Institute and Faculty of Actuaries

Tackling issues with Long Term Guarantees

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16 October 2015

Agenda

The measures and applications

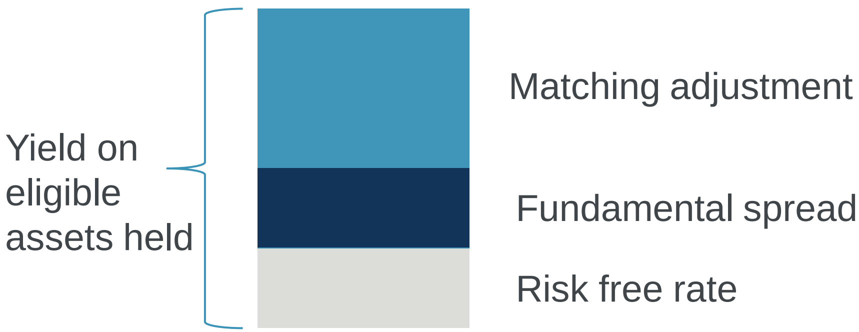
- A quick introduction to the ‘LTG measures’
- Practical issues with the applications
- What next?

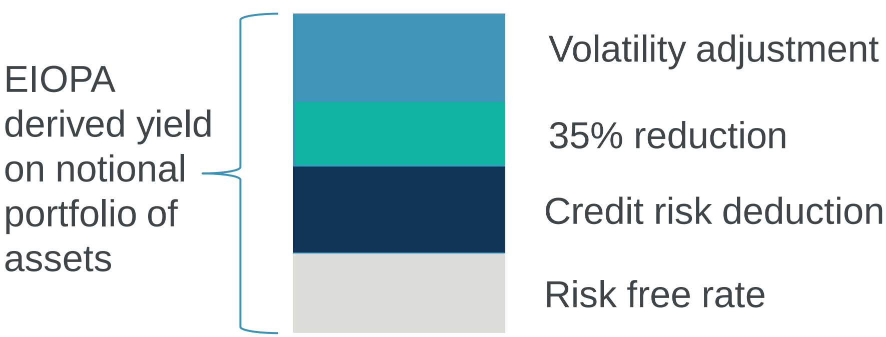
The impact on running the business

- Hedging interest rate exposure
- Playing by the rules
- Portfolio optimisation

The 'LTG measures'

- **The matching adjustment**
  - Based on own asset portfolio
  - The proportion of spread not attributed to the 'fundamental spread' – an EIOPA derived allowance for default and downgrade or, if greater, 35% of a long term average spread (30% for government bonds)
  - Assets and liabilities subject to eligibility restrictions
  - Subject to PRA approval
  - Impact publicly disclosed

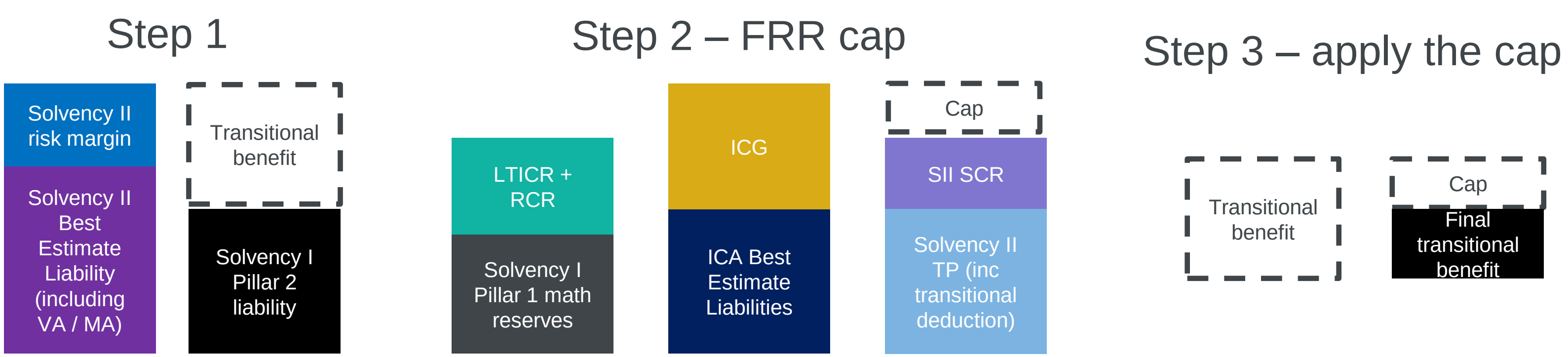




- **The volatility adjustment**
  - Based on EIOPA derived notional asset portfolio
  - Equal to 65% of the risk adjusted spread on that notional portfolio
  - Can be applied to any liabilities not using MA, subject to approval.
  - Impact publicly disclosed

The ‘LTG measures’ (continued)

- **Transitional on technical provisions**
  - Transitions in over 16 years
  - Can recalculate the benefit given a change in risk profile or if the PRA requires it
  - Based on difference between SII and ICA liabilities, but with a ‘FRR’ cap
  - Subject to PRA approval
  - Impact must be publicly disclosed



The applications

- **Content**
  - What to put in them?
  - How much detail to put in?
  - Length
- **Timing**
  - 6 month approval time (except if only doing VA)
  - Tie in with scheduled Board meetings
- **Validation**
  - Is it needed?
  - External or internal?
  - What level? Assurance? Review?
- **Ownership**
  - Line 1 or Line 2?
  - Actuarial or Risk?

Specific issues – Matching Adjustment

- **Data requirements**
  - Asset identification
  - Granularity of data
  - Multiple sources of data
- **Asset eligibility**
  - How ‘aggressive’ to be
  - Calibration of maximal make whole clauses
  - Restructuring?
- **Updating investment mandates**
  - Asset restrictions
  - Duration restrictions
  - Regular monitoring of mandates
  - Determining permitted level of turnover
- **Communication**
  - Requires Board approval
  - How to communicate end result to analysts

Specific issues – Volatility Adjustment

- **Requirements**
  - There are no set rules for the application
- **Liabilities**
  - Can be used on any liabilities
  - In order of ease: annuities, deferred annuities, with-profits, protection, unit-linked
- **Investment strategy**
  - Demonstrate that the VA can be earned in practice
  - Demonstrate that the use of the VA will not impact investment strategy
- **Liquidity plans**
  - For non-annuity business, not often considered in detail
  - Demonstrate that not necessary to force-sell assets
- **Quantification of VA**
  - Will EIOPA produce the VA in time for valuation?
  - How to project the VA?
  - VA change under stress in IM?

Specific issues – Transitional measures

- **Calculation**
  - Need to know potential capital add-on / position of approvals
  - Need to know ICG as at YE15
- **Re-calculation**
  - Need to set out what a change in risk profile means
  - Also need to set out process for recalculation of the Solvency I position
  - How to run off in business plan projections?
- **Communication**
  - Hardest to explain to analysts

What next?

- **Extensions to applications?**
  - More asset types?
  - More liability types?
  - Restructures
- **Implementation**
  - Amending collateral arrangements
  - Separating funds, accounts, management information
  - Asset mandates
- **Role of the Risk Function**
  - Monitoring that the requirements are being met
  - Assessing what new assets are within the bounds of the application
  - Assessing what new liabilities are within the bounds of the application
  - “Guardian” of the application

Overview

Managing interest rate exposures:

- Discounting under Solvency II
- Sovereign spread risk

Playing by the rules:

- Asset eligibility
- Cash flow matching tests

Portfolio optimisation

Liquidity management

Managing Interest Rate Exposures

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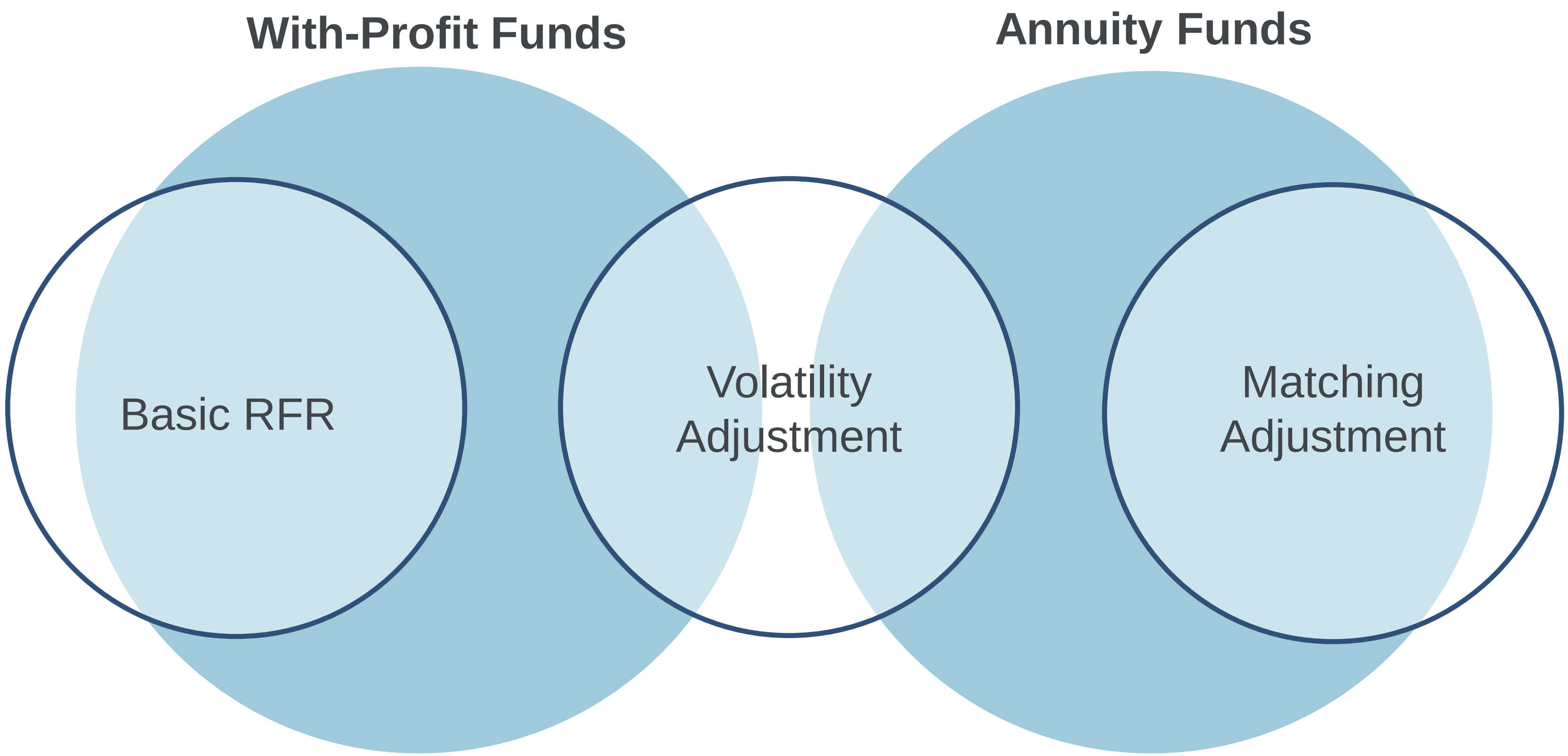
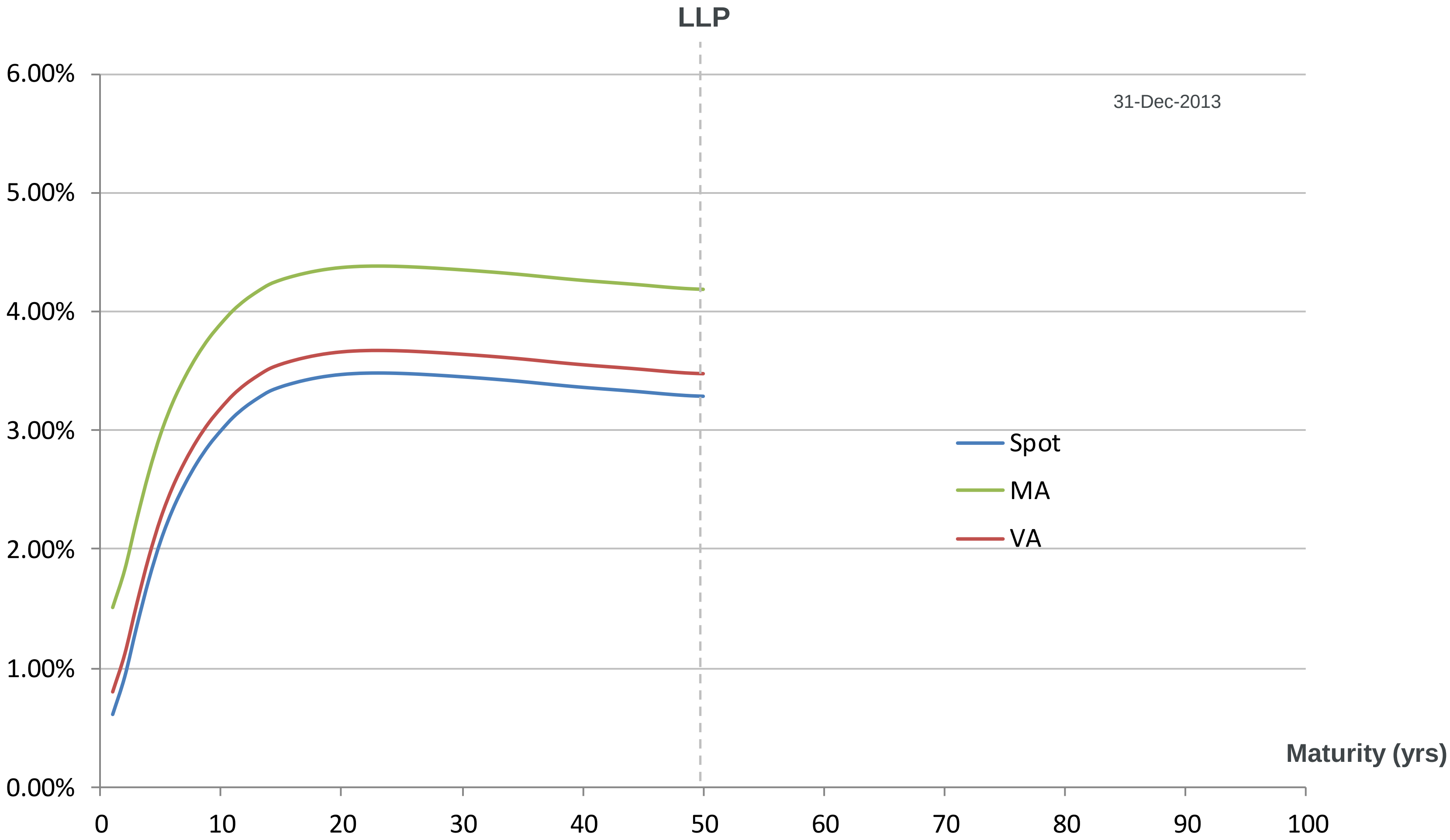
Discounting



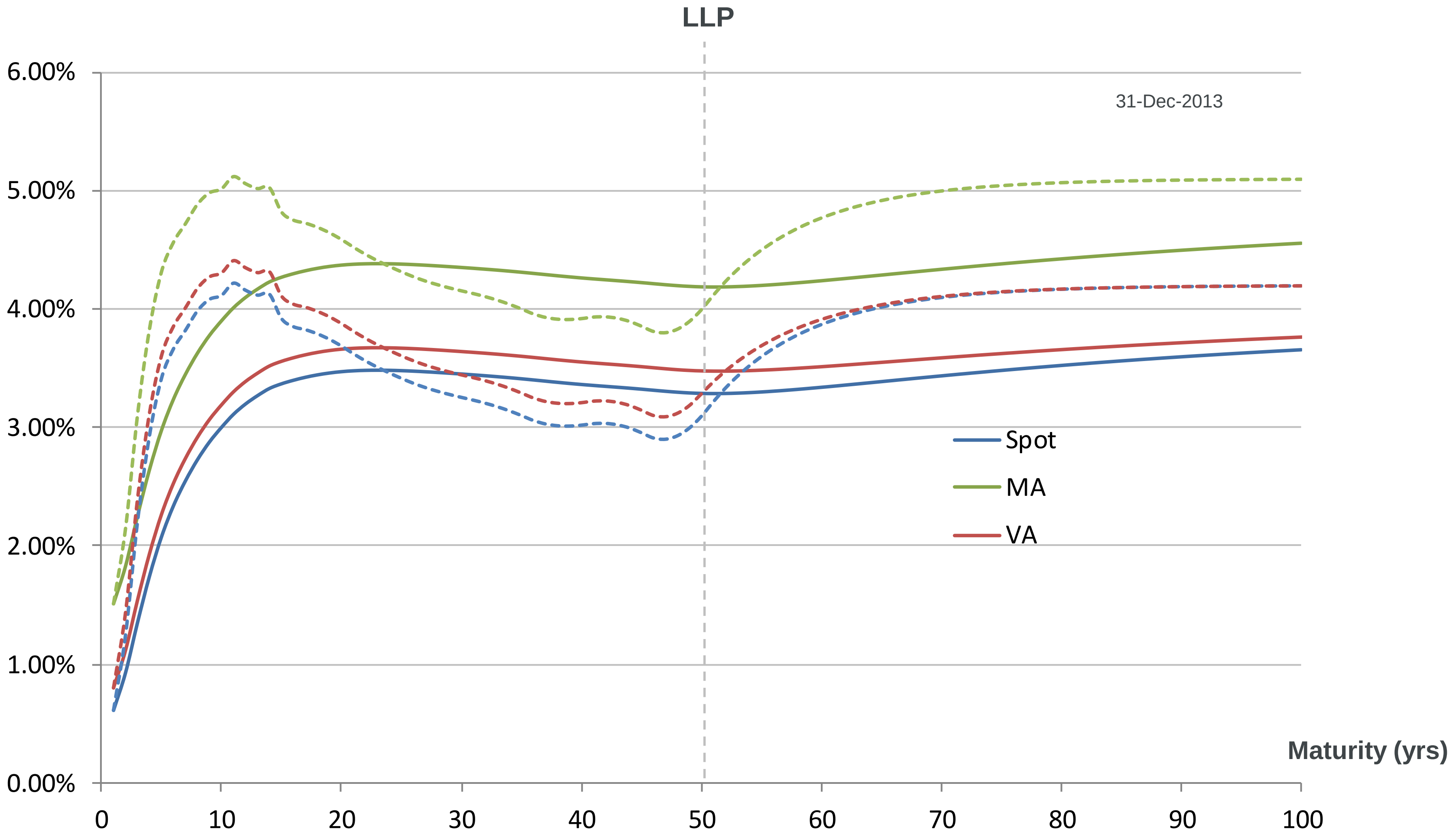
Transitional Measures

Discounting | Yield Curves



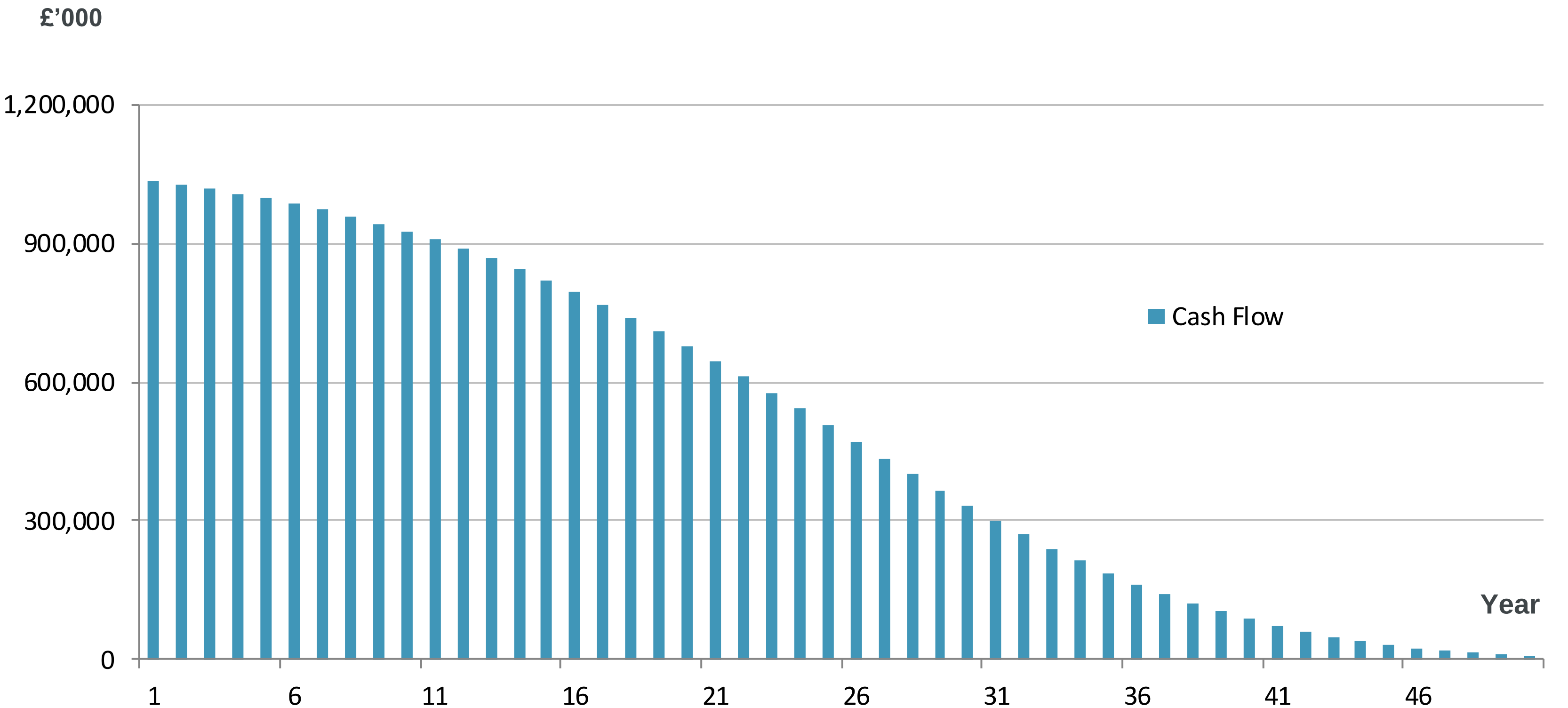
Source: Bloomberg, EIOPA

Discounting | Yield Curves



Source: Bloomberg, EIOPA

Hedging | Annuity Funds



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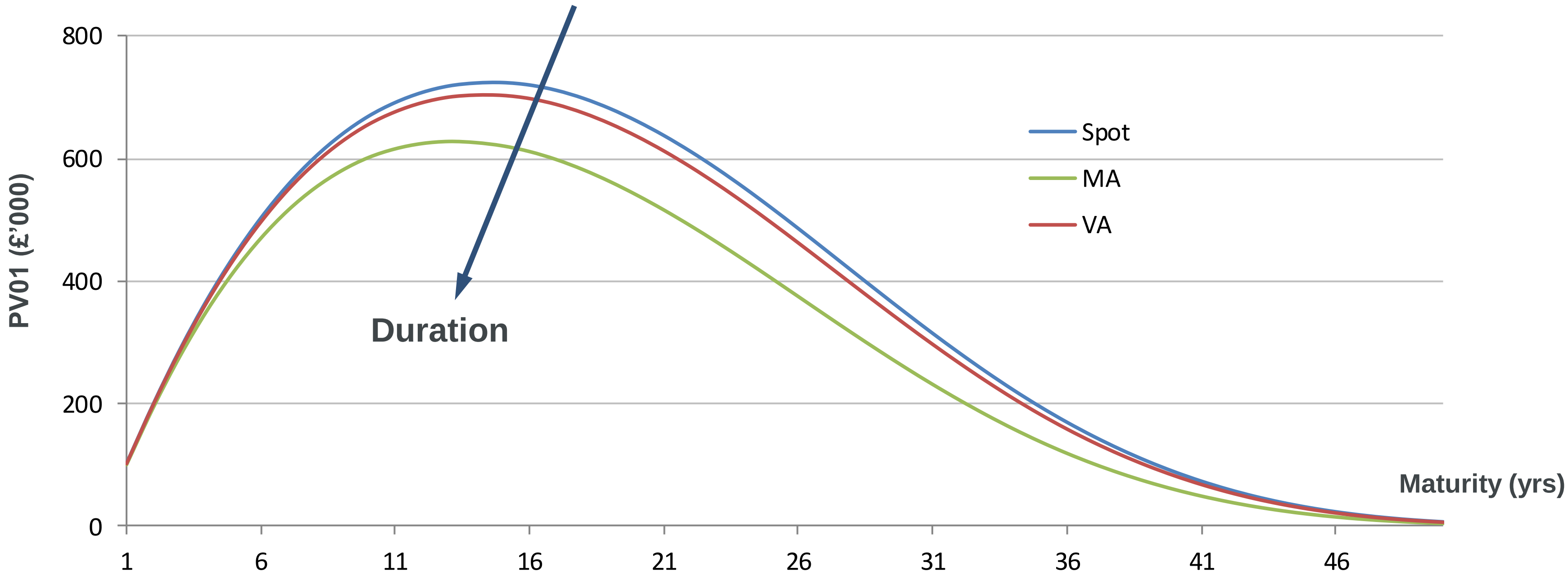
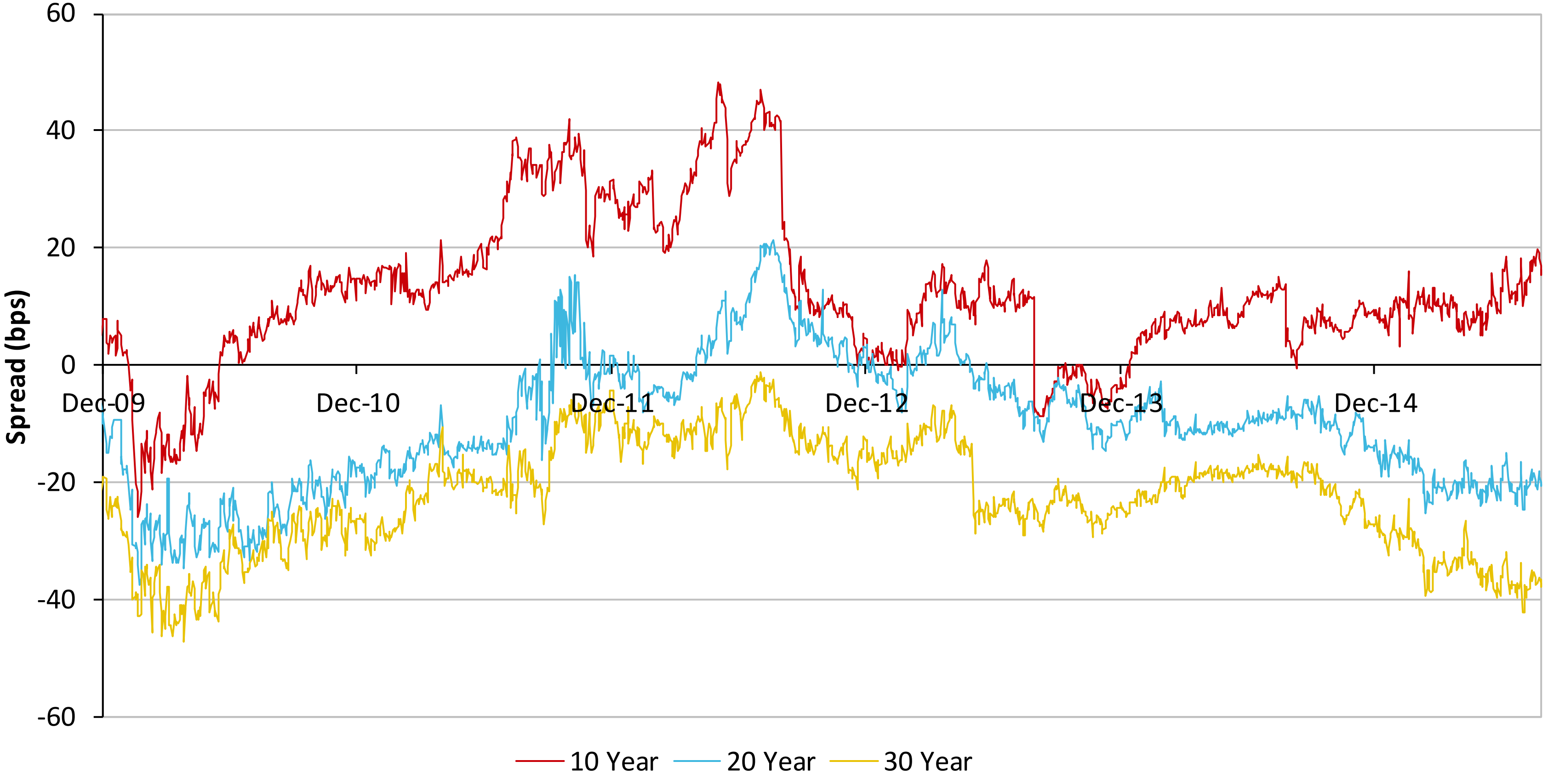


Hedging | Gilt-Swap Spreads



Source: Bloomberg

Gilt-Swap Spreads | PRA View

Consultation Paper | CP14/15

Solvency II: treatment of sovereign debt in internal models

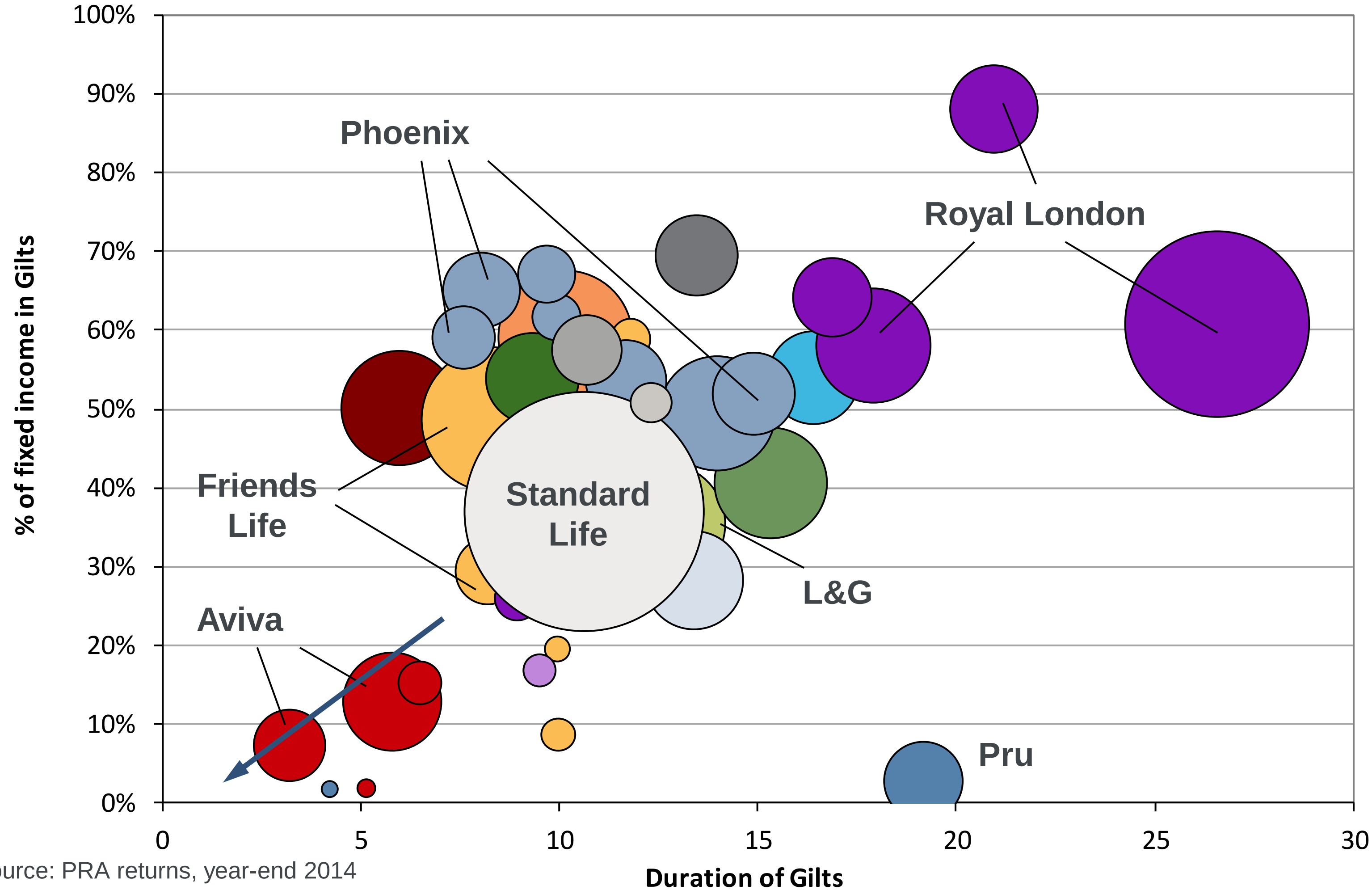
March 2015

1.3. The purpose of this statement is to ensure that firms using an internal model take into account material risks associated with sovereign debt. It is intended to support compliance with Solvency II regulations, thereby achieving the benefits of policyholder protection envisaged by the Directive. Some firms may need to hold additional capital as a result, although the PRA would not regard them as incremental to those costs of complying with Solvency II.

2.1 Solvency Capital Requirement - General Provisions 3.3 requires that the Solvency Capital Requirement must be calibrated so as to ensure that all quantifiable risks to which a firm is exposed are taken into account. The PRA considers that sovereign debt as an asset class can give rise to market risk and credit risk as defined in the Glossary Part of the PRA Rulebook.

Source: PRA

Gilt-Swap Spreads | With-Profit Funds



Source: PRA returns, year-end 2014

Playing by the Rules

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Matching Adjustment | Asset Eligibility

Assets:

- Bond-like
- **Assigned** and **maintained** over the lifetime of the obligation
- **Identified**, **organised** and **managed separately** from other business
- May be **grouped** to demonstrate compliance

Liabilities:

- No future premiums
- **Mortality**, **longevity**, **expense** and **revision** risk only
- Surrender value must not exceed market value of underlying assets

Cash flows:

- Expected asset cash flows must replicate expected liability cash flows
- **Fixed**, not simply “very predictable”

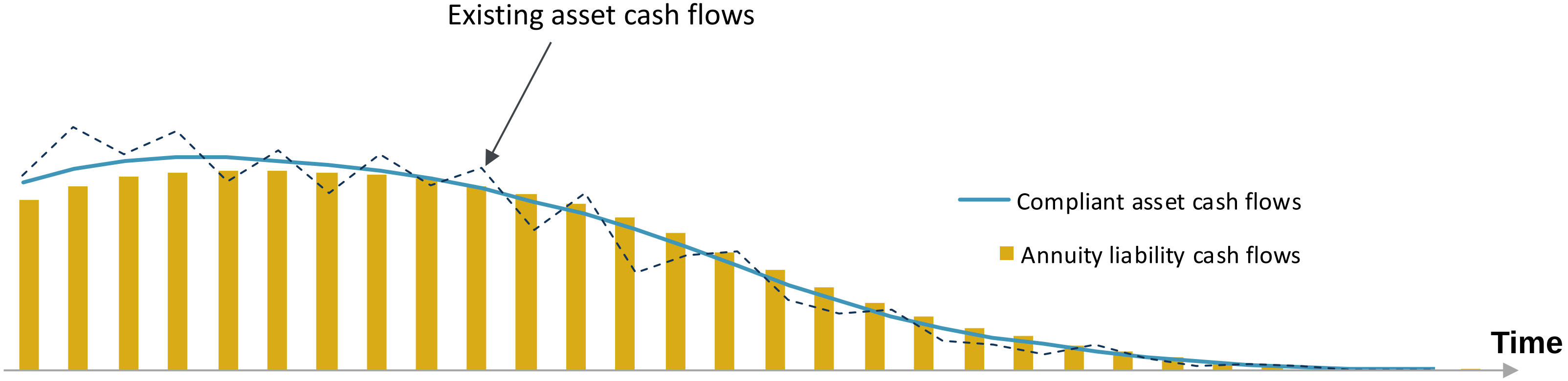
Matching Adjustment | Quantitative Tests

- First announced by the PRA in November 2014
- Updated to include **tolerance limits** in March 2015
- Tests should **not be the only consideration** when assessing the extent of mismatching
- Asset portfolios should be split into **components**:
  - **A**: cash flow matching assets
  - **B**: additional assets required so that A+B equals BEL
  - **C**: surplus assets required to demonstrate MA compliance

Matching Adjustment | Quantitative Tests

Test 1:

- Accumulated cash flow shortfall (type A assets) must not exceed 3% of PV of BEL (calculated using basic RFR) in any future year:



Matching Adjustment | Quantitative Tests

Test 2:

- 99.5th percentile VaR test: undiversified SCR capital for each of:
  - **interest rates**
  - **inflation**
  - **currency**

No standard formula stress

…should not exceed 1% of PV of BEL (calculated using basic RFR+MA).

Use of FX forwards 28 March 2015

The PRA's view is that the paired/grouped assets that result from using FX forwards to hedge non-sterling bond exposures do not provide fixed cash flows (as required by Article 77b(1)(h) of the Solvency II Directive) and consequently we cannot currently envisage circumstances in which these assets, in their current form, would meet the eligibility requirements for MA.

Source: PRA

Matching Adjustment | Quantitative Tests

Test 3:

- Notional swap test:
  - calculate the **scaling factor** require to scale type A asset cash flows such that the PV of projected shortfalls/surplus calculated for Test 1 is zero
  - firms must issue an explanation if the **scaling factor** is not in the region 99-100%

Suitably matched so that cash flows could be perfectly matched by overlaying a set of swaps without further cost

Portfolio Optimisation

16 October 2015

Portfolio Optimisation

Duration

Diversification

Asset class

Capital

Illiquidity premium

Risk

Rating

Return

ALM

Spread

Issuer

Sector

Cash flow

Fundamental spread

Verification

Portfolio Optimisation

Optimisation metric:

- What are the key metrics by which you run your business?
- Are different measures mutually compatible?
- Which metrics take priority?

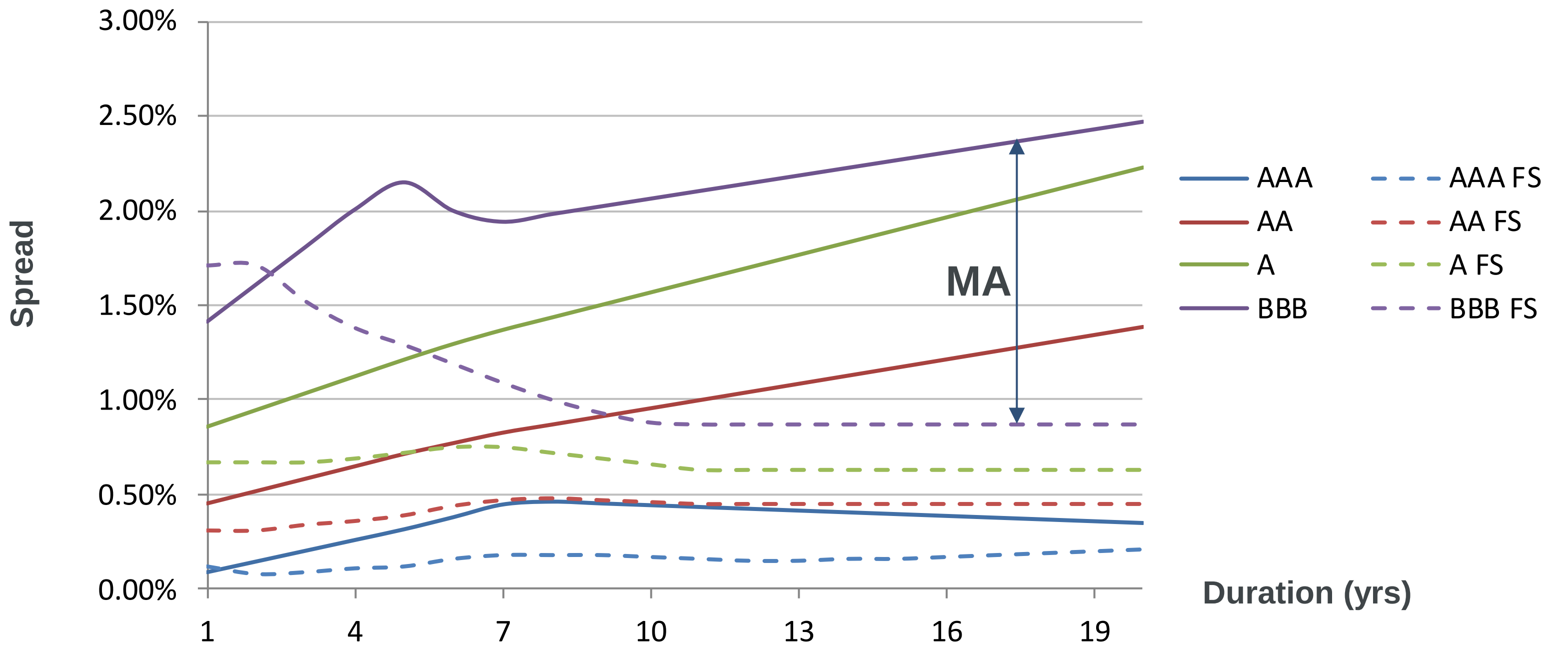
Optimisation variables:

- Too many variables to optimise all concurrently
- Which constraints do we need to impose?
- Regulatory constraints vs. internal views

Portfolio Optimisation | Credit Spreads

Example:

- **corporate bond** portfolio for **annuity fund** under **matching adjustment**

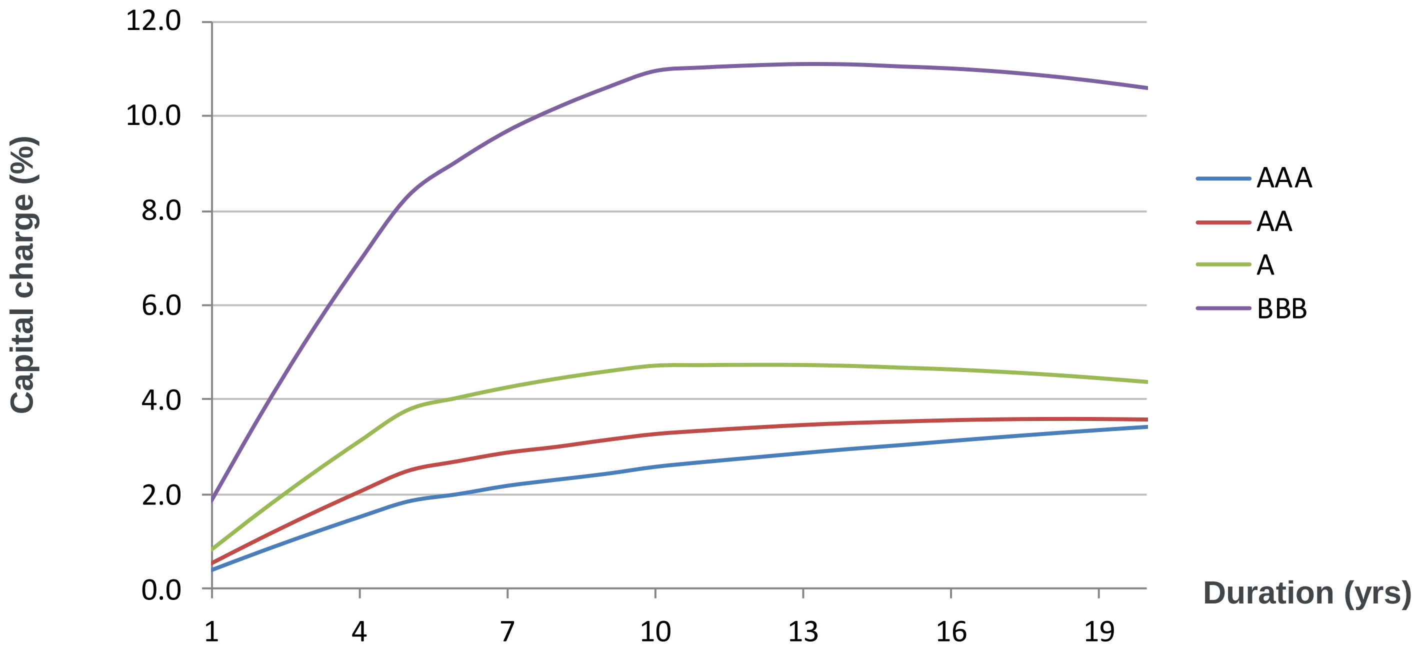


Source: iBoxx, EIOPA. Data as at end-Jun 2015

Portfolio Optimisation | SCR Capital

Example:

- **corporate bond** portfolio for **annuity fund** under **matching adjustment**



Source: EIOPA

Portfolio Optimisation

Example:

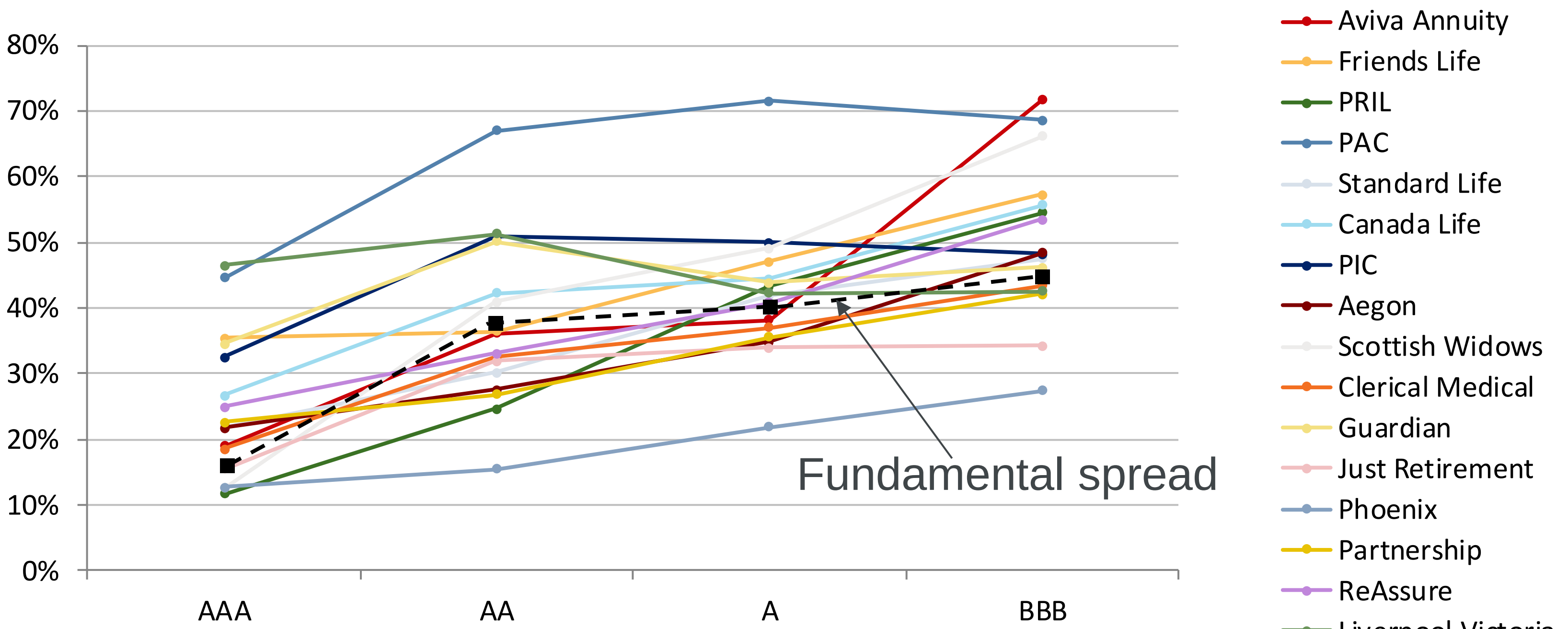
- **corporate bond** portfolio for **annuity fund** under **matching adjustment**
  - **Increasing MA** reduces liability, **releasing cash**
  - Selecting **lower-rated credit** increases **capital cost**
  - Where the **fundamental spread** exceeds best estimate default/downgrade deductions an **additional reserve** is established

Portfolio Optimisation | Fundamental Spreads

Example:

- **corporate bond** portfolio for **annuity fund** under **matching adjustment**

Current Pillar 1 default deductions:



Source: PRA returns, year-end 2014

Portfolio Optimisation | Fundamental Spreads

Example:

- **corporate bond** portfolio for **annuity fund** under **matching adjustment**

Financials - PD+CoD less FS (%):

Tenor	AAA	AA	A	BBB
1	- 0.12	- 0.26	- 0.60	- 1.53
2	- 0.06	- 0.25	- 0.57	- 1.48
3	- 0.05	- 0.26	- 0.55	- 1.25
4	- 0.06	- 0.27	- 0.55	- 1.06
5	- 0.06	- 0.29	- 0.55	- 0.93
6	- 0.09	- 0.33	- 0.56	- 0.79
7	- 0.09	- 0.34	- 0.54	- 0.65
8	- 0.08	- 0.34	- 0.49	- 0.52
9	- 0.07	- 0.32	- 0.43	- 0.43
10	- 0.06	- 0.31	- 0.38	- 0.35

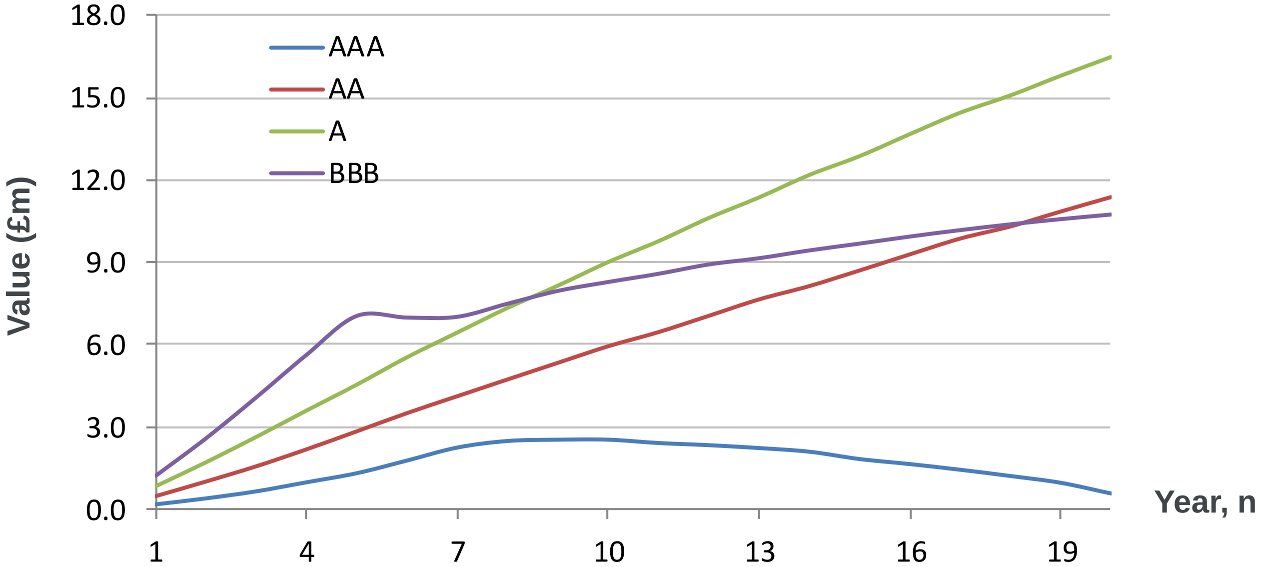
Source: EIOPA

Portfolio Optimisation | Asset Allocation

Example:

- **corporate bond** portfolio for **annuity fund** under **matching adjustment**

£100m bullet payment due in year n:



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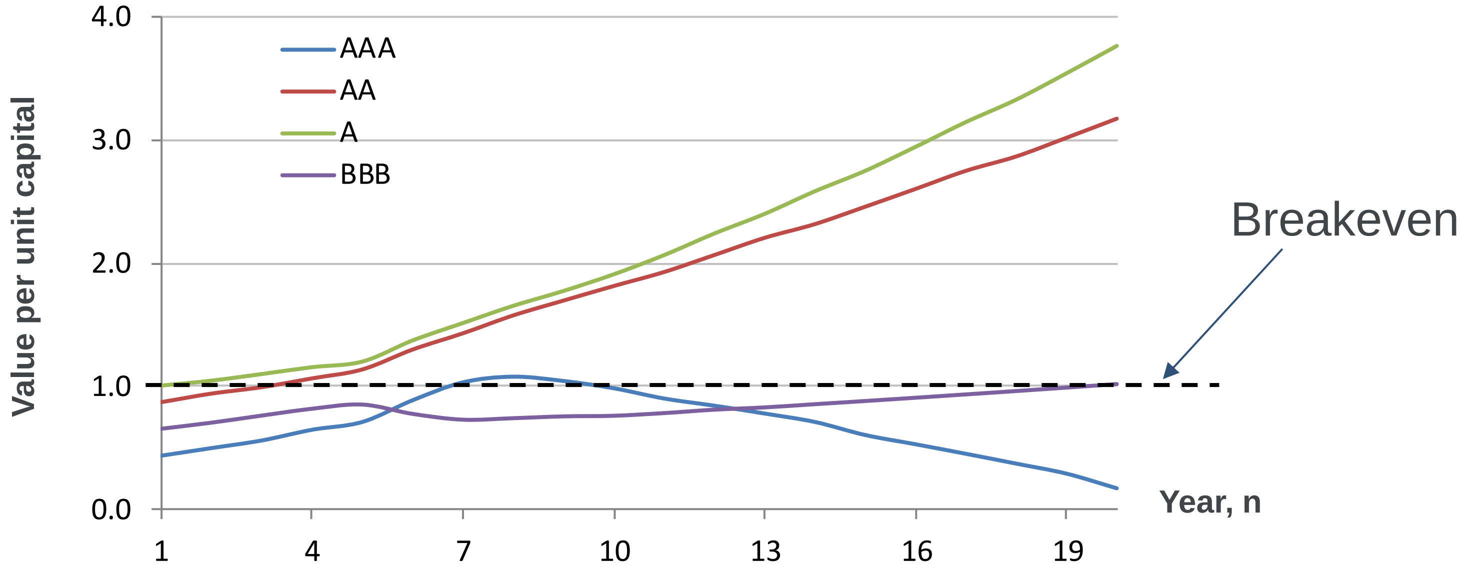

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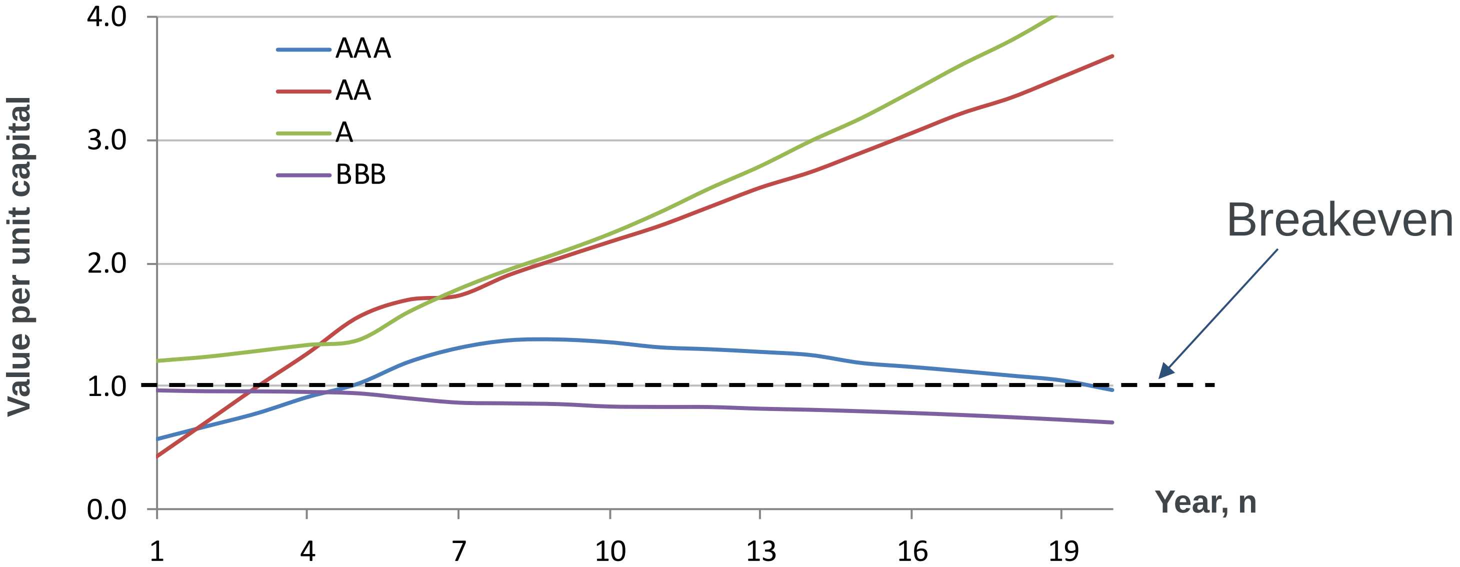
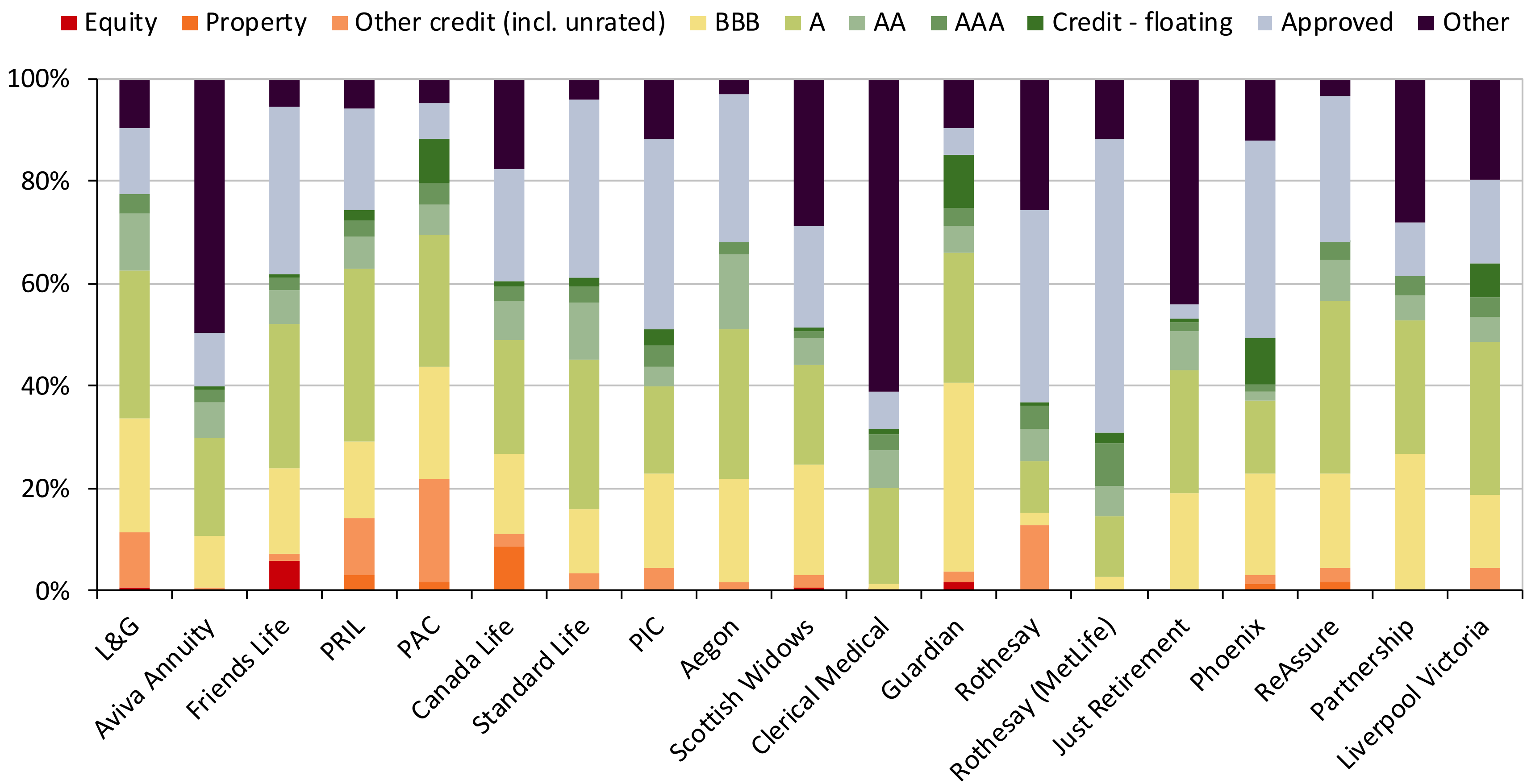


Source: iBoxx, EIOPA. Data as at end-Aug 2015

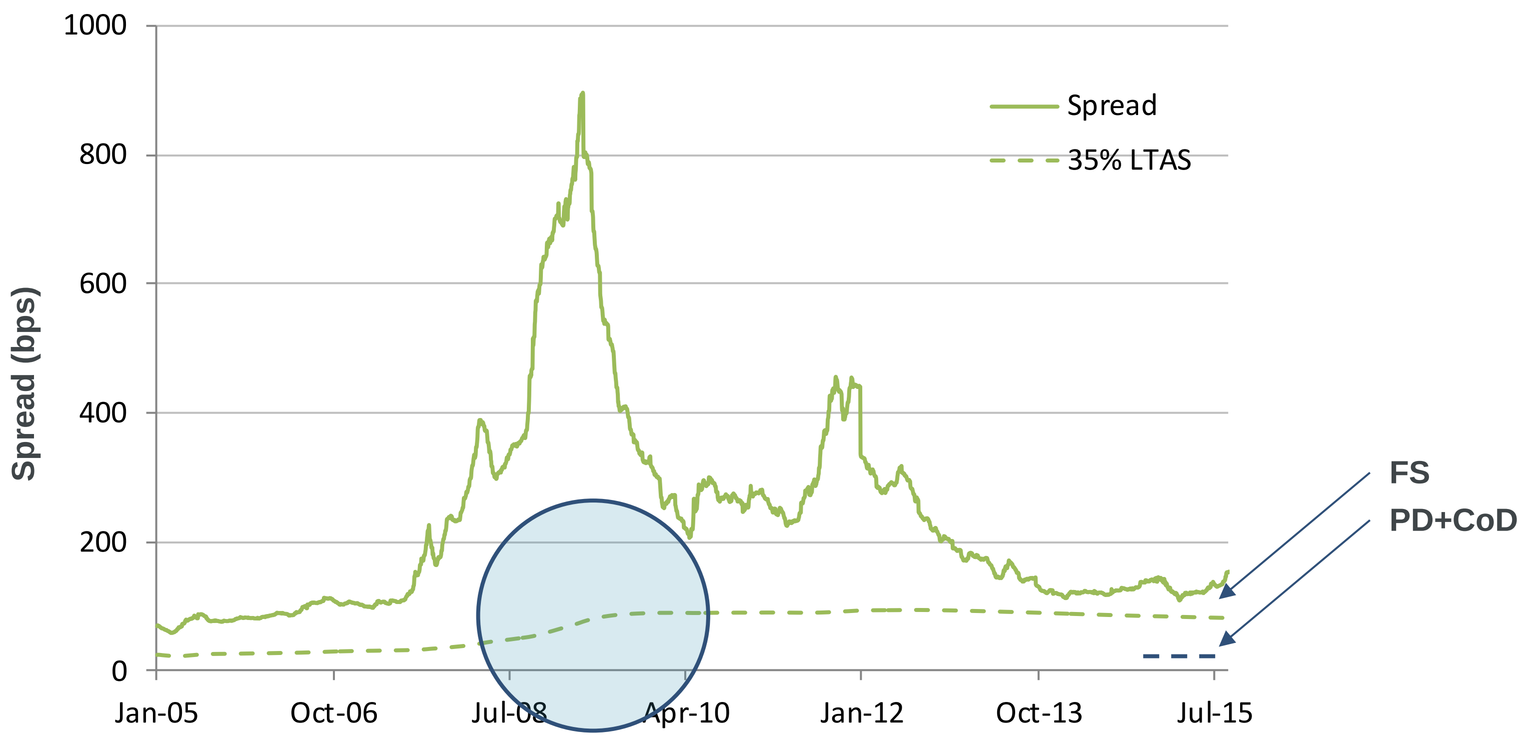
Portfolio Optimisation | Asset Allocation



Source: PRA returns, year-end 2014

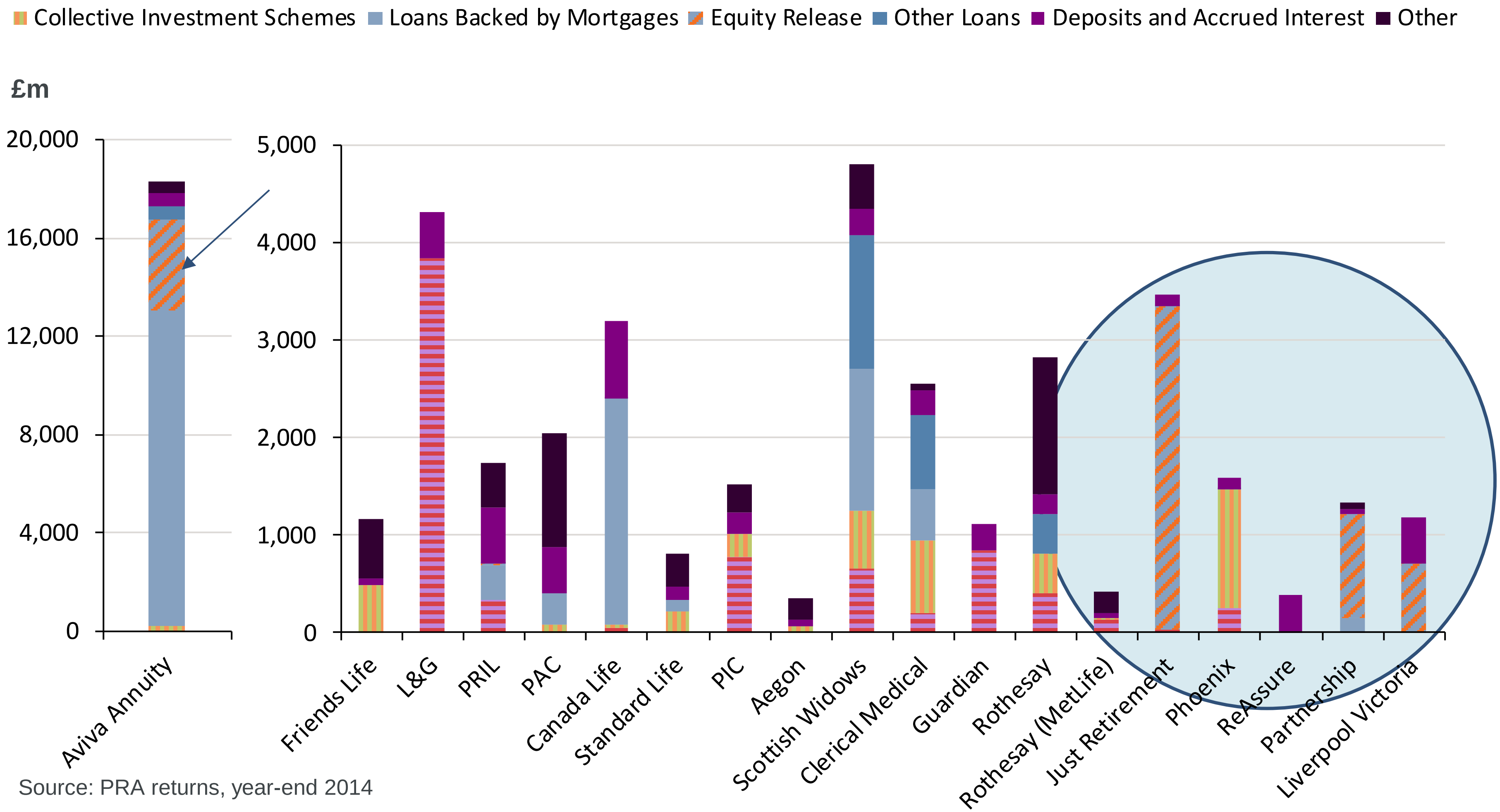
Portfolio Optimisation | Historical Spreads

A-rated financials, 7-10 year duration:



Source: iBoxx

Portfolio Optimisation | Alternative Assets



Source: PRA returns, year-end 2014

Matching Adjustment | Asset Eligibility

Assets:

- Bond-like
- **Assigned** and **maintained** over the lifetime of the obligation
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- May be **grouped** to demonstrate compliance

Liabilities:

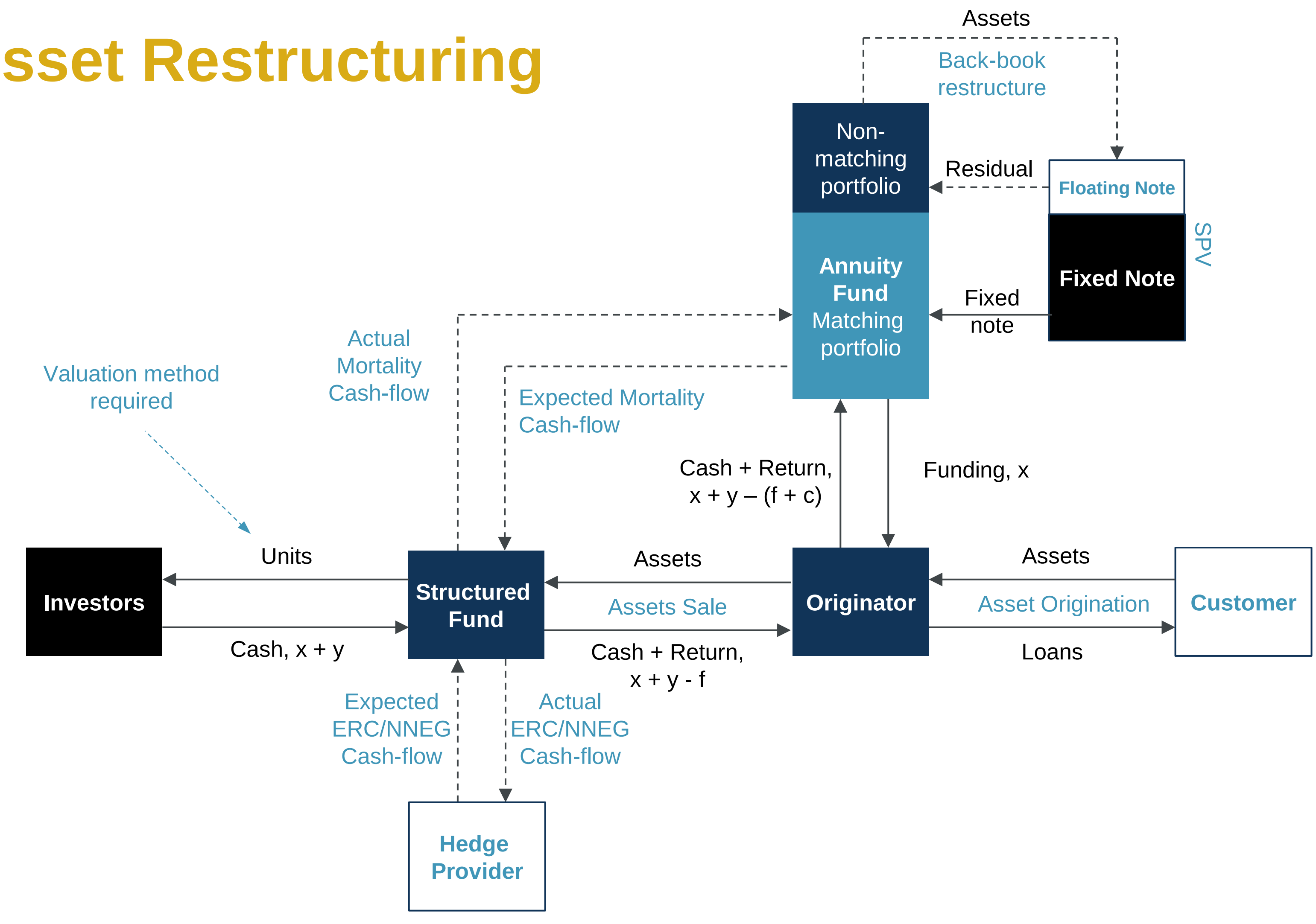
- No future premiums
- **Mortality**, **longevity**, **expense** and **revision** risk only
- Surrender value must not exceed market value of underlying assets

Sufficient compensation for pre-payment

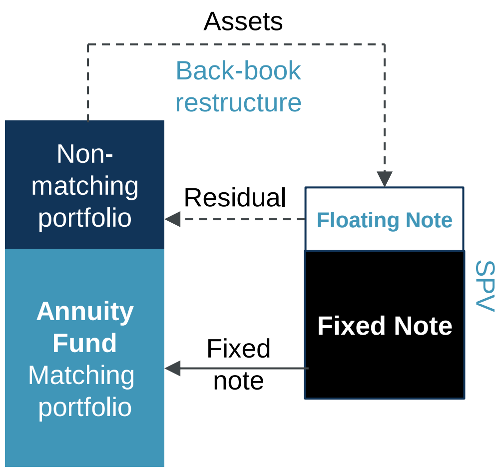
Cash flows:

- Expected asset cash flows must replicate expected liability cash flows
- **Fixed**, not simply “very predictable”

Asset Restructuring



Asset Restructuring

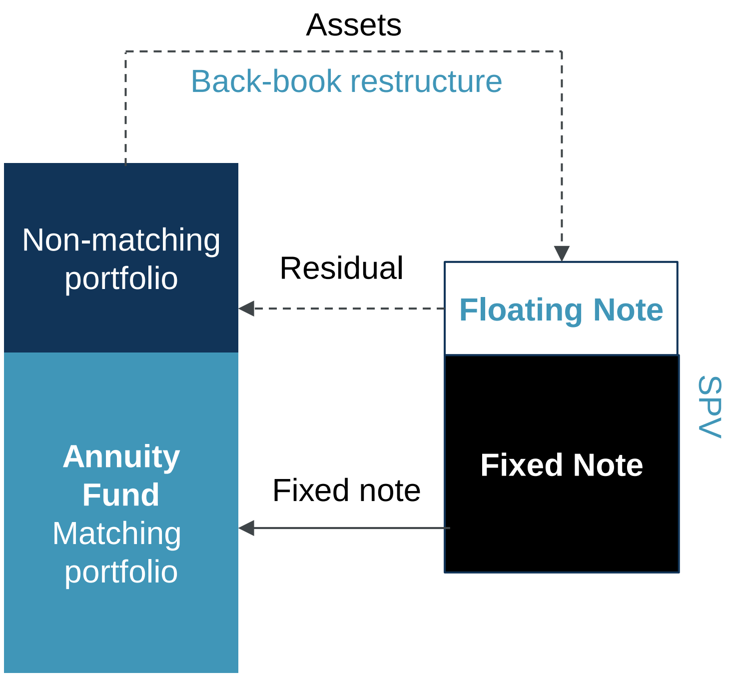


Solvency II: equity release mortgages 20 February 2015

The PRA considers that a structure where all the tranches are held by the same entity which contains the matching adjustment portfolio (albeit with any junior tranches and / or equity held outside the portfolio in order to comply with matching adjustment portfolio requirements), could be classified as an 'intra-entity' transaction (between the matching adjustment portfolio and the rest of the entity), rather than 'intra-group'. As such, any matching adjustment benefit secured at a solo level would not then be eliminated on consolidation.

Source: PRA

Asset Restructuring



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Asset Restructuring | Portfolio Optimisation

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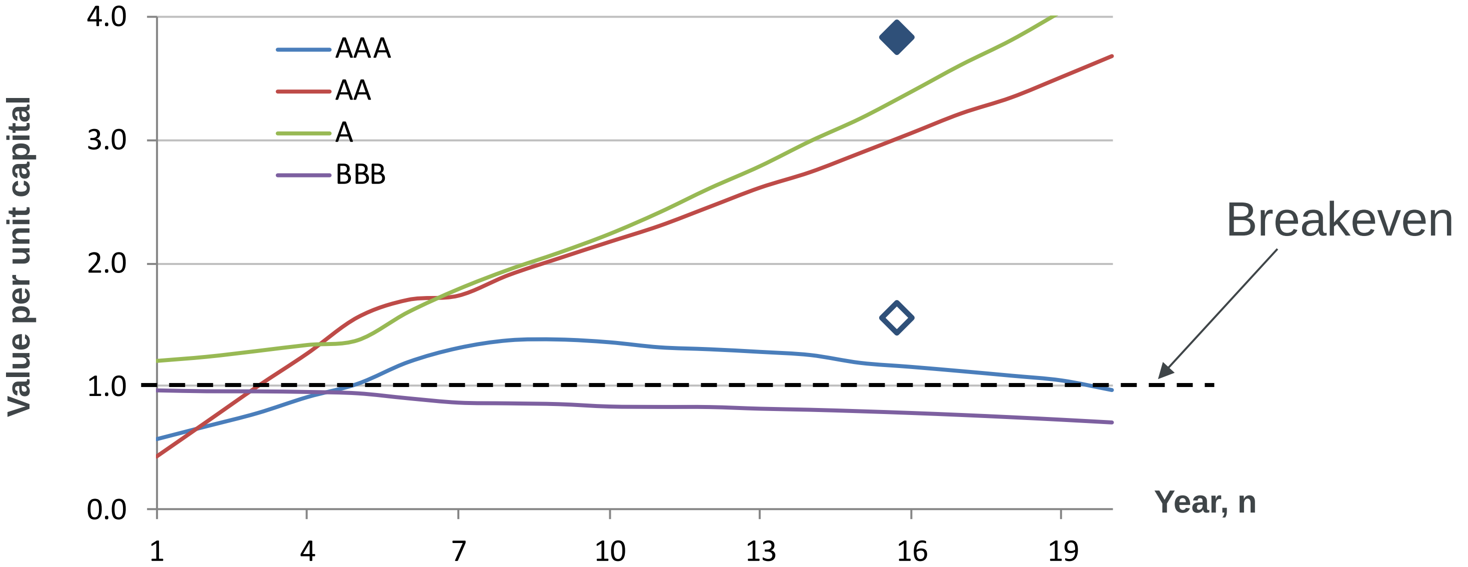

Source: iBoxx, EIOPA. Data as at end-Aug 2015

Liquidity Management

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Liquidity Management

- **MA optimisation**
- **Liquidity plan**
- **Central clearing**
- **Repo markets**

Liquidity Management | MA Optimisation

- **Matching assets** or recourse to **non-matching** portfolio?
- **Surplus extraction** process
- **Collateral management**:

1 June 2015

"The PRA's view is that collateral in respect of an MA portfolio should be managed separately within the MA portfolio. If collateral is managed jointly for MA and non-MA portfolios, then netting of collateral across portfolios would conflict with the requirement to manage the MA portfolio separately".

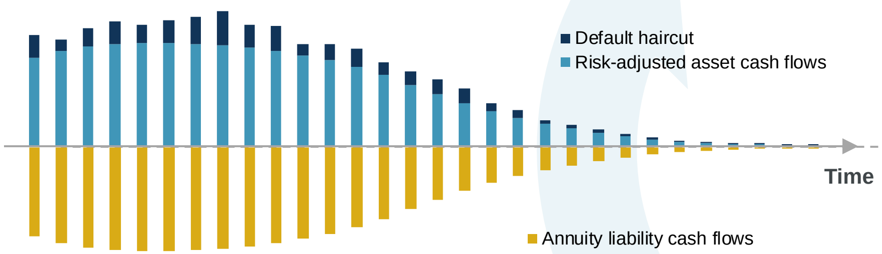
- for illiquid assets, unless the collateral arrangement requires the return of identical assets, firms should consider whether such assets should be excluded from their cash flow matching assessment. For the purposes of calculating the PRA matching tests published on 9 March 2015, illiquid assets posted as collateral must be excluded unless the collateral arrangement requires the return of identical assets.

Source: PRA

Liquidity Management | Liquidity Plan

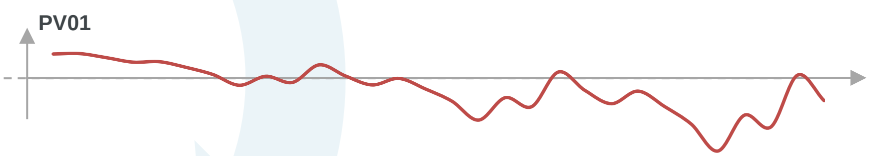
Project cash flows:

- Identify key sources of risk
- Monitor risks



Stress and scenario testing:

- Risk tolerance (individually and in combination)
- Reverse stress testing



Justify the approach:

- Contextualise proposed triggers and tolerances
- Compare alternatives

Conditional liquidity:

- Options available under stress
- Allow for the dependencies on external sources e.g. repo

Liquidity Management

- MA optimisation
- Liquidity plan
- **Central clearing**
- **Repo markets**

Summary

Summary | Actions

- Rebalance **interest rate hedges** in-light of LTGs
- Consider capital cost of **sovereign spread exposures**
- Check that MA assets meet **eligibility criteria** and **cash flow matching tests**
- **Optimise portfolios** for the new regime
- **Restructure** ineligible assets
- Evaluate **liquidity requirements**