



The Actuarial Profession

making financial sense of the future

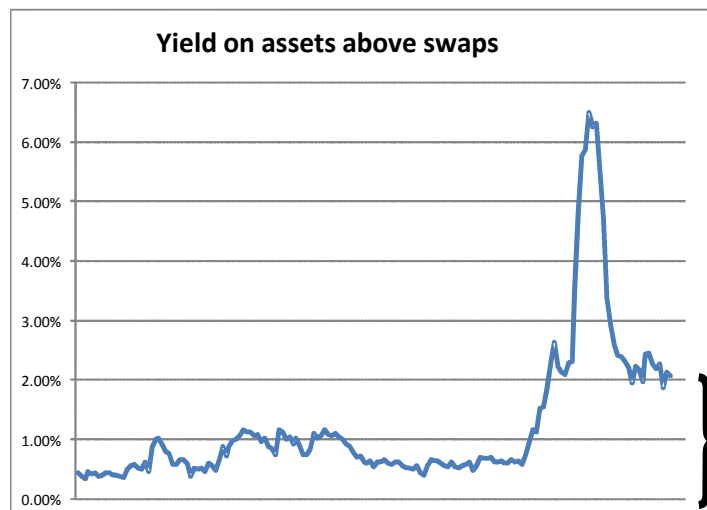
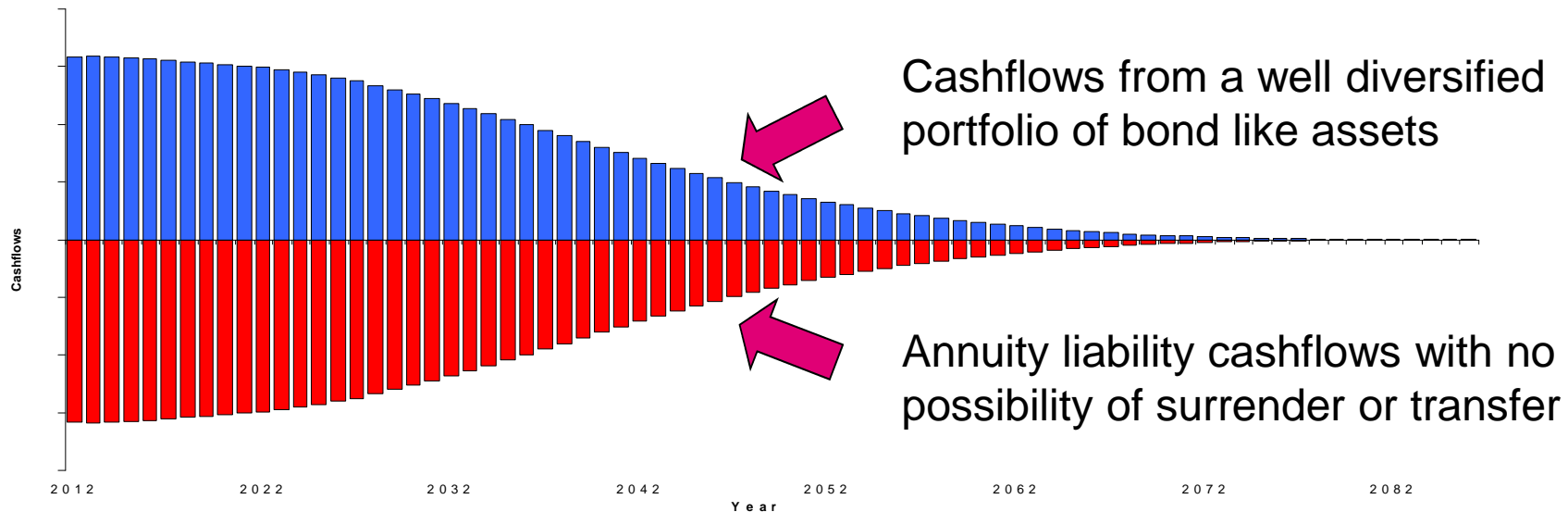
SII internal model credit risk calibration & the matching adjustment
Roger Simler, Deloitte and Bernie Hickman, Legal & General

SII Matching adjustment

An industry view

5th November 2012

Matching adjustment: the key question



How much of the yield above swaps should be used to discount the liability cashflows?

Given the only market risk is default: All but an appropriate allowance for default

Extreme market consistent answer: None of it

What we intend to cover

- Brief history
- Draft rules
- Worked example
- Key issues and implications
- Latest update including impact assessment
- Proposed way forward: Alternative matching adjustment
- Industry comment

Brief History

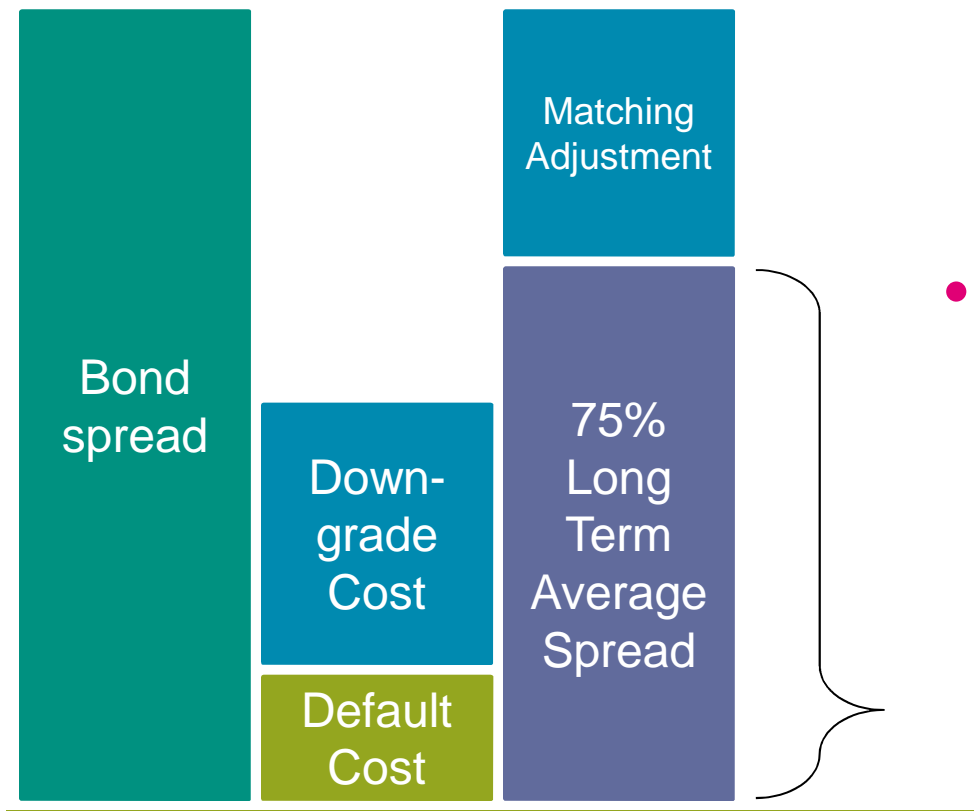
Regulatory attitude constantly changing

- Solvency I – allows for illiquidity premium
 - ICA – allows for illiquidity premium
 - Early Solvency II – pure market consistent, no allowance for illiquidity
 - QIS 5 - Illiquidity premium: 50%(spread – 0.4%)
 - Draft Level text 2 (Oct 2011) – matching premium (MP)
 - Omnibus II – matching adjustment (MA) still under discussion
-
- Matching Premium and Matching Adjustment are the same concept with different detailed calibration and so can be use interchangeably

Matching Adjustment – what is it trying to achieve?

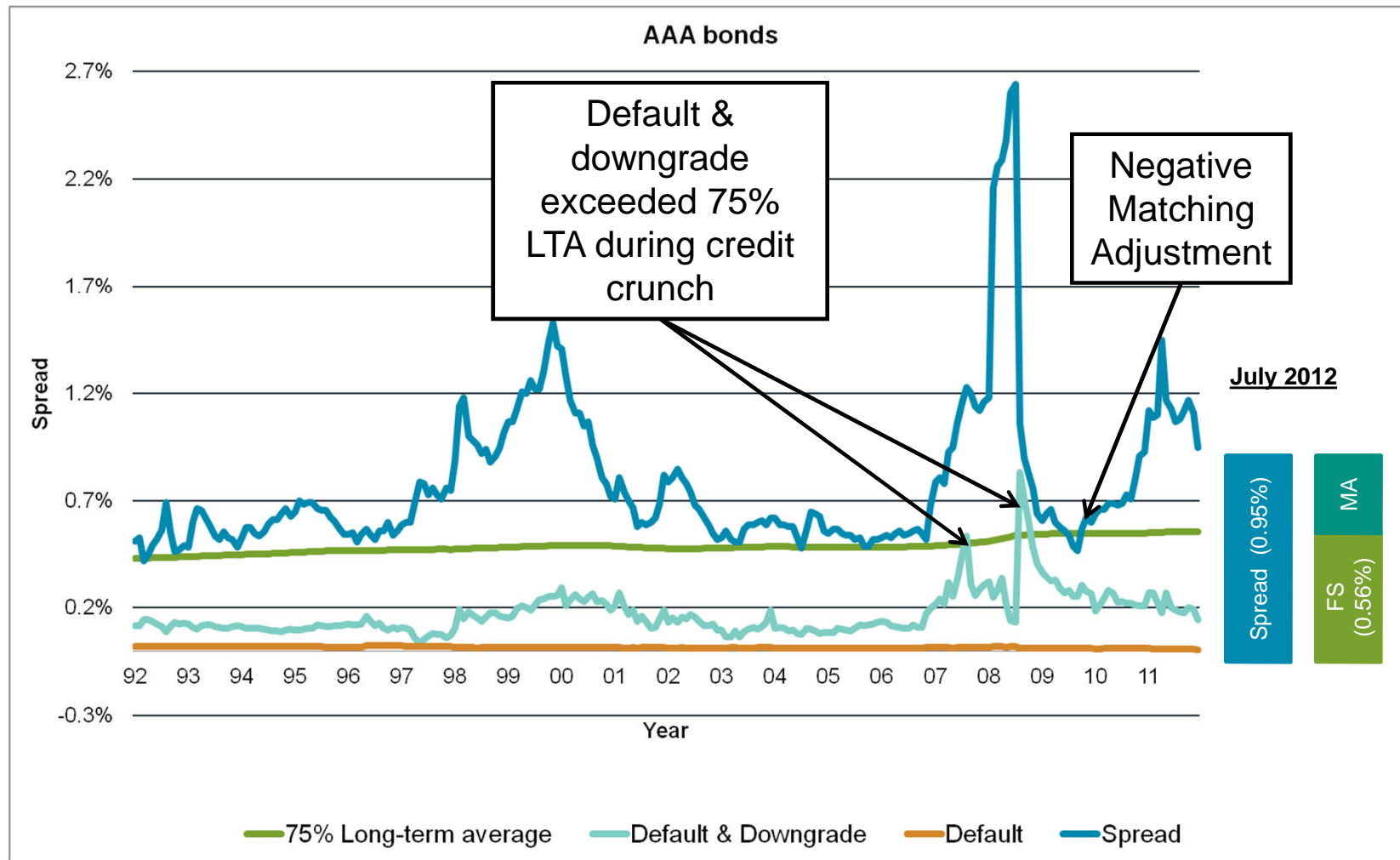
- Some long term products (e.g. annuities) are backed with assets which match the cash-flows closely and are expected to be held long term.
- These assets often have yields in excess of the risk free plus expected defaults.
- As the assets are not intended to be sold, the investor expects to earn the additional yield and reflects it in lower prices offered to consumers.
- The value of the risk adjusted, matching asset and liability cash-flows should be equal
- Examples of assets used by annuity writers include:
 - Corporate bonds
 - Swaps
 - Mortgages (including equity release)

How does the Matching Adjustment work?



- Allows a proportion of the spread to be reflected in the discount rate
- Disallows the higher of
 - Default and downgrade cost
 - 75% long term average spread**= Fundamental spread**

Example of how it would have worked in the past based on AAA bonds



Data Sources:
Merill Lynch UK index, 15+ years Sterling Corporate securities
Moody's transition matrix: Average One Year Letter Rating Migration rates
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Which liabilities does it apply to?

Liabilities

- The only underwriting risks are:
 - Longevity
 - Expense
 - Revision
 - No options (except surrender where surrender value \leq assets)
- No future premiums

Implications

- Covers immediate annuity products
- May not cover:
 - Deferred annuities
 - Certain continental European products

Current debate on extending scope of products covered

Which assets does it apply to?

Assets

Specific assets that match cash-flows.

- Ring-fenced
- with no possibility of transfer
- not actively traded
- equal to BEL

Asset criterion:

- Rated BBB or higher
- Maximum 30% BBB (15% if bought post 31/12/12)
- “Bond like”, with fixed cash-flows (or linked to an index)
- Issuer has no options

Implications

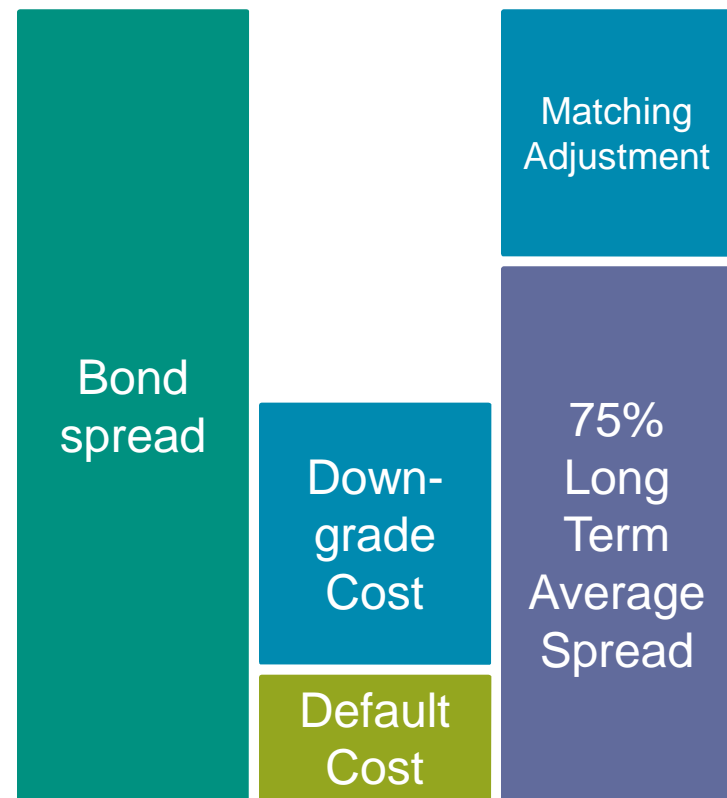
Covers:

- Some corporate bonds
- Assets held via SPV?
- Gilts

May not cover:

- Swaps?
- Callable bonds
- Subordinated debt
- Mortgage assets/equity release

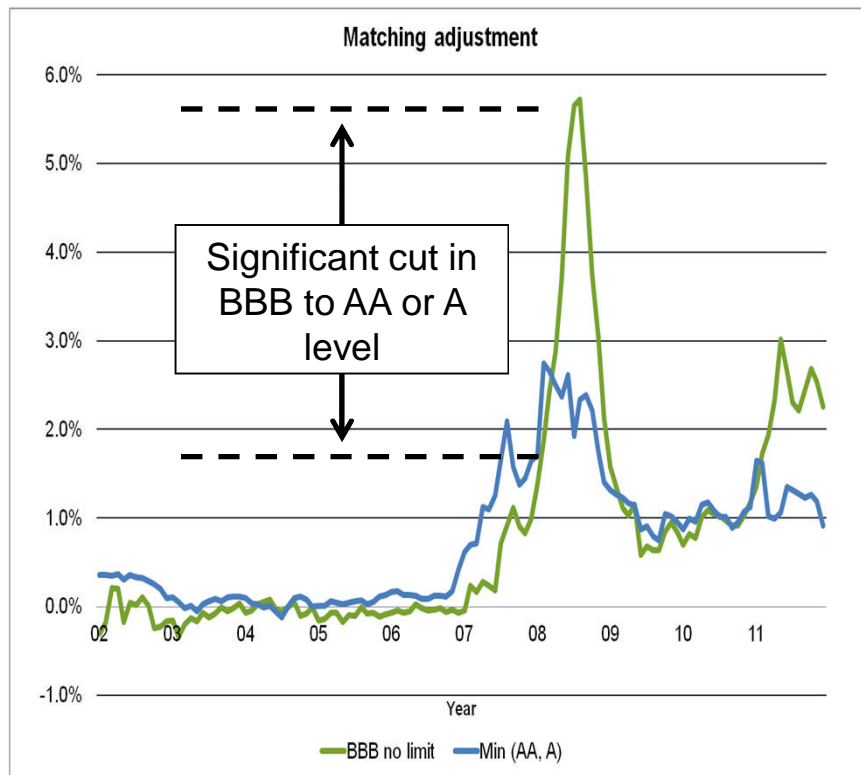
Some other restrictions



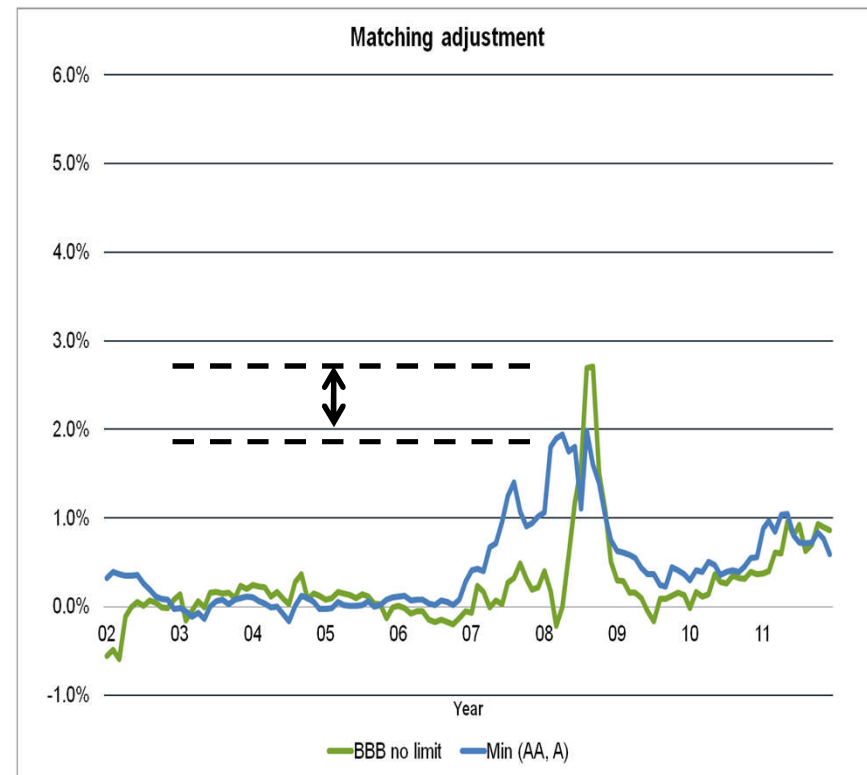
- Assumes all assets replaced on downgrade (not just BBB)
- BBB matching adjustment can't exceed that for AA or A

Illustration – impact on attractiveness of BBB bonds

UK ML Corporate 7-10 years



UK ML Corporate 15+ years



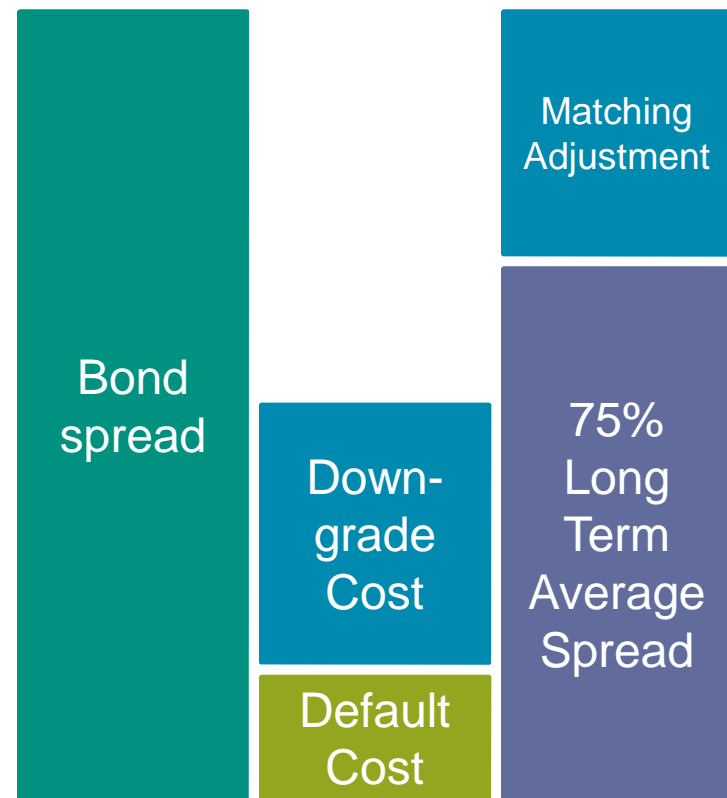
Data Sources:

Merill Lynch UK index, 7-10 years Sterling Corporate, All

Merill Lynch UK index, 15+ years Sterling Corporate Securities

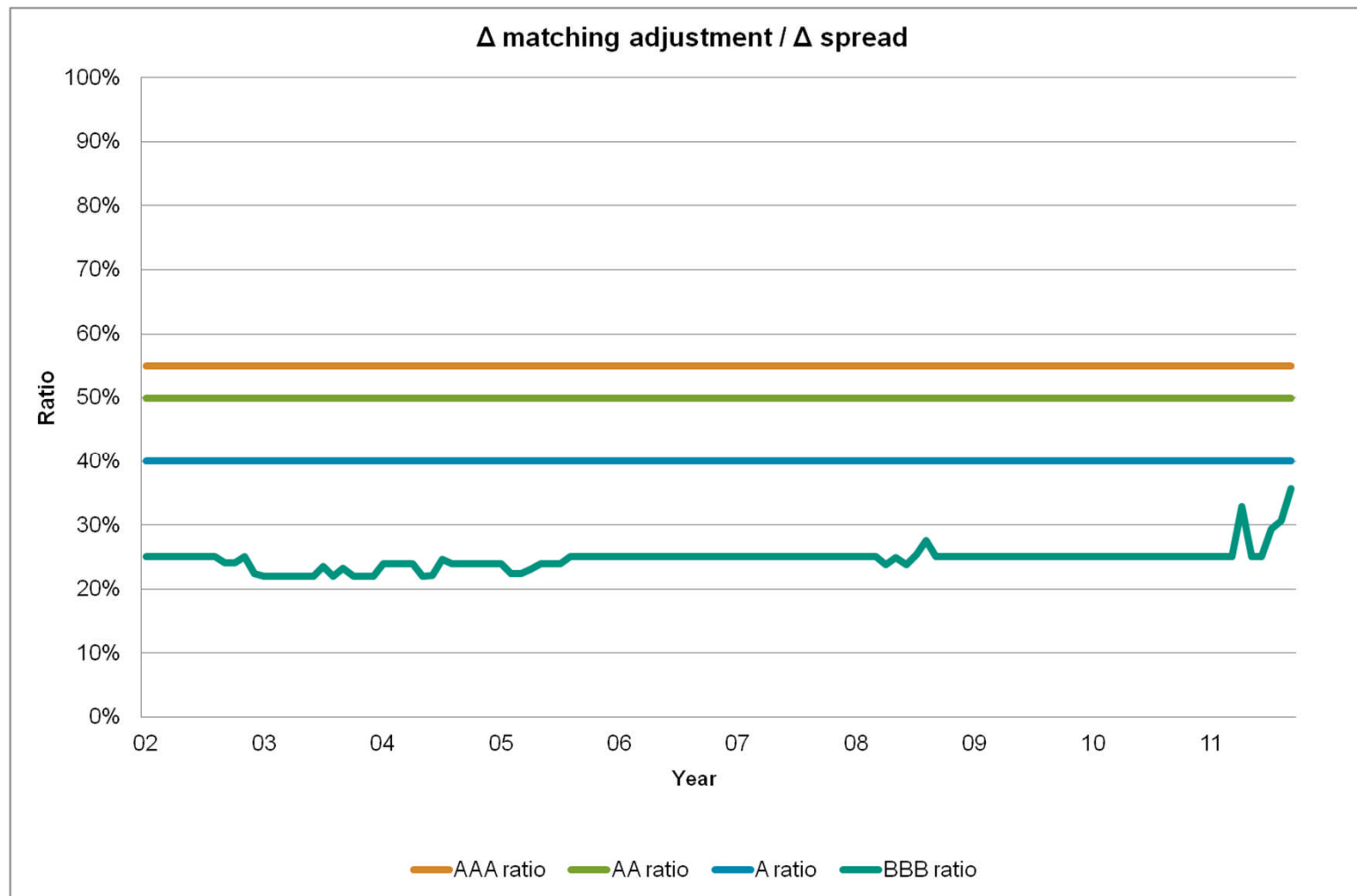
Moody's transition matrix: Average One Year Letter Rating Migration rates

How does the MA respond to stress?

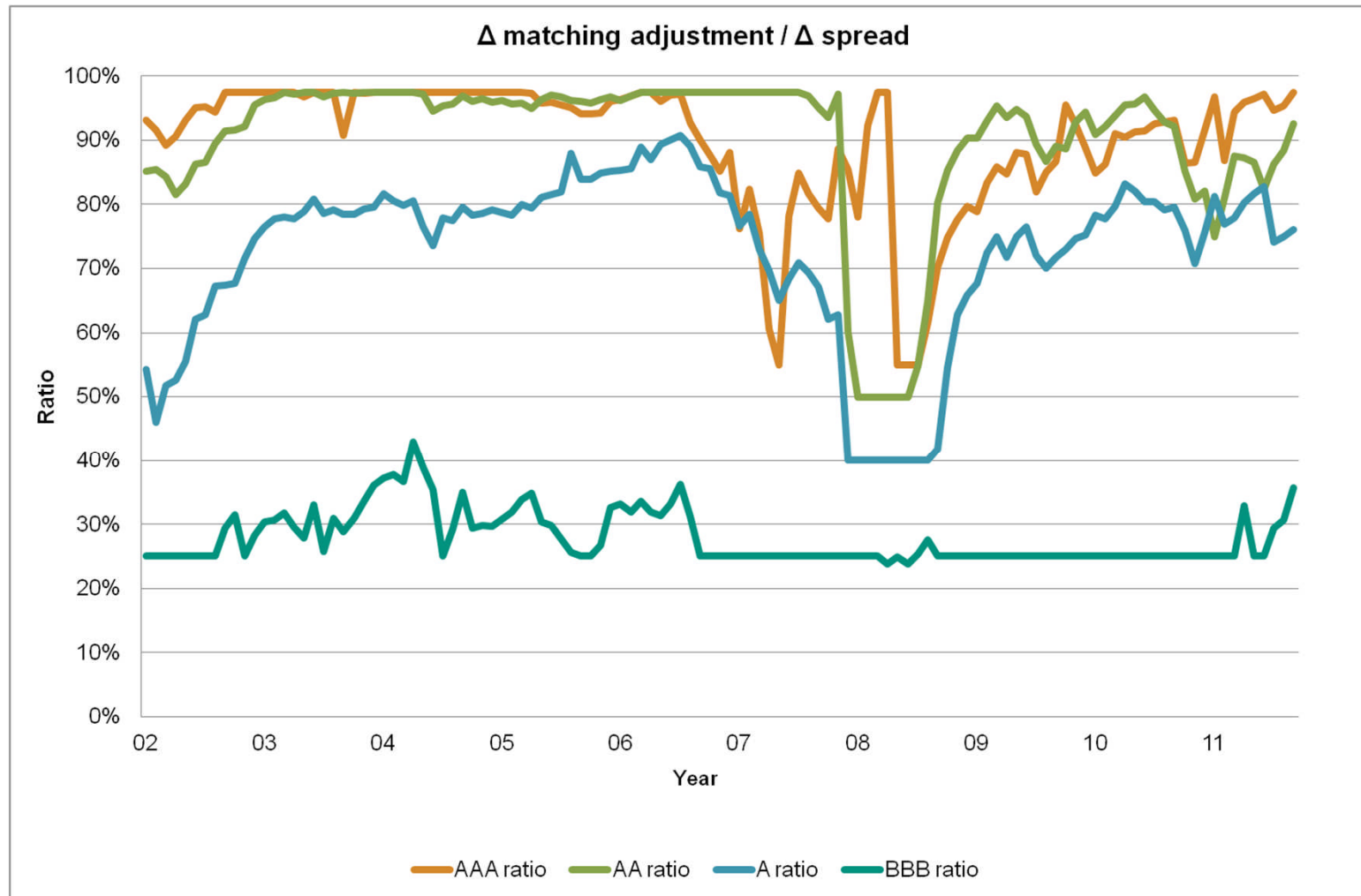


- 75% maximum in the Fundamental Spread only changes by $1/30^{\text{th}}$ of the spread stress (i.e. small)
- Change in default/downgrade may change which part of the FS maximum bites

How MA responds to volatility – stress to FS



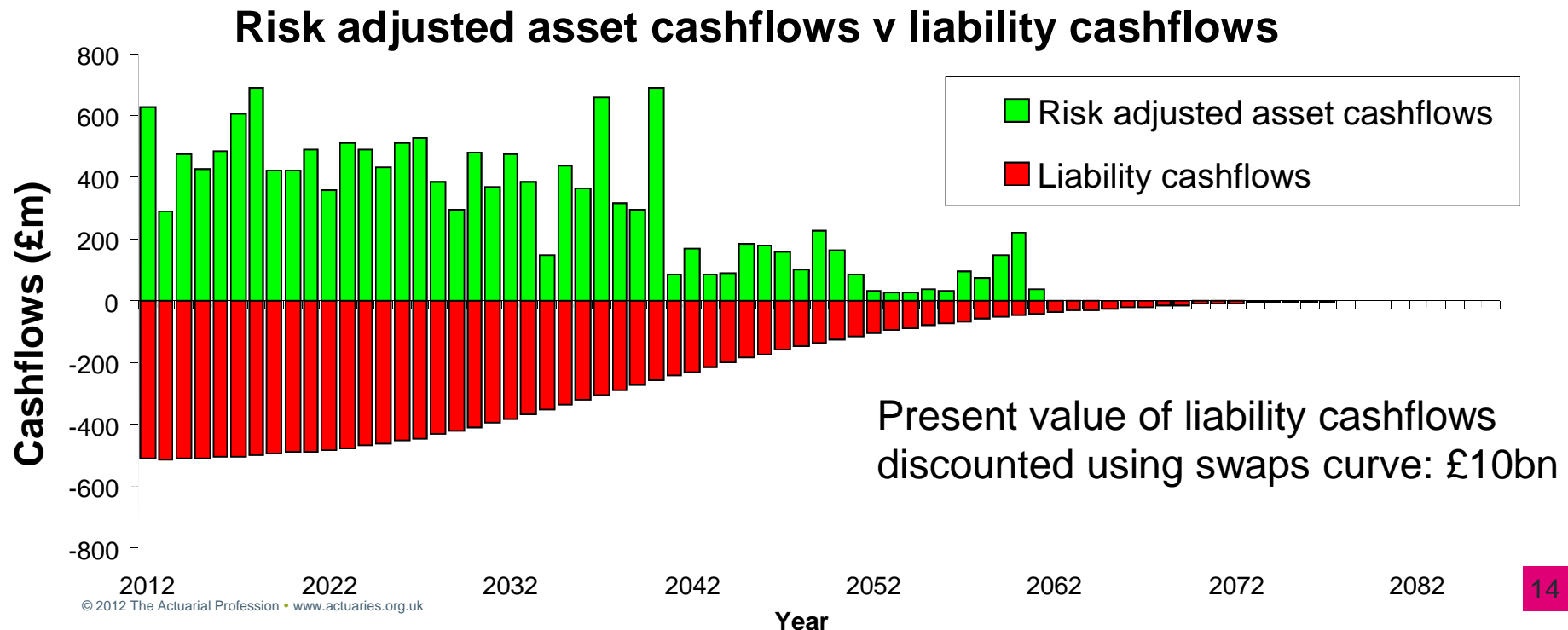
How MA responds to volatility – stress to components of FS



Matching Adjustment – worked example

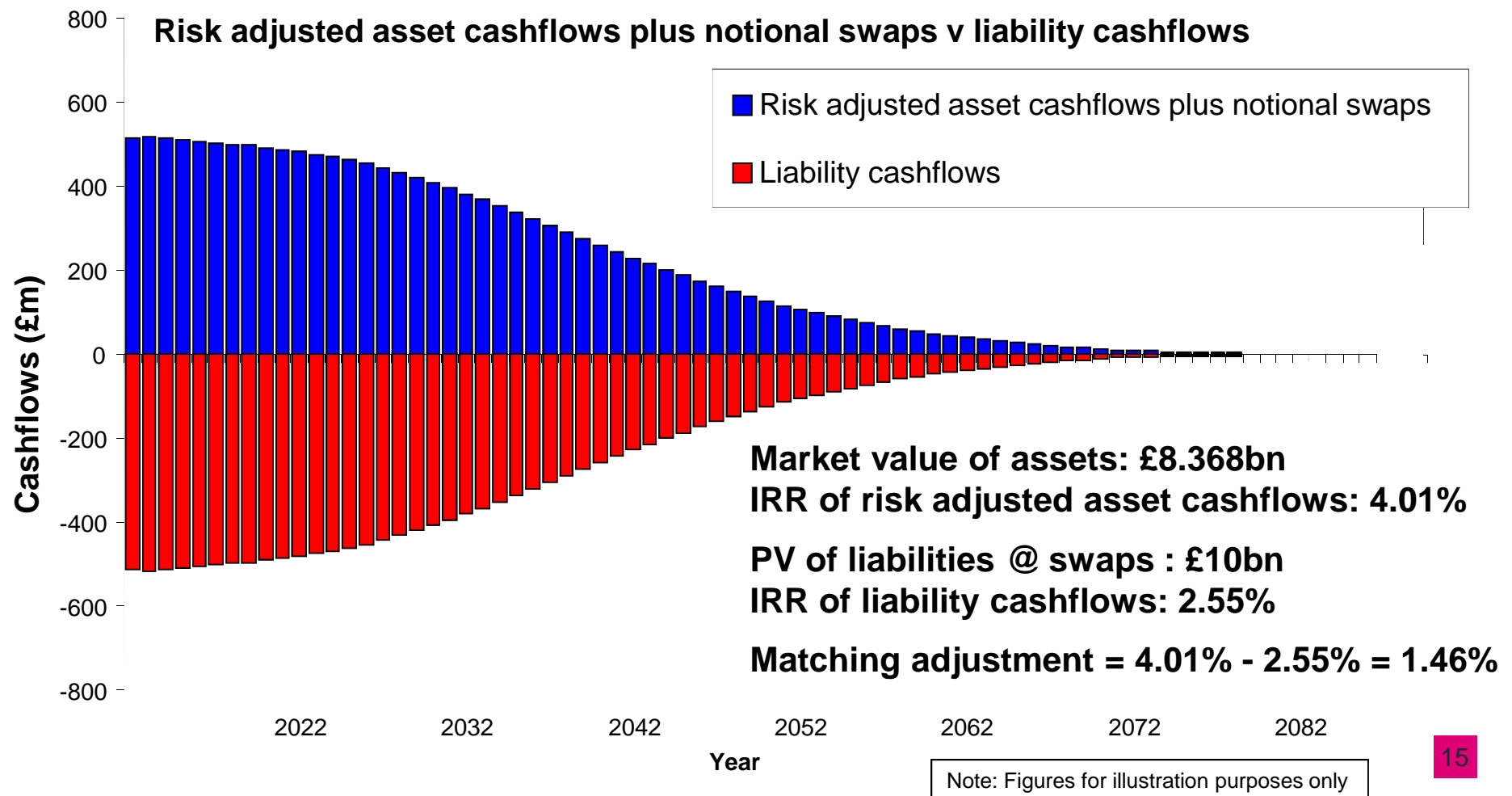
Illustrative model annuity portfolio

1. Identify eligible **liabilities**
2. Select a portfolio of eligible **assets**
3. Calculate **fundamental spread** appropriate for each asset
4. Calculate risk adjusted asset cashflows that broadly match



Worked example – deriving matching assets

- Convert risk adjusted asset cashflows to be completely matched eg using notional swaps.



Simpler approximation for matching adjustment

Illustrating the dynamics

- Assets are split into rating categories
- Changes to asset prices, swap rates, migration matrices etc. can be reflected in this approximate calculation of the matching adjustment:

	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	10%	10%	20%	30%	30%	100%
MV assets £m	837	837	1,674	2,510	2,510	8,368
A Gross yield	3.32%	3.60%	4.65%	5.12%	5.88%	4.92%
B Swap rate	2.58%	2.50%	2.59%	2.57%	2.52%	2.55%
C Credit spread = A - B	0.74%	1.10%	2.06%	2.55%	3.36%	2.37%
D Allowance for default and migration	0.09%	0.03%	0.07%	0.16%	0.47%	0.22%
E 75% average spread	0.03%	0.30%	0.48%	0.80%	1.00%	0.67%
F Fundamental spread = higher of D or E	0.09%	0.30%	0.48%	0.80%	1.00%	0.68%
G Fundamental spread post BBB restriction	0.09%	0.30%	0.48%	0.80%	1.78%	0.91%
Matching premium = C - G	0.65%	0.80%	1.58%	1.75%	1.58%	1.46%

Present value of liabilities discounted at swaps + matching adjustment 8,368
Assets - Liabilities 0

PV of liabilities is very sensitive: 1bp increase in MA reduces liabilities by £10m

Illustrating the dynamics when spreads rise

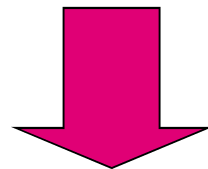
Holding BBB assets sub-optimal

Base position: 30% BBB

	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	10%	10%	20%	30%	30%	100%
MV assets £m	837	837	1,674	2,510	2,510	8,368
Credit spread = A - B	0.74%	1.10%	2.06%	2.55%	3.36%	2.37%
Fundamental spread	0.09%	0.30%	0.48%	0.80%	1.78%	0.91%
Matching premium = C - G	0.65%	0.80%	1.58%	1.75%	1.58%	1.46%
Present value of liabilities discounted at swaps + matching adjustment						8,368
Assets - Liabilities						0

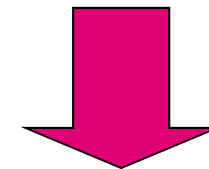
No BBB holdings

	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	10%	10%	20%	60%	0%	100.0%
MV assets £m	837	837	1,674	5,021	-	8,368
Credit spread = A - B	0.74%	1.10%	2.06%	2.55%	3.36%	2.12%
Fundamental spread	0.09%	0.30%	0.48%	0.80%	1.78%	0.62%
Matching premium = C - G	0.65%	0.80%	1.58%	1.75%	1.58%	1.51%
Present value of liabilities discounted at swaps + matching adjustment						8,317
Assets - Liabilities						51



**Credit spreads doubled for A and BBB;
unchanged for AAA and AA.**

**Assumed no change to LTA spreads and that
this is the biting constraint.**



	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	12%	12%	24%	27%	26%	100.0%
MV assets £m	837	837	1,674	1,953	1,820	7,120
Credit spread = A - B	0.74%	1.10%	2.06%	5.10%	6.72%	3.82%
Fundamental spread	0.09%	0.30%	0.48%	0.80%	5.14%	1.69%
Matching premium = C - G	0.65%	0.80%	1.58%	4.30%	1.58%	2.12%
Present value of liabilities discounted at swaps + matching adjustment						7,770
Assets - Liabilities						-650

	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	12%	12%	23%	54%	0%	100.0%
MV assets £m	837	837	1,674	3,906	-	7,253
Credit spread = A - B	0.74%	1.10%	2.06%	5.10%	6.72%	3.43%
Fundamental spread	0.09%	0.30%	0.48%	0.80%	5.14%	0.59%
Matching premium = C - G	0.65%	0.80%	1.58%	4.30%	1.58%	2.84%
Present value of liabilities discounted at swaps + matching adjustment						7,203
Assets - Liabilities						50

In practice there would be a small increase in LTA spreads slightly reducing MA

Key issue with October 2011 draft text: Implications for Growth and Pensioners

- BBB matching adjustment no higher than AA or A
- BBB restricted to 30%
- Bonds migrating to below BBB have no matching adjustment
 - ➡ Liability value over prudent and highly volatile over time
 - ➡ **Don't hold BBB bonds (or even A-)**
- Overly restrictive asset eligibility

Implications:

- Fire sale of BBB and A- rated bonds and asset bubbles in AAA and AA
- No demand for assets that are not straight forward bonds

Consequences:

- Further economic decline through lack of investment
- Pensioners retiring with even poorer pension annuity rates

Latest position including Impact Assessment

- Recognition that growth and consumer implications need consideration

"I would be grateful to EIOPA for examining whether the calibration and design of capital requirements for investments in certain assets under the envisaged Solvency II regime necessitates any adjustment or reduction under the current economic conditions, without jeopardising the prudential nature of the regime"

Jonathan Faull (European Commission) letter to Gabriel Bernardino (EIOPA) on 26th September 2012

Source: http://ec.europa.eu/internal_market/insurance/docs/solvency/20120926-letter-faull_en.pdf

- Impact assessment on Long Term Guarantee package should enable an informed decision avoiding undesirable consequences
- Likely to include quantitative and qualitative impact of:
 - “Narrow” matching adjustment
 - “Wider” matching adjustment for liabilities with surrender risk
 - Investment market impact
 - Customer impact
 - Removal of asset restrictions

Alternative matching adjustment

A proposed way forward

- Broad concept of the matching adjustment is good:
 - Separately managed and identified portfolio of assets and liabilities
 - Liability cashflows discounted using asset yield less allowance for risk
- Some aspects need small refinements:
 - Asset portfolio cashflows considered (not individual asset cashflows)
 - Risks, including materiality of risk, considered at portfolio level
 - 75% floor very high compared with historic default levels: use a lower number eg 50%
- “One size fits all” detailed prescription replaced by a principle based approach:
 - Each (re)insurer should specify an investment strategy, market risk appetite and approach to managing market risks.
 - Appropriate risk based capital should be held against every risk informed by market data.
 - A proven track record of executing investment strategy and risk management approach will give confidence to all stakeholders that a return above risk free can be achieved.

Alternative matching adjustment

Example investment strategies

- Example 1:
 - Well diversified, fixed income tradeable/liquid assets maintaining an overall portfolio rating of at least A with no more than 10% assets below BBB.
 - If downgrades cause either rating limit to be breached then the portfolio will be rebalanced over the medium term – assume asset sale prices are mean reverted.
 - Risk allowance covers default and cost of rebalancing book after downgrade
- Example 2:
 - Broadly fixed income portfolio of illiquid assets. Asset purchases on average AA rating.
 - No asset sales assumed; capital will need to increase in the event of downgrades
 - Risk allowance covers default, cost of raising more capital following downgrade and any variability in non-fixed asset cashflows.

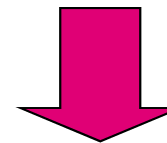
Alternative matching adjustment

Illustrative calculations based on Example 1 investment strategy

Base unstressed illustrative numbers

	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	10.0%	10.0%	20.0%	30.0%	30.0%	100.0%
MV assets £m	794	794	1,589	2,383	2,383	7,943
C Credit spread = A - B	0.74%	1.10%	2.06%	2.55%	3.36%	2.37%
D Allowance for default and migration	0.07%	0.02%	0.04%	0.11%	0.45%	0.18%
E 50% average spread	0.02%	0.20%	0.32%	0.53%	0.67%	0.45%
F Fundamental spread = higher of D or E	0.07%	0.20%	0.32%	0.53%	0.67%	0.45%
Matching premium = C - F	0.68%	0.90%	1.74%	2.02%	2.69%	1.92%
Present value of liabilities discounted at swaps + matching adjustment						7,943
Assets - Liabilities						0

Credit spreads doubled for A and BBB;
unchanged for AAA and AA



	Sovereigns and Supras	AAA	AA	A	BBB	Weighted Average
% assets in rating category	12%	12%	24%	27%	26%	100.0%
MV assets £m	794	794	1,589	1,854	1,727	6,758
Credit spread = A - B	0.74%	1.10%	2.06%	5.10%	6.72%	3.82%
Fundamental spread = higher of D or E	0.07%	0.20%	0.32%	0.53%	0.67%	0.42%
Matching premium = C - F	0.68%	0.90%	1.74%	4.56%	6.05%	3.39%
Present value of liabilities discounted at swaps + matching adjustment						6,816
Assets - Liabilities						-58

Alternative matching adjustment

Good for Growth and Pensioners

- Different companies able to take different asset strategy approaches from the full range of assets in the market
 - Supports investment for growth in wider economy not just large companies with the very best credit rating
 - Avoids artificial asset bubbles
 - Delivers better returns for customers as risk return trade off optimised over a much wider range of assets
 - Asset innovation enabled
- Appropriate capital levels to safeguard policyholder protection while over prudence avoided
 - Better value for money pension annuity rates

Industry comment

“There is still an urgent need to clarify and expand the wording on the Matching Premium”

Otto Thoresen
Director General
ABI
1 March 2012

“... we are concerned at the limited circumstances in which a matching premium may be used and we remain to be convinced that such restrictive conditions are appropriate. Indeed we would argue that far from resulting in a level playing field, a regime in this form will favour those who can take advantage of the matching premium, which will include few”.

Institute & Faculty of Actuaries
2 October 2012

“It seems as though we have been living with uncertainty about both the timeline and the final policy content of Solvency II for as long as we have been talking of the Directive itself.”

Julian Adams
22 October 2012

“...remove arbitrary restrictions...”
“... no restriction on BBB, but measures to avoid ‘chasing the premium’...”

UK insurers

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

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

