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Capital Motivated Reinsurance - the Actuary's guide to the Ultimate Coinsurance Universe

Singapore Actuarial Conference 2023

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ALM challenges & solutions

	Replicating Portfolio	Interest Rate Derivatives	Coinsurance
Description	• Pool of assets designed to replicate the cash flows (static replication) or market value (dynamic replication) of the liabilities across a large number of scenarios • Typical instruments applied to legacy savings portfolios are vanilla fixed income securities such as government and corporate bonds	• Hedging instruments aimed at offsetting the impact of movements in financial market variables on the liabilities • Most typical instruments applied to legacy traditional savings portfolios are interest rate swaps, bonds forwards and swaptions	• Reinsurance transaction where assets and reserves are transferred to the reinsurer • **All risks of the reinsured portfolio are transferred proportionally from the cedant to the reinsurer**
Advantages	✓ Can be an effective hedge for stable liabilities and stable market conditions ✓ Relative simplicity	✓ Can be an effective interest rate hedge for stable liabilities and stable market conditions ✓ Requires less funding/balance sheet capacity than purchasing underlying assets	✓ Complete transfer of underlying portfolio risks (market, biometric, policyholder behaviour) ✓ Access to global investment expertise and yield pick-up from reinsurer (possibly supported by favourable solvency regime) ✓ Favourable accounting & solvency treatment ✓ Highly bespoke solutions possible
Disadvantages	× Not an effective risk management tool for insurance risks and disintermediation risk (policyholder behaviour changes in response to financial market changes) × Low returns for some portfolios vs capital requirements for incremental asset risk taking × Assets that replicate long-term or 'exotic' liabilities might not be available or sufficiently liquid	× Not an effective risk management tool for insurance risks and disintermediation risk (policyholder behaviour changes in response to financial market changes) × Derivatives that replicate long-term or 'exotic' liabilities might not be available or sufficiently liquid × Operational considerations and potential for accounting volatility under GAAP	× Counterparty credit risk towards reinsurer (can be mitigated with appropriate collateral) × Relatively higher complexity for more tailored solutions

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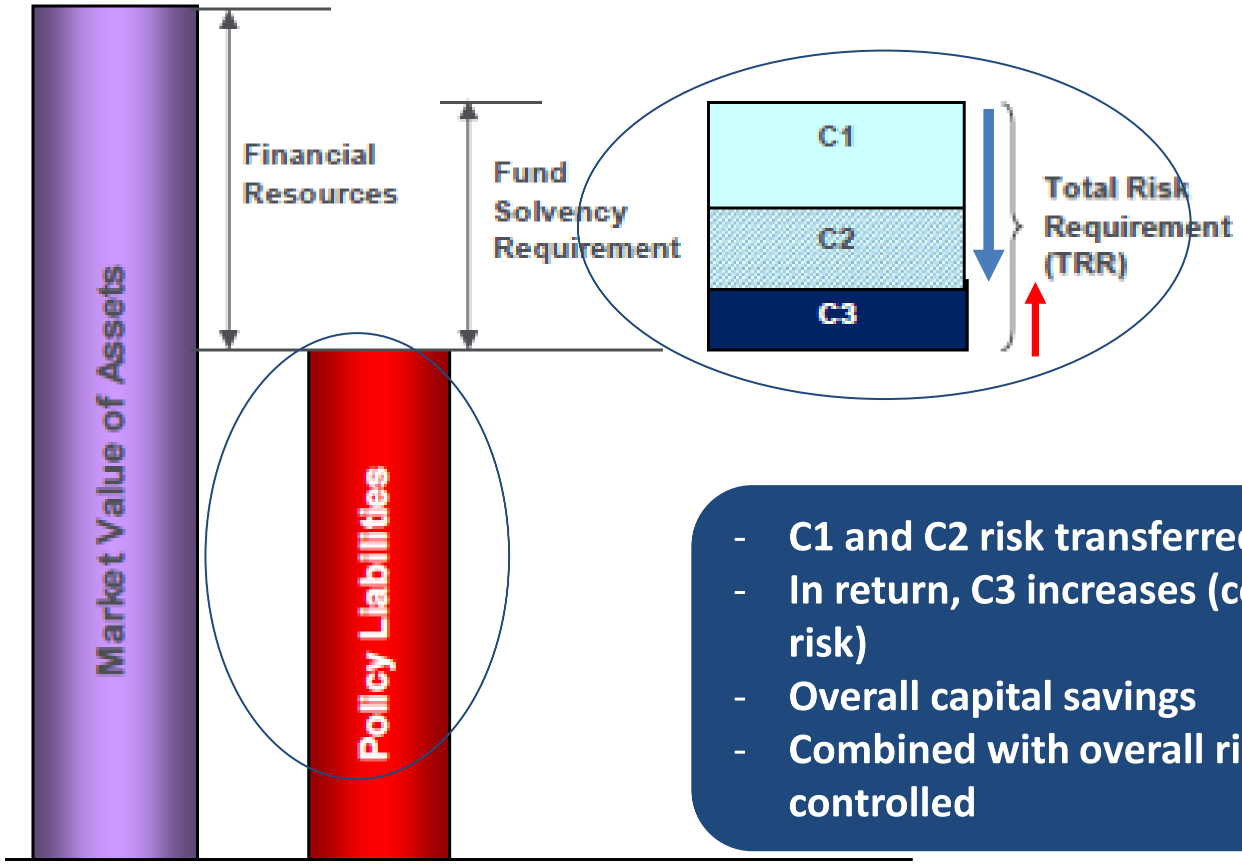
Coinsurance – back-book

Don't Panic



- C1 and C2 risk transferred
- In return, C3 increases (counterparty risk)
- Overall capital savings
- Combined with overall risk management controlled

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What is Coinsurance – Flow reinsurance?

Don't Panic

Key features

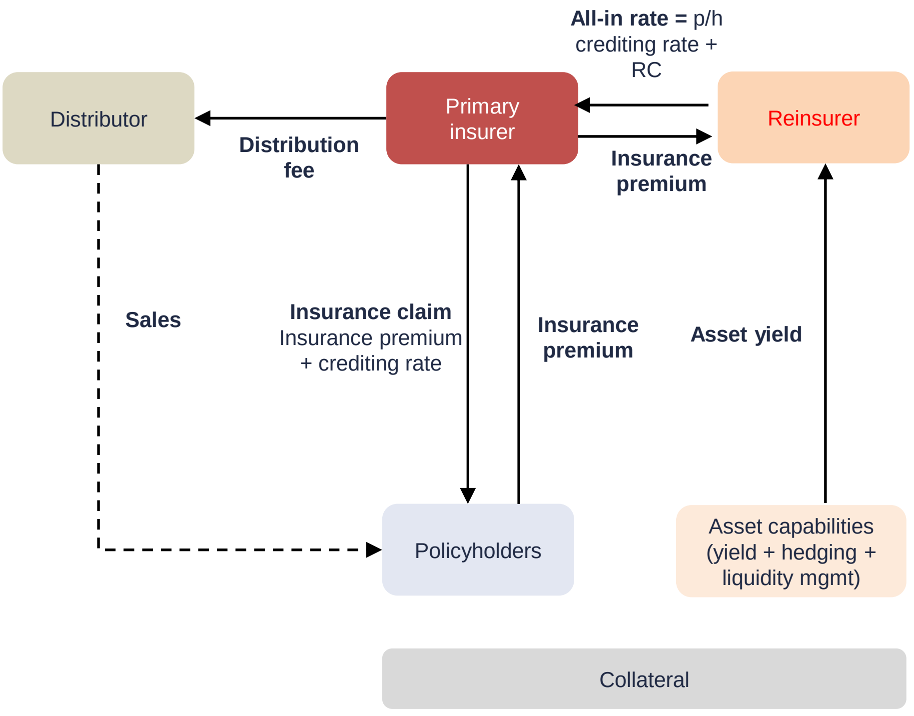
Product features

- Policyholders can choose to take a lump sum or annuity at maturity
- Key benefits: Death, Surrender (including partials) & Maturity
- Surrender comes with penalties and market-value adjustment
- Fixed policyholder crediting rate during accumulation period
- Term: e.g. 5y, 10y
- Currency: JPY, USD, AUD e.g.
- Tontine / non tontine : e.g.
  - For tontine a cap is applied to Surrender and Death claims in return for an increased maturity benefit. The tontine cap is 70%-100%
- Can come with protection riders (e.g. nursing benefit) or target currency riders (e.g. USD policies - when USD/JPY reach certain levels, automatic conversation to JPY)

Reinsurance Structure

- Coinsurance with asset transfer
- Typically, 80-100% Quota-Share
- Reinsurer may not reinsure all original benefits that are outside of its risk appetite (e.g. target currency rider)
- New business is repriced twice a month, with existing business ceded until natural expiry (i.e. Term)
- Motivation for insurers to enter into reinsurance is driven by risk management in relation to ALM, as well as reserve or capital relief
- Collateral is posted for credit risk mitigation – typically market value based liabilities and assets, where methodology and investment guidelines are mutually agreed

Transaction structure



Motivation:

- Yield enhancement & Product competitiveness
- ALM / product design idea generation from other markets

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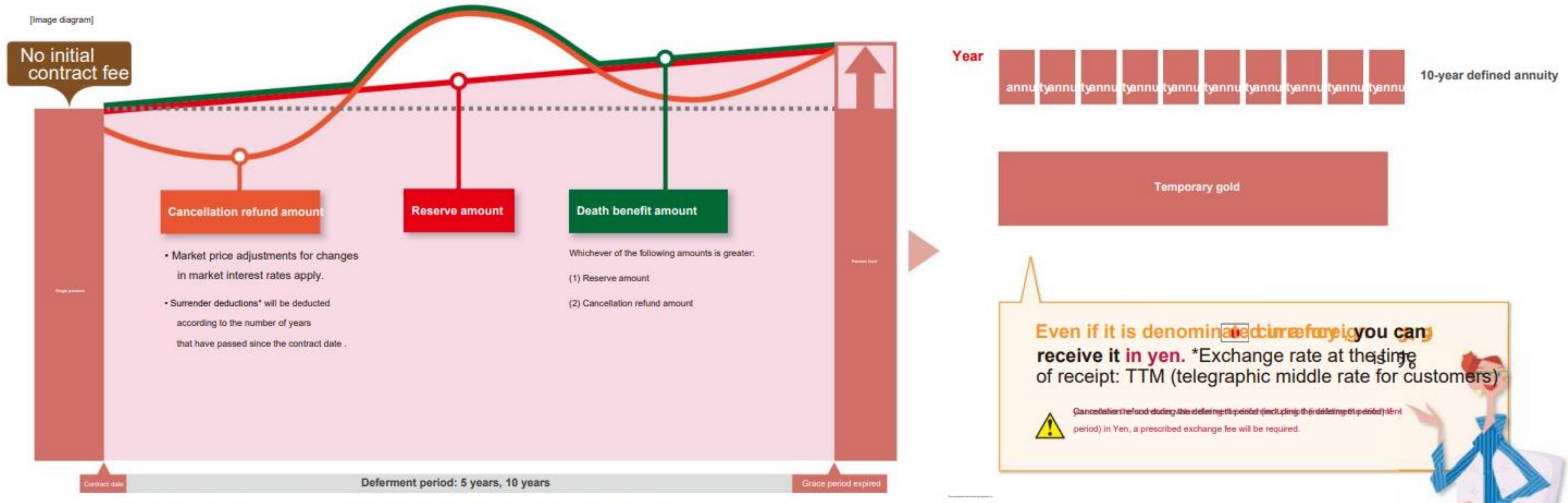
Product x

Point 1 A minimum **death benefit amount equal to or greater than the single premium** is guaranteed in the designated currency from the time the death benefit contract for the single premium or higher is signed.

Point 2 **The amount to be received is fixed** At the time of contract, the amount of annuity funds denominated in the designated currency is fixed.

Point 3 You can also choose to receive a lump sum payment at the end of the grace period .

Addition of Accumulated Interest Rate If the designated currency is yen and the single premium is 30 million yen or more, the accumulated interest rate will be added. * Only simple plan is available.



*The surrender deduction amount is the amount obtained by multiplying the basic benefit amount (single premium equivalent) by the surrender

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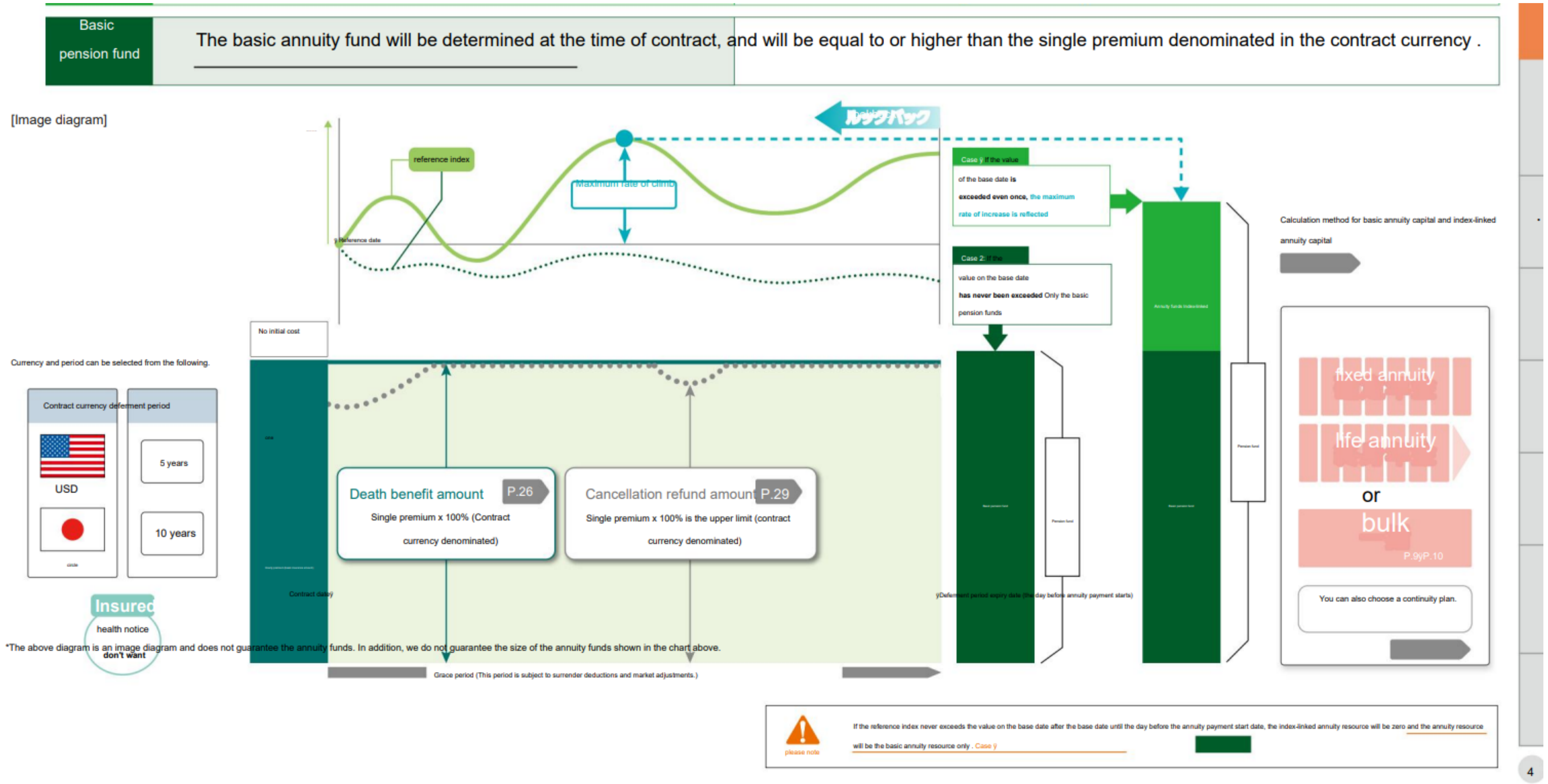
Product y



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Coinsurance - flow

Day 0 | **Day 1-2** | **Day 3-4** | **Day 5** | **Day 6-7** | **Day 12-14** | **Day 15**

Insurer	Client Data	→ Sausage Machine
Investments (Investments / Treasury)	Investment Yields as of Day [X]	→ Sausage Machine
Market Research (Actuarial / Client Management)	Market / Channel Data / Competitive Positioning	→ Sausage Machine
Reinsurance Operations (Actuarial)	BE assumptions/ Expenses	→ Sausage Machine
Asset / Hedge Management	SAA, Hedge, Liquidity etc. Considerations	→ Sausage Machine

Sausage Machine

Day 3-4: Communicate model outputs and pricing outlook to internal

Rate Setting internal reinsurer process

Day 5: Communicate **Rate Recommendation** to Insurer

Insurer has [X] Days to Agree / Disagree with Rate Recommendation

[Any applicable Ceding Commission may be adjusted according to Insurer strategy]

Day 6-7: Insurer provides **confirmation of New Rates**

Day 12-14: Insurer Communicates **New Rates** externally to Agents / Market

Day 15: Pricing life-cycle begins again

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Some variations

Coinsurance, funds withheld	Modified Coinsurance
• "Coinsurance" is original terms reinsurance, with assets and reserves transferred to the reinsurer • "funds withheld" is Coinsurance, with life insurer keeping the assets	• Modified Coinsurance is original terms reinsurance with reserves deposited "withheld" with the life insurer • Overall, original terms with life insurer keeping assets *and reserves*

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Counterparty Risk Management - tools

Funds withheld *– certain jurisdictions may still levy asset risk charge*

Multiple reinsurers

LOC

- Can be costly?

- Tenor limited to <5 years?

Trust

– independent custodian

- mutually agree on triggers for access

(*some*) 'Naked' exposure

- for price optimisation

Capital relief penalties or haircuts

- *Some jurisdictions prescribe this for collateral*

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Collateral (Negotiation) decisions: AMOUNT

Local (Risk Free curve) BEL basis

Reinsurer (e.g. GAAP, RF + illiquidity premium or other) BEL basis

This is the ‘economic efficiency’ of different balance sheet jurisdictions
<>
(perceived) credit risk on reinsurance counterparty

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Collateral (Negotiation) decisions: MIX

Local (Risk Free curve) BEL basis

Reinsurer (e.g. GAAP or other) BEL basis

Assets in here to be mutually agreed:

- Investment guidelines (too conservative or different with actual investment strategy can lead to higher price)

- Derivative usage permitted or not (if not, or not allowed within Trust, can be higher price or cost leakage)

- choice of Trustee (if trustee not enough experience in managing ‘more complex’ assets or not ‘international’, cost leakage)

- Book value vs Market value basis (Asia is a MTM industry, IFRS 9 and IFRS 17)

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Trust Account (Negotiation) decisions: PACKAGE

Local (Risk Free curve) BEL basis

Reinsurer (e.g. GAAP or other) BEL basis

Counterparty risk penalties under local RBC or internal model (*where applicable*)

'capital' credit risk:

– under local RBC, some jurisdictions have haircuts to certain asset classes and/ or reinsurer credit ratings

- some cedants may have internal credit risk model and/or haircuts

Conclusion:
"**Give and Take**"
- insurer take some credit risk
- reinsurer can give optimal price

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Balancing Pricing versus Security

Swap Insurance Risk for Counterparty risk, risk vs. reward balance

Focus on lowest price	Security package	Focus on highest security
Higher flexibility / broader asset universe	**Investment guidelines / eligible assets**	Lower flexibility / restrictive asset universe
Lower	**Collateral haircuts / overcollateralization**	Higher
Greater alignment with reinsurer's local reserving	**Collateral approach**	Dependent on Cedant's risk appetite / internal model

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Illustrative reinsurance considerations

- Typical elements to consider

Illustration purposes only	
Portfolio	• Risk type? Benefit Type? Currency ? • How much to cede? Min. retention?
Reinsurance structure	• Coinsurance with funds transferred or withheld? (if transferred, paid in assets or cash?) • Modified Coinsurance?
Collateral	• Reinsurer posts collateral in a trust account with a reputable custodian or trustee • BEL calculation for collateral amount: – Discounting to allow for some credit spread volatility/illiquidity premium? – Actuarial assumptions are locked-in at inception or allow to move with experience? • Investment guidelines reflects cedant risk taking approach to assets/counterparty risk management? • Letter of Credit: if used, with which bank? Is it cost prohibitive? What duration? (not available for >5 years?)
Termination trigger	• Counterparty risk deterioration? What are the triggers to use? • Major change in law or regulations?
Pricing	• To make the ‘economics work’ reinsurance premium <100% of cedant’s BEL • Other items to solve for/consider: local accounting standards, tax considerations etc.

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Coinsurance – in-force – recent transactions in Asia

Most notably:

- Dai-ichi Life (Japan) – coinsurance with asset transfer, WOL (mostly) mortality policies
- AXA Life (HK) – coinsurance with asset transfer, WOL participating policies, (mostly) mortality risk
- T&D (Japan) – coinsurance with asset transfer, term individual annuity policies, (mostly) longevity risk
- Flow reinsurance
  - Japanese life insurers, FIA/FA products (5Y and 10Y duration, with USD and Yen options)
  - Singapore life insurers, endowment + exploring IUL
- Others, estimated with <0,5bn USD:
  - HK life insurer – fixed term annuities
  - Singapore life insurers -> motivated by par back book, UL back book etc.
  - Korean life insurer(s) -> mix bag
- Non-life side:
  - Japan – casualty & 3rd party (motor) liabilities

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