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The future of (Life) Reinsurance Evolution or Revolution?

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Content

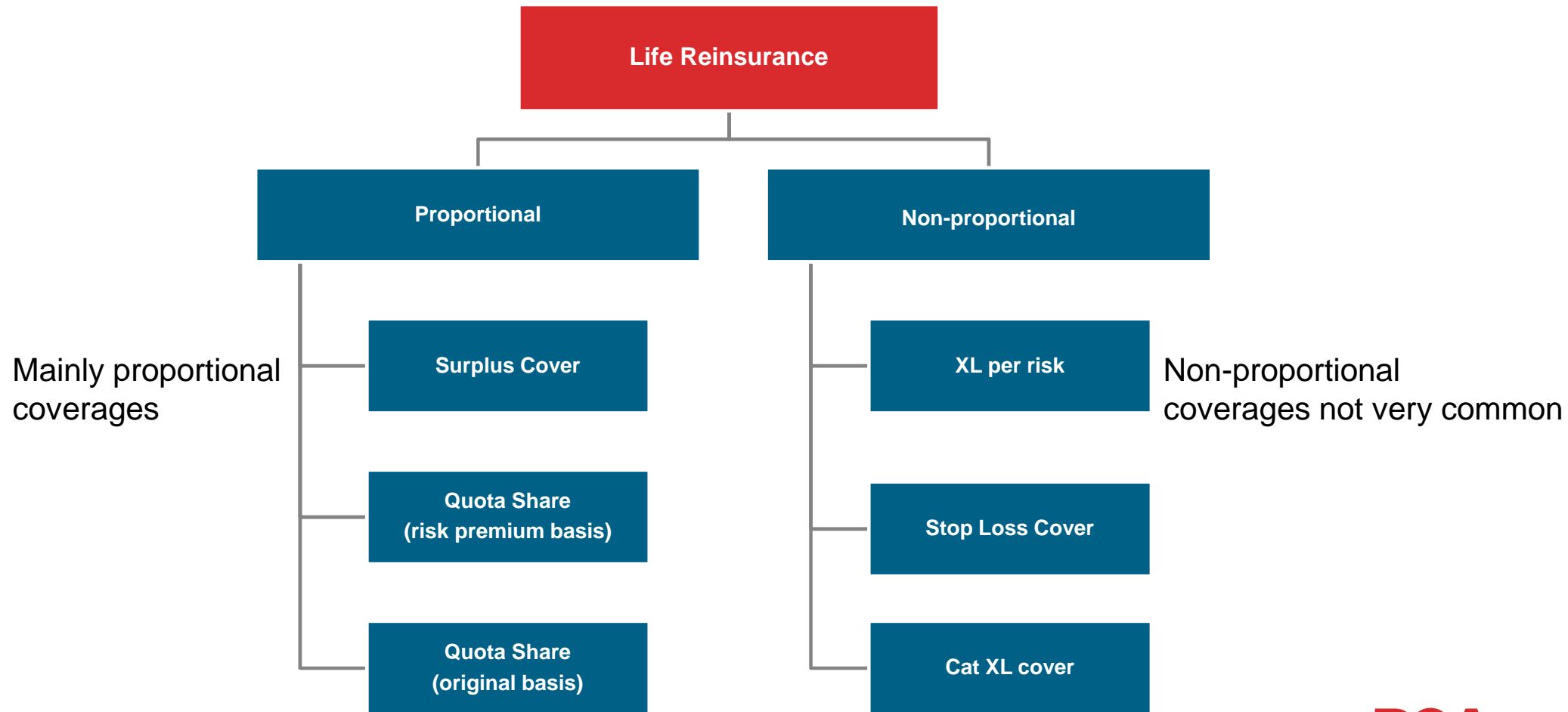
- A. Life reinsurance in the past and up to now
- B. Why do we expect (life) reinsurance to change?
- C. Possible reinsurance solutions in the future
- D. Closing remarks



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A. Life reinsurance in the past and up to now

Life Reinsurance Treaties





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B. Why do we expect (life) reinsurance to change?

B. Why do we expect life reinsurance to change in the future?

1 Life insurance is currently undergoing significant changes

2 Buying reinsurance: same reasons new solutions.

3 Reinsurers are developing new business models

1. Life insurance is currently undergoing significant changes

1. Low interest rate environment challenges life insurers' traditional business model
2. Managing market risk becomes key
3. Increased focus on biometric risks and products
 - a) New biometric risks (e.g. Incapacity to work, essential abilities,...)
 - b) Trend to differentiating risks (preferred tariffs, telematics tariffs, underwritten annuities,...)
4. Demographic changes: aging Western populations
5. Introduction of market consistent RBC capital regimes (SST / SII)

2. Reasons for buying reinsurance

1 To manage risk

2 To manage capital


3 To have access to service and information

2.1. Reinsurance to manage risk

- Managing risk as obvious reason for reinsurance:
 - Reduction of volatility
 - Protection against
 - Risk of random fluctuations
 - Risk of change
 - Risk of error

- Risk-based capital regimes introduce an intimate link between risk management and capital management:
 - Transferring risk reduces corresponding capital requirement
 - All Reinsurance will be assessed in the context of capital relief

2.2. Reinsurance to manage capital

- Capital efficient reinsurance is reinsurance with improvement of capital position as primary objective.
- Capital efficient reinsurance will change comprehensively through SST / SII
- Depressed solvency ratios under SST / SII (at average)
 increased need for capital efficient reinsurance

Reinsurance under Solvency I

Solvency Margin and relief through reinsurance measured very easily based on factors on volumes and limited by arbitrary factors

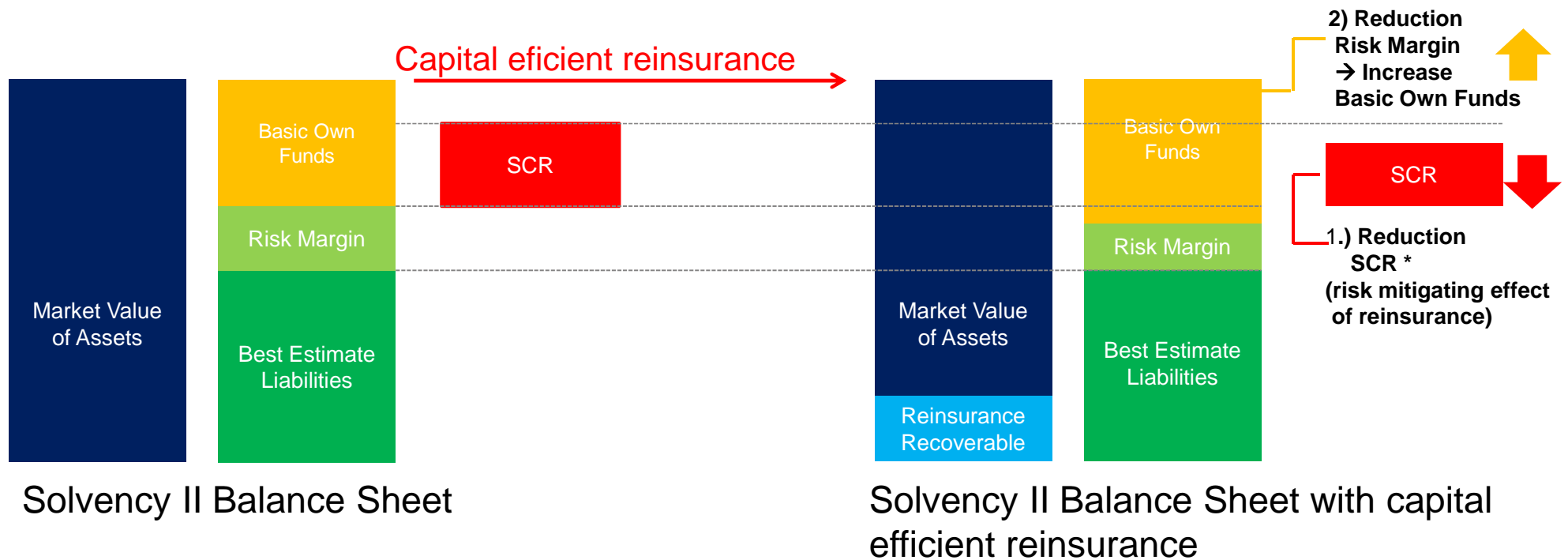
	Solvency Margin	Capital relief through reinsurance as % of the Solvency Margin
Life *	1. 4% of statutory reserves (1% for unit linked) plus 2. 0.3% * of sum at risk	1. Min (reinsured reserves / total reserves, 15%) plus 2. Min (sum at risk reinsured / total sum at risk, 50%)
Non-Life	Max (16% -18% of premiums, 23%- 26% claims)	Min (reinsured premium/ total premium, 50%)

* Biometric life risks and riders considered by the requirements for non-life

** 0.10% - 0.15% for policies with duration up to 5 years

Double effect of reinsurance to the SII solvency ratio: $\frac{BOF}{SCR}$

1. Reduction of the capital requirement and
2. Increase of available capital



* The reinsurer's counterparty risk will (slightly) increase the SCR

Capital efficiency of common life reinsurance treaties

Reinsurance Cover	Solvency ratio SI	Solvency ratio SII
QS on risk premium basis	++	+
QS on original terms (reserve deposit)	+++	+
Surplus	++	+
XL per risk	+/-	++
Stop Loss	+/-	+++
Cat XL	+/-	+ / -

Mortality and disability risks were usually covered under such reinsurance treaties

2.3. Access to service and information

- Reinsurers' international experience and large historical databases
- Reinsurers provide the following services:
 - Medical Underwriting
 - Claims management
 - Product development
 - Advisory services
- SST / SII impacts the latter two



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Reinsurers are developing new business models

3. Reinsurers are developing new business models

Reasons

- Life insurance business in many European countries hardly growing or shrinking.
- Consolidation process among insurers.
- Insurers increase share of retained business:
 - Increase of retentions
 - Bigger international companies pool their business internally (via internal reinsurers) and seek only little external reinsurance
- Currently sufficient capacity at the market (soft market)
- Competition with other risk-mitigating vehicles (e.g. securitisations, derivatives)

3. Reinsurers are developing new business models

Solutions

- Strong investments in direct insurance business
 - Direct insurance subsidiary
 - Participation in direct insurance company
- Investments in insurance runoff business
- Tendency towards accepting risks which were traditionally not in the scope (market and longevity risk)



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C. Possible reinsurance solutions for the future

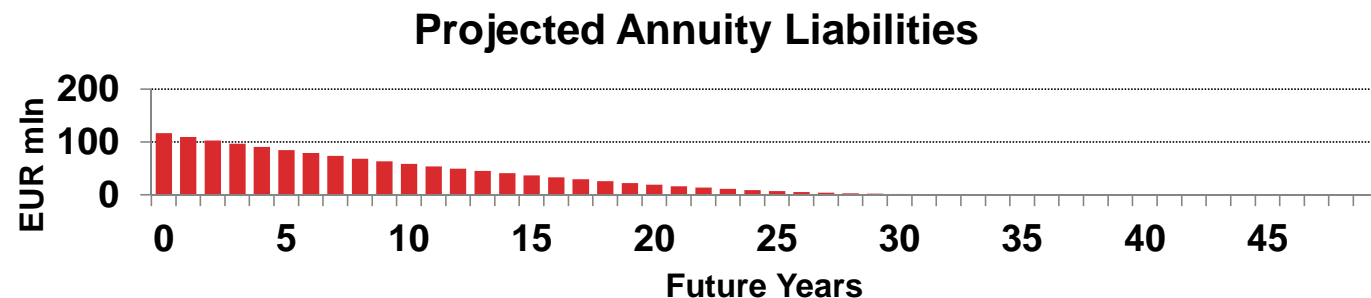


Possible reinsurance solutions for the future

- Asset Intensive Reinsurance
- Longevity Swaps
- Shock Absorber Solutions
 - Lapse Shock Absorber
 - Longevity Shock Absorber
- Value-of-Inforce (VIF) financing solutions
- Contingent Capital Solutions
- Beyond Reinsurance: Portfolio transfers

Asset-intensive reinsurance

- Full Coinsurance with asset transfer
- Biometric risk and asset risk transferred to the reinsurer
- Amount of transferred assets (Single Premium) is crucial
- Reinsured business: savings and annuity business
- Reinsurer pays all future claims and benefits of reinsured portfolio

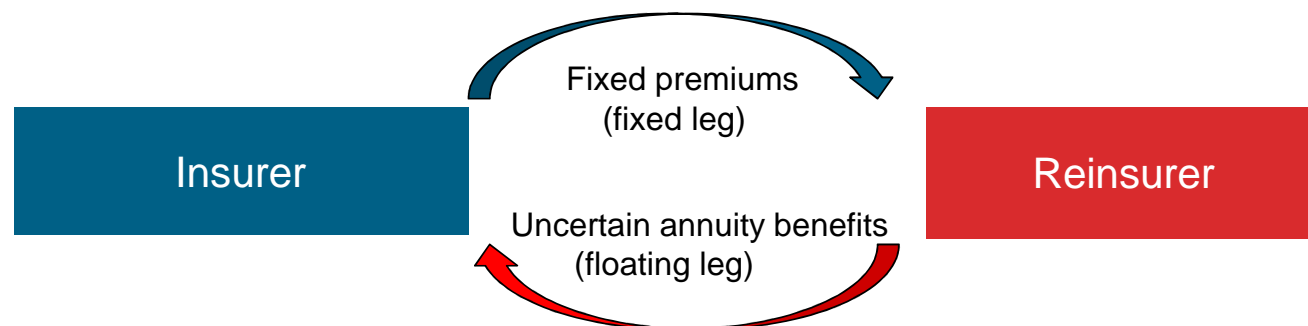


Asset-intensive reinsurance

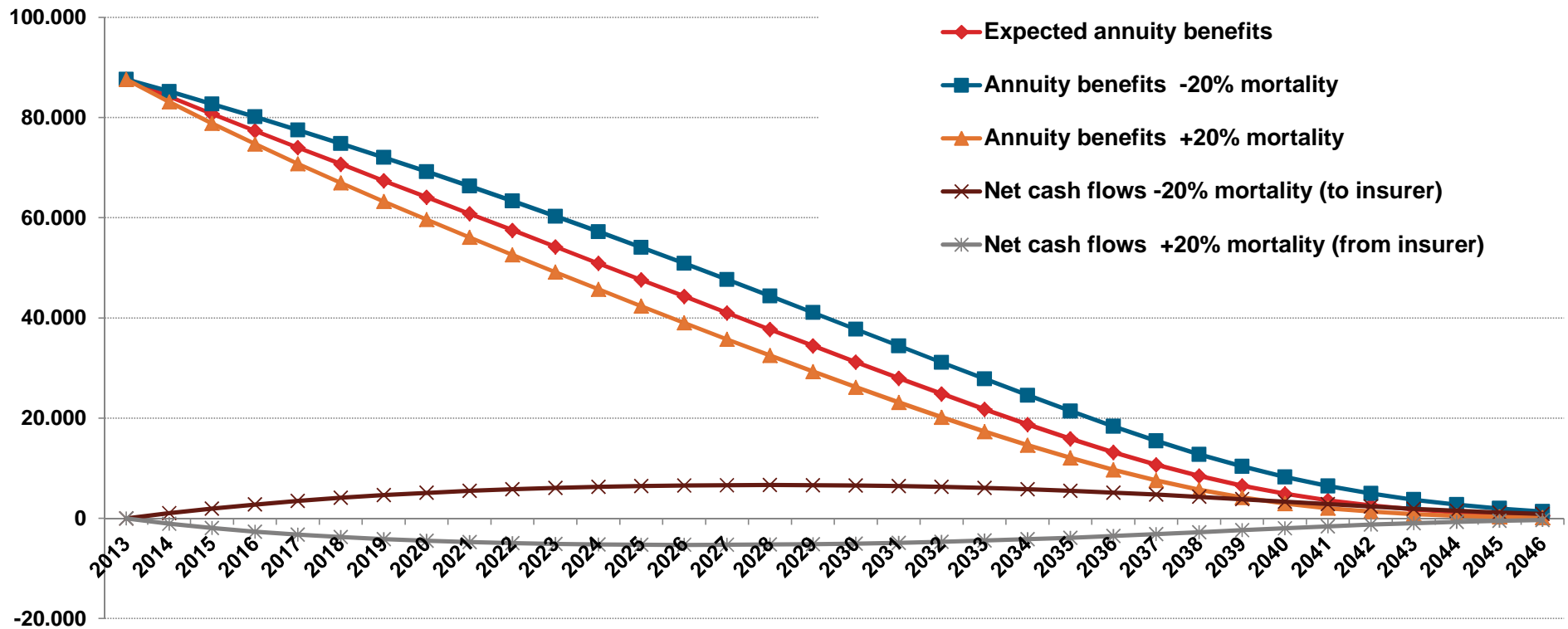
- Assets are held in a way that protects insurer from reinsurer's default (e.g. in a trusted fund).
- Challenges in many European countries:
 - Local regulation doesn't support transfer of assets
 - Profit-sharing provisions in savings and annuity business

Longevity Swaps

- Longevity Swap is a reinsurance treaty – in spite of the swap terminology
- Reinsured business: portfolio of life-contingent annuities
- Premiums („fixed leg“) are defined at beginning for all future years
- Claims („floating leg“) are the actual annuity payments in the future, which reflect the survival of the annuitants



Example: Cash flows longevity swaps



Pricing of longevity swaps

- Long-term reinsurance contract: reinsurer is liable for future annuity payments until expiry
 - Pricing is based on 3 components:
 1. Expected mortality (q_x, q_y)
 2. Mortality improvement
 3. Reinsurer margin
- Best Estimate Mortality

Shock absorber solutions

Stop Loss Cover to reduce capital requirements for biometric risks under stress scenarios of standard formula:

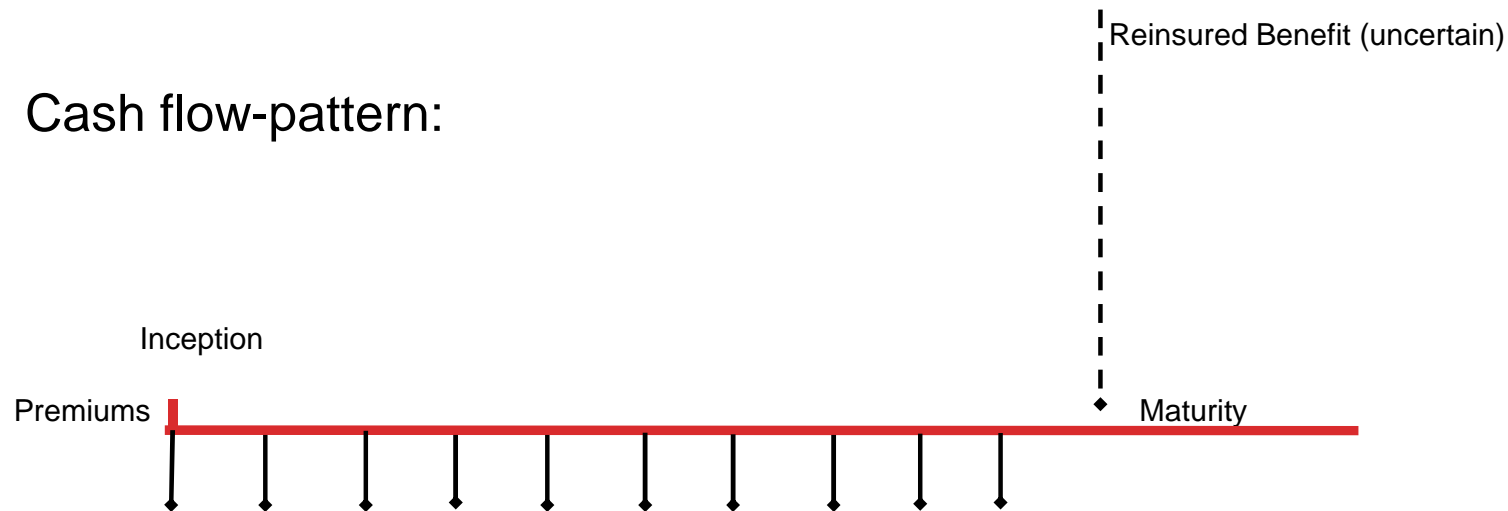
- Idea:
 - Transfer a portion of tail risk within the stress scenario to improve insurer's capital position
 - Reinsured benefit is based on a defined range (intervall) within the stress scenario defined between
 - Attachment point (AP) and
 - Detachment point (DP)

- Crucial:

Reinsurance premium < Insurer's CoC for this covered intervall

Shock absorber solutions

- Cash flow-pattern:



- Reinsured Benefit

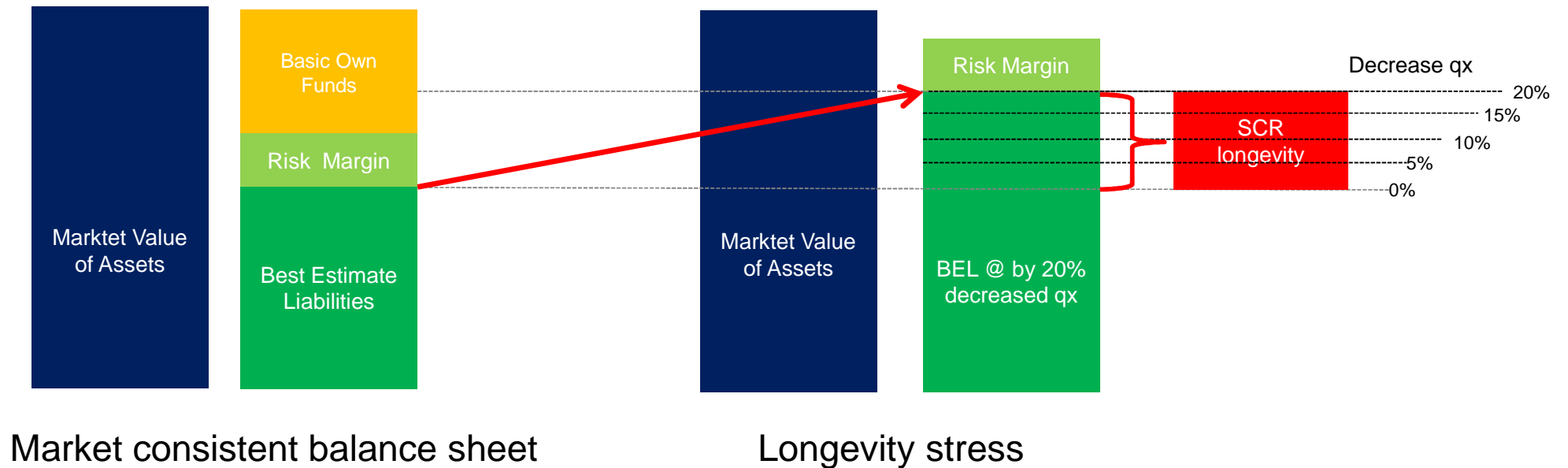
- Paid at maturity
- Payment uncertain, depending on development during term

Lapse shock absorber

- Capital requirement for lapse risk under the SII standard formula defined as maximum of
 - Lapse up: Permanent increase of lapse rates by 50%
 - Lapse down: Permanent decrease of lapse rates by 50%
 - Mass Lapse: 40% lapses in the current year
- Mass Lapse scenario hurts for profitable business with low lapses.
- Lapse shock absorber covers insurer's actual lapse rates in excess of an attachment point (tbd) up to a detachment point (up to 40%).
- Reinsurance benefit to be paid if actual lapse rates exceed attachment point.

Longevity Shock Absorber

longevityshock = immediate permanent decrease of the mortality rates by 20% which are used for calculating best estimate liabilities



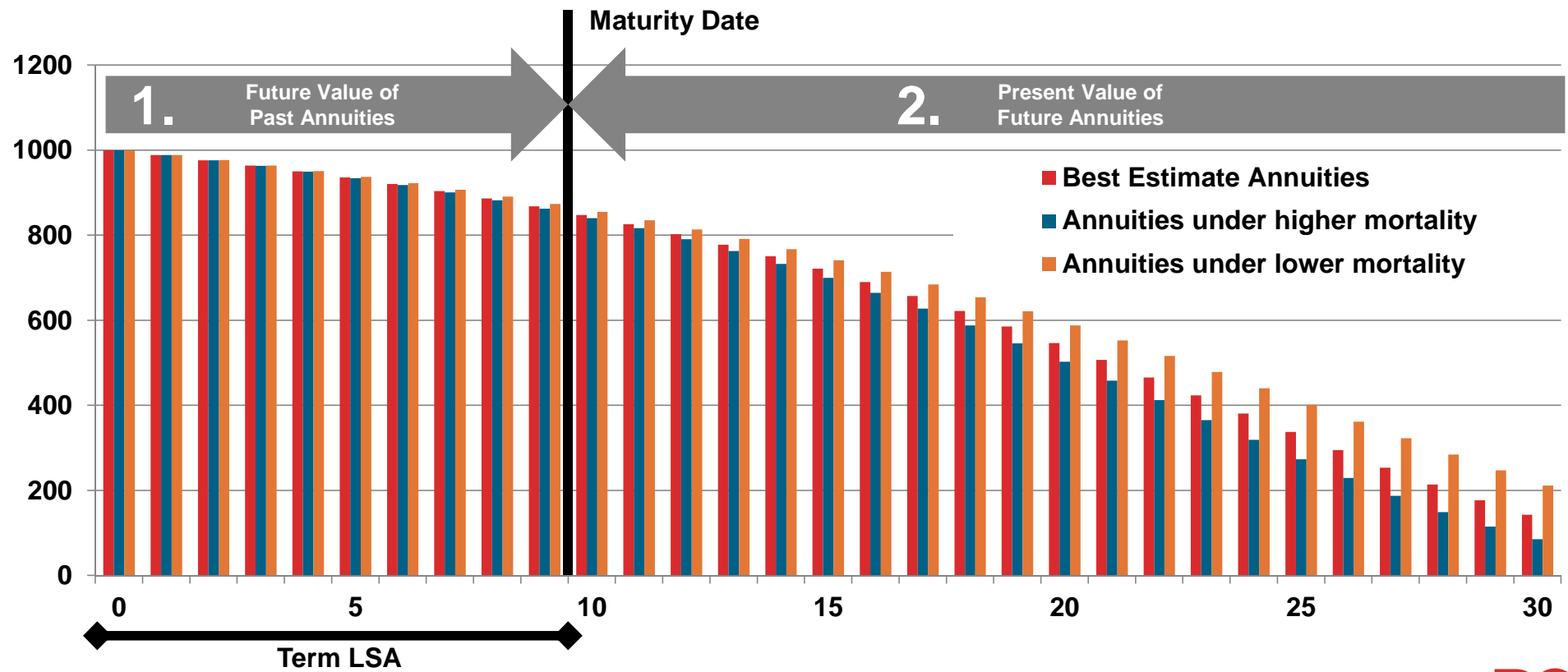
Longevity Shock absorber

- Capital relief for long-term longevity risk through limited cover period
- Decrease of mortality rates partly covered by reinsurer
- Reinsured Benefit defined as interval [AP, DP] within the interval [0%,20%] of the longevity stress scenario
- Underlying Longevity Benefit (ULB) at maturity is key.
 - $ULB = FV(\text{past annuities}) + PV(\text{future annuities})$

 Reinsured Benefit = $\max [0, \min (ULB - AP, DP - AP)]$

Two Components Underlying Longevity Benefit (ULB)

1. FV of Past Annuities and 2. PV of Future Annuities



Longevity Shock absorber

- Definition of underlying longevity benefit: 2 components:
 1. Future Value of past annuity payments (easy)
 2. Present Value of future annuities (not easy)
at maturity date.

- Methodology to determine PV of Future Annuities set at inception:
 - Pre-defined model to project mortality rates over remaining term liabilities
 - Model is recalibrated based on realized mortality during term (and other available data)
 - Data used for recalibration needs to be observable and objective

Value of Inforce Financing

- VIF financing:
 - Quota-share agreement
 - Reinsurance pays commission and participates in future profits of the business
- Expected profits in future premiums (EPIFP) Tier 1 capital under SII
 - ➔ VIF financing is not effective under SII
- But: If SII shortens contract boundaries
 - ➔ VIF financing improves the solvency ratio under SII
- VIF financing for optimising other bases (e.g. statutory income) unchanged



Contingent Capital Solutions

Capital relief through ‘just-in-time reinsurance capital’

- Insurer buys the option
 - to enter into a reinsurance treaty or
 - to increase share or extend duration of existing treaty

- Option is triggered through pre-agreed conditions, e.g.:
 - movement at financial markets (interests, equity)
 - decrease of insurer's capital

- Can support fungibility of capital within the group

Beyond Reinsurance: Portfolio Transfers

- Long-term traditional business puts significant pressure on life insurers
- Exit structures attractive for non-core business
- Growing market for acquiring run-off portfolios:
 - Equity Firms (usually cooperate with reinsurers)
 - Reinsurers (via subsidiaries)
 - Run-off platforms

 Capital relief through transfer of non-core business

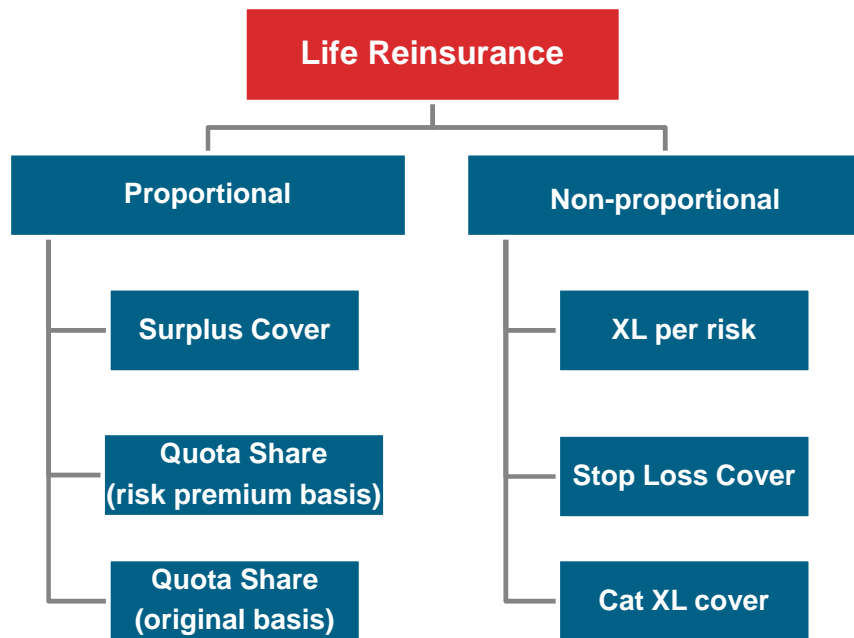


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D. Closing Remarks

Evolution or Revolution?

- What will the future bring?



or

Shock Absorber solutions Portfolio Transfers
Contingent Capital Solutions ?
Longevity Swaps
Asset Intensive Reinsurance

Thanks for your attention

- Any Questions?
- Any Comments?



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