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Life Conference 2022

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New Risk Transfer Techniques for Life Insurers

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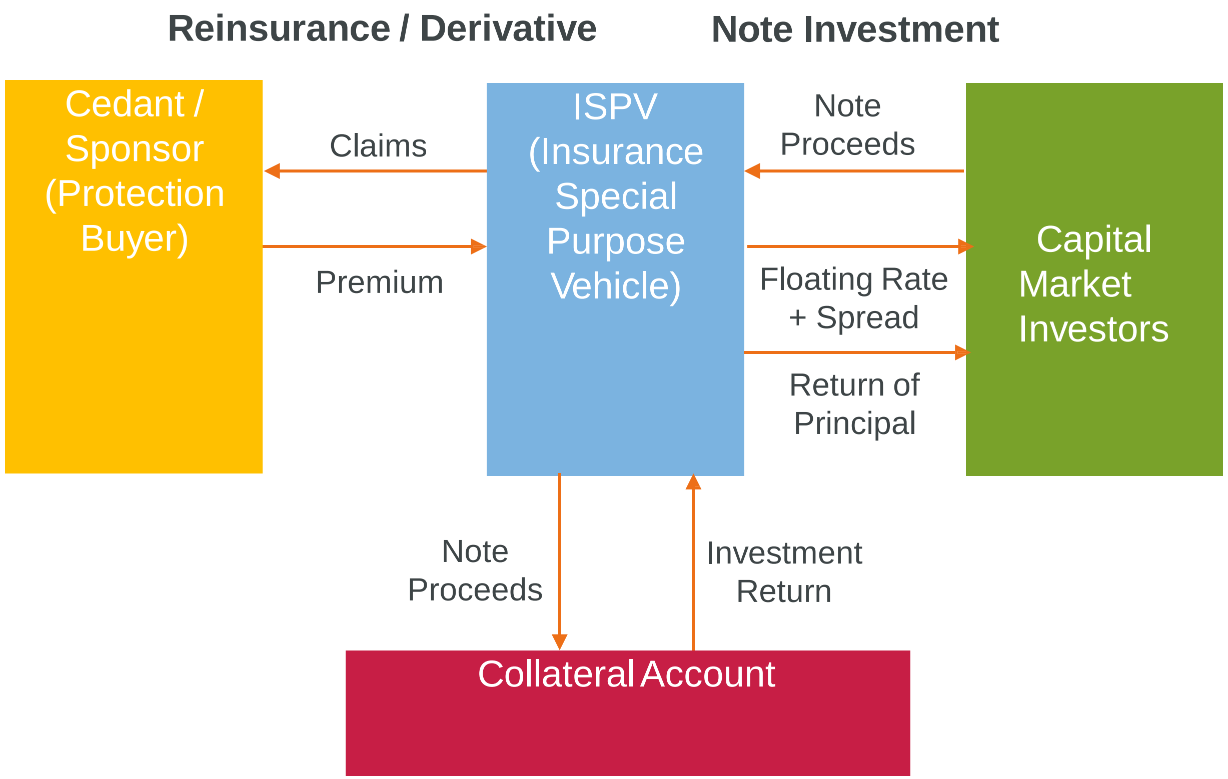
AGENDA

- **Introduction to ILS**
- UK ISPV Regime + Relevant Regulation
- Types of Life Transaction
- Annuity Writer Potential Use Cases

Typical Structure



How cat bonds and other ILS are structured:

- Insurance Linked Securities (ILS) provide (re)insurance firms a means for transferring insurance risk to the capital markets.
- An ISPV transforms (securitises) insurance risk into investable securities.
- They are typically fully funded with loss of principal between defined claim Attachment and Exhaustion Points.
- Collateral is conservatively invested. Typically held in liquid Money Market Funds or Putable Notes issued by Supranational Banks e.g. IBRD / EBRD.
- Transactions are typically short tenor: 1 – 5 years.
- Investors receive a regular coupon plus return of capital, minus any payments made to the cedant, at the end of the contract period. There may be an Extension Period to allow for a final determination of losses before capital is released.

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Types of ILS and Payout Triggers

Types:

Cat Bonds	Collateralised Reinsurance	Sidecars	ILWs (Industry Loss Warranties)	Derivatives
Most common segment of the market	Typically smaller size than cat bonds and privately placed	Often Quota Share. A type of collateralised reinsurance	Reinsurance or derivatives based on industry losses	E.g. weather, longevity

Pay-out Triggers (share of market – cat bonds):

More tailored, less basis risk, less transparent

Increased transparency and speed of calculation but more basis risk

Indemnity (62%)	Modelled Loss (<1%)	Industry Loss (28%)	Parametric (10%)

Hybrid Triggers

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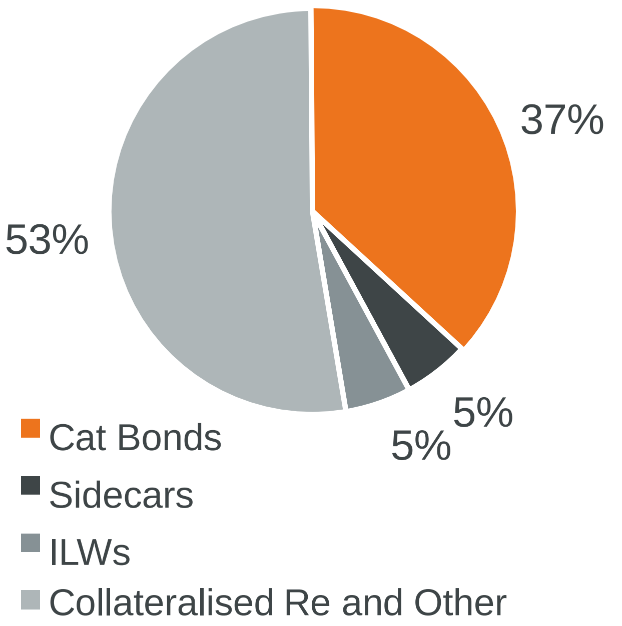
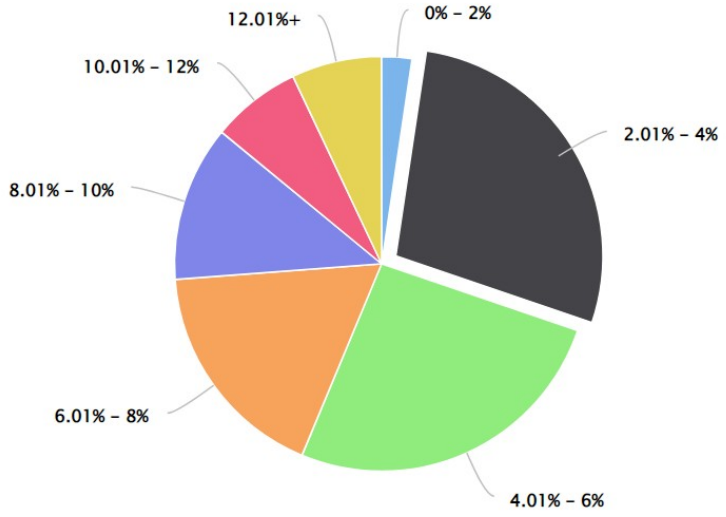
Key features of the market

c.$100bn market breakdown HY2022
c.15% of global reinsurance capacity



Cat Bonds and ILS risk capital outstanding by coupon pricing



Source: www.Artemis.bm Deal Directory

Vast majority of perils covered are short-tail property cat

Life insurance makes up a tiny part of the market

Pricing

Most of the market operates at the riskier end of the spectrum and pricing is comparable to the structured credit market.

Life ILS funds are lower risk and will target mid single digit returns. Non-Life funds will often target low to high teen returns.

In the life space funds often need some leverage to meet return targets. They do this by not always fully funding:

- Fronting rated reinsurer
- Fronting rated investment bank
- Unpaid share capital with investor commitments
- Bank lending facility secured on investor commitments

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Jurisdictions

Number of 144A transactions per issuer domicile

Domicile	Period ending June 30, 2021	Period ending June 30, 2022
Bermuda	38	41
Singapore	7	5
Cayman	3	3
Ireland	2	2
UK	1	1
USA	0	1
Hong Kong	0	1
Grand Total	**51**	**54**

Source: Aon Securities LLC

Bermuda is by far the most popular domicile for the issuance of ILS. Singapore is relatively new to the scene, but has been growing rapidly.

Bermuda is popular largely because of flexibility and speed of authorisation by the BMA.

Singapore and Hong Kong currently offer financial incentives for setting up ISPVs in their jurisdiction (refund legal costs).

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Hot Topics in the ILS market

- Higher Interest Rate Environment:
  - Traditional investments offer attractive returns
  - Pension Fund Investors:
    - Better funded so less need to take risk
    - Smaller size due to higher rates
- Hurricane Ian:
  - Losses
  - Trapped Capital
  - Revised return targets to reflect hard reinsurance market
- Life:
  - Excess mortality

Some investors / funds withdrawing from the ILS market despite the attraction of a hard reinsurance market

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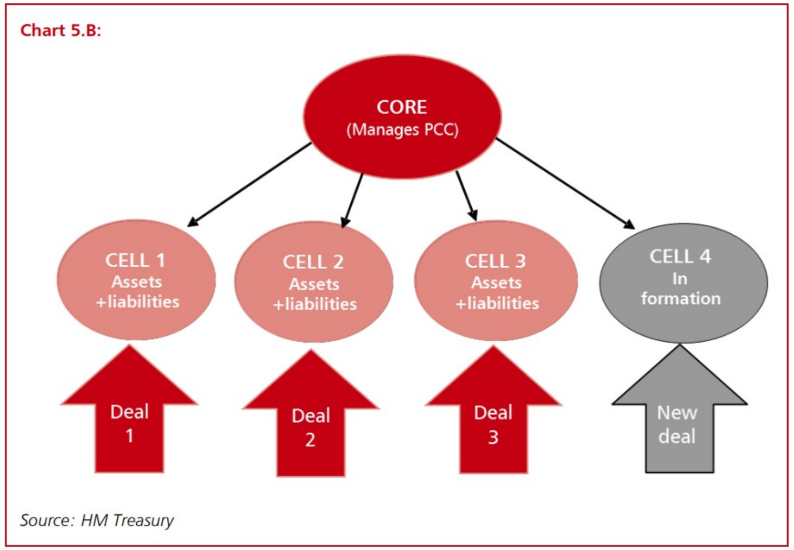
Key requirements for an ILS Regime



Creation of a Protected Cell Company (PCC) Regime in addition to individual ISPVs

- A common feature of the ILS market is that the same ISPV may be used for a number or series of different deals, saving set-up time and administrative expense.
- Such a multi-arrangement ISPV (mISPV) differs from a traditional ISPV in that it can take on multiple contracts for risk transfer e.g.an mISPV is an ISPV through which a series of ILS or Collateralised Reinsurance deals can be managed.
- mISPVs are permitted under Solvency II, but the risk transfer contracts must be strictly segregated from each other under the Solvency II regime to avoid cross contamination of one transaction with other transactions that are not related.
- The UK's new Protected Cell Company (PCC) regime ensures such segregation.

Tax Neutrality:

Benefits: for Qualifying Transformer Vehicles (QTVs):

- No corporation tax
- No withholding tax
- No Stamp Duty

- Authorised
- Real risk transfer
- No tax avoidance

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Solvency II ISPV Regulation

Authorisation of an ISPV is subject to all the Articles in Chapter XV of the Delegated Act (Article 318)

Article 319 Fully Funded	▪ The SPV must be fully funded at all times in accordance with Article 326
Article 320 Effective transfer of risk	▪ Risk transfer is clearly defined and incontrovertible
Article 321 Rights of the providers of debt or financing mechanisms	▪ The claims of the providers of debt or financing mechanisms are at all times subordinated to the reinsurance obligations of the SPV to the insurance or reinsurance undertaking
Article 326 Solvency Requirements (requirements to be fully funded)	▪ Assets of the SPV are valued in accordance with Article 75 of Directive 2009/138/EC; ▪ At all times assets are equal to or exceed the Aggregate Maximum Risk Exposure (AMRE) and the SPV is able to pay the amounts it is liable for as they fall due; ▪ **Proceeds of the debt issuance or other financing mechanism are fully paid-in.**

One mechanism to ensure full funding is for reinsurance treaties to contain a limited recourse clause, limiting any claim on the ISPV to no more than the assets provided as collateral. However, this is not a requirement under Solvency II and is not a substitute for effective risk management.

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UK ISPV Regime – Genesis and Regulatory Timeline

2014

London Market Group (LMG) publishes paper suggesting competitive position of London market is under threat

Recommends embracing rise of alternative capital to build capacity

HMT Autumn Statement: government to explore options to attract more reinsurance business to the UK

2015

March Budget announces intention of government to work with industry and regulators to develop a corporate and tax structure to allow ILS to be domiciled in the UK

LMG establishes an ILS task force including representatives from UK Treasury, FCA and PRA

2016

HMT initial consultation on ISPV regime in the UK

HMT second consultation on tax and regulation of ILS vehicles and draft Risk Transformation Regulations 2017

PRA CP42/16
FCA CP16/34
Authorisation and supervision of ISPVs

2017

Response to consultation in July

PS26/17
SS8/17 on Authorisation and Supervision of ISPVs

FCA Statement: Authorising and Supervising ISPVs

Risk Transformation Regulations 2017 (RTR) Enacted in December

2018

First deals closed

2019

CP19/19
ISPVs: Updates to Authorisation and Supervision

2020

PRA PS13/20
Updates SS8/17 in May 2020
Authorisation and supervision of ISPVs

2021

2022

Lords Committee finds inflexible culture of regulators may have held back ambition to develop new forms of business

PRA CP10/22
ISPVs: Further updates to Authorisation and Supervision. Expected to be effective by end November

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UK ISPV Regime – Transaction Timeline

2018

Neon sets up NCM Re (UK PCC) Ltd a reinsurance sidecar for its Lloyd's of London Neon syndicate. $72m QS

SCOR sets up Atlas Capital UK 2018 PLC. ($300m Series 2018 ISPV1) Various cat risks.

Beazley sets up Fuchsia Capital PCC Ltd.

2019

Pool Re sets up Baltic PCC Terrorism risk (£75m Series 2019).

SCOR sets up second vehicle Atlas Capital UK 2019 Plc ($250m Series 2019-1). Various cat risks.

2020

Brit sets up Sussex Capital UK PCC Ltd US Storm and Earthquake $300m

2021

London Bridge Risk PCC Ltd is authorised with a limited Scope of Permissions (SOP):

Only QS reinsurance, only with Lloyd's members

2 Transactions:

- Nephila funds its newest syndicate
- The Ontario Teachers' Pension Plan funds a Lloyd's member backing 3 syndicates

2022

Baltic PCC Ltd second issuance (£100m Series 2022-1)

London Bridge 2 PCC Ltd is authorised with an expanded SOP:

- XoL reinsurance for corporate members
- XoL and QS for syndicates
- Cells funded through either preference shares or debt securities

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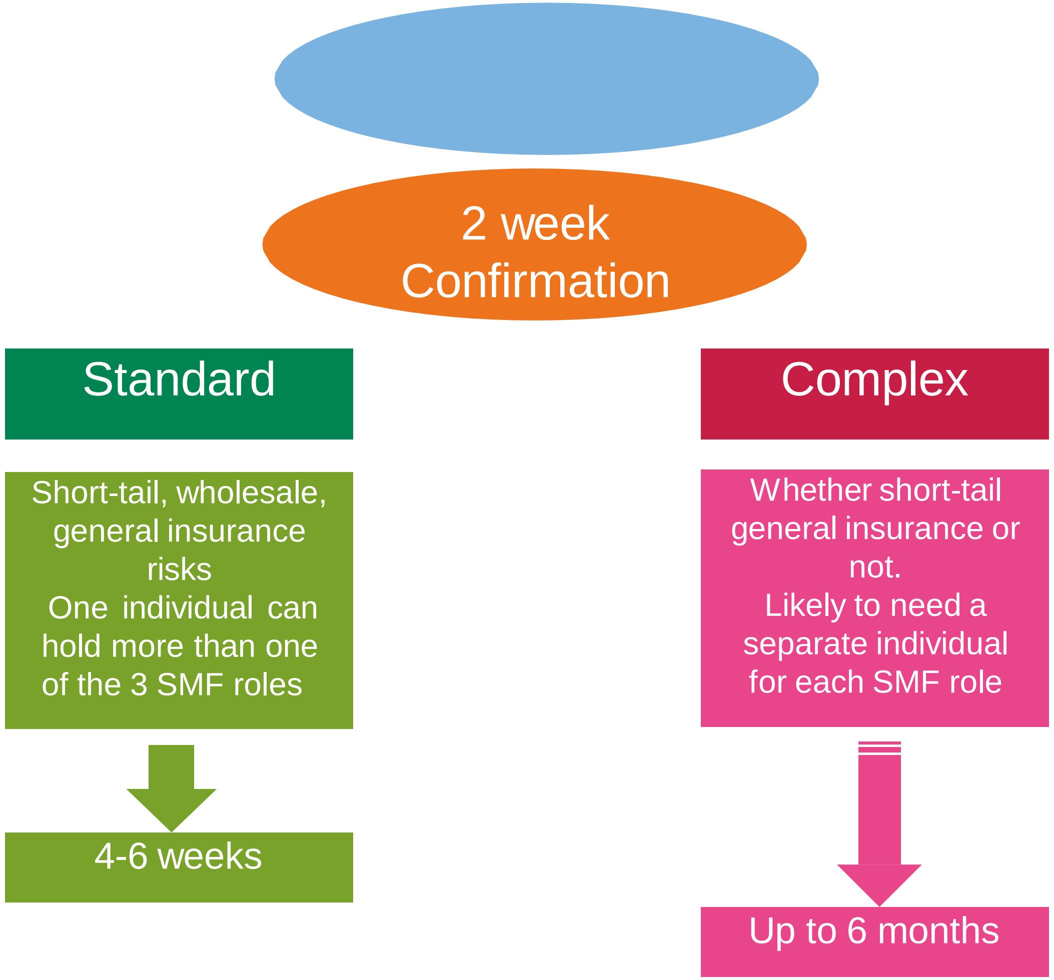
Authorisation and Supervision (as updated by CP10/22)



Authorisation

- ISPVs are only permitted to write reinsurance business.
- The regime is flexible enough to accommodate parametric triggers.
- Scope of Permissions (SOP) limits the regulated activities that an ISPV or MISPV can carry out.
- Improvements proposed for Standard Applications in CP10/22:
  - No longer require a legal opinion for non-English law.
  - Multiple cedants from a single group can cede risk to a single cell under one contract – helping groups manage aggregate exposures.
  - Quantifiable risk: insurance, market, operational and asset
  - No longer requires written policies for systems of governance

On-going Supervision

- SPVs will be subject to ongoing supervision by both the PRA and FCA, and will need to comply with the relevant Threshold Conditions and Solvency II requirements on a continuous basis
- ISPVs are required to provide both a qualitative and quantitative report annually to the PRA e.g. completing the EIOPA templates designed specifically for ISPVs.

What has held the UK back?

Tax	Process	Competition	Regulation
• Stamp duty exemption only implemented in 2022	• Other jurisdictions offer greater speed and certainty for authorisation • Sponsors require confidence in what the regulator will accept	• Other jurisdictions such as Bermuda had a head start • Hong Kong and Singapore offer a grant system to refund expenses	• Solvency II fully funded requirement (other jurisdictions offer some degree of flexibility in the definition of fully funded). • Flexible and proportionate approach

Opportunity going forward….

- CP10 /22 goes some way to streamline the authorisation process, especially for standard applications. PRA open to further feedback.
- Recent developments at Lloyd's of London are encouraging
- Size of UK market and local expertise
- There are untapped areas of the ILS market incl. casualty and longer tail risks (including life?)
- ESG (no need to travel overseas….)

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Alternative Risk Transfer Examples

$$\text{Solvency Cover Ratio} = \frac{\text{Available Capital}}{\text{Required Capital}}$$

Capital vs. Capital Relief:

- Transactions that create capital increase the numerator
- Transactions that create capital relief reduce the denominator and potentially increase the numerator through reduction in Risk Margin. They can therefore be more efficient at improving the Solvency Cover Ratio, though this may be diluted by the impact of diversification.

Type	Capital	Capital Relief	Liquidity	Commentary
VIF Financing: (Pre SII)	✓	☐	✓*	* Cash financing provides liquidity but cashless financing does not…
(Post SII)	☐	☐/✓	✓	Under Solvency II rarely provides capital (depends on contract boundaries) or capital relief (depends on whether fully repay in stress)
Mortality Cat	☐	✓	☐	Usually seen as a risk management rather than capital management tool. Limited number of public deals perhaps because of growth in longevity hedging.
Longevity Risk Transfer	RM	✓	☐	A capital and risk management tool – largely carried out in the traditional reinsurance market – though some limited examples of transfer to ILS funds
Mass Lapse	RM	✓	☐	Usually seen as a capital management rather than risk management tool
Sidecars	✓	☐	✓	Capital raised to access greater new business volumes and gear up returns

Some Deals in the Public Domain

Type	Year	Cedant	Size	Counterparty / Arranger	Commentary
Longevity Risk Transfer (excl. regular longevity swaps)	2008	Canada Life	£500m	JP Morgan	Longevity Swap
	2008	Lucida	£100m	JP Morgan	Index based q forward
	2009	Aviva	£475m	RBS	£50m risk on £475m reserves
	2010	Swiss Re	-	Swiss Re	$50m bond based on differences in longevity improvements between two populations – 8 year
	2011	Pall (UK) Pension	£70m	JP Morgan	Index based q forward
	2012	Aegon	€12bn	DB	Index based OTM longevity swap
	2013	Aegon	€1.4bn	Soc Gen	Index based OTM longevity swap
	2017	NN	€3bn	Hannover Re / Longitude Solutions	Index based longevity trend risk – 20 year
Mass Lapse	2016	ASR		Munich Re	Solvency Ratio Boost 5 pp
	2016	Storebrand		?	Solvency Ratio Boost 3.2 pp

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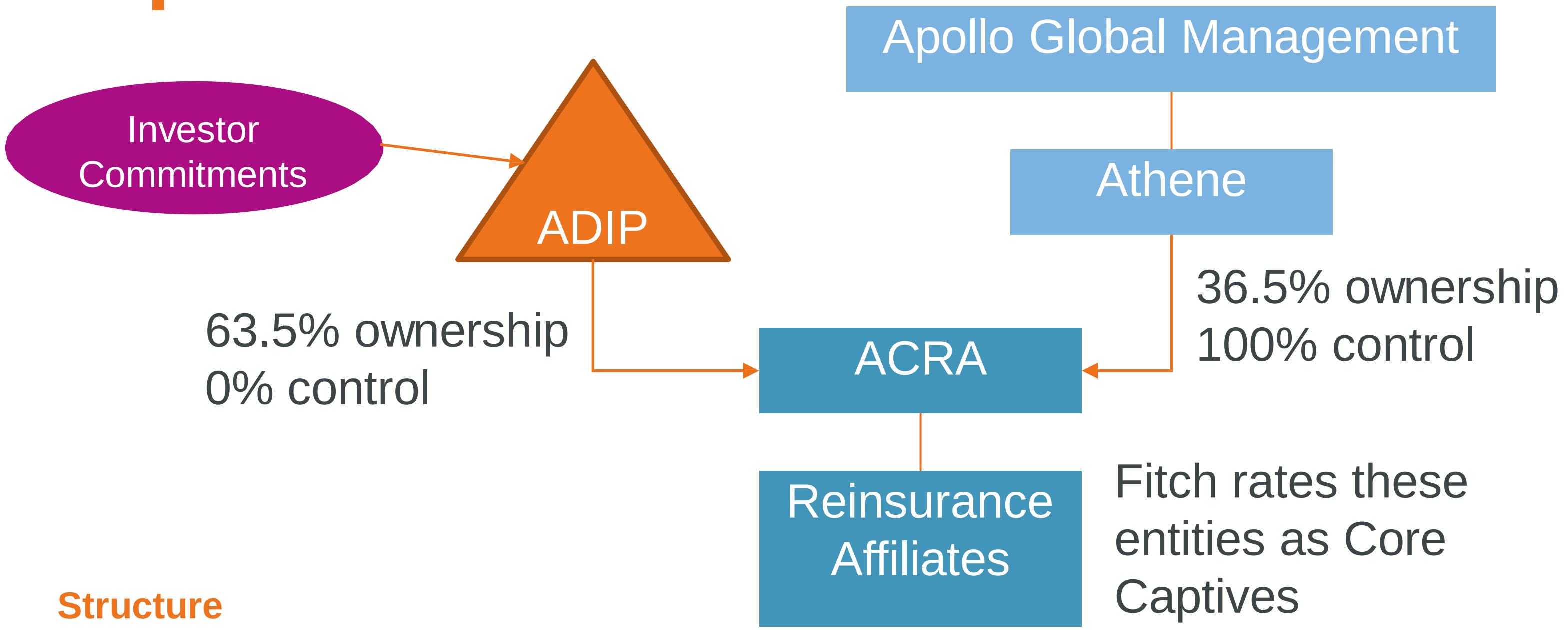
Apollo / Athene Sidecar



Structure

- Apollo / Athene Dedicated Investment Program (ADIP) is a co-mingled fund holding 67% share ownership of Athene Co-Invest Reinsurance Affiliate (ACRA)
- ACRA only reinsures business from Athene
- ACRA is fully consolidated by Athene
- ACRA is licensed and capitalised as a long term reinsurer and rated the same as Athene
- Athene has the ability to recapture business if ACRA falls below certain capital thresholds and has the option to recapture the business after 10 years (providing an exit for investors)

Economics

- Athene has grown from a start-up in 2009 to amassing c.$235bn total assets within 13 years. Apollo manages its assets which make up close to 50% of Apollo’s AUM.
- ACRA set up in 2019 to give Athene the ability to target larger transactions than it could write alone while also gearing up its returns.
- Athene levies a 15bps p.a. management fee on ADIP’s share of ACRA assets. With asset intensive leverage of c.12 this adds c.3.5% to ROE for Athene from asset intensive deals.
- Apollo gains even greater AUM.
- $3.2bn capital commitments allows Athene to target c.$60bn of asset intensive reinsurance.
- Athene can see prospect for ADIP2, ADIP3 in future

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Athene / ACRA Transactions

- $1.7bn capital deployed
- $27 bn fixed annuity block reinsurance transaction and investment in Jackson National Life, part of Prudential plc (63% of the total capital deployment from third-party investors. 37% funded by Athene on a standalone basis), and
- $4.9 bn pension risk transfer deal for security and aerospace company Lockheed Martin.
- It is expected that by the time the additional $1.5bn capital is deployed, it could generate more than $60bn of premium to be invested

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Other Life Sidecars in Bermuda

- Athene is not the only life carrier to have set up a sidecar recently. There are other examples in the US of asset managers / PE firms setting up sidecars to raise third party capital to enable them to carry out larger asset intensive life reinsurance transactions, while also raising AUM and earning Asset Management fees.
- Though often called sidecars they are all fully regulated reinsurance companies and not ISPVs.

Example include:

- KKR/Global Atlantic and side car Ivy Re in 2020 (not consolidated)
- Eldridge/ Security Benefit and SkyRidge Re (not consolidated)

Other developments:

- RGA and Renaissance Re set up Langhorne Re in 2017 to similarly help RGA access larger deals. $780m of capital commitments raised but no deal volume (at least by end 2021).
- Not clear if only provides retro to RGA or faces clients direct.

Different models exist, taking different approaches on whether to provide retro / reinsurance to part of the (re)insurance group or face 3rd party cedants direct, and on whether to consolidate or not.

Interestingly these vehicles are not set up as ISPVs.

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- **Annuity Writer Potential Use Cases**
  - **Raise third party capital**
  - **Share risk with plan sponsor e.g. longevity risk**
  - **Credit hedging**

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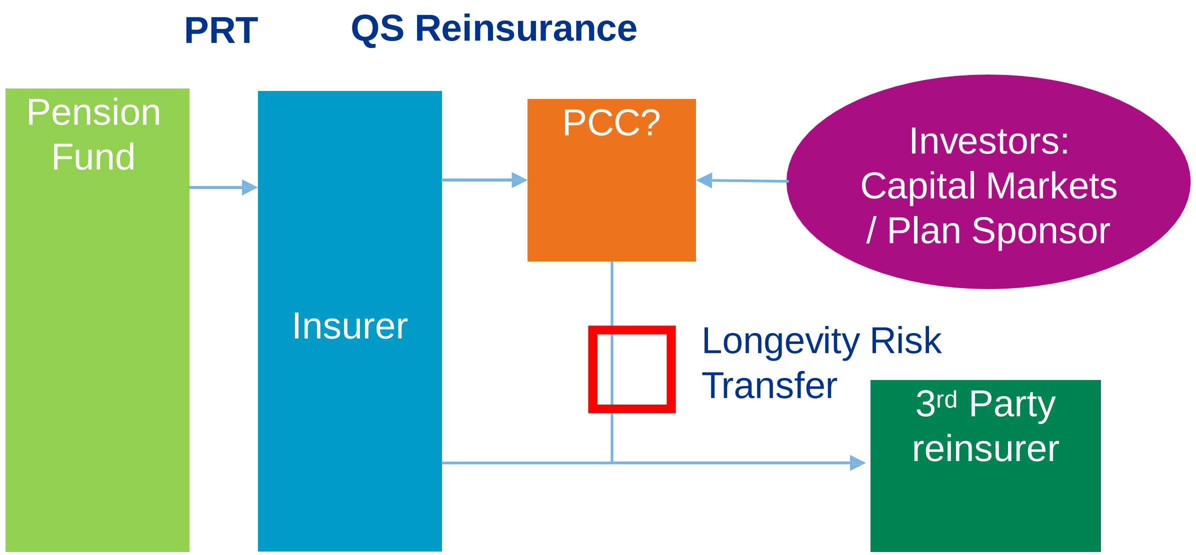
Annuity Writer Use Case 1: Sidecar

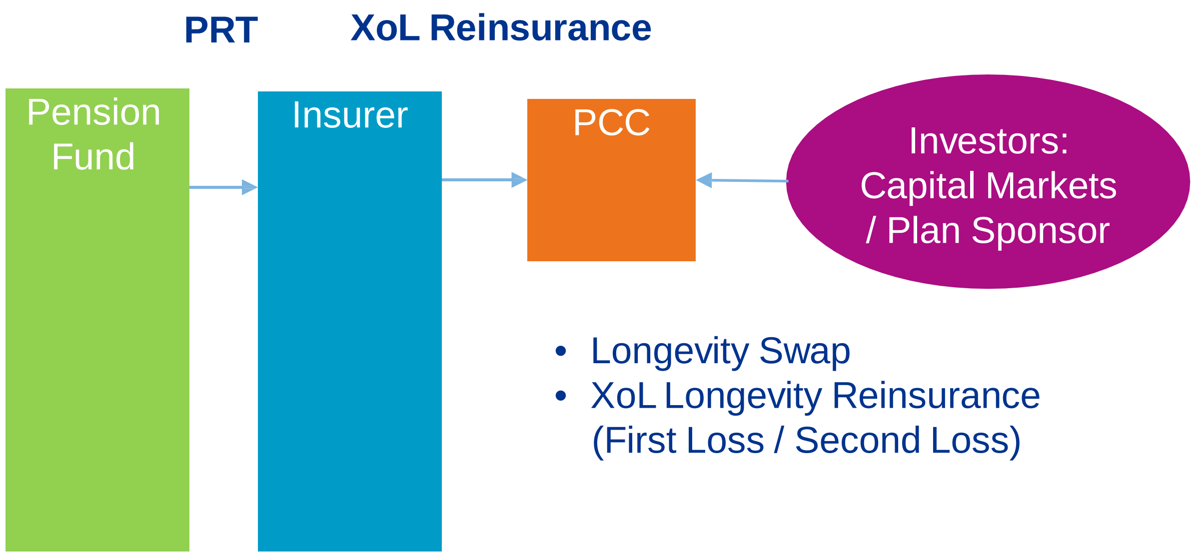


Commentary

- Insurer faces pension fund in a buy-in / buy-out
- Scheme is quota share reinsured to a cell in the PCC. X% reinsured or 100% reinsured and the insurer takes a (1-X%) stake in the cell?
- Annuity book investors typically look for the leveraged asset return and therefore longevity risk is likely to be transferred to a 3rd party reinsurer (probably before reinsurance to the PCC)
- Is there likely to be any appetite from Pension Funds / Sponsors to invest? Capital Requirements for Bank Sponsors may make this hard for them to invest?

Advantages	Challenges
• Asset kept on-shore and therefore meets one of the PRA's concerns around asset intensive reinsurance • Raises capital without diluting existing shareholders • Allows access to larger deals • Gives investors the ability to invest directly in selected deals e.g. a plan sponsor or other third parties • Fees can gear up returns for the insurer	• Managing conflicts of interest including which assets are invested in PCC vs. kept by insurer • Loss of diversification if ring fence different deals • Since the vehicle needs to be fully funded at all times for the risk it has assumed, tail-risk falls back on the insurer. • Design mechanism to allow investors an exit after 10 years. Keep at discretion of insurer? • Is a PCC the right vehicle – Bermuda examples do not use one.

Annuity Writer Use Case 2: Longevity Risk Sharing

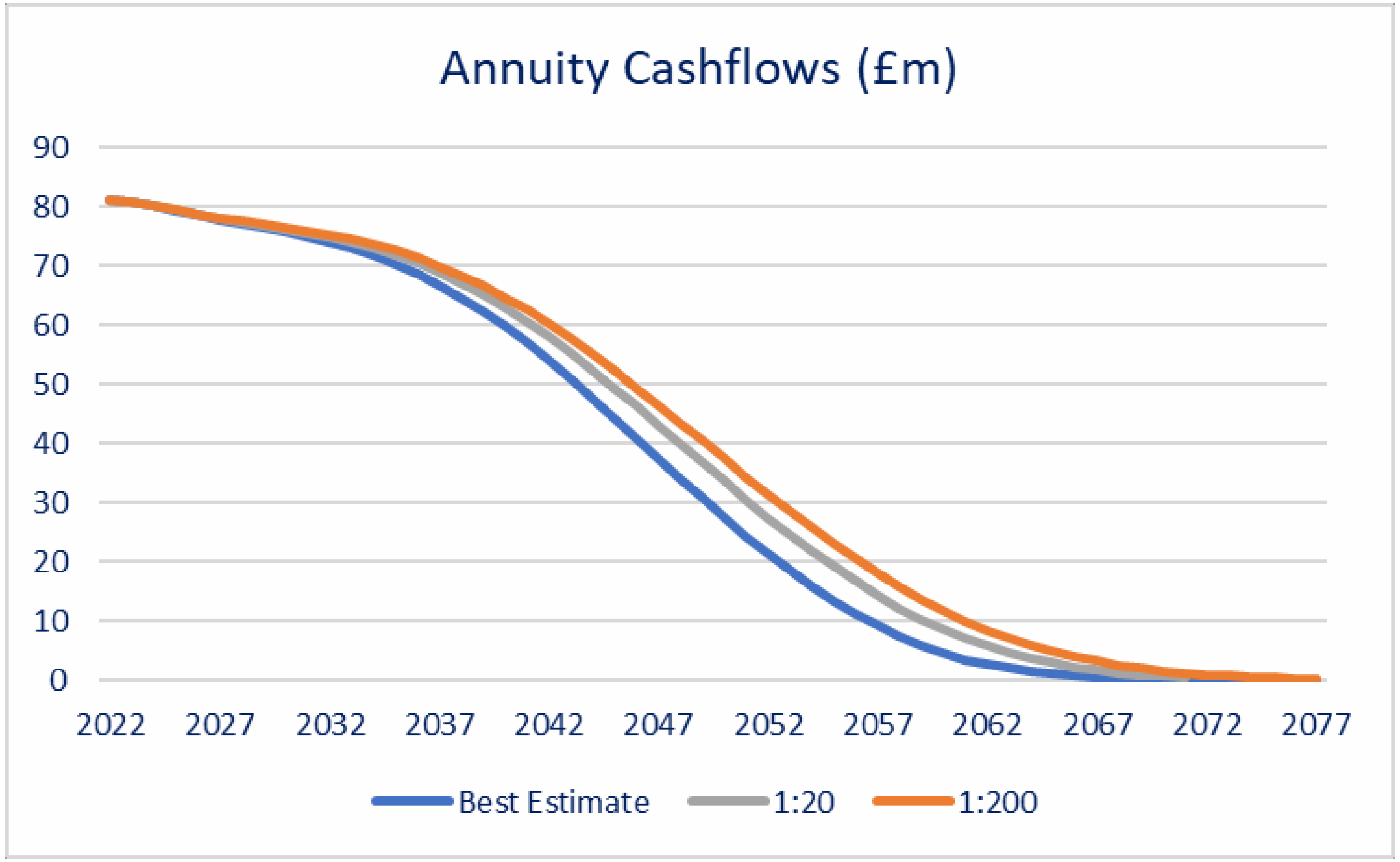


Commentary

- Insurer faces pension fund in a buy-in / buy-out
- Insurer enters into XoL reinsurance with PCC
- Transfer First Loss or Second Loss?
- Is there likely to be any appetite from Pension Funds / Sponsors to invest?

Advantages	Challenges
• May cheapen cost of buy-in / buy-out for Pension Plan if sponsor contributes capital to cover risk • Provides a route for investors to take longevity risk but can economics stack up?	• Facing a rated reinsurer may be a cheaper option than a fully collateralised vehicle • Since the vehicle needs to be fully funded at all times for the risk it has assumed, tail-risk falls back on the insurer. • Currently no shortage of cheap longevity swap capacity • Investment time horizon of investors typically shorter than tenor of majority of longevity risk

Annuity Writer Use Case 2: Longevity Risk Sharing



Commentary

- The most common type of longevity risk transfer is a longevity swap. The insurer pays the best estimate cash flows plus a margin to cover the reinsurer's cost of capital
- Replicating some earlier longevity risk transfer trades it is possible to replicate XoL economics with a plan sponsor or third parties.
- ISPV does not need to set up Risk Margin but does need to fully collateralise the undiversified longevity capital requirement.
- Probably easier to share first loss with a plan sponsor rather than OTM longevity risk
- Question whether economics could ever stack up versus a reinsurer who benefits from diversification with its mortality book.

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Annuity Writer Use Case 2: Indicative impact on pricing

- Under a structure, it may be possible to reduce the overall required capital for the insurer and translate the reduced capital cost to the premium.
- The total capital required across the insurer and the PCC may increase and a significant amount of capital remains at risk for the sponsor (up to the 1-in-20 level)

Scenario	Base – Insurer 100% reinsured using longevity swap	Sponsor funds to 1-in-20 – No additional reinsurance	Increase / (Decrease) in Liabilities Required by the Insurer	Notes
BEL	104	100	4	Reduction for no Re fees – assumed 4% fee
RM	2	4	(2)	Increase in RM due to removal of the longevity swap
SCR	11	12	(1)	Allow for 1 in 20 long. sponsor cover in longevity SCR, offset by reduced diversification in the insurance entity
Capital Buffer	4	5	(1)	Assume 40% CMP
Total required capital (Insurer)	121	121	(0)	TP + required capital
Capital Required in the PCC by sponsor	-	5		Funding = Undiv. 1 in 20 longevity risk.
Total required capital (Insurer + PCC)	121	126	5	Total increase in required capital in Insurer and PCC

Table 1: Base results, Scenario = 1 in 20 longevity risk, Rounded
Results normalised to unit of 100 of liabilities

In-payment annuity cash-flows, 100% reinsured
Longevity capital assumed to be normally distributed
No allowance for impact of potential changes to Solvency II in UK

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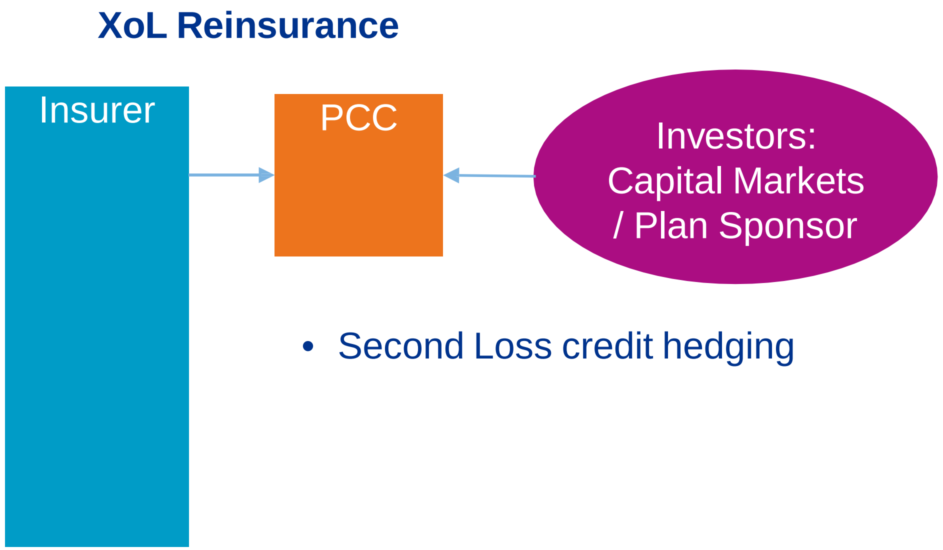
Annuity Writer Use Case 3: OTM Credit Hedging



- Second Loss credit hedging

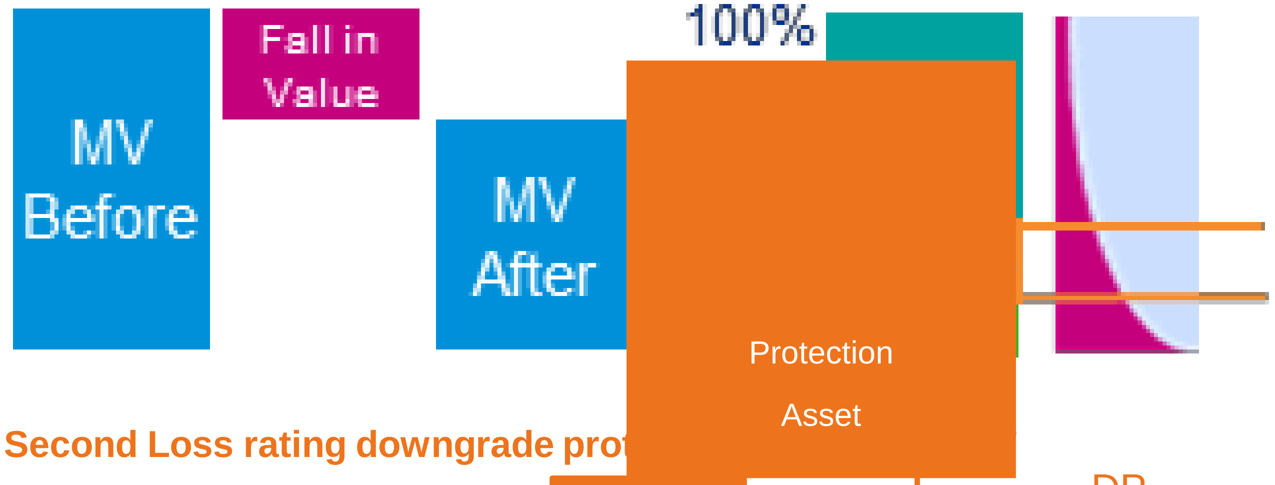
Commentary

- Does not need to be linked to a particular buy-in deal.
- Insurer enters into XoL reinsurance with PCC. PCC covers OTM shortfalls in asset cashflows to meet annuity payments.
- Since credit risk is return generating only look to transfer OTM credit risk i.e. Second Loss
- Investors could include reinsurers with appetite for asset intensive reinsurance or structured credit investors

Advantages	Challenges
• Annuity writers often claim that they hold excessive capital against credit risk • It should therefore be possible to transfer OTM credit risk at an attractive cost of capital relief • The calculation of SCR capital in a Matching Adjustment Portfolio is complex. Reinsurance may offer advantages versus financial market / capital market solutions since it can be more readily tailored to cover asset shortfalls in meeting liabilities – whatever the reason for those shortfalls.	• Facing a rated reinsurer / bank may be a cheaper option than a fully collateralised vehicle • ILS funds are unlikely to invest since they focus on insurance risk and do not look to take credit risk • Addressing maturity mismatch between investor time horizon and tenor of annuity book. There are some techniques that can be employed to recapture the reinsurance from emerging capital resources (VIF and release of SCR) to allow a long dated deal with a short expected life

Credit Hedging – Financial / Capital Market Techniques

Second Loss Synthetic Securitisation



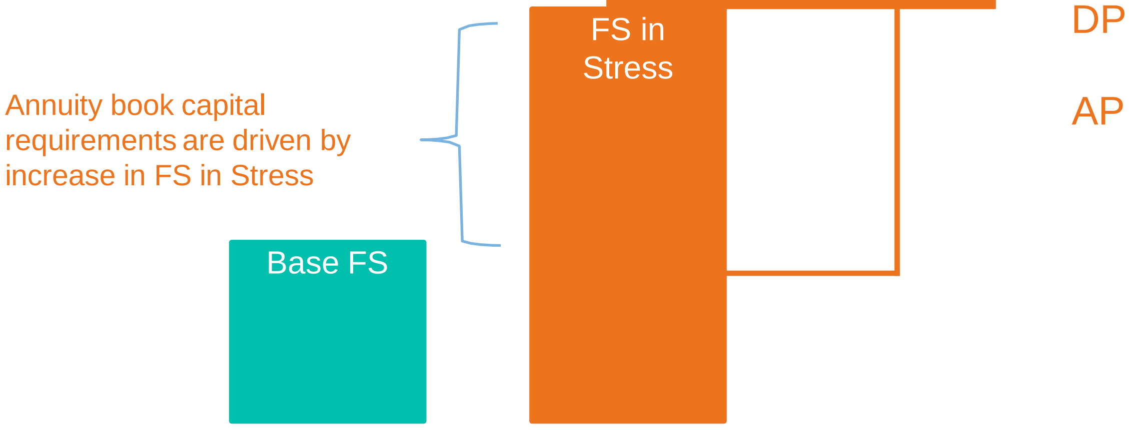
Pros:

- Tried and tested securitisation technique
- Provides capital relief when spreads widen as protection asset increases in value

Cons:

- Pays out on default only and may expire before it ever pays out
- Only partial pick up in value in stress
- Maturity mismatch increases cost of capital relief over time
- Complex to price and value

Second Loss rating downgrade prot



Pros:

- Capital relief targets main driver of capital requirements (ratings transition)
- Likely to fully pay out in a 1:200 stress

Cons:

- Short term but can still be effective
- Valuation complexity
- May look expensive

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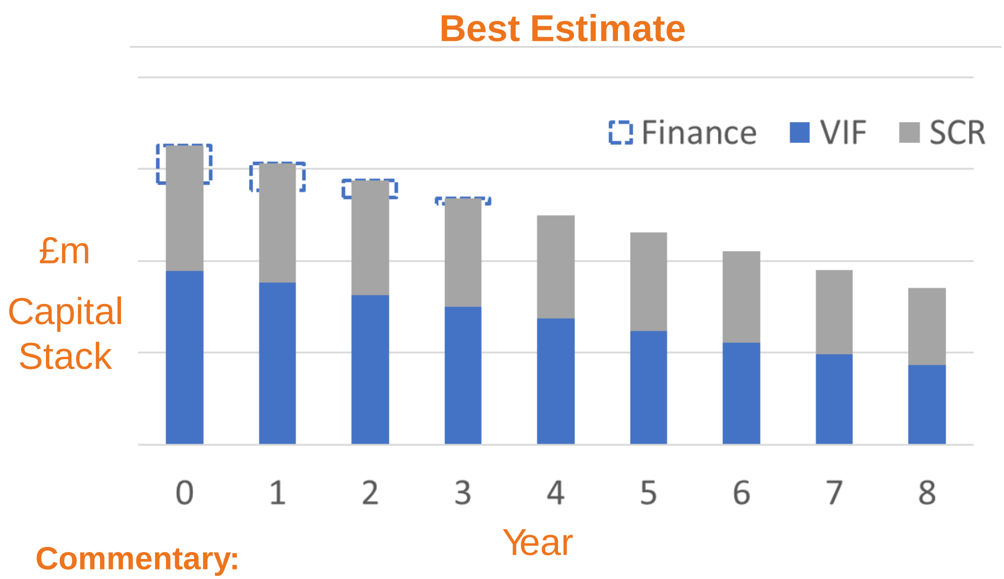
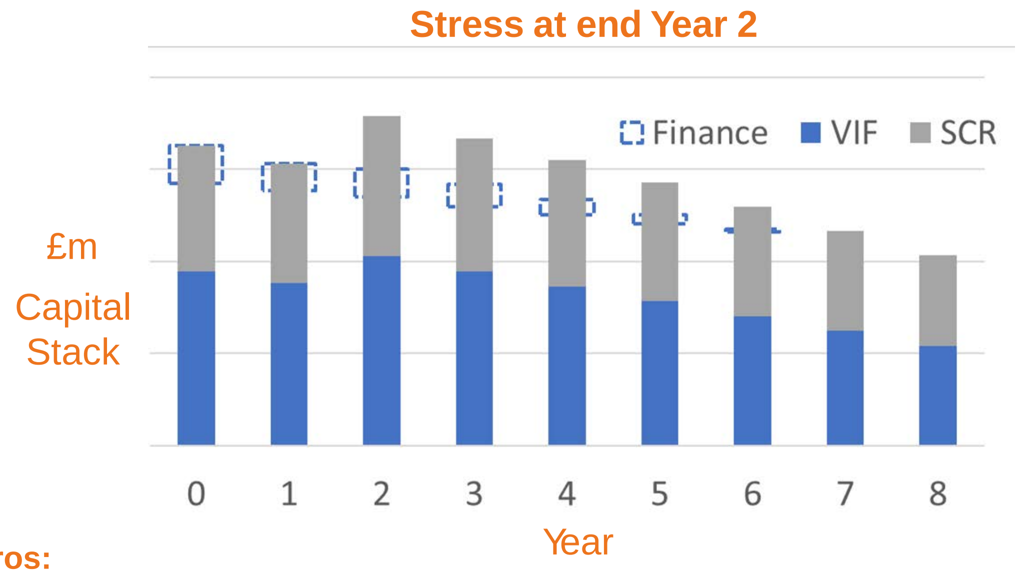
Credit Hedging – XoL Reinsurance Example





Commentary:

- Reinsurance finances OTM capital requirements
- Reinsurance can be recaptured from emergence of VIF arising from Fundamental Spread unwind less cost of default and downgrade and amortisation of SCR
- Insurer accelerates release of capital and replaces 3rd party capital only when it can afford to do so, as capital resources emerge
- In stress 3rd party capital moves more ITM and ultimately is available to meet asset shortfalls required to meet annuity payments

Pros:

- No fixed maturity - financing only repaid when insurer can afford to do so
- Targets the OTM capital requirements very precisely
- Should deliver cheap cost of capital relief versus alternatives
- Can deliver capital relief for illiquid assets which would not typically be sold on downgrade

Cons:

- Valuation is complex
- Limited potential reinsurance / ILS counterparties
- May be complex to explain to capital market investors

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Comparison of OTM Credit Capital Relief Options

	2nd Loss Default Tranche Protection	2nd Loss Downgrade / Increase in FS Protection	Excess of Loss Reinsurance
Capital Efficiency*	• Partial (may be less than 50% efficient)	• 100% (if fully pays out in 1:200 stress scenario)	• 100%
Cost of Capital Relief	• In between the other two options	• Should look expensive since arguably overpays if assets do not ultimately default	• Has the potential to be cheapest
Maturity Mismatch	• Yes (short dated: 5-10 years)	• Yes (short dated: 2-3 years)	• No (but is recaptured over time)
Liquidity	• No	• No	• No
Basis Risk	• No	• No	• No
Investors	• HFs / Reg Cap Funds	• HFs	• Reinsurers / capital market investors?
Counterparty risk	• No	• No	• Either exposure to reinsurer or fully collateralised

* Before diversification considerations which will serve to dilute the impact of the capital relief

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Summary – potential to use reinsurance structures to:

- Access third party investors to support new business growth and gear returns
- Expand the longevity risk transfer market
- Use reinsurance to reach parts of capital requirements that other solutions cannot (easily) reach

These may or may not involve the use of PCCs!

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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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Thank you

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