

Highlights of 2012 Life Conference  
Derek McLean & Emily Penn



## The Risk-Free Rate: Politics, Economics & Investments

17 April 2013

### Origins of this presentation

#### Working party on “How to hedge the risk-free rate under Solvency II”

- Rationale for hedging
- Extrapolation to an “ultimate forward rate”
- QIS5 liquidity premium

#### Life Conference 2011

Society of Actuaries Ireland

Our Changing Futures

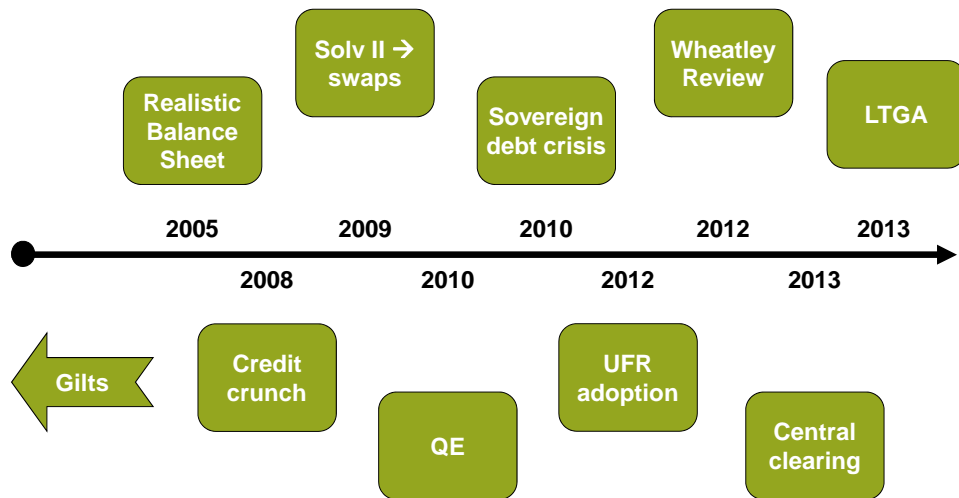
Bristol Actuarial Society

Yorkshire Actuarial Society

#### Life Conference 2012

Actuary magazine – “Hedging your bets”

## The journey so far ...



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## Drivers of the risk-free rate



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## Insurance Regulation

### Solvency II



EUROPEAN  
COMMISSION



Govt ~~onds~~

Overni ~~swaps~~

Libor swaps

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## Breaking down the yield on a Government bond

$$\text{Yield} = \text{Swap Rate} + \text{Credit Spread} + \text{Liquidity Premium}$$

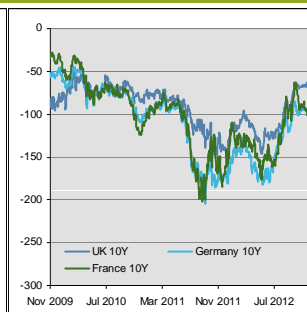
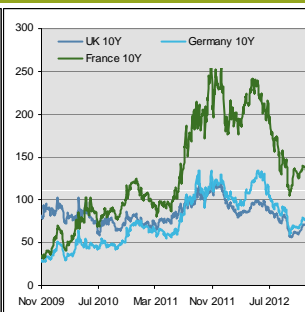
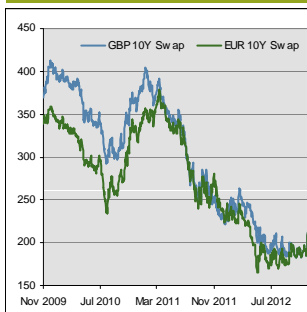
Swap Rate

+

Credit Spread

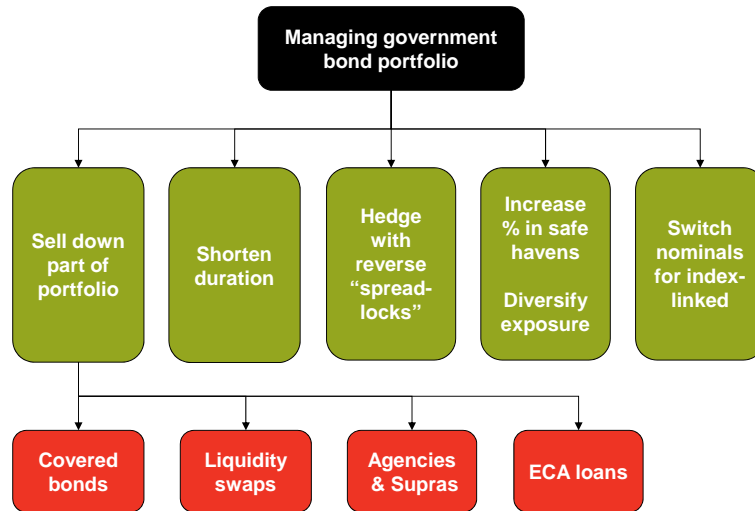
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Liquidity Premium



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## What choices does the insurer have?



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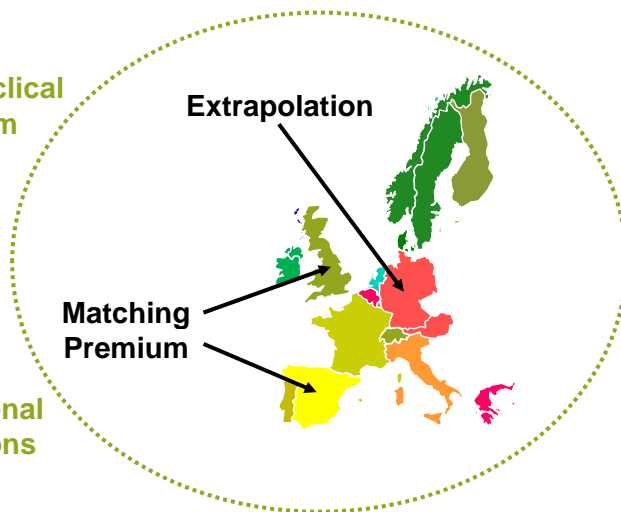
## Politics

Countercyclical  
Premium

Extrapolation

Matching  
Premium

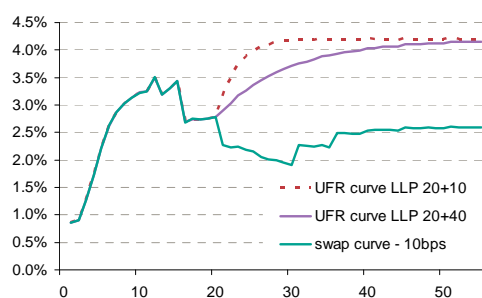
Transitional  
Provisions



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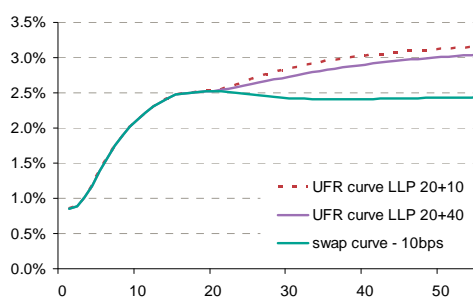
## The extrapolation conundrum

1yr fwd rate under different curves



Source: Bloomberg; RBS; 26 April 2012

Resulting liability discount curves



Source: Bloomberg; RBS; 26 April 2012

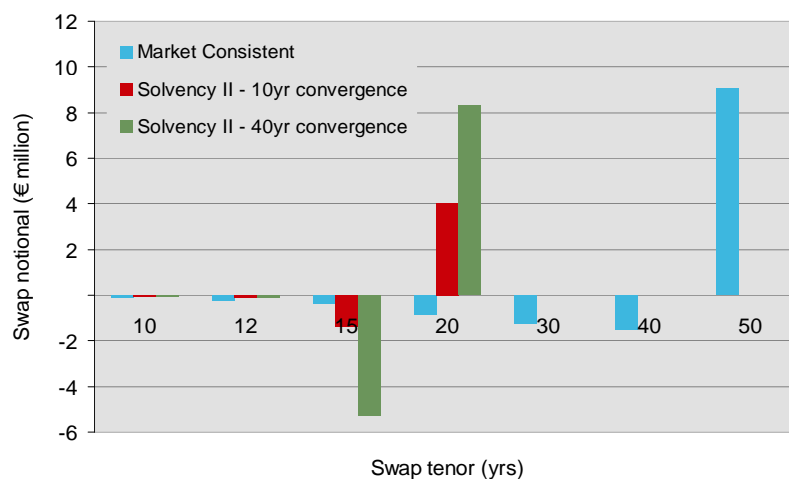
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## Solvency II to the rescue

	Market consistent	Solvency II 20yr LLP 10yr convergence	Solvency II 20yr LLP 40yr convergence
Value of 50yr €10mn liability	€3.9 million	€2.1 million	€2.5 million
PV01 (as % of market consistent)	100%	24%	34%
Modified duration	50	22	27

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## Delta hedges for 50yr €10 million liability



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### Non-Insurance Regulation

- Traditional method of swap valuation was to use the **6mth Libor swap curve**
- Market moving to **CSA discounting**

#### What does this mean?

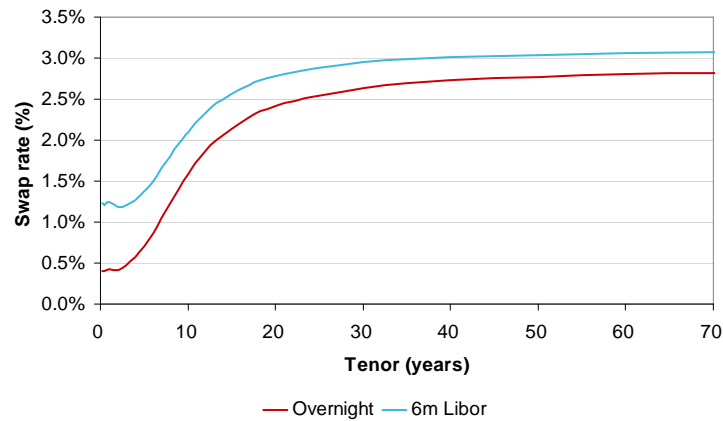
- Derivatives are valued based on the **cost of posting collateral**
- Normally based on overnight index swaps (OIS)
- Some CSAs allow wider collateral

#### Why?

- Libor previously regarded as bank funding rate – no longer the case
- Collateral at heart of risk management
- LCH moved to OIS in July 2010

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## SONIA vs. Libor



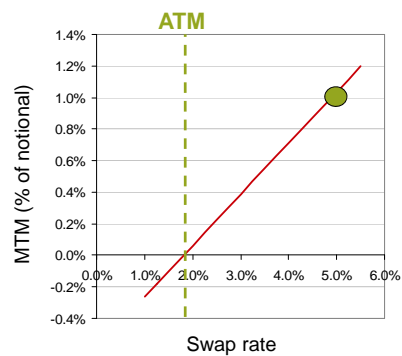
Source: RBS 24<sup>th</sup> October 2012

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## Impact on swap contracts held by Insurers

### Example:

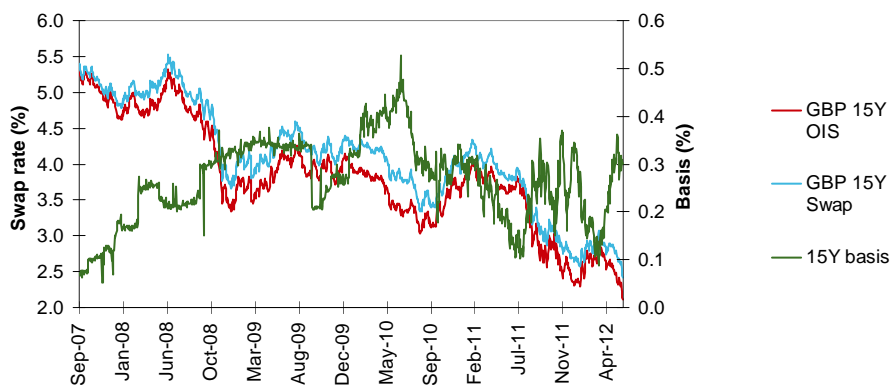
Tenor	10 year
Notional	£1m
Strike	5%
Value on Libor curve	305,200
Value on OIS curve	315,400
Difference	10,200 (1%)



- Greater impact for ITM/OTM swaps
- Less impact where CSA allows GBP corps / Multi currency cash

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## Resulting basis risk under Solvency II



- Re-striking positions
- Hedging exposure

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## Regulatory developments in banking sector

### The Wheatley Review of LIBOR:

#### final report

- "far reaching programme of reform"
- Focus on governance
- But alternative benchmarks remain under consideration

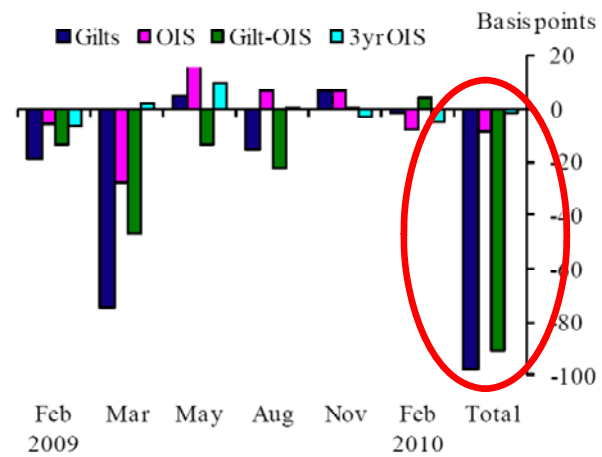
- **Basel 3/CRD IV**
  - Capital requirements **UP**
  - Liquidity requirements **UP**
- **More recently**
  - FSA has **relaxed** some of these requirements

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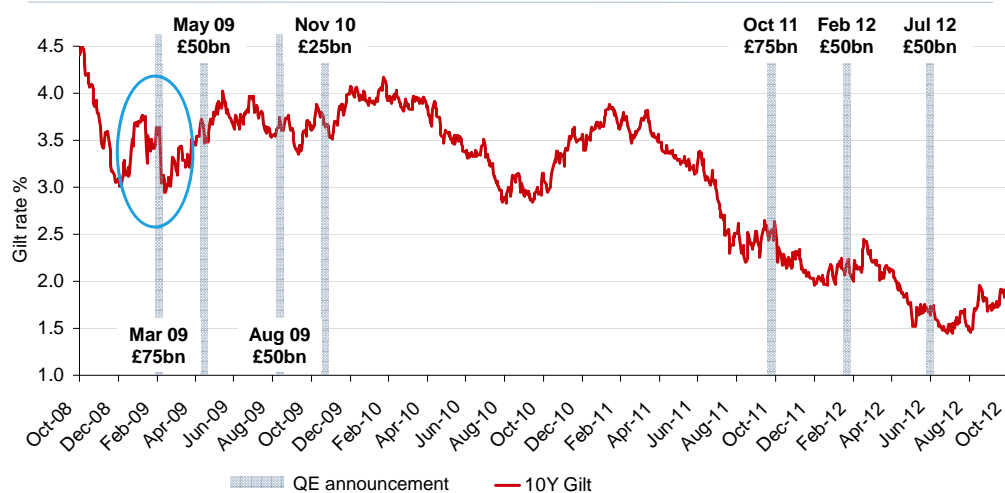
### Central Bank Operations

*“Summing over the reactions in gilt yields to each of the QE news events gives an overall average fall of just under 100 bps”*



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### Buy the rumour, sell the fact ...

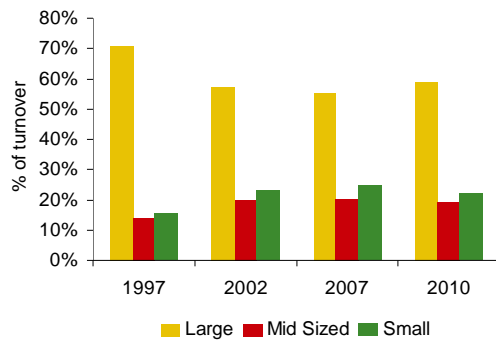


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## Changing Central Bank reaction functions ...

### Shift from QE to FLS

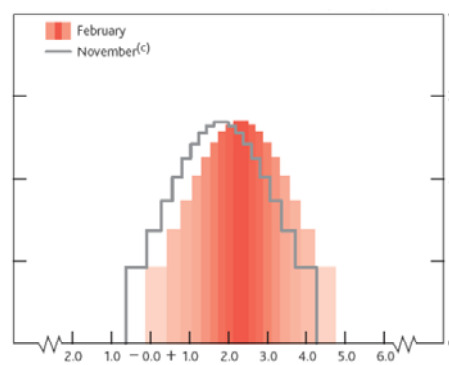
*SME's are crucial to economy ...*



Source: Department for Business Innovation and Skills

### Greater inflation tolerance

*Upward revision to 2yr forecast ...*



Source: 2013 BoE February Inflation Report  
(Projected probabilities of CPI outturns in 2015 Q1)

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## Economic Environment

- We see Gilt yields being supported at 2.5%
- Market remains driven by very sharp sell offs in a volatile environment
- Recent MPC minutes now stress effect of high Gilt yields on the economy



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## UK Gilt curve vs. 5 year yields

- 10s30s has shown reluctance to flatten in a rising yield environment
- Market is pricing in risk premium for Gilts
- 5yr and shorter part of the curve to remain supported while interest rates are on hold



## Investment Decisions



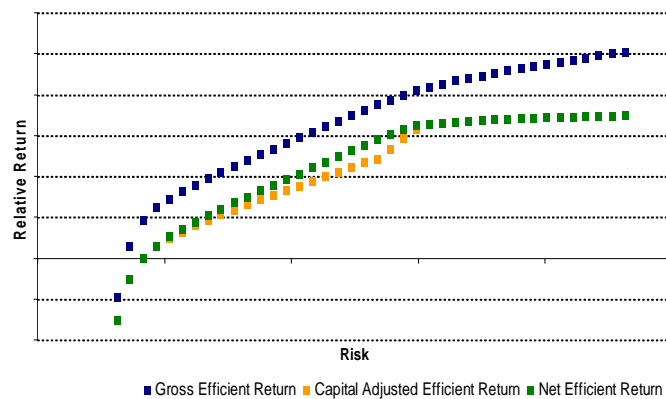
## Efficient frontiers

If the cost of capital penalises risk ...

... then Investors may switch to lower risk assets ...

... hence reducing risk-free yields

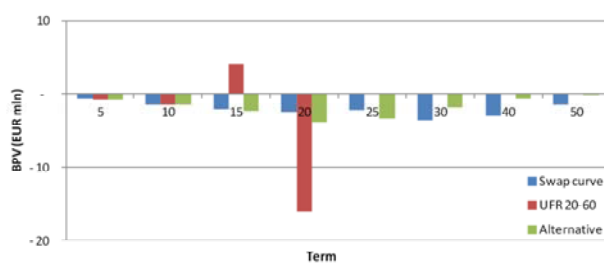
### Efficient portfolio returns relative to liabilities



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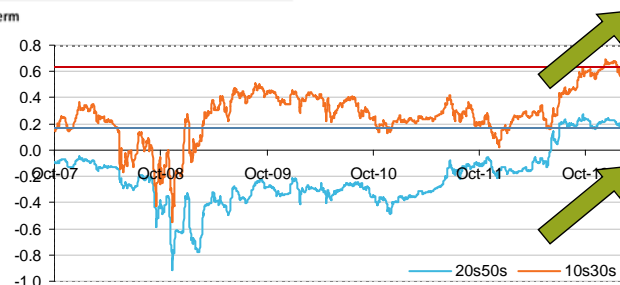
## Dutch leading the charge

$$fwd_{t-1,t}^{SW} = (1 - w(t)) fwd_{t-1,t} + w(t) UFR$$



Source:  
Academic Community  
Comments on CP-12-003  
Draft Tech Specs on QIS QIOP II

Source: RBS



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**Any questions?**

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