

Reinsurance Optimisation for Non-Life Insurance

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Agenda



- Why to Reinsure?
- Contradictions within the system
- Reinsurance Decision Criterion
- RI Selection
- Importance of Optimisation
- A Simple Example of RI Assessment
- Other Considerations
- Questions?

Why to Reinsure?



- Stabilizing the UW Results while increasing business capacity
- Improving the capacity to absorb large losses
- Accessing benefits from larger diversification pools
- Reducing Capital Requirement (in many jurisdictions)
- New products & Technical Support

And others..

Contradictions within the system



Board: Maximise return
on capital

Finance/RM: Stabilise
results

RI OPTIMISATION

UW: Maximise profit by
line

Regulator: RI follows
risk appetite

Reinsurance Decision Criterion



The insurer compares treaties to:

- Maximise expected profit after reinsurance
- Minimise probability of ruin after reinsurance
- Modify risk profile to reduce capital required

Difficult but important to formalise the reinsurance selection process



Factors that play a big role in our market:

- Market practice
- (Re)Insurance cycle (hard/soft or in between)
- Personal choice/Historical arrangements
- Rating of the Reinsurer

RI brokers are relied on for quantification

Importance of Optimisation



- Too much or inappropriate reinsurance reduces profitability by passing on profit to the RI
- Too little or ineffective reinsurance can expose the insurer to excessive risk

So, the aim is to find the optimal level of RI

Some concepts



- Underwriting Result: The Insurance operation profit before investment gains
- Cost of Capital: Rate of return required by the Shareholders for the risk written
- Economic Result: Underwriting results after deduction of cost of capital

The UW and Economic Results are assessed to determine the optimal level of RI



A Simple Example

- Motor LOB: AED 100M top line (GWP)
- Expenses: 20% of GWP
- RI Commission: 20% of the Ceded Premium
- Cost of Capital: 8% of the VaR (99.5 percentile)
- RI:
 - XL Premiums: 80% LR assumed for RI (actual market driven)
 - QS Premiums: 70% Ceded



A Simple Example (cont.)

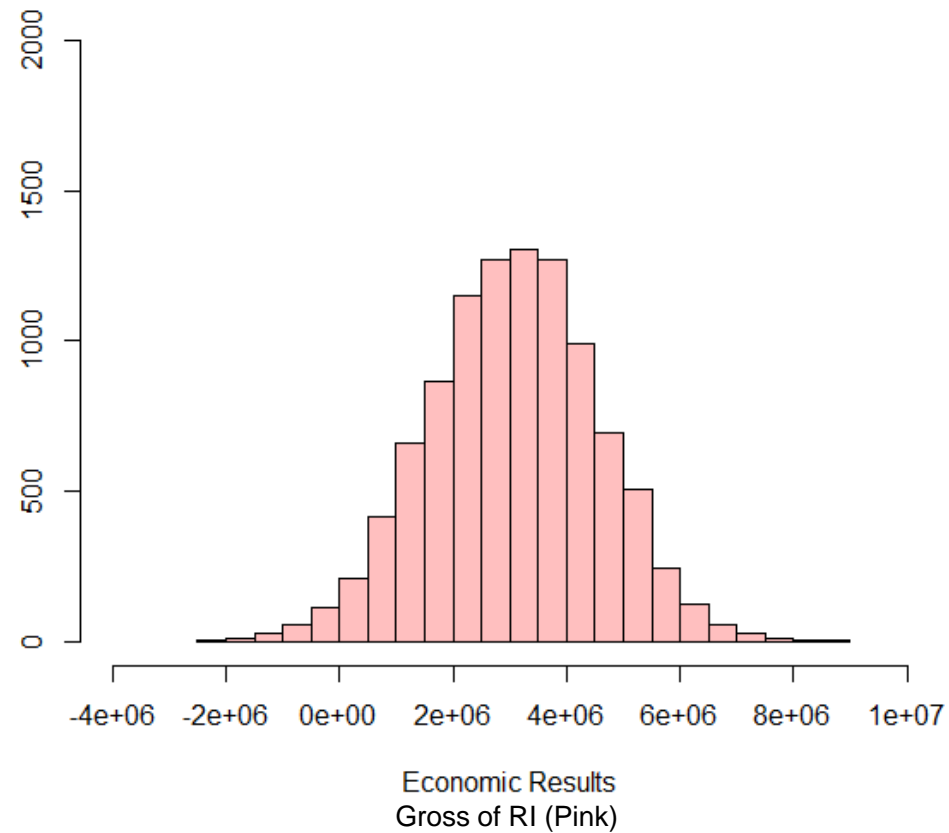
- Data:
 - Vehicle-Year level data in R
 - Policy & Claims per risk per year
 - Packages used: actuar and fitdistrplus
 - Distribution Fitting:
 - Frequency: Poisson/Negative binomial
 - Severity: Lognormal/Gamma
- Monte Carlo Simulations (10k)
 - Gross of RI
 - Excess of Loss (Excess 100K)
 - Quota share (70%)
- Each simulation generates gross & retained losses for the projected year

A Simple Example (cont.)

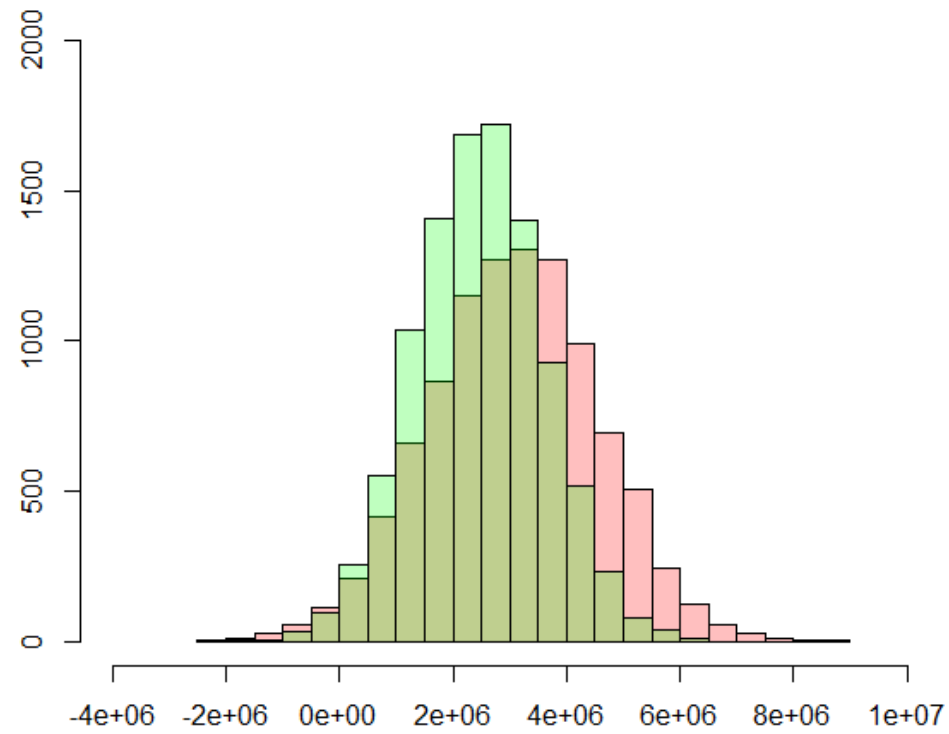


(All Amounts in AED '000)	Gross	XL Excess 100K	70% QS
Gross Premium	100,000	100,000	100,000
RI Premium	-	5,815	70,000
Net Premium	100,000	94,185	30,000
Net Retained Losses	69,575	64,924	20,873
Expenses	20,000	20,000	20,000
RI Commission	-	-	14,000
Underwriting Result (A)	10,425	9,262	3,127
Capital at Risk			
VaR (99.5%)	91,875	84,765	27,563
Cost of Capital (at 8%) (B)	7,350	6,781	2,205
Economic Result (A-B)	3,075	2,481	921

A Simple Example (cont.)

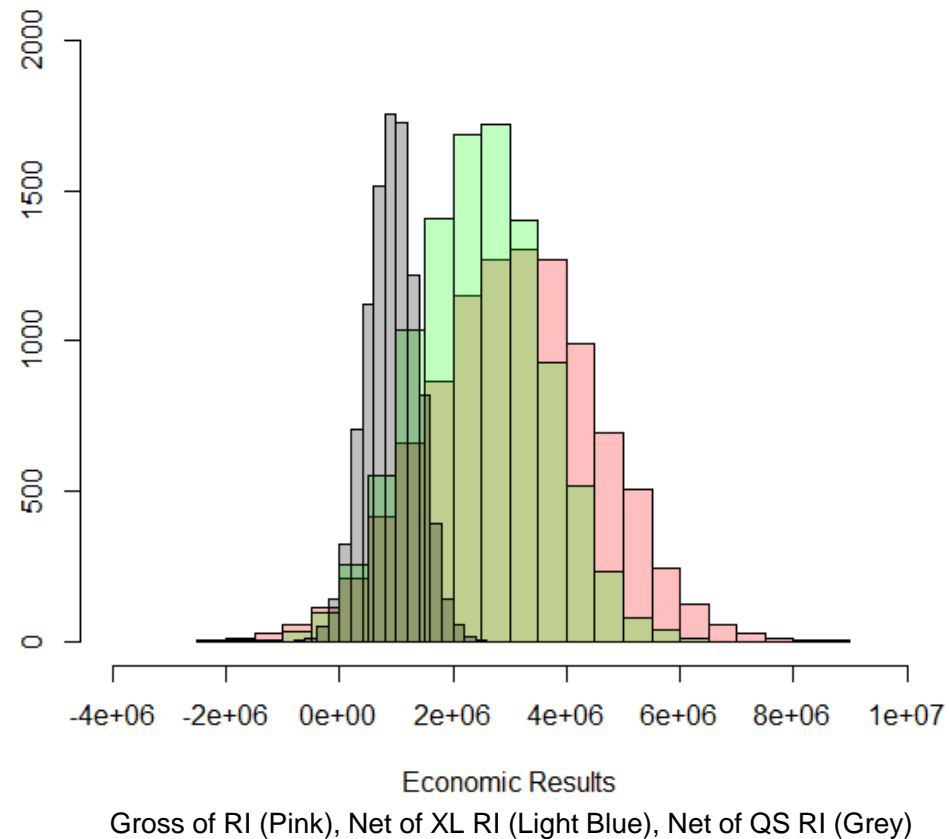


A Simple Example (cont.)



Economic Results
Gross of RI (Pink), Net of XL RI (Light Blue)

A Simple Example (cont.)



Other Considerations



- Quota Share: It increases the supply of insurance in the industry resulting in price war
- No “Cheap RI” in long run
- Minimum RI to fulfill the need of the insurer
- Consider brokerage role in purchasing proportional RI
- Actuaries involvement should increase

Questions?



Sources



1. Value of Risk reduction [Gary Venter & Alice Underwood]
2. Optimising non-life reinsurance strategy under risk-based capital measures [Jeff Courchene and Vincent Robert]
3. Reinsurance [Gary Patrik]
4. Reinsurance: Actuarial and Statistical Aspects [Hansjörg Albrecher, Jan Beirlant, Jozef L. Teugels]
5. Reinsurance Optimisation: [Subhash Chandra]