The Actuarial Profession
making financial sense of the future

Risk and Investment Conference 2010: Impacts of regulation and market turbulence on annuity fund investment strategies working party

Unintended Consequences & the Avoidance of Self- Fulfilling Prophecies

Middle Range Theory

Purposive Action

- Regulation to safeguard policyholders

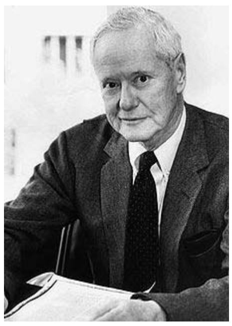
Unintended Consequences

- Impacts investment strategies
- Inherent biases drive risk concentration

Self-Fulfilling Prophecies

- There is systematic risk in insurance that requires regulation

Robert K Merton



1910-2003

Working Party Remit

Based on the observed strain in the UK life insurance industry from 2007 onwards

↓

Analyse the degree to which regulation led to the investment strategies underlying annuity funds

↓

To outline key risks associated with the formulation of future regulation

Approach

- Understand existing annuity fund investment strategies
- Build comprehensive ALM annuity fund model
- Analyse capital and pricing impacts of alternative strategies
- Project forward from end 2006 to end 2009
- Interpret effect of market volatility on surplus emerging
- Derive conclusions in relation to Solvency II

Current Regulatory Framework – Pillar I

EU Directive 2002/83/EC ("Pillar I") for annuity funds

- Rules based on 1970s regulation
- Assets held at market value
- However liabilities a function of assets' yield
- Yield adjustment based primarily on historic defaults
- Favours long dated A rated bonds
- No additional credit stress

If assets match liabilities they move together with markets

Current Regulatory Framework – Pillar II/ ICA

Individual Capital Assessment (ICA)

- End 2004, principle based, privately disclosed to FSA
- Principles reflect insurer's views
- Calibrated to 99.5% confidence interval over 1 year
- Still potentially favours corporate bonds
- Market impacts dampened by methodology

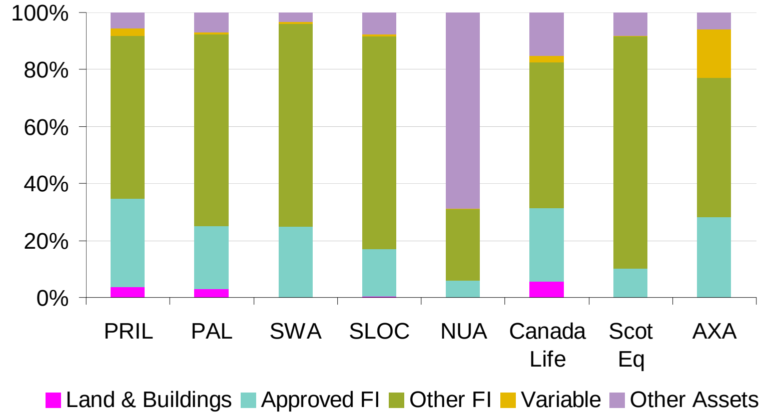
More market sensitive than Pillar I but only privately disclosed

Annuity Fund Pricing

- Price = (Materials + Labour + Shipping)/(1-Profit Margin)
- BPAs are elastic goods with perfect substitutes
  - Materials = Capital
  - Shipping and Labour = BPA Sales & Annuity Fund Overheads
  - Capital efficiency gives competitive advantage

Regulation doesn’t drive investment strategy, however it does impact competitors’ production costs & prices

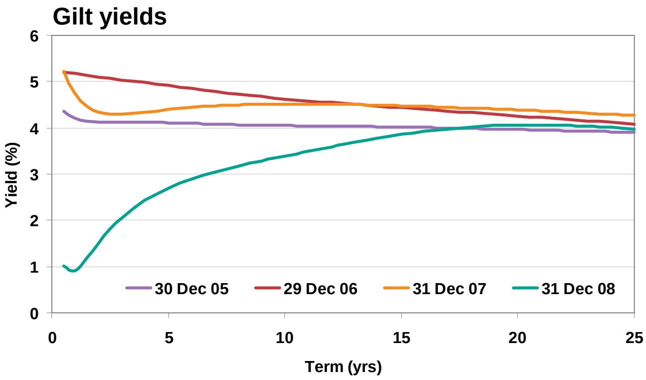
End 2006 Investment Strategies



Source: FSA Returns

Gilts – the risk-free approach

- Expect little or no profit under P1
- Profit/loss under P2 as curve changes shape – duration matching approach
- Curve shifts are more pronounced at front end – greater impact on liabilities

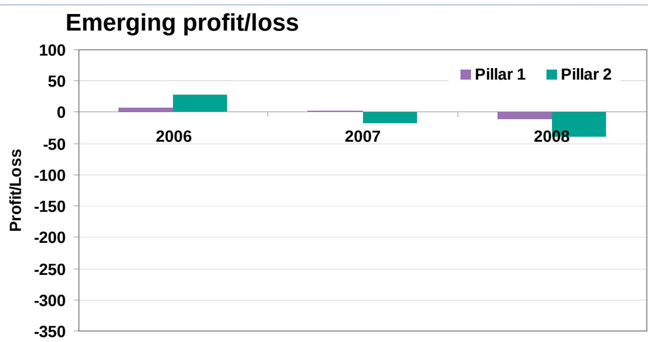


	2005	2006	2007	2008
Pillar I Discount Rate*	4.08%	4.52%	4.47%	3.56%

* before 2.5% FSA risk deduction

Gilts – what the model says

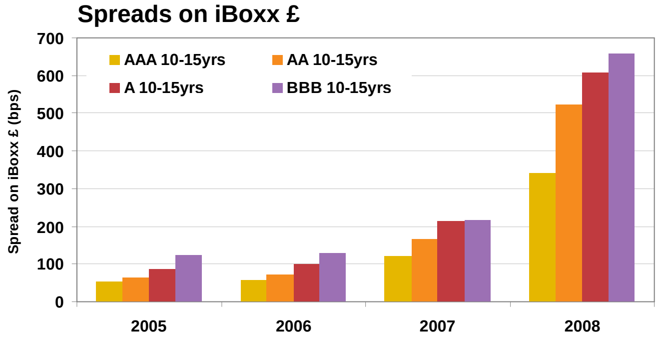
- Gilt strategy is generally stable under both Pillars
- P2 surplus/loss consistent with direction and magnitude of curve shift at front end



P/L as % of start year assets	2006	2007	2008
Pillar 1	0.3%	0.1%	-0.5%
Pillar 2	1.4%	-0.9%	-1.9%

Credit – the "free lunch" under Pillar I

- P1 profit/loss due to assumption changes, downgrades and defaults
- 50% of spread on assets credited to P2 discount rate – expect loss in 2007 and 2008 as spreads widen

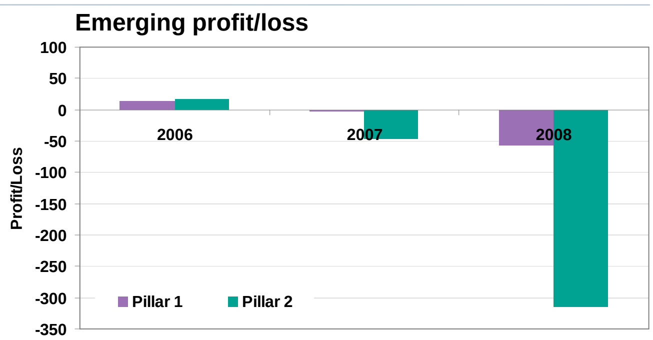


	2005	2006	2007	2008
Pillar I Discount Rate*	4.48%	5.04%	5.68%	7.26%
Haircut	0.36%	0.37%	0.45%	0.72%

* before 2.5% FSA risk deduction

Credit – what the model says

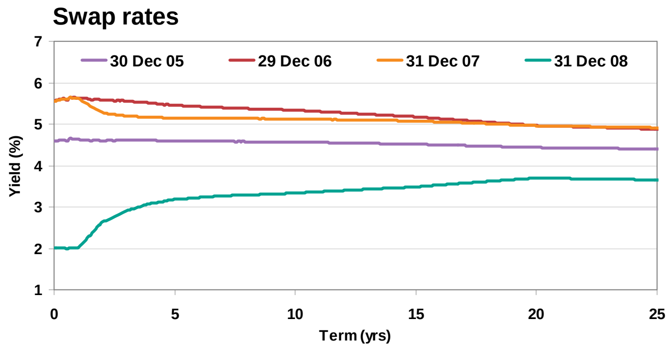
- P1 stable until 2008 when default haircuts double
- 2007 spreads more than twice 2005 levels
- Large P2 loss in 2008
  - spreads at seven times 2005 levels
  - ICA credit stresses doubled in 2008



P/L as % of start year assets	2006	2007	2008
Pillar 1	0.7%	-0.1%	-3.1%
Pillar 2	0.9%	-2.4%	-17.5%

Matching duration with swaps

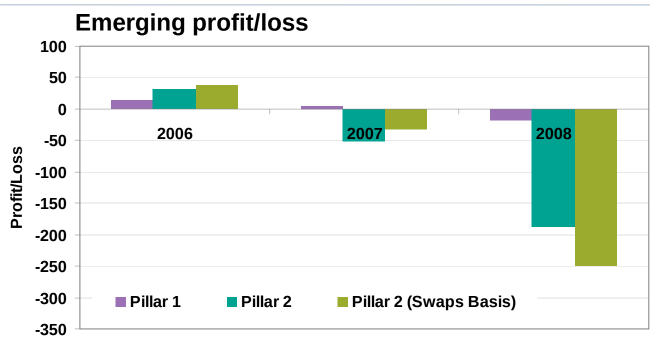
- Swaps used to extend duration
- Swap rates broadly stable until 2008
- Big drop in swap rates over 2008 – positive balance sheet impact



Duration (yrs)	2005	2006	2007	2008
P2 Liabilities	8.9	8.7	8.5	8.2
Credit Bonds	4.8	4.9	4.5	4.5

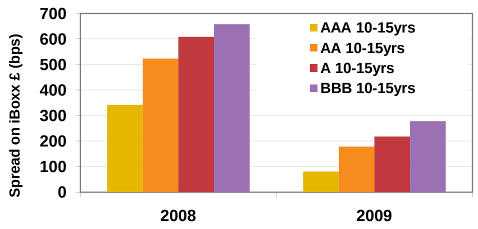
Credit + Swaps – what the model says

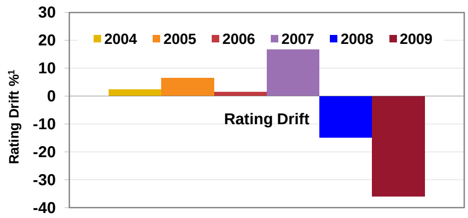
- Similar results to Credit only strategy up to 2008
- Smaller loss in 2008
- Smaller increase in P1 default haircut
- Gain on swaps
- Shorter dated credit lessens impact of ICA strengthening



P/L as % of start year assets	2006	2007	2008
Pillar 1	0.7%	0.2%	-1.0%
Pillar 2	1.6%	-2.6%	-9.9%

Economic Conditions - 2009





Credit Markets

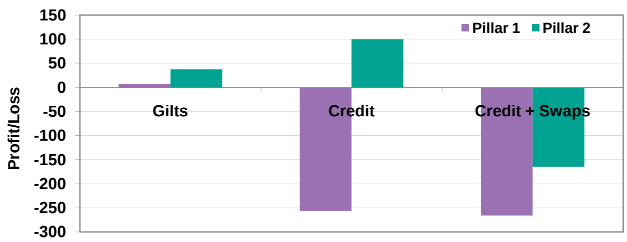
- Credit spreads widened to March before recovering

Credit Ratings

- Ratings downgrades increased significantly in 2009

[1] *Source: Moody's*

Modeled Results - 2009



Credit Strategy

- Large deficit emerging in 2009

Credit + Swaps Strategy

- Similar experience to credit strategy

Why?

- Crystallisation of losses following downgrades

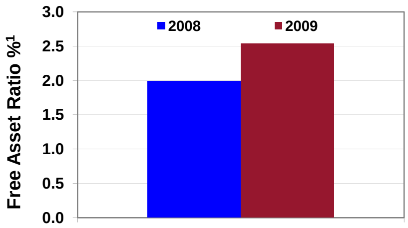
Annuity Companies – What Actually Happened?

Experience

- Most companies improved under Pillar 1

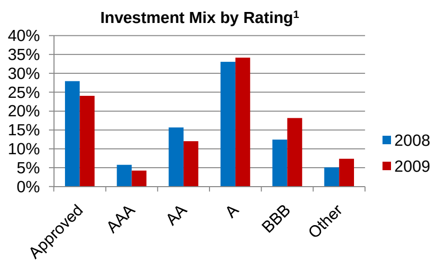
Why Different from Model?

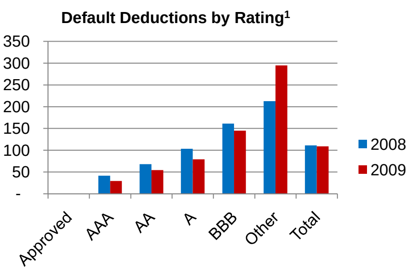
- Companies not force sellers
- Impending downgrades allowed for at end-2008



[1] Source: FSA returns. Data from 14 major annuity providers.

Annuity Company Assumptions





Asset Mix

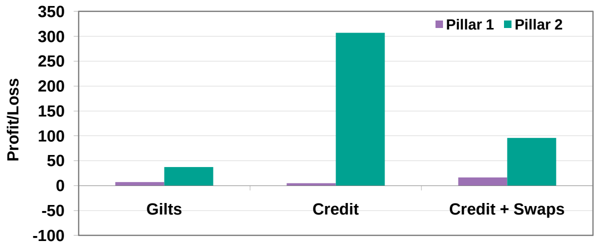
- Average rating worsened to end-2009

Default Assumptions

- Allowance for defaults reduced for most ratings

[1] Source: FSA returns. Data from 14 major annuity providers.

Revised Model



Adjustment

- Model adjusted to exclude forced selling

Pillar 1

- More stable surplus emerging. As per observed results

Pillar 2

- No observable market results. Model suggests improvement

Current UK Regulation – What has happened?

Investment strategies

- Pillar 1 led to severe credit bias due to capital efficiency

Solvency

- Pillar 1 relatively stable despite market volatility
  - Assumption changes (08)
  - Downgrades (09)

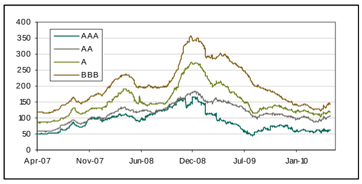
  Both impacting aggregate haircut
- Divergence between regulatory and realistic solvency position

A new regulatory regime: Key Risks

- Existing regulations resulted in a systemic risk exposure for UK Annuity Funds

Aspects of regulations define investment strategy:

- Capital calculation
- Liability valuation
- Diversification of asset strategies will depend on impact to liability and capital values/volatility

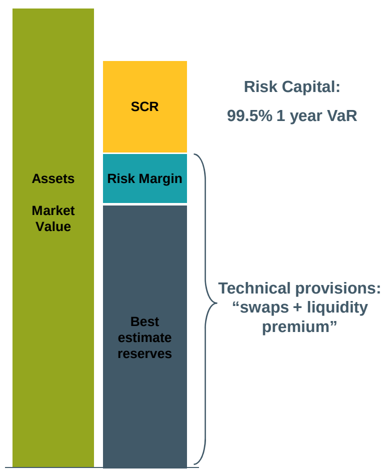


What's next? .... Solvency II

A move towards market consistency

- Total balance sheet approach
- Diversification
- Standard formula/Internal model
- Liquidity premium

Applies to EU (Re)Insurers



Annuity Funds – Capital Considerations

Capital Requirements

Independent of assets

- Reduced liquidity premium
  - Currently c.75% of spread assumed
  - Solvency II = 50%

> 5% increase to reserves[1]

City&Business

INSURERS FALL ON £50BN HIT FROM EUROPE

Thursday September 3 2009

Investors in Britain's biggest insurers took fright after the industry warned that new European rules obliging firms to beef up reserves could force them to issue up to £50billion of shares, possibly triggering higher premiums and lower cover, writes Philip Waller.

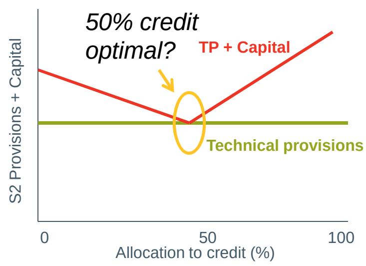
- Credit spread stress
  - Spread widening: 260bps A
    - (50% allocated to liquidity premium)
  - Also spread narrowing test
- Grandfathering?

1. *iBoxx A 10-15yr spread c.220bps*

Annuity Funds – Investment Strategies

Investment strategies

- Reduced credit investment – 50%?
- Shorten credit duration
  - reinvestment risk
- Alternatives to credit
  - Loans, infrastructure, property
- Swaps based liability benchmark
- Focus on **return on capital**



Self-Fulfilling Prophecy?

- Balance sheet volatility
- Capital efficiency

Will funds still be forced to follow one route?

What is the “killer” scenario if a Solvency II efficient investment strategy is followed?

What next for the Working Party

Model diverse strategy

- See how it performed through the crisis
- Would it have left funds in better position?

Solvency II

- Acceptance of more diverse strategies
- Exposure to “blow out” scenario

Further Considerations

Risk Management
- Enhanced industry risk management
- Greater focus on economic risk

Market impacts
- Credit markets – UK Annuity funds 1/3 iBoxx
- Swap markets – Recall impact of LDI

Buy-out Market
- Pricing
- Alignment of asset strategies

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.