

# Reinsurance Considerations for Product Development under PBR

Actuaries' Club of the Southwest Spring Meeting

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**Christopher Halloran, ASA**

# Agenda

- 1 **Background**
- 2 **Case study**
- 3 **Discussion to date**
- 4 **Impacts on product development and pricing**
- 5 **Conclusion**

## Section 8 of VM-20 pertains to the impact of reinsurance on the components of reserves under PBR

	Component	Considerations in determining reinsurance impact
Maximum	<b>Net premium reserve</b>	<ul style="list-style-type: none"> <li>No change as compared to pre-PBR</li> <li>Coinsurance: The NPR is reduced by the percentage coinsured</li> <li>Yearly Renewable Term (YRT): The NPR is reduced by the unearned cost of insurance that is reinsured</li> </ul>
	<b>Deterministic and stochastic reserve</b>	<ul style="list-style-type: none"> <li>Requires two separate calculations, pre- and post-reinsurance</li> <li>Exclusion testing, if elected, must be performed on a pre- and post-reinsurance basis</li> </ul>
=	<b>Final PBR reserve</b>	<ul style="list-style-type: none"> <li>The starting asset collar does not apply to pre-reinsurance reserves</li> <li>Credit = <math>Max(NPR_{Gross}, DR_{Gross}, SR_{Gross}) - Max(NPR_{Net}, DR_{Net}, SR_{Net})</math></li> </ul>

The reserve credit for reinsurance under PBR is significantly different from the formulaic approach that insurers have become accustomed to

Several sources of guidance exist for the modeling of reinsurance cash flows. The guidance is non-prescriptive and takes the form of considerations and required disclosures.

Source	Guidance
VM-20	<ul style="list-style-type: none"><li>▪ The actuary should assume that the counterparty is likely to act efficiently</li><li>▪ The assumptions used may differ between the ceding and assuming company</li><li>▪ Additional (outside the cash flow model) stochastic analysis may be required for certain types of reinsurance (i.e. stop-loss)</li><li>▪ Considerations are similar to those for liability modeling</li></ul>
VM-31	<ul style="list-style-type: none"><li>▪ Requires a description of assumptions and methodology used to model reinsurance cash flows</li></ul>
PBR ASOP	<ul style="list-style-type: none"><li>▪ Recommends consistency between reinsurance assumptions and other assumptions</li><li>▪ Margins should consider the guarantees in the arrangements, past practices of the reinsurer and how the company might respond to different actions the reinsurer could take</li></ul>
AAA Practice note	<ul style="list-style-type: none"><li>▪ States that “some actuaries will assume less than 100% selection against the company”</li><li>▪ Recommends analyzing the financial impact on the reinsurer and assuming more selection if the financial impact is significant</li></ul>

A cohort of new business with \$50MM of first year premium consisting of 10-, 20- and 30-year term products was projected for 30 years

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**Model**

- 30 year projection horizon
- Reserve revalued annually

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**Best estimate assumptions**

- Mortality follows 100% of 2015 VBT
- Mortality experience is 30% credible with 10 years of sufficient data
- Expenses, commissions and lapses set at industry averages

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**Prudent estimate assumptions**

- Mortality is improved up to each valuation date at 1% per year
- 100% shock lapse at end of level term period

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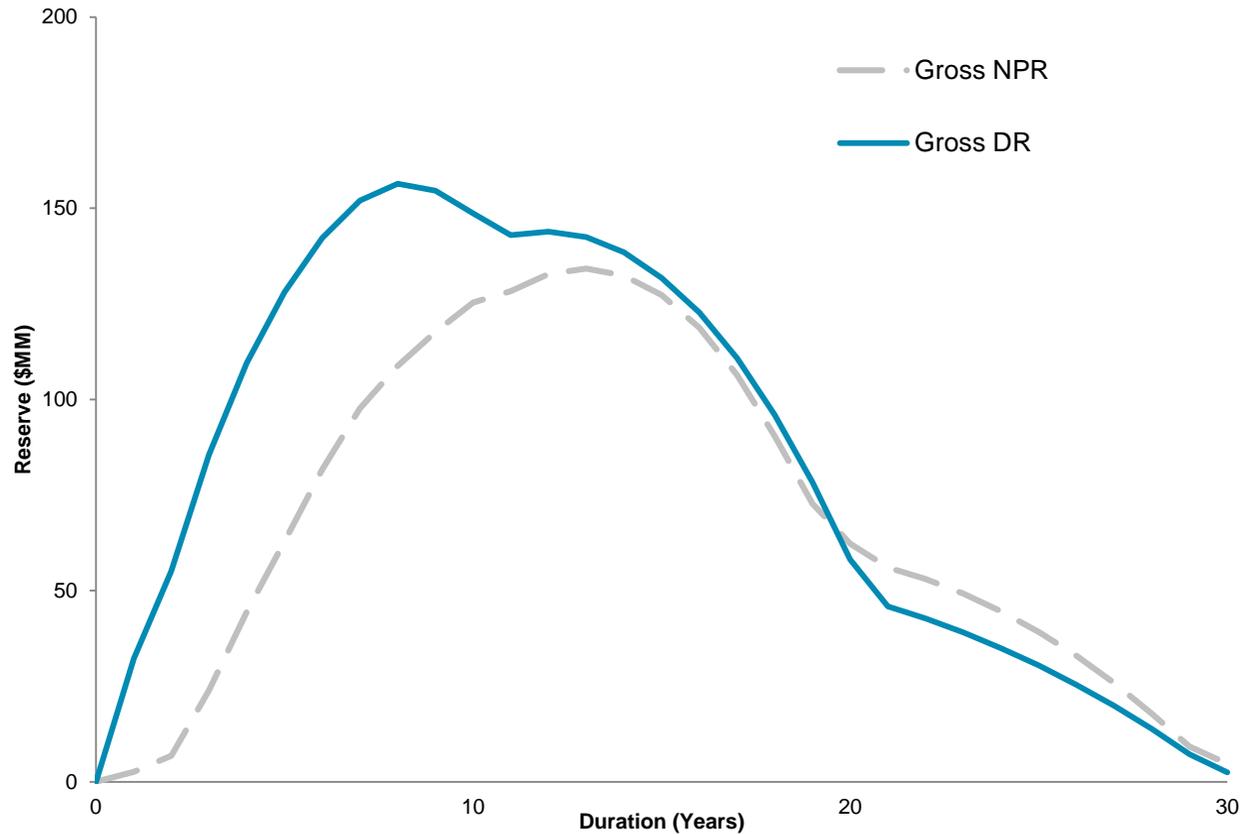
**Reserve assumptions**

- The NPR uses the 2017 CSO and a valuation interest rate of 4.5%
- DR scenarios are re-generated at each valuation date
- Starting assets at each valuation date use the 'direct iteration' approach
- The cohort is assumed to pass the Stochastic Exclusion Test (SET)

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Assumptions used and products modeled are for an illustrative term portfolio intended to be reasonably representative of products offered in the market today

The gross NPR and DR for this cohort of new business are shown below

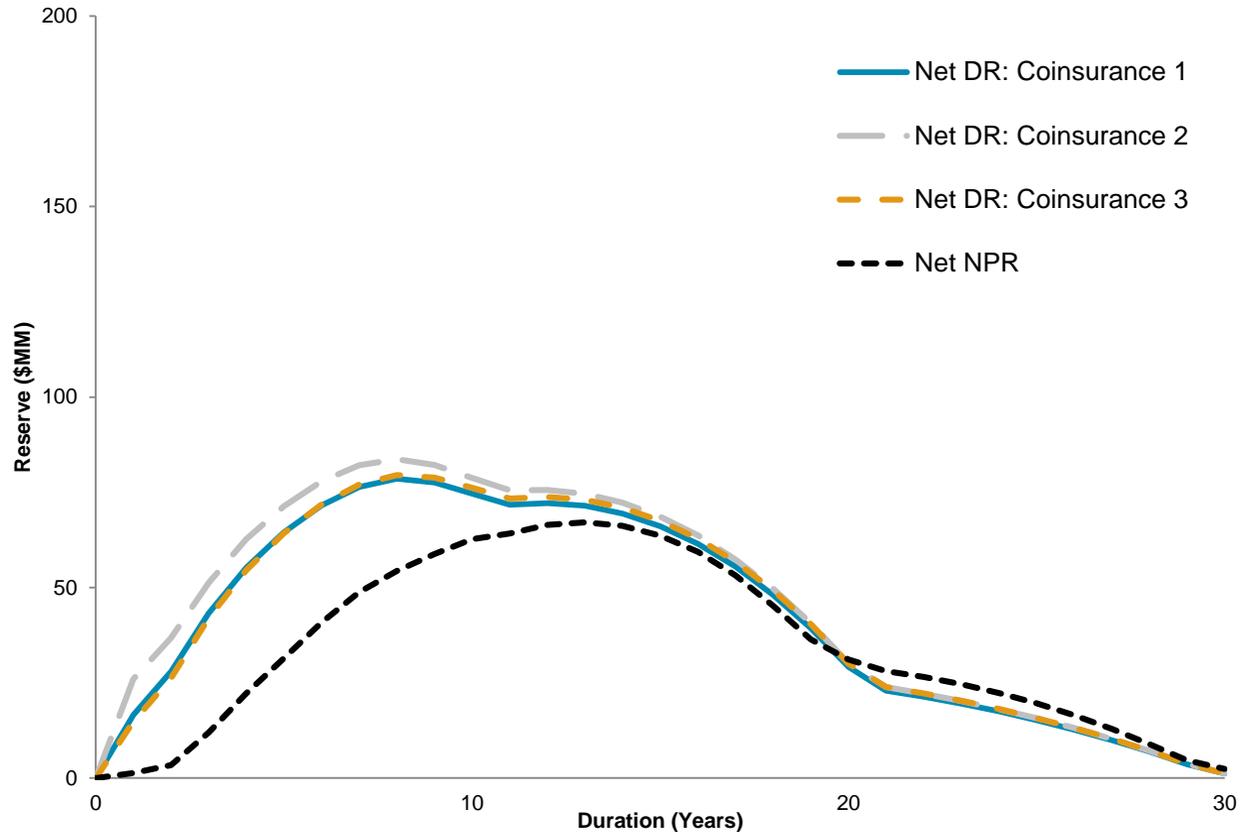


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The DR starts much higher than the NPR, but the gap closes over time, partially because mortality improvement to date is reflected at future valuation dates

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Three 50 percent first dollar coinsurance agreements were modeled. The coinsurance allowances were assumed to be guaranteed.

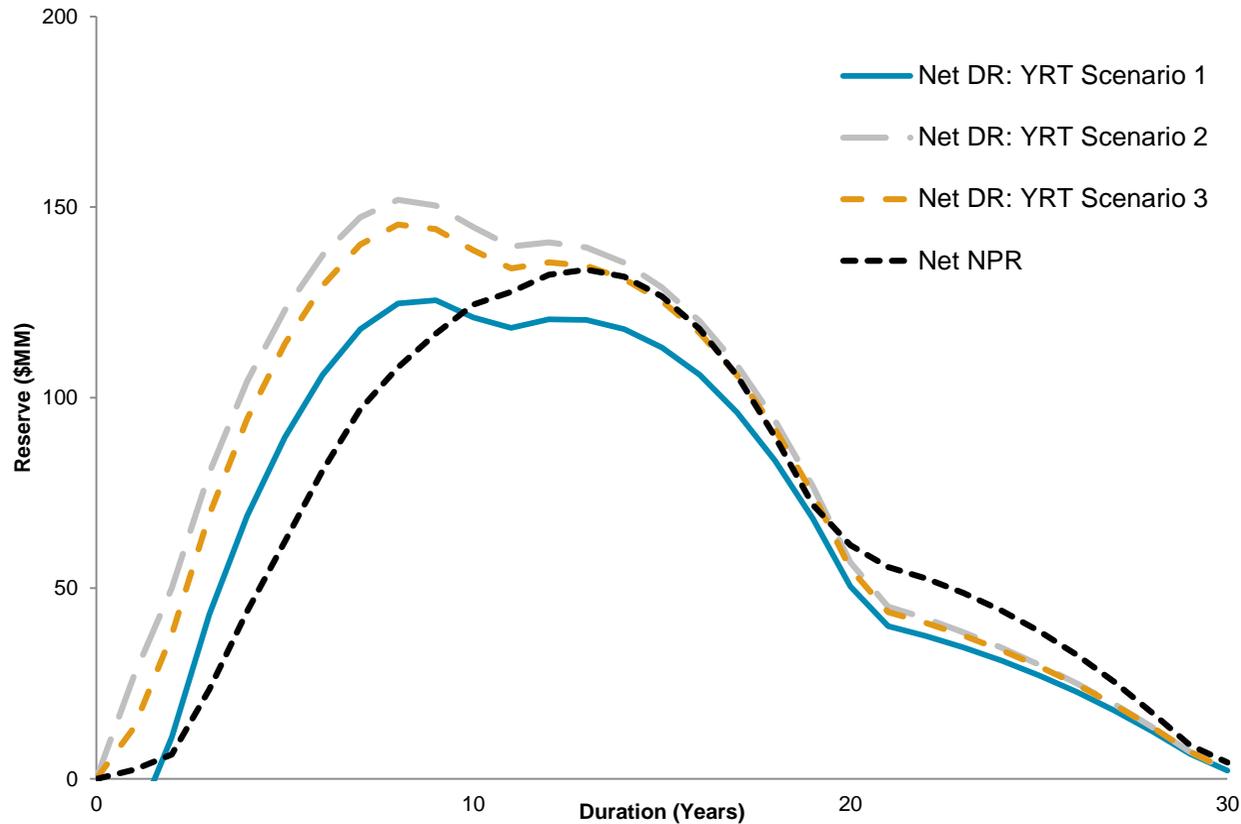


**Coinsurance 1:** Reimburse proportion of VM-20 prudent expenses and commissions

**Coinsurance 2:** Reimburse proportion of best estimate expenses and commissions

**Coinsurance 3:** Reimburse best estimate expenses and commissions, level % of premium

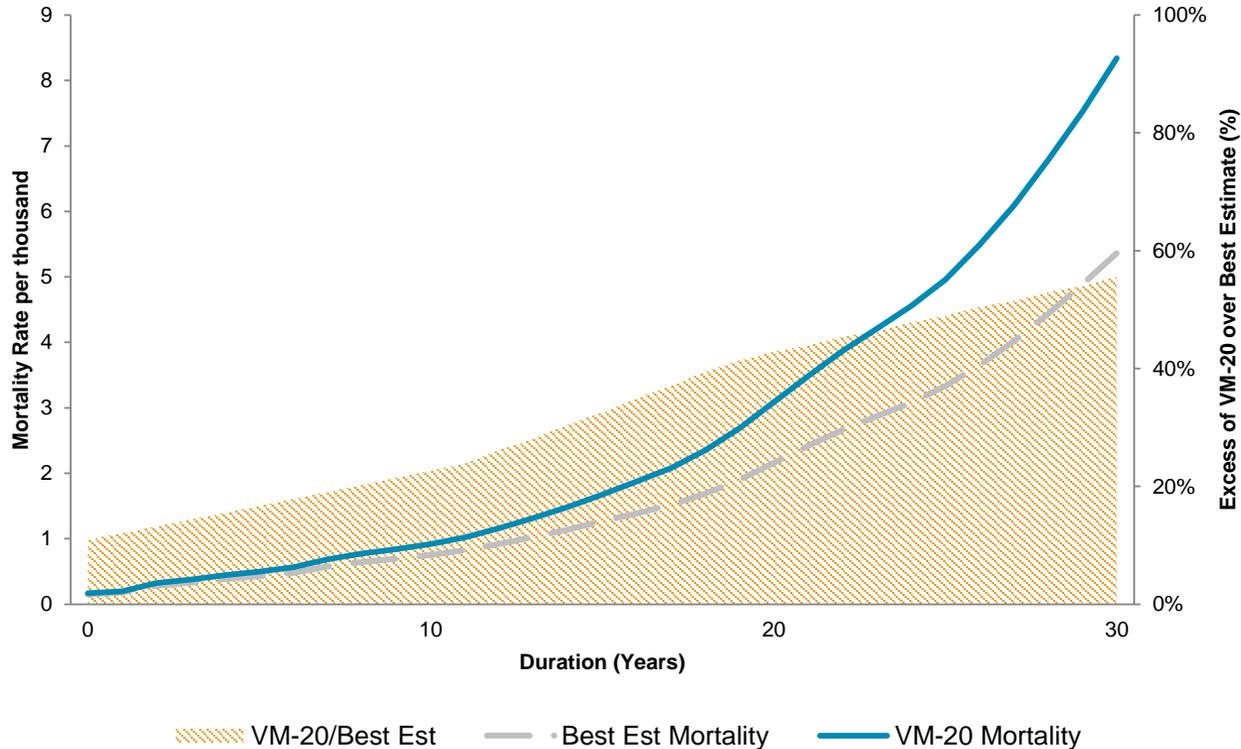
A 50 percent first dollar YRT reinsurance arrangement with the current premium scale set equal to 100 percent of the best estimate mortality assumption was modeled



**YRT Scenario 1:** No change in rates  
**YRT Scenario 2:** Change rates to eliminate any gain/loss from reinsurance  
**YRT Scenario 3:** Increase rates by 15%

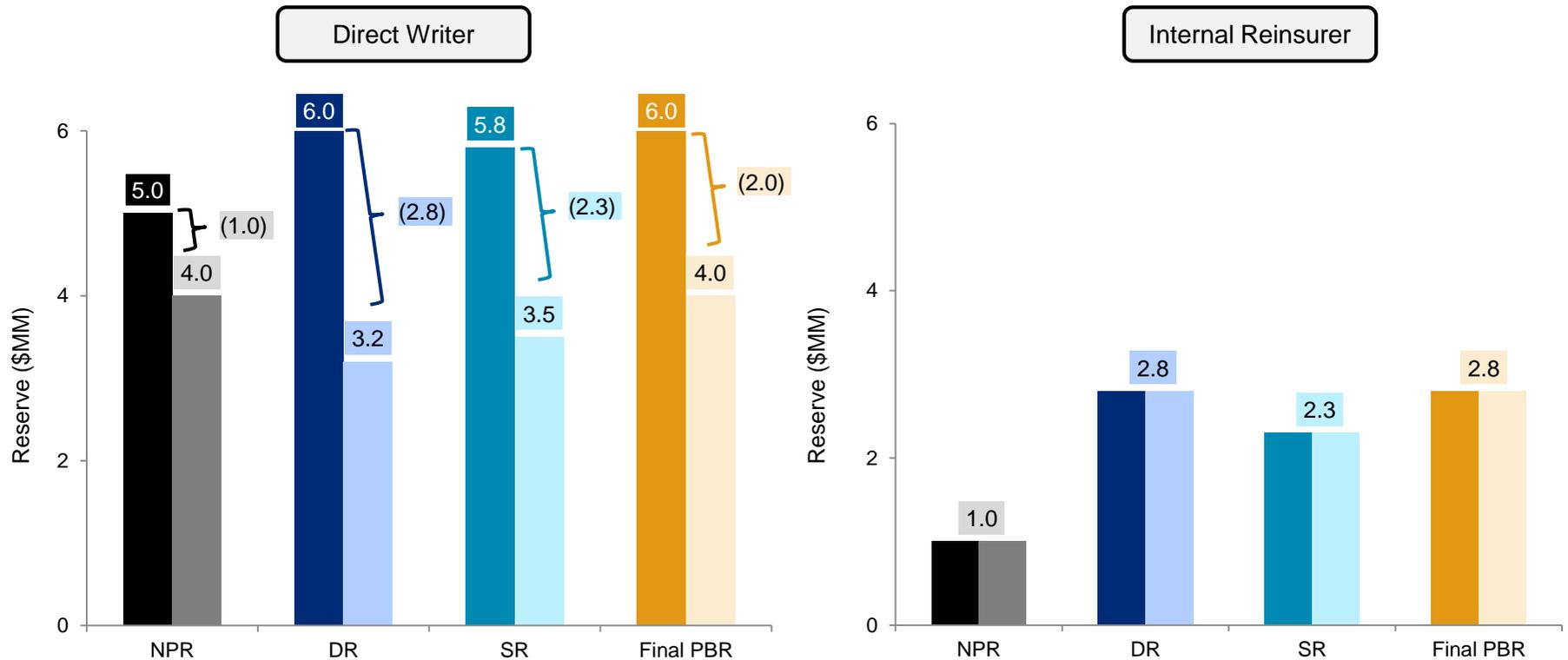
# The difference in net reserves under the YRT scenarios modeled is driven by the level of margin in the VM-20 mortality assumption

The result below is for 35-year-old male, preferred non-tobacco, time 1 valuation



The mortality assumption under VM-20 contains no future mortality improvement and is based on a company-specific prudent assumption grading to a prudent industry table when sufficient data no longer exists

The gross and net reserves resulting from a hypothetical internal YRT arrangement are shown below for illustrative purposes



The internal reinsurance arrangement increases net reserves by 13%. Total reserves increased from \$6MM to \$6.8MM because of the arrangement.

The results of the NAIC's PBR company pilot project showed that seven companies reported a reduction in post-reinsurance reserves, one reported an increase and three only reported pre-reinsurance reserves



*Gross and net of reinsurance reserves led to **many discussions** and NAIC staff will research the impact of PBR reserves on accounting for reinsurance.*



– Mike Boerner, Chair of the NAIC's Principle-Based Review (EX) Working Group

The reduction in primary security requirement under AG 48 due to reinsurance was limited to ½ Cx. Comments were received in support of and against this change.



*A **ceding insurer** might use one set of assumptions to **manufacture a large reserve credit**, while the reinsurer uses a different set of assumptions to calculate a much smaller reserve. A company potentially could exploit this type of gap. We recommend that LATF explore improvements to the Valuation Manual that could **mitigate the risk of this type of gaming**.*



– John Finston, Chair, NAIC Reinsurance (E) Task Force

## The following impacts are expected because of PBR and the associated reinsurance considerations

Reinsurance type	Impact
<b>Financial</b>	<ul style="list-style-type: none"><li>▪ Less attractive due to lower tax reserves and uncertainty in AG 48 financing solutions</li><li>▪ Carriers realizing a tax benefit may defer PBR election</li></ul>
<b>YRT</b>	<ul style="list-style-type: none"><li>▪ Stronger guarantees on YRT rates (i.e. lower cap, fully guaranteed)</li><li>▪ Additional disclosure on when/how reinsurance rates will be reviewed and changed</li><li>▪ Industry convergence on level of prudence to assume</li></ul>
<b>Coinsurance</b>	<ul style="list-style-type: none"><li>▪ Restructuring allowances or expense assumptions</li><li>▪ Higher coinsurance allowances reflective of lower reserve requirements</li></ul>
<b>Internal</b>	<ul style="list-style-type: none"><li>▪ An important consideration will be the aggregate reserve impact</li><li>▪ Use depends on the aggregate reserve and capital impact</li></ul>

## Key takeaways

- 1 Reinsurance has a more significant impact on pricing**
- 2 Pricing models must be granular enough to properly account for the asymmetry arising from reinsurance structures**
- 3 It is critical for carriers to understand the pricing implications of reinsurance early on in the pricing process**
- 4 Implications of potential regulatory changes should be considered**