The Actuarial Profession
making financial sense of the future

Life Conference 2012

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The Risk-Free Rate: Politics, Economics & Investments

6 November 2012

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

Actuary magazine – "Hedging your bets"

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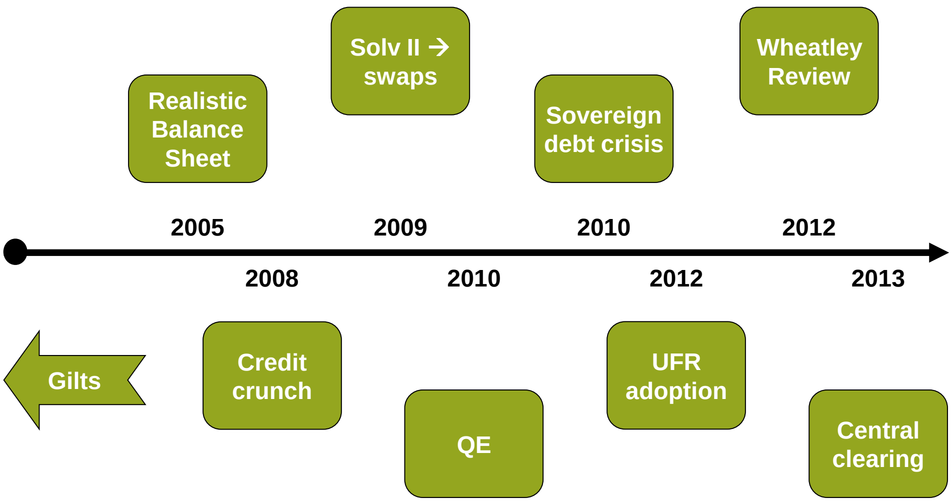
The journey so far …



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Drivers of the risk-free rate

3

Insurance Regulation

Solvency II

EUROPEAN COMMISSION

EIOPA
EUROPEAN INSURANCE AND OCCUPATIONAL PENSIONS AUTHORITY

Gove ~~X~~ onds

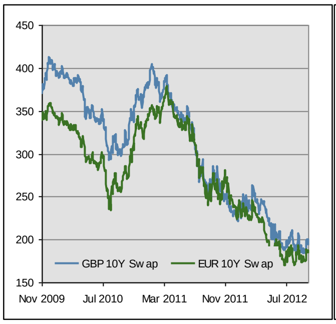
Overni ~~X~~ swaps

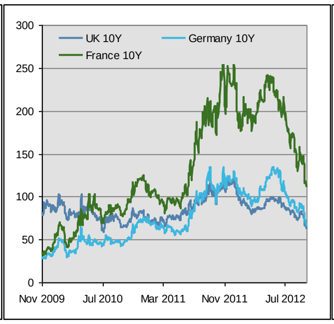
Libor swaps

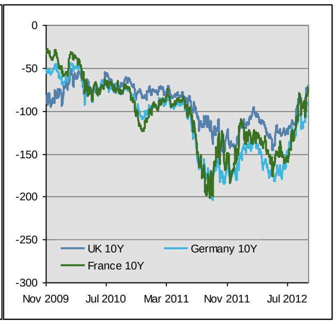
Breaking down the yield on a Government bond

Yield = Swap Rate + Credit Spread + Liquidity Premium

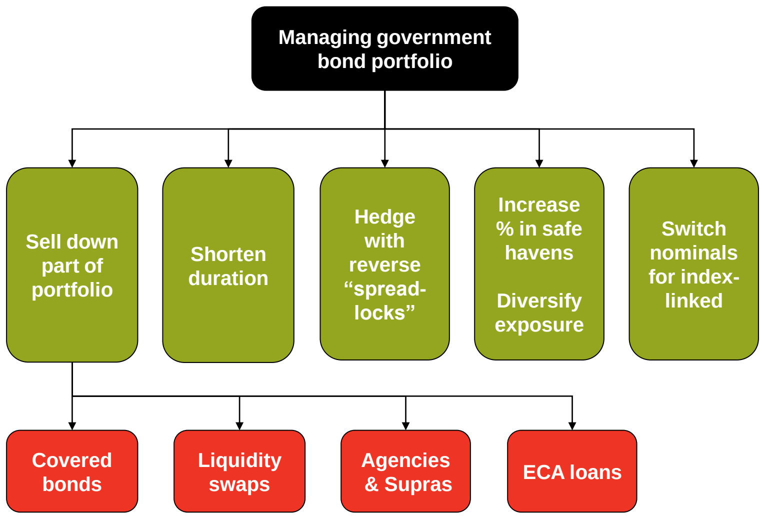
Swap Rate	+	Credit Spread	+	Liquidity Premium



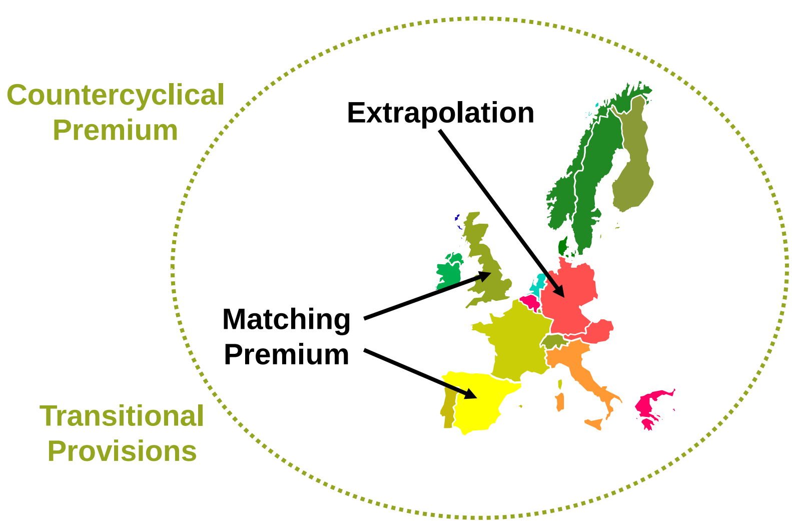




What choices does the insurer have?

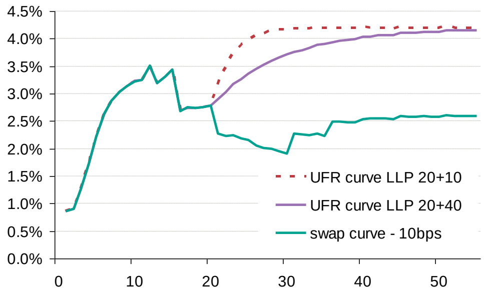


Politics



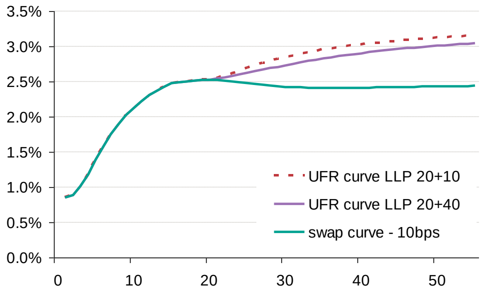
The extrapolation conundrum

1yr fwd rate under different curves



Source: Bloomberg; RBS; 26 April 2012

Resulting liability discount curves

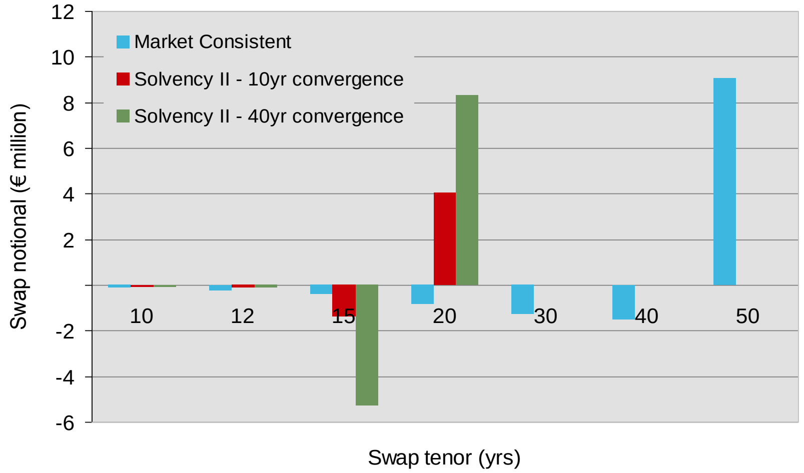


Source: Bloomberg; RBS; 26 April 2012

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

Delta hedges for 50yr € 10 million liability



Non-Insurance Regulation

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

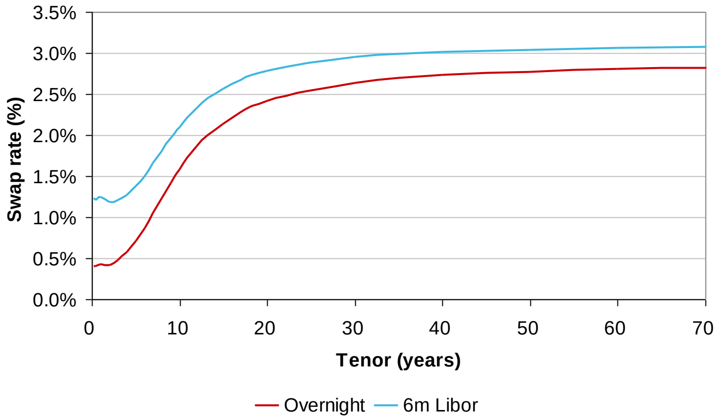
What does this mean?

- 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

SONIA vs. Libor

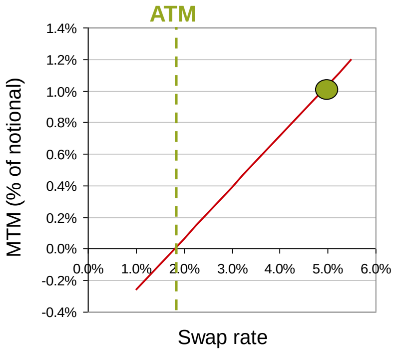


Source: RBS 24th October 2012

Impact on swap contracts held by Insurers

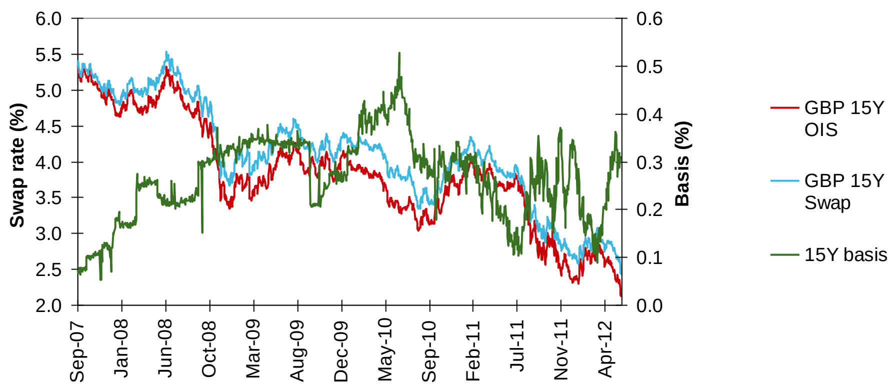
Example:

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

Resulting basis risk under Solvency II



Managing exposure

- Re-striking positions
- Hedging exposure

Regulatory developments in banking sector

The Wheatley Review of LIBOR:

initial discussion paper

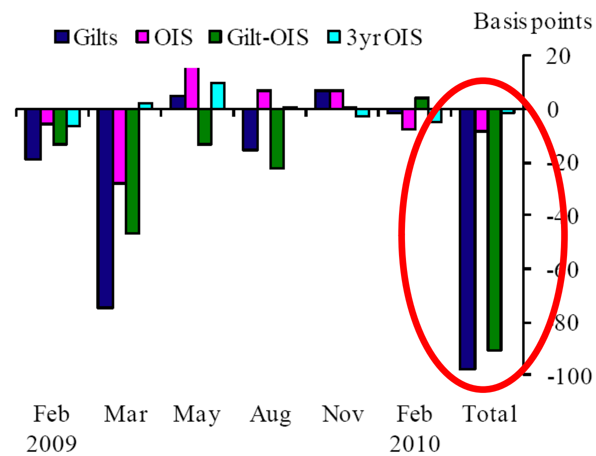
Reforming the framework for setting & governing LIBOR

- *End of one-size-fits-all in duration management?*
- *Alternative benchmarks?*
- *OIS swaps for hedgers of long-dated liabilities?*

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

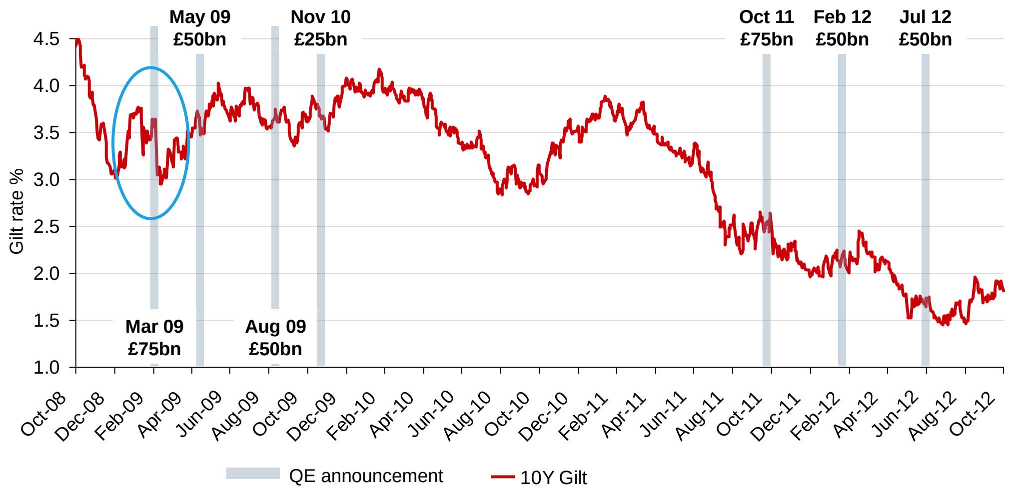
Central Bank Operations

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



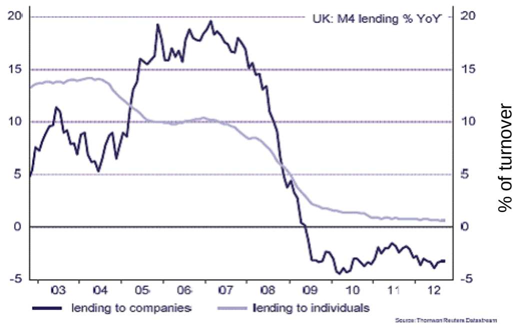
Sources: Bloomberg and Bank calculations.

Buy the rumour, sell the fact …



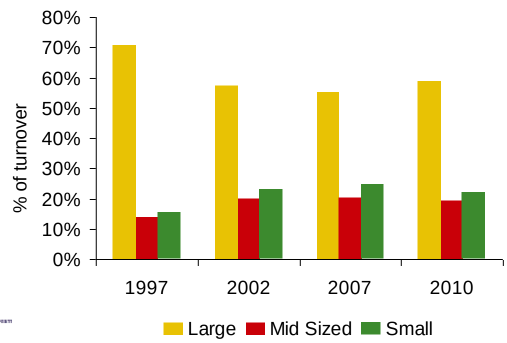
From quantitative easing to credit easing…

Lending plummeted….



Source: Thomson Reuters

SME's are crucial to economy…



Source: Department for Business Innovation and Skills

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Economic Environment

- Ongoing financial crisis in Europe
- Forced buying of government bonds due to regulatory tightening
- Safe-haven market demand
- Central bank policy to keep rates low for the medium term

UK Gilt curve vs. 5 year yields

- Risk aversion has caused curve to steepen to record levels
- Short dated maturity bond yields underpinned by low interest rate policy
- Longer dated bonds less attractive to central bank buying
- Supply biased to longer durations
- UK has successfully been able to issue debt at these yields

Investment Decisions

Solvency II basis

Capital buffer

Risk appetite

Market liquidity

Demand from Insurers

Economic vs. Regulatory

Liquidity premium

Investors

Asset manager mandates

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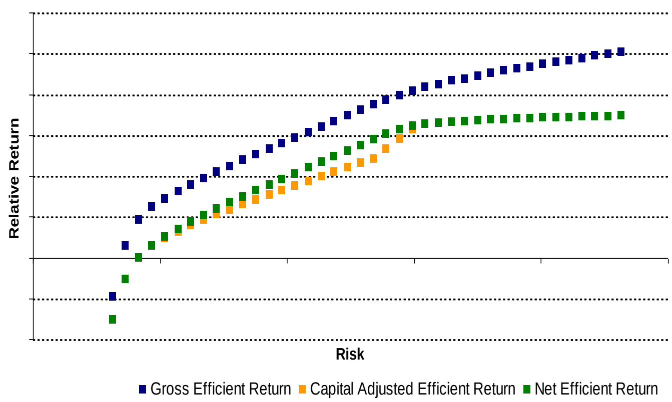
Efficient frontiers

If the cost of capital penalises risk …

… then Investors may switch to lower risk assets …

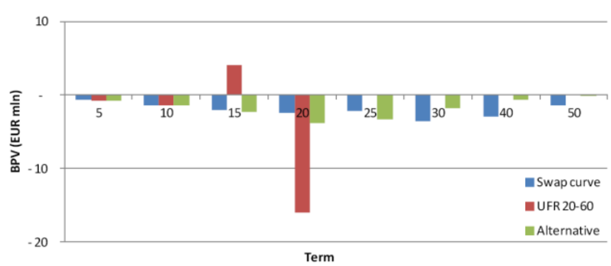
… hence reducing risk-free yields

Efficient portfolio returns relative to liabilities

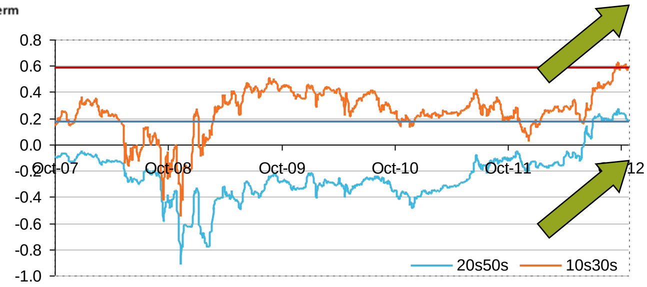


Dutch leading the charge

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



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



Source: RBS

Any questions?