

Reinsurance Efficiency System

Preliminary Concept

Historical analysis , statistics, projections from past to present and model toward future are the vision of Actuaries.

They operate like Coroners, Doctors of Autopsy: analyze quantitative aspects of cadavers, actualize and project the same.

This is the limit of this process to determine the efficiency of a Reinsurance Program.

Qualitative aspects and the freedom of subjective decision introduce the human factor, the perspective of human error.

But the degree of to do mistakes is directly proportional of our liberty to take entrepreneur decisions.

A woman is not only weight , number of red globules, is pretty skin, beautiful body and mind.

Try to explain this to the Actuaries.

SCOPE OF THE RES

Geographical scope

Country Diversification

LOB's Diversification

Reinsurance types covered

- **All treaty reinsurance is *included*:**

- Proportional (QS, Surplus,...)
- Non-proportional (XL,SL,...)

- **Facultative and fronting are *excluded***

- However it is important to understand their impact (premium and results) on the overall reinsurance balance

Focus on types of reinsurance:

- ***protecting the whole portfolio (as opposed to single risks)***
- ***driven by overall reinsurance policy rather than case-by-case decisions***

MODELLING APPROACH - PORTFOLIO ANALYSIS

1. Portfolio information inputs

- **Key information by LoB:**
 - Premiums and number of policies
 - Claims frequency
 - Claims severity - small and large claims
 - Average maturity of reserves
- **Portfolio profile** (MPL / sum insured)
- **Correlation between LoBs**
- **Key financial and simulation hypotheses**

2. Reinsurance program inputs

- **Reinsurance programs applied** to the LoBs
- **Structure of individual reinsurance programs:**
 - Treaties (QS, Surplus, XL, SL) and order of application
 - Conditions for each treaty

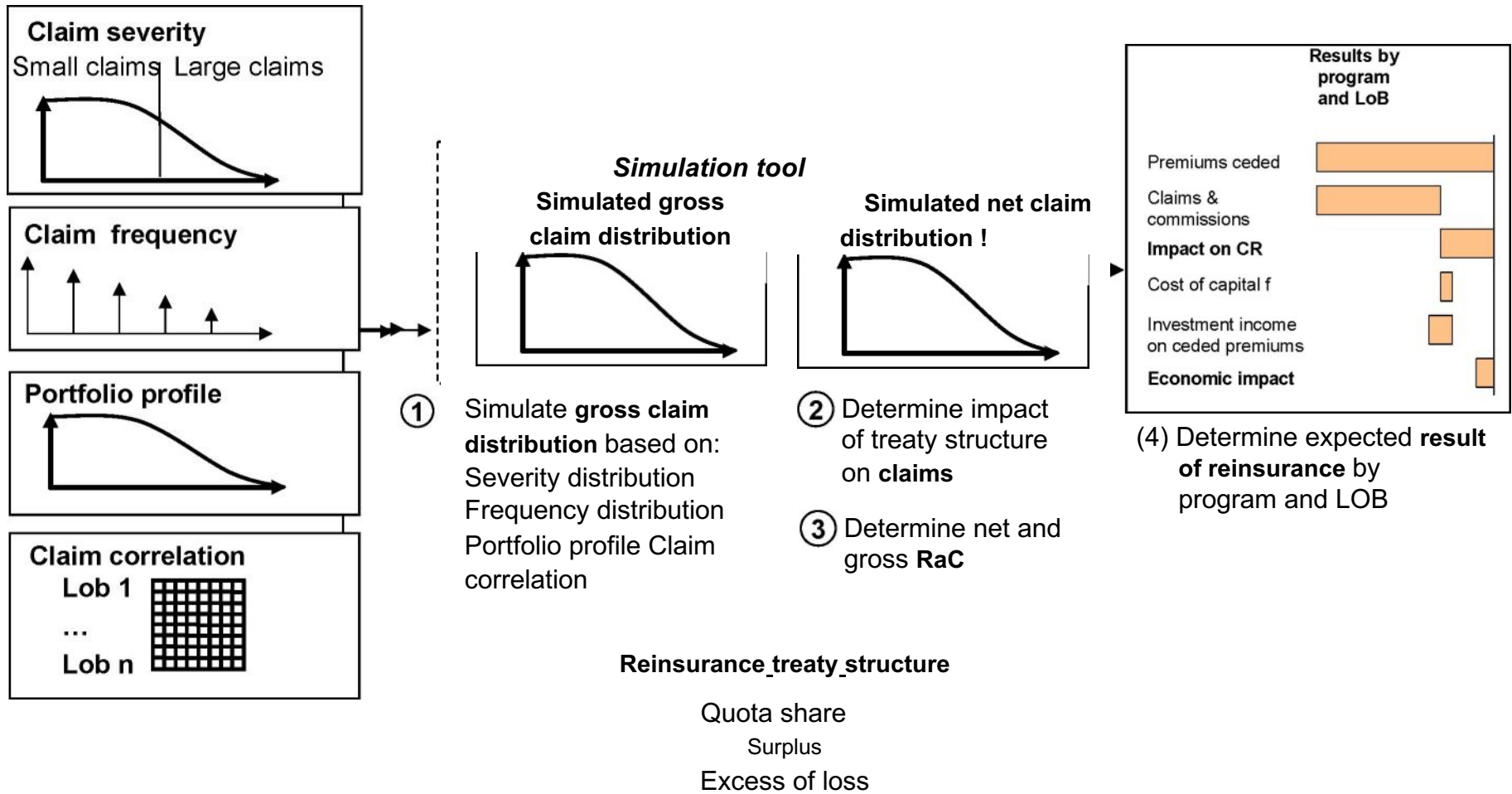
3. Simulation

- Build cumulative claims distributions
- Run simulation
- Run reinsurance statistics

4. Analysis of results

- **Results by LoB**
- **Results by program**
- **Detailed information by program**

MODELLING APPROACH - MECHANICS

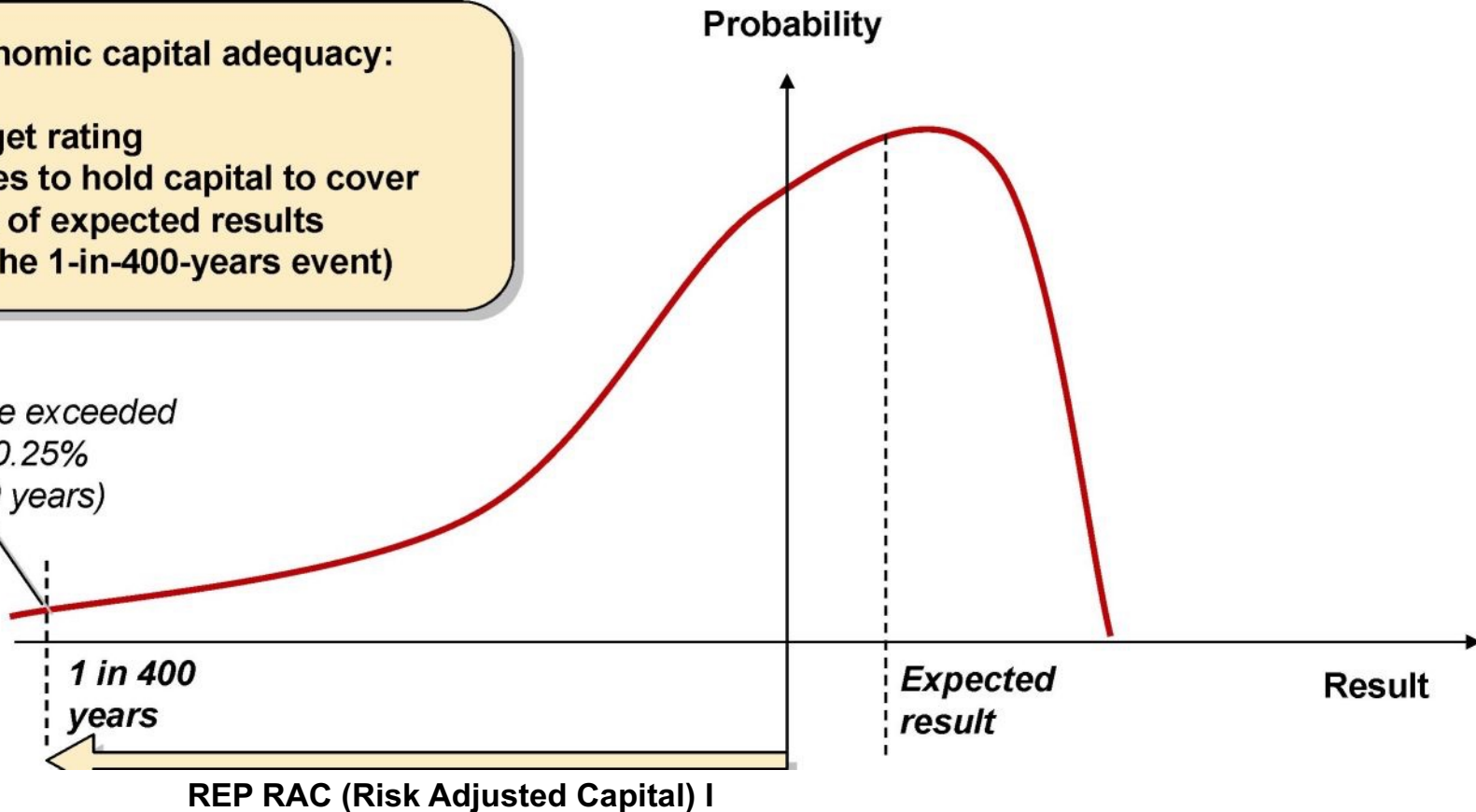


DISTRIBUTIONS AND RISK DEFINITION

Target economic capital adequacy:

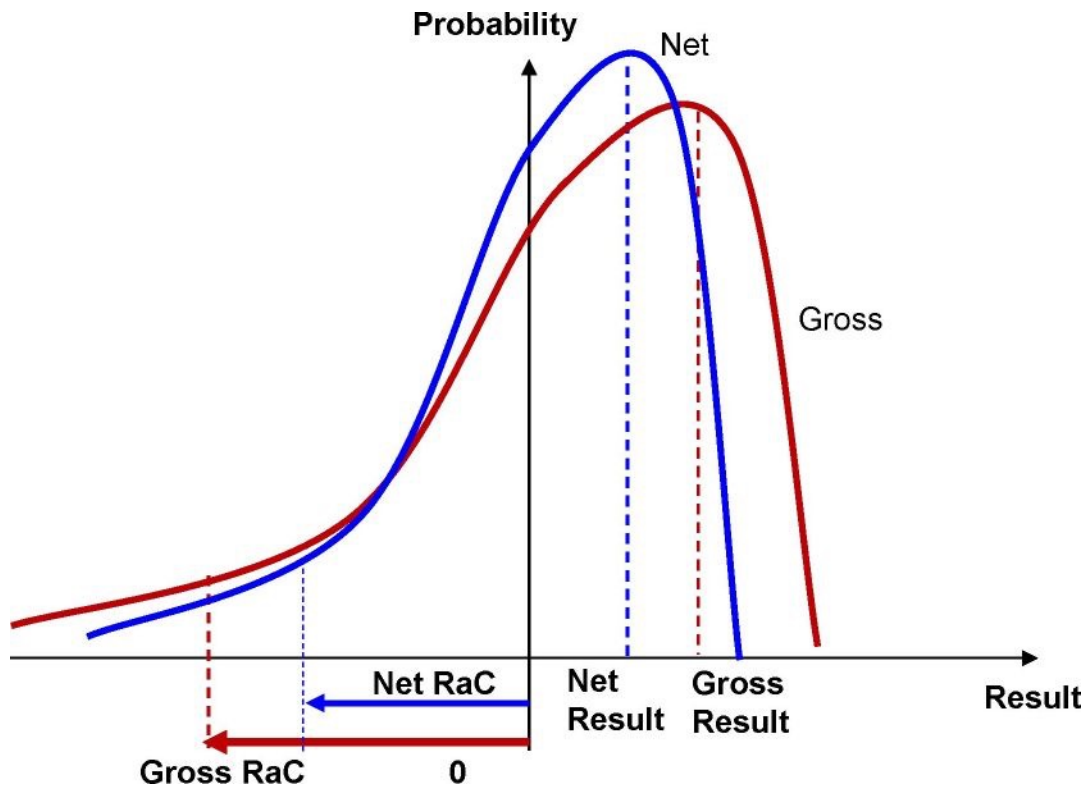
- AA target rating
- Requires to hold capital to cover 99.75% of expected results (up to the 1-in-400-years event)

This value will be exceeded with probability 0.25% (once every 400 years)



DISTRIBUTIONS AND RISK DEFINITION

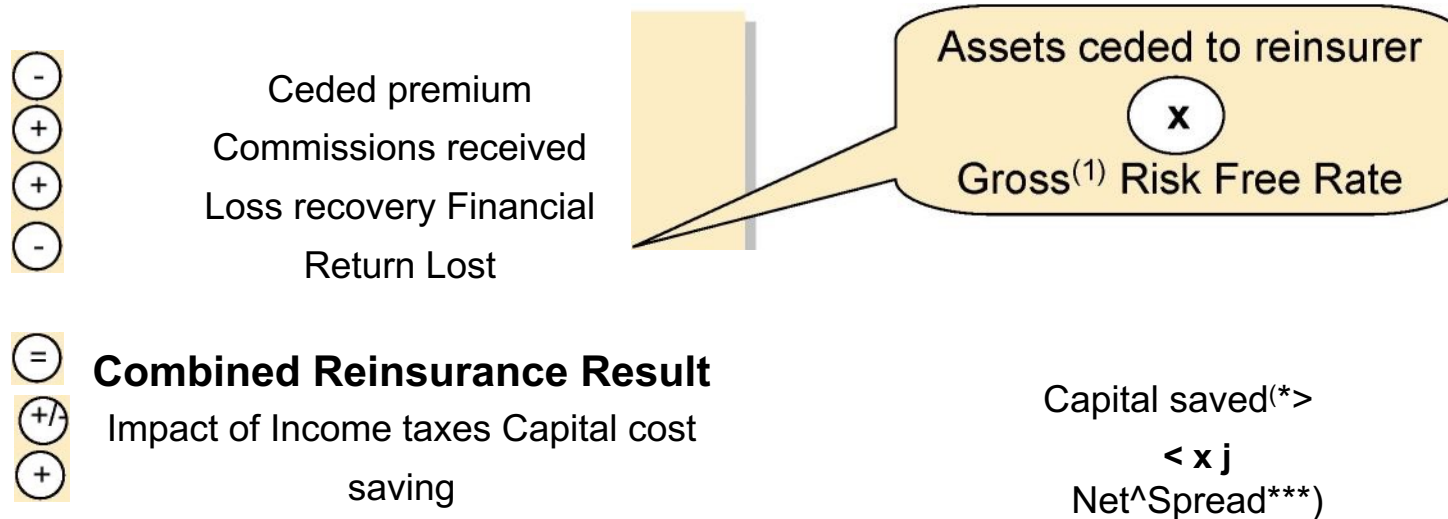
Impact of Reinsurance



Our focus is on the impact of reinsurance on value creation:

- It reduces volatility of results and therefore the capital required to protect the company against unexpected losses
- It reduces the insurance result in the long term (because reinsurers require a positive return on their invested capital)

REINSURANCE EFFICIENCY ASSESSMENT



O Value creation of reinsurance

(1) Before taxes

(2) After taxes

(*) Capital Saved= Gross RaC - Net RaC

(**) Spread= Cost of Capital - Risk Free Rate

DIVERSIFICATION

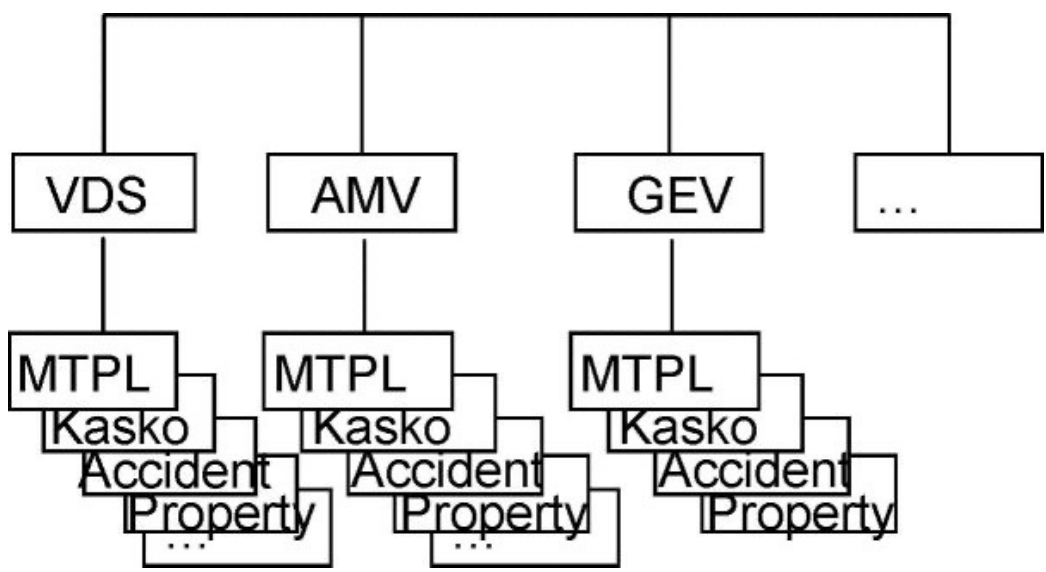
Levels of achievement

Focus of Underwriting
Department

Focus of Marketing
Department

Focus of Portfolio Mix

INSURANCE COMPANY



Geographical Diversification across the Country

Diversification across Type of Clients

Diversification across LOB's

Data Requirements

DATA REQUIREMENT

Financial Parameters

RES - Inputs

Company	Company Name
Currency	
Exchange rate	
Scale	
Data as at	

Model description

Run Igloo Model
Save Inputs Copy

General Assumptions
Description
Portfolio Premium
Facultative Premium

DATA REQUIREMENTS

Portfolio Data

Portfolio Data ***Gross Premium and Claims Distributions***

Portfolio Composition	
<i>Profiles</i>	1 001
Premium information	
<i>Gross Premium</i>	
<i>Subject Gross Premium for RI</i>	
<i>Facultative & Fronting Premium</i>	
Frequency distribution: left part (small claims)	
<i>Frequency distribution type</i>	

DATA REQUIREMENTS

Correlations

		1	2	3	4	5	6
Portfolio Bucket		Health	Motor Hull	Accident (incl. Motor Accident)	General TPL	Property Fire Industrial	Property Fire Civil
1	Health	100%	60%		20%	40%	
2	Motor Hull	60%	100%		50%	60%	
3	Accident (incl. Motor Accident)			100%			30%
4	General TPL	20%	50%		100%	60%	
5	Property Fire Industrial	40%	60%		60%	100%	40%

DATA REQUIREMENTS

Reinsurance Program

Reinsurance Cover Data	
<i>Reinsurance Cover Characteristics</i>	
Programme No.	1
Programme Name	Programme Name
	Rank
Surplus	
Quota Share	
XoL	
Stop Loss	
Surplus Data	Surplus 1

DATA REPORTING

Hypothesis Result Details by Reinsurance Treaty

PROGRAM 1
Homeowner

	Total	Sub-Totals				Details	
PROGRAMME RESULTS		Surplus Total	QS Total	XL Total	SL Total	Surplus	QS
Before Diversification							
Gross RaC	45,652,457	45,652,457	38,074,068	0	0	45,652,457	38,074,068
Net RaC	31,762,816	38,074,068	31,762,816	0	0	38,074,068	31,762,816
RaC Saved	13,889,641	7,578,390	6,311,252	0	0	7,578,390	6,311,252
After Diversification							
Gross RaC	35,508,318	35,508,318	29,413,962	0	0	35,508,318	29,413,962
Net RaC	24,338,607	29,413,962	24,338,607	0	0	29,413,962	24,338,607
RaC Saved	11,169,711	6,094,356	5,075,355	0	0	6,094,356	5,075,355
Gross Premium	30,773,550	30,773,550	24,702,689	0	0	30,773,550	24,702,689
Net Premium	16,056,748	24,702,689	16,056,748	0	0	24,702,689	16,056,748
Ceded Premium		6,070,861	8,645,941	0	0	6,070,861	8,645,941
XoL Reinstatement Premium		829,280	1,181,036	0	0	829,280	1,181,036
Provisional Commission		0	0	0	0	0	0
Variable Commission	14,716,803	9,462,695	11,571,284	0	0	9,462,695	11,571,284
Profit/Loss Share	2,010,315	0	0	0	0	0	0
Recoveries	21,033,979	0	0	0	0	0	0
Technical Reinsurance Result	8,327,492	4,221,113	4,106,379	0	0	4,221,113	4,106,379
Financial Return Lost		146,404	208,504	0	0	146,404	208,504
Combined Reinsurance Result before Taxes	354,907	4,074,709	3,897,875	0	0	4,074,709	3,897,875
Income Taxes	7,972,584	-3,475,249	-1,776,166	-1,699,084	0	0	-1,776,166
Capital Cost Saving ex div	1,075,558	586,840	488,718	0	0	586,840	488,718
Value Creation ex div	5,572,893	2,885,384	2,687,509	0	0	2,885,384	2,687,509
Capital Cost Saving inc div	864,938	471,923	393,015	0	0	471,923	393,015
Value Creation inc div	5,362,272	2,770,466	2,591,806	0	0	2,770,466	2,591,806