essential to provide numeric results drawn from actual reinsured blocks, preferably including the major types of reinsurance: coinsurance, yearly renewable term (YRT) and modified coinsurance (ModCo).
  - It would be appropriate to consider not just reinsurance ceded, but also cases involving assumption of business, with and without subsequent cession or retrocession.

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