Agenda

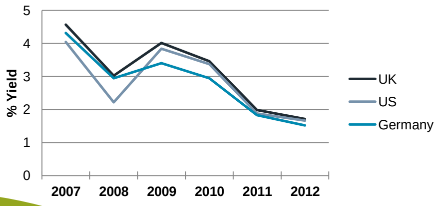
- Background
- What is a Sovereign Annuity?
- Issues with original proposals
- Product development
- Risk management
- Perspectives

1

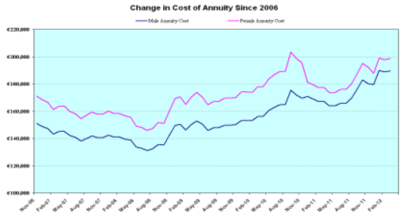
Background

Interest rates

Equity markets



Annuity costs



Pension scheme funding

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Irish Pension Scheme Funding Rules ("class 101")

- Schemes subject to funding standard
- Liability values based on:
  - Pensioners – current market value of annuities
  - Actives and deferreds – transfer value
- On wind-up
  - No debt on the employer
  - Pensioner priority - actives and deferreds vulnerable

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Possible Solution – Sovereign Annuities

- Allow schemes to take credit for higher yielding bonds

  - Improve DB scheme funding position
  - Create stable, local demand for Irish debt
  - More equitable distribution of scheme assets
  - Some additional risk

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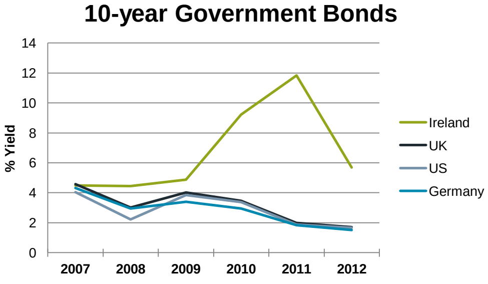
Sovereign debt crisis

- Concern over sovereign debt

- Greek default



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What is a Sovereign Annuity?

- Sovereign Annuity
  - Assurance contract certified by the Pensions Board
  - Annuity payments linked to EU government bonds
  - To meet pension payments/liabilities of pensioners
  - Payments can be reduced in event of ‘non-performance’

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How does it work?

- Annuity contract linked directly to 'reference bonds'
  - bonds issued by either Ireland and/or another Member State of the European Union
  - can reference more than 1 bond
    - Policy must clearly set out percentages referenced to each bond
  - not all payments need to be linked
  - payments cannot be reduced after maturity of reference bonds

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Payment adjustment – original guidelines

- Determine reduction in value using <u>specified interest rate</u>
- Convert to a reduction in payments using <u>specified interest rate</u>
- Reduction can be applied <u>immediately</u> or <u>spread forward</u>
  - Define at outset
  - If spread forward, state the longevity assumption to be used
- Also:
  - Have due regard to actuarial advice and PRE
  - Take no account of charges/expenses incurred
  - Payments also adjusted for events of recovery

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Asset-Liability matching on default

- Considered two default scenarios

  A. Reduction in bond payments e.g. 30% reduction

  B. Deferral of all bond payments e.g. by 2 years

- Simplifications:
  - Assets and liabilities initially cash flow matched
  - Flat interest rate curve…

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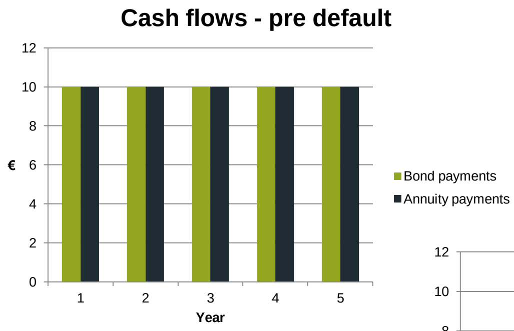
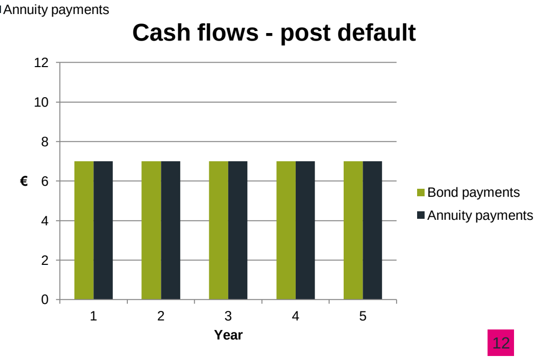
Scenario A – 30% reduction in bond payments
Spread Adjustment





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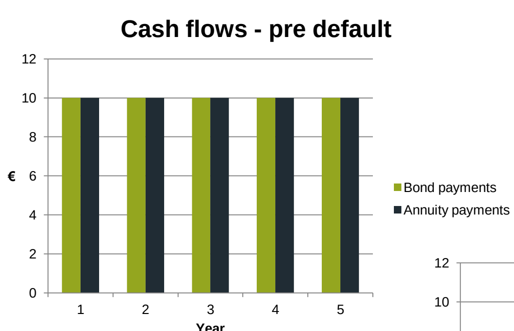
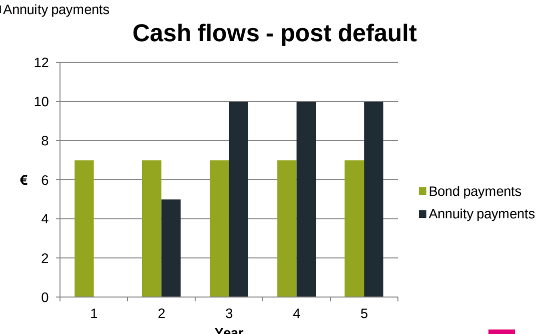
Scenario A – 30% reduction in bond payments
Immediate Adjustment





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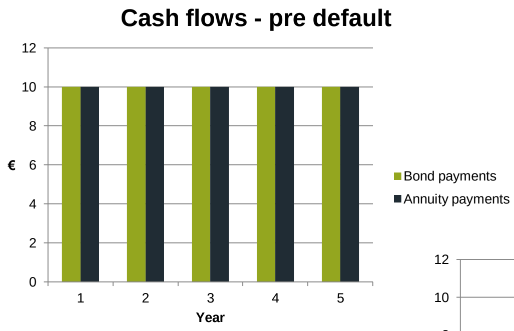
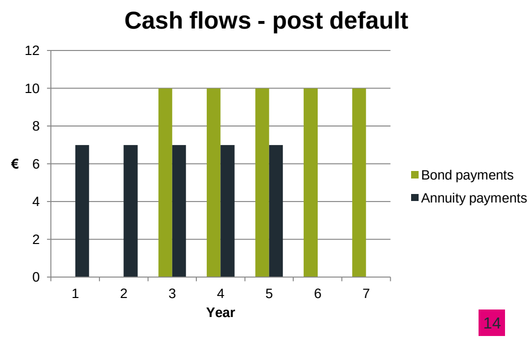
Scenario B – deferral of bond payments
Spread Adjustment





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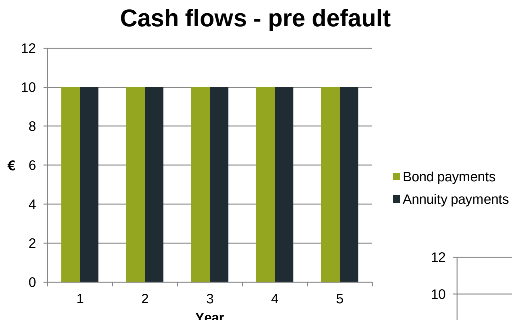
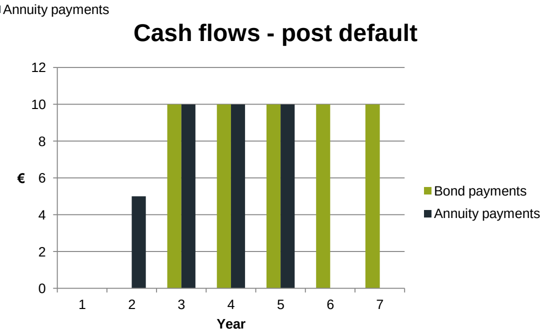
Scenario B – deferral of bond payments
Immediate Adjustment





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ALM Summary

Default scenario	Immediate reduction	Spread reduction
A: percentage reduction	Mismatch	No mismatch
B: payment deferral	Mismatch	Mismatch

- Other complications:
  - Default scenario?
  - Interest rate curve and movements?
  - Additional risks of Spread approach (additional defaults)
  - Fixed longevity assumption

→ Too much non-hedgeable risk for insurers?

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Reserving considerations – Solvency I (Ireland)

- Discount rate
  - Based on asset yield less allowance for default risk
- Credit risk passed onto policyholders – lower value liability
- Adjust liability cashflows
  - Allow for expected defaults (PD) and LGD
  - Simplified approach?

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Reserving considerations – Solvency II

- Discount rate based on risk-free rates
- Adjust liability cash flows for PD and LGD
- Matching Premium
  - Possible restrictions?
- Counter-Cyclical Premium
  - Some benefit

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Alternative approach

- Too much non-hedgeable risk?

Negotiate alternative approach with Pensions Board

- Direct pass through?
- Fewer restrictions?
- Addresses some of the risks – but not all!

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Default Calculation Principles

- An exact as possible cashflow match of bond receipts to pensioner out go is structured

- Principle of one to one correspondence as far as possible, some inconsistencies:

1. Annual bond payment versus monthly annuity payment
2. 3 month notice period before adjustment
3. Annuity payments after maturity of final bonds

- Adjustments to annuity payments are based on <u>actual versus expected</u> bond receipts over the previous 12 months.

1. Adjusted benefits come into payment after a 3 month notification period.
2. All benefit adjustments are applied over a 12 month period.
3. The same principle apply to recovery events.

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Default Example

- One of the bonds only pays 50% of the coupon due
- The reference table specifies that annuity payments are 23% linked to this bond
- The reduction required in annuity payments is 11.5% - calculated as 23% X 50% (Reference % X Shortfall).
- Annuity payments continue as normal for 3 months following notification
- The adjustment period covers the 12 months after this notification period-annuity reduced by 11.5%.
- Annuity payments will be restored to their full level thereafter (provided there are no subsequent non-performance events)

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Target market

- Domestic defined benefit schemes
  - 1,098 DB schemes
  - 532,728 DB members (this includes DB schemes not subject to funding standard)
  - Total Irish pension fund assets = €75.5 billion
    - €48 billion in DB assets
- Explaining the concept
  - Pensions consultants
  - Trustees

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Bond Details

- NTMA initially proposed yield 6% or so - less than then current market rates – but tailored, bespoke
- Great bulk demand for Irish due to pricing/local suitability/availability of suitable bonds
- Amortising bonds-like mortgage repayments so level
- Annual payment, in arrears
- Legally pari passu…. but possible argument Sovereign Annuity Bonds less likely to be hit by such action than standard bonds?

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Bond Details

GRAB Corp NTMA

National Treasury Management Agency

1

NATIONAL TREASURY MANAGEMENT AGENCY IRELAND BOND ANNOUNCEMENTS 13:01 GMT 23-Aug-12

The NTMA has issued 5 new Irish Amortising Bonds today. A total of Eur 1021.3 million was sold at a weighted average yield of 5.91%.

BOND TITLE	ISIN CODE	PRICE	YIELD%	AMT.ISSUED
5.72% Amortising Bond 20 July 2027	IE00B7XWNN51	100.02	5.72	35 M
5.82% Amortising Bond 20 Mar 2032	IE00B7Z55X64	100.04	5.82	34.1 M
5.92% Amortising Bond 20 Jan 2037	IE00B8JXZJ91	100.04	5.92	298.35 M
5.92% Amortising Bond 20 May 2042	IE00B8JYSW68	100.04	5.92	322.9 M
5.92% Amortising Bond 20 Sept 2047	IE00B86ST629	100.00	5.92	330.95 M

The Offering Circulars are available on the NTMA's website www.ntma.ie.

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000
SN 515020 G364-1297-2 23-Aug-12 14:03:35 BST GMT+1:00

Yield modelling

- 3 month notification period of any default/reduction
- Effectively first 15 months payment guaranteed
- Once annual payment received, monthly payments then guaranteed-so requires "guaranteed" reinvestment
- Exact yield loss f(number of bonds, duration of scheme, "guaranteed yield" at time) etc
- Approx 80bps reduction of the c 400bp spread over AAA (at time)
- Cost of life office solvency rules/prudence

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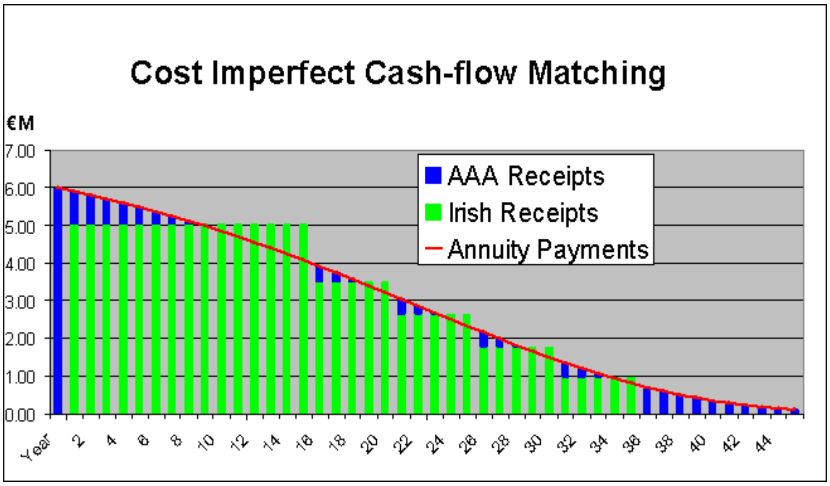
Yield leakage



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Other pricing considerations

- Allowance for costs on non-recovery
- Allowance for risk on forced voluntary default
- Residual mismatches
- 3 months' notice period

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Risk Management

- Standard annuity risks
  - Market risk
    - Cash flow and liquidity
      - Similar issues to standard annuities
      - Use coupon-only or amortising bonds
  - Insurance risk
- Sovereign annuity specific risks

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Reputational risk?

- If you do…
  - Possible impact on brand?
  - Bulk schemes vs individual sales
  - Domestic vs other EU state bonds
- If you don't…
  - reputational damage by not offering "cheap annuities"?
  - drawdown options actually more risky?

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“Voluntary” default

- Consideration of Private Sector Involvement (“PSI”)
- Greek bondholders asked to allow swap (“voluntary action”)
  - Should insurer volunteer in this case?
- Can legal wording help?
- Impact of Collective Action Clauses (CACs)

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Other issues

- Impact on longevity reinsurance – potential mismatches
  - “Full” reinsurance (high % Quota Share)
  - Swap – pure longevity hedge
- Strict regulator/certification process

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Perspectives (1)

- Trustees
  - Fairness to members?
  - Regard to reward and risk
- Sponsors
  - Improve scheme funding
- Members
  - Improved funding for 'actives' – greater equity
  - If there is a default – deferred payments to surviving pensioners (equity?)

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Perspectives (2)

- Government
  - NTMA - new source of funding
    - Value of scheme pension liabilities c.€20-30 billion
  - Pensions Board – consumer protection
  - Central Bank – life company solvency

- Life companies
  - Can additional risks be managed?
  - Will there be a market?

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Conclusion

- Highly different, platypus product
- Very much function of the times
- Contains many unique actuarial (and other) challenges!

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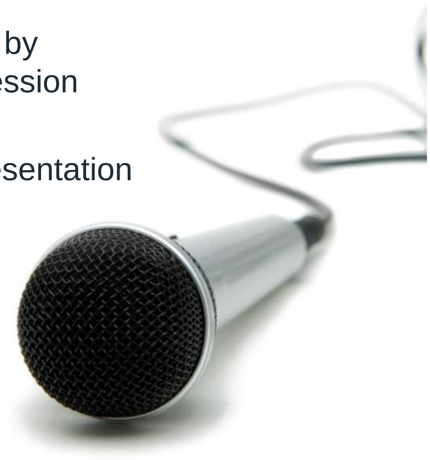
Questions or comments?

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.



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