The Actuarial Profession
making financial sense of the future

Highlights of 2012 Life Conference

Derek McLean & Ross Evans



The Risk-Free Rate:
Politics, Economics & Investments

7 March 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

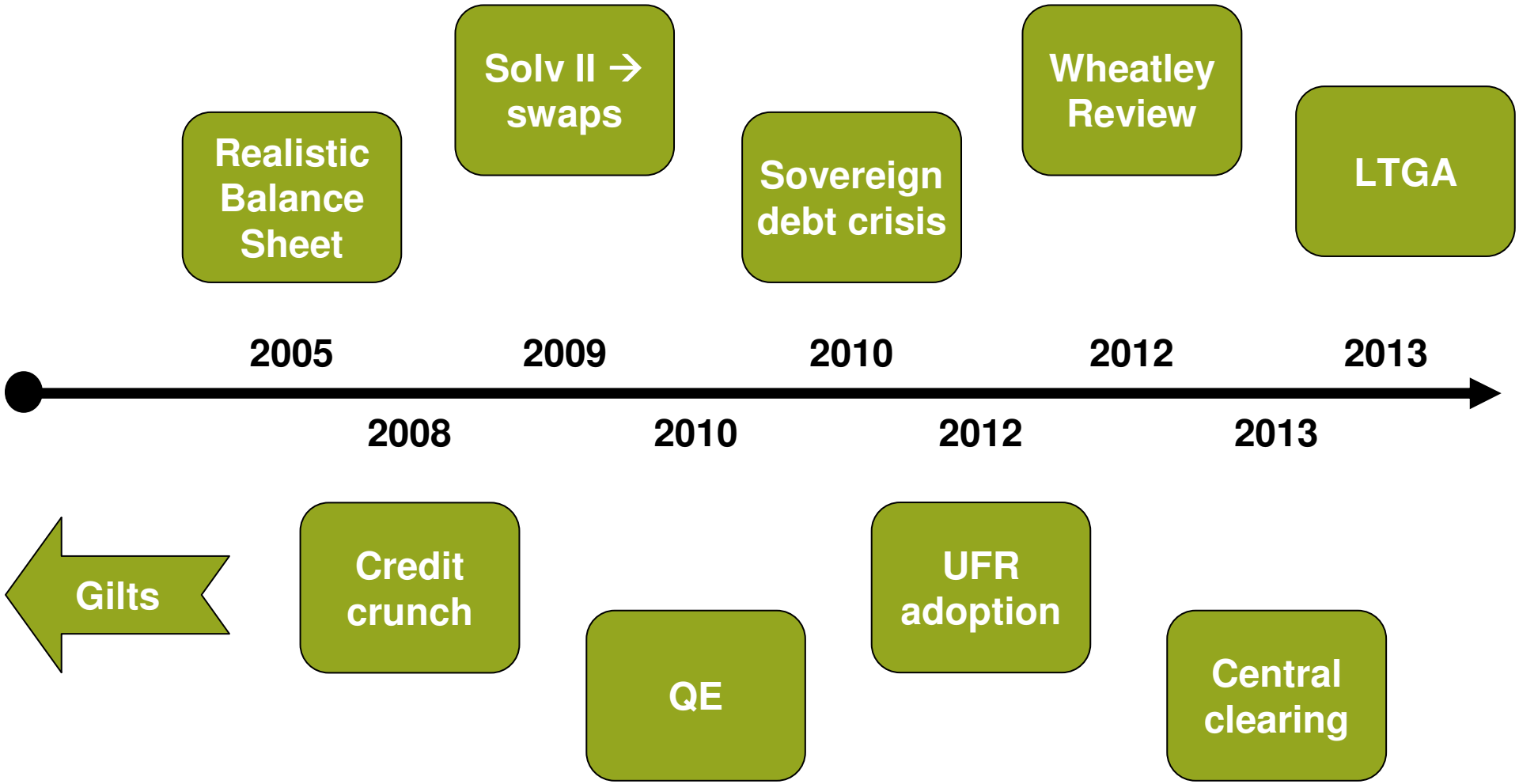
Bristol Actuarial Society

Yorkshire Actuarial Society

Life Conference 2012

Actuary magazine – "Hedging your bets"

The journey so far …



Drivers of the risk-free rate

Insurance Regulation

Non-Insurance Regulation

Investment Decisions



Politics

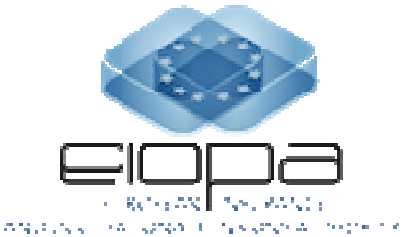
Economic Environment

Central Bank Operations

Insurance Regulation

Solvency II





Gove ~~X~~ onds

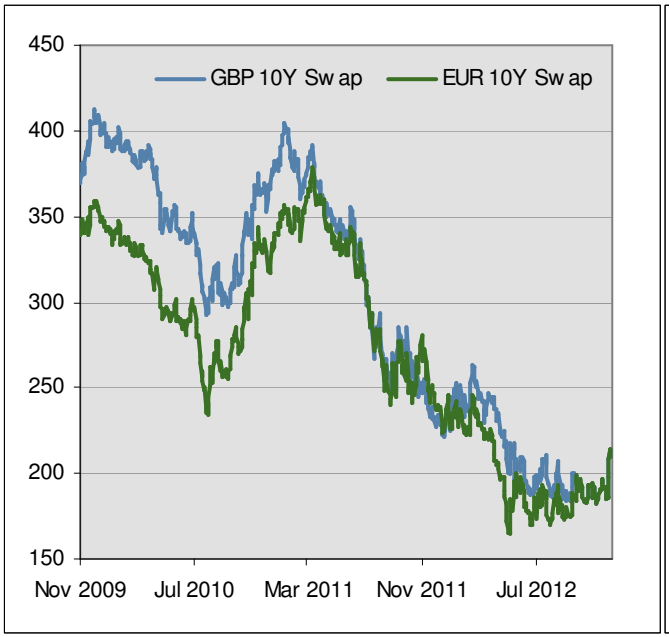
Overni ~~X~~ swaps

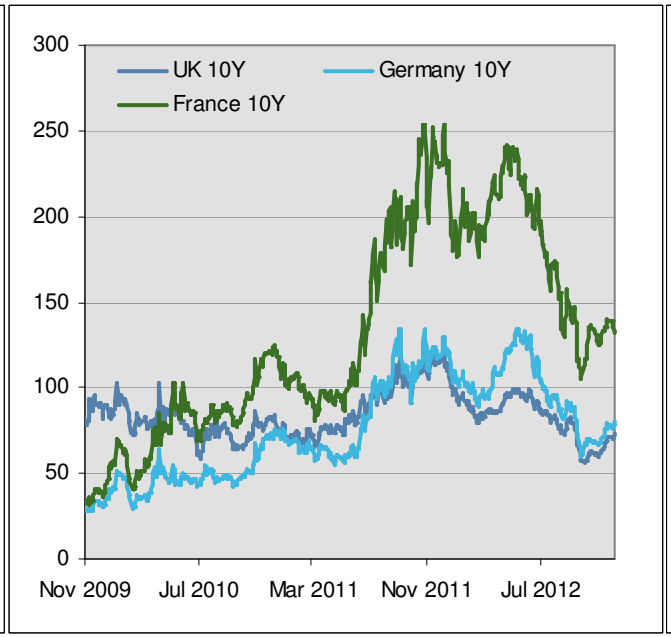
Libor swaps

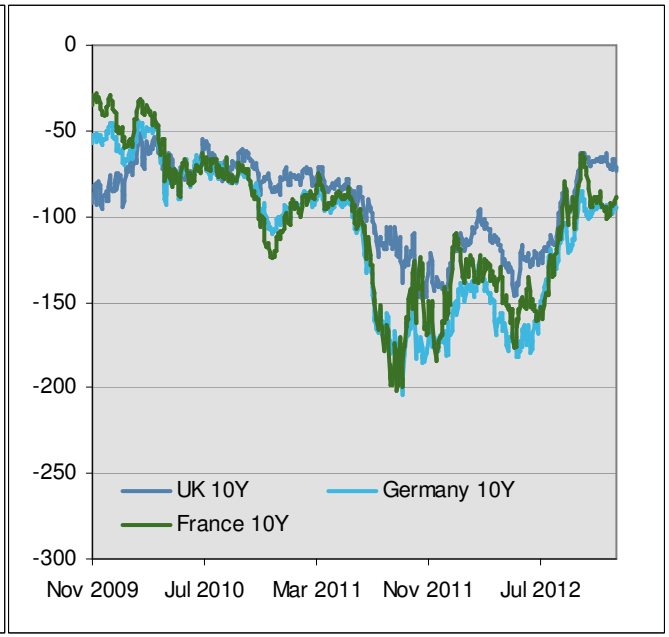
Breaking down the yield on a Government bond

Yield = Swap Rate + Credit Spread + Liquidity Premium

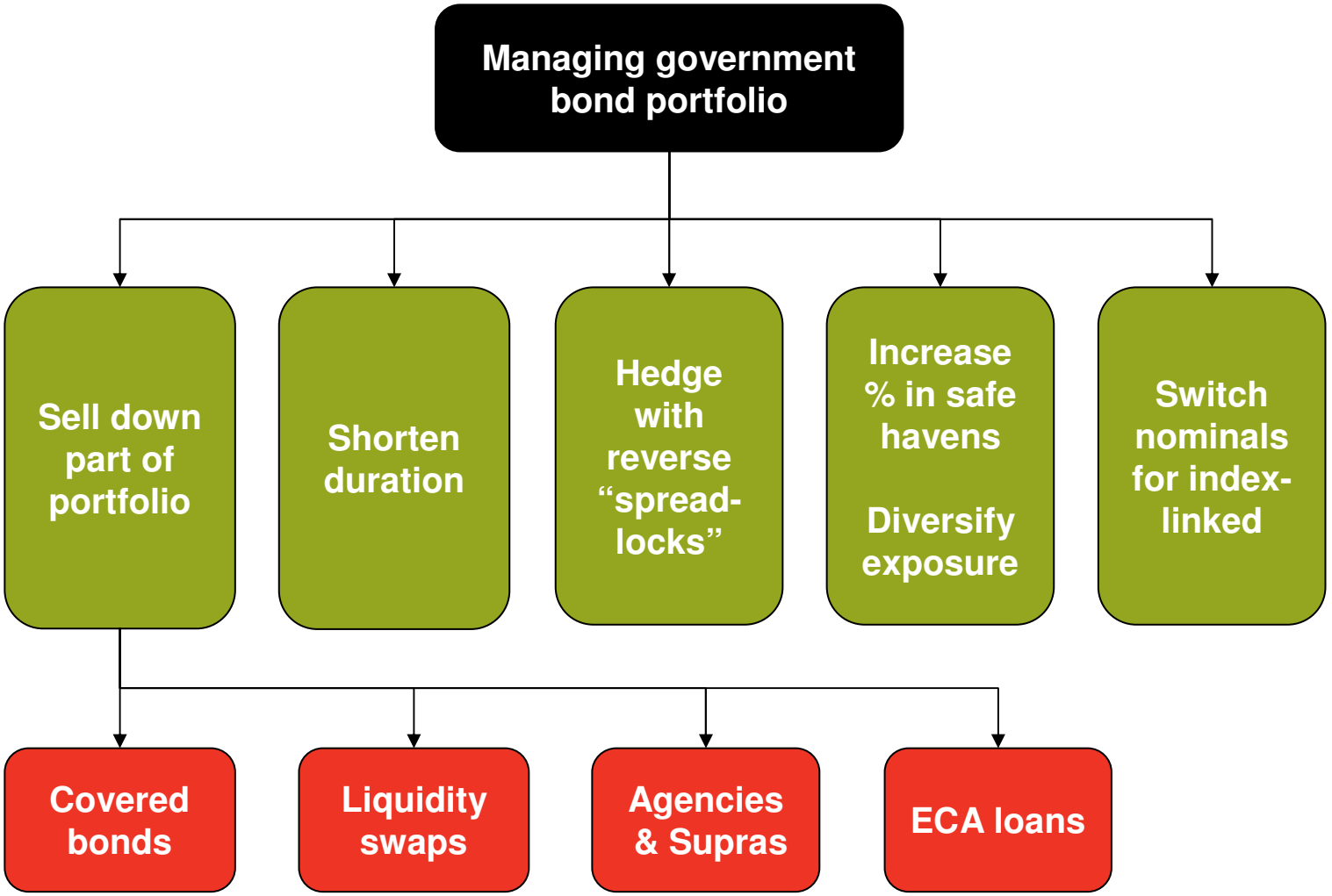
Swap Rate	+	Credit Spread	+	Liquidity Premium



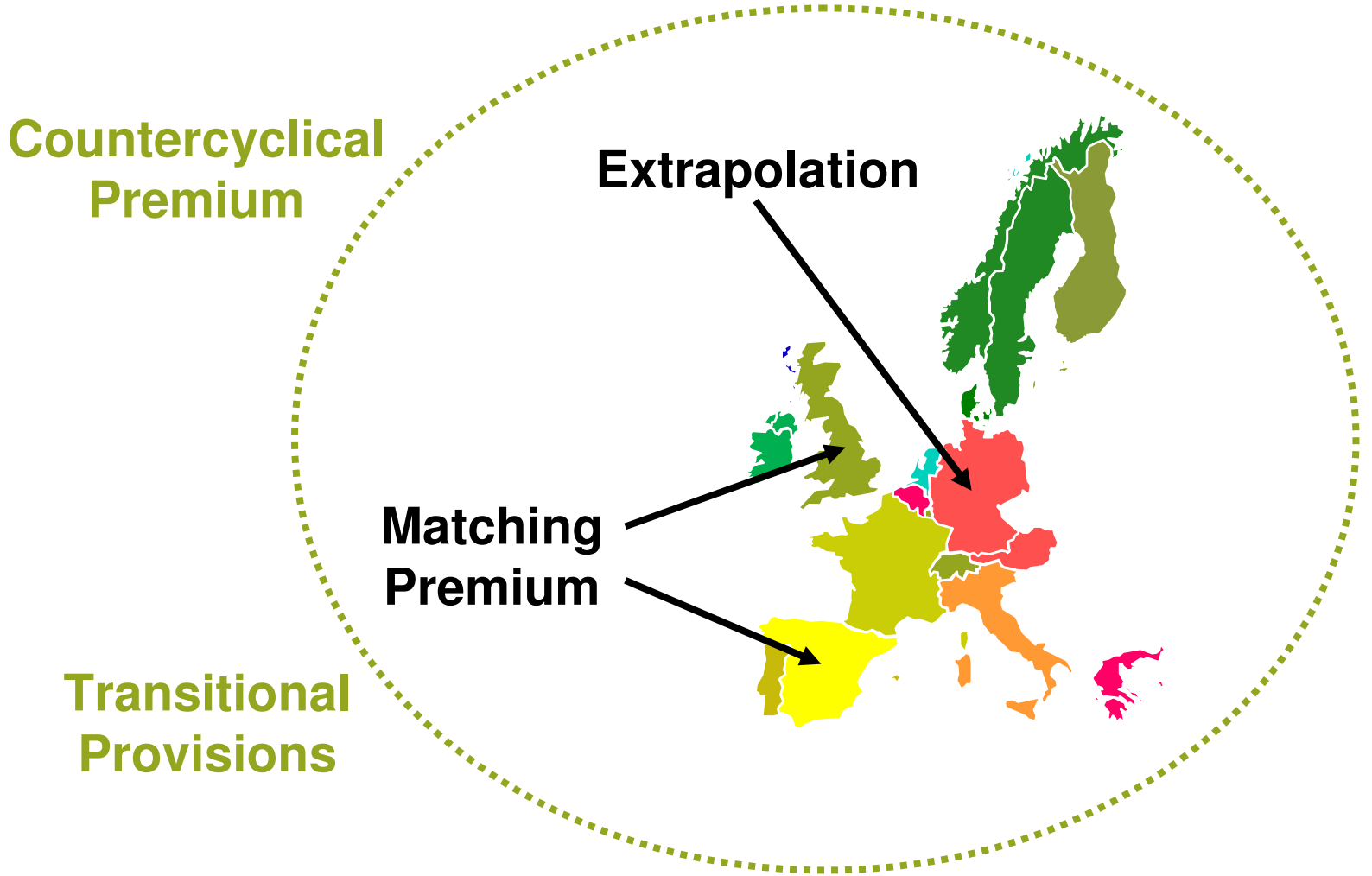




What choices does the insurer have?

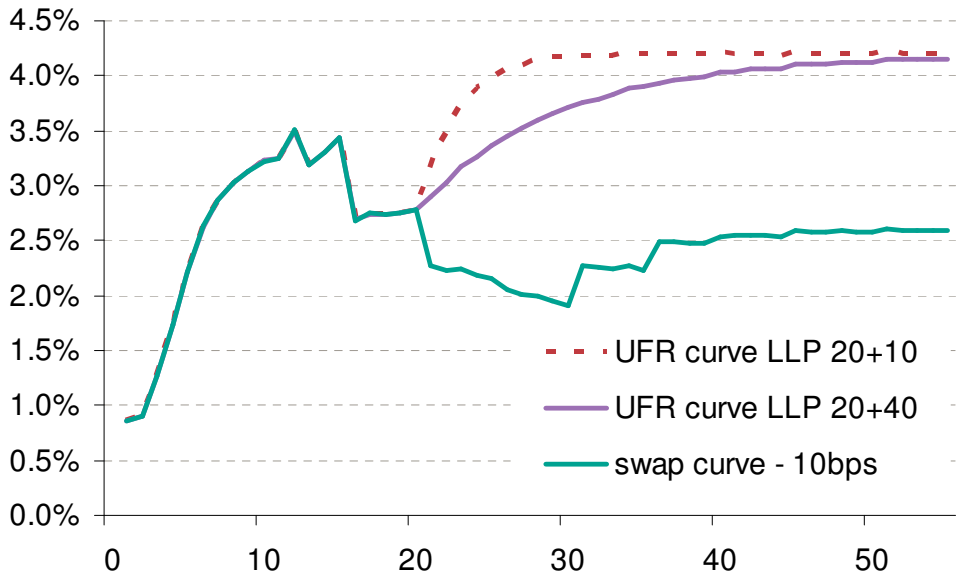


Politics


Countercyclical Premium
Extrapolation
Matching Premium
Transitional Provisions

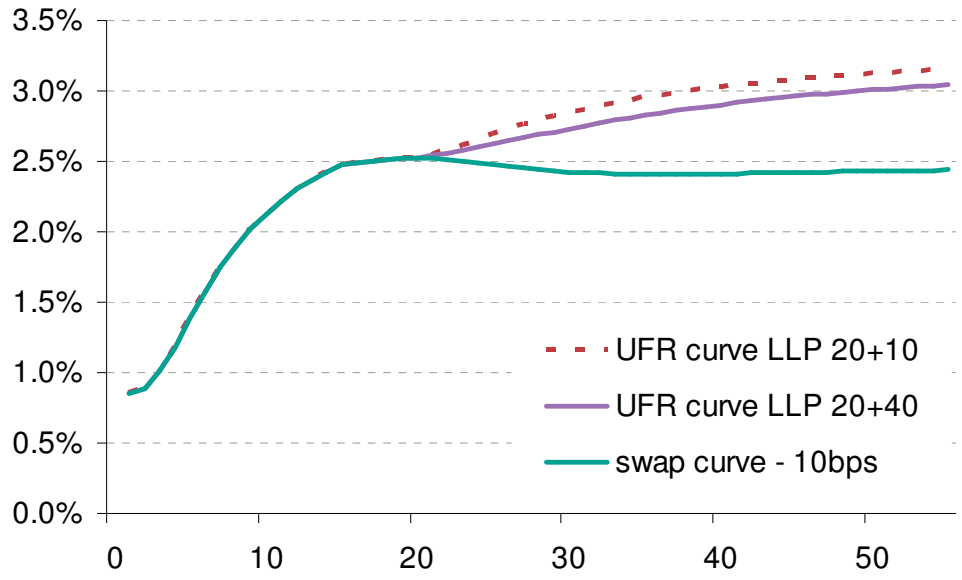
The extrapolation conundrum

1yr fwd rate under different curves



Source: Bloomberg; RBS; 26 April 2012

Resulting liability discount curves

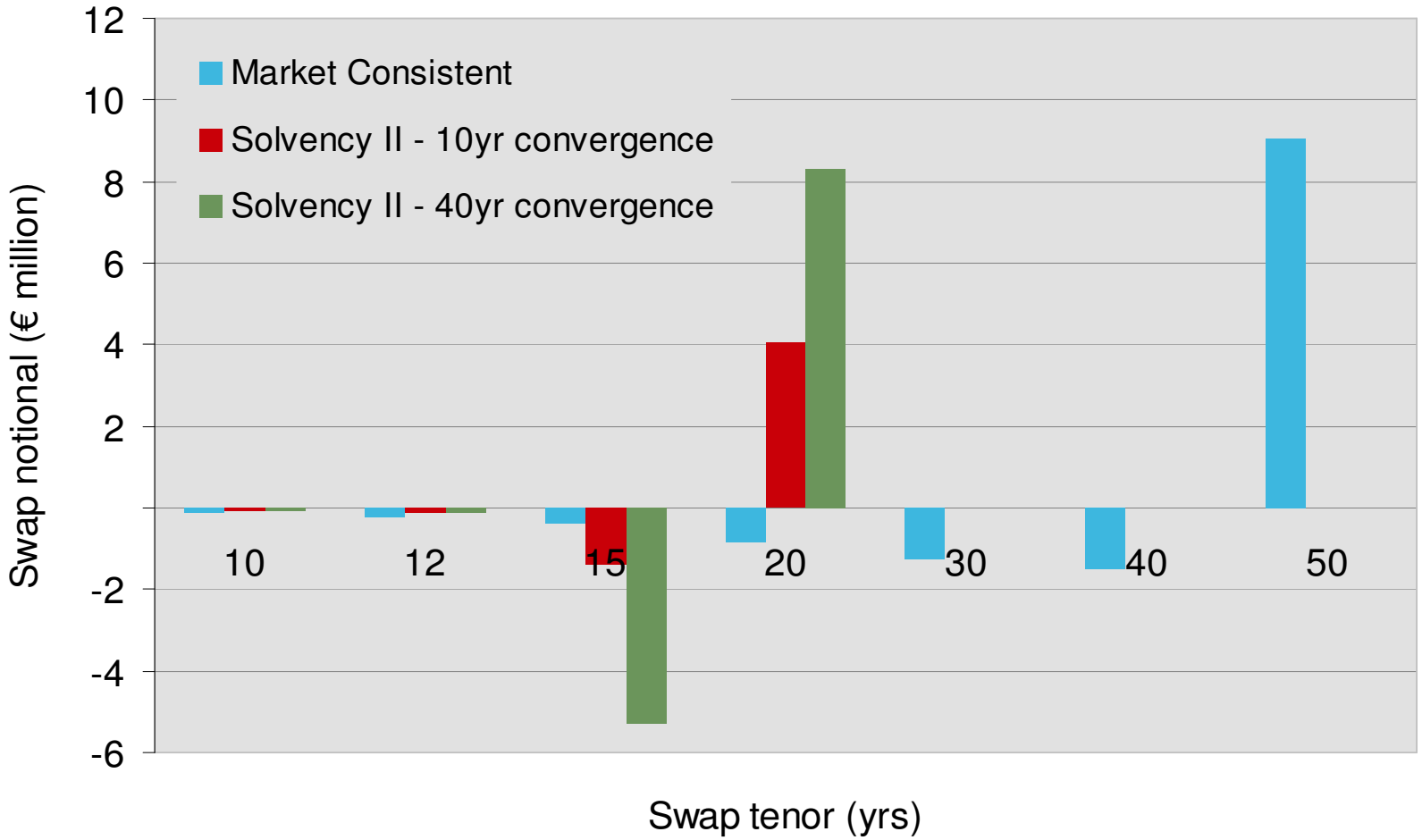


Source: Bloomberg; RBS; 26 April 2012

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**

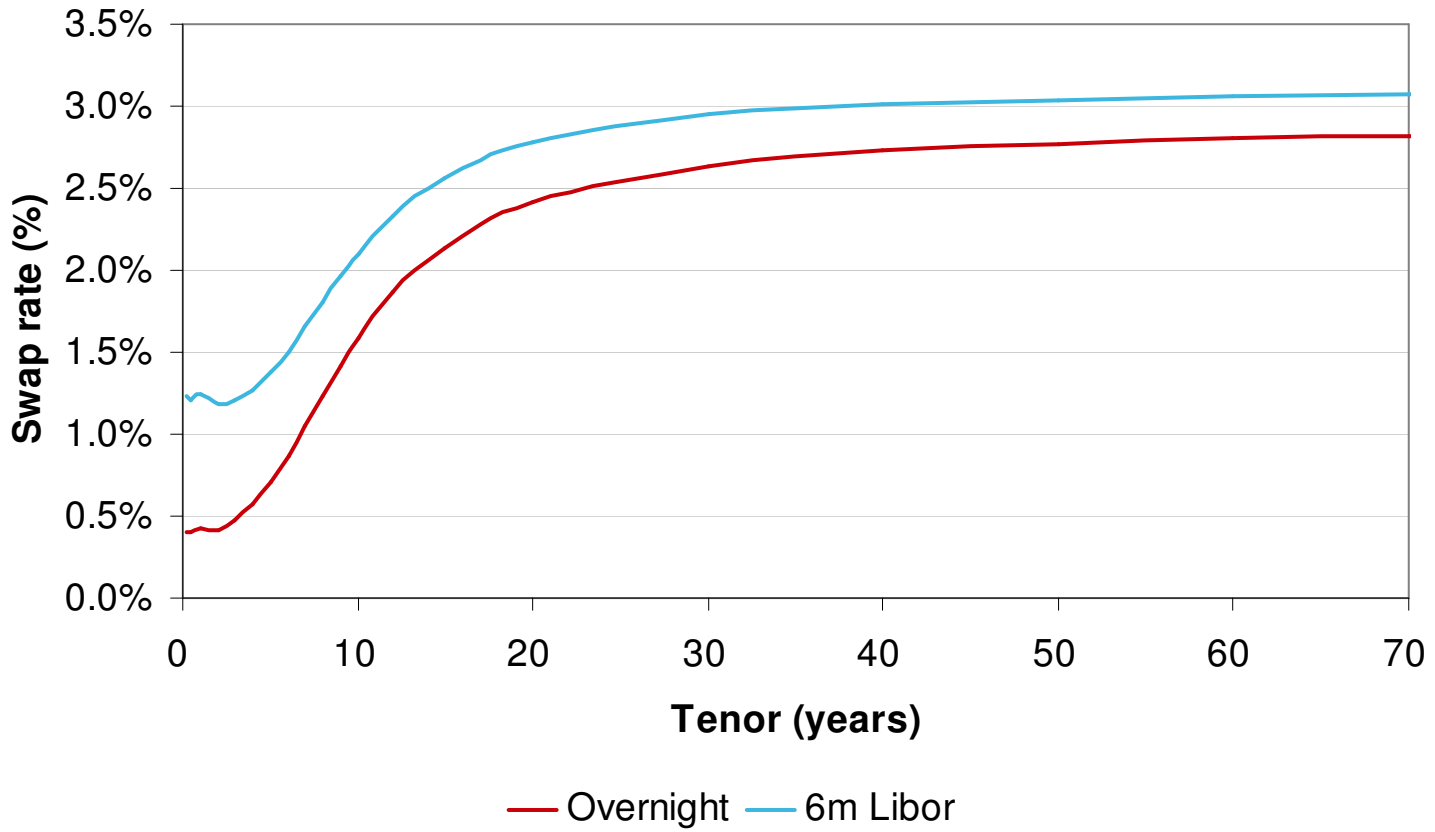
What does this mean?

- 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

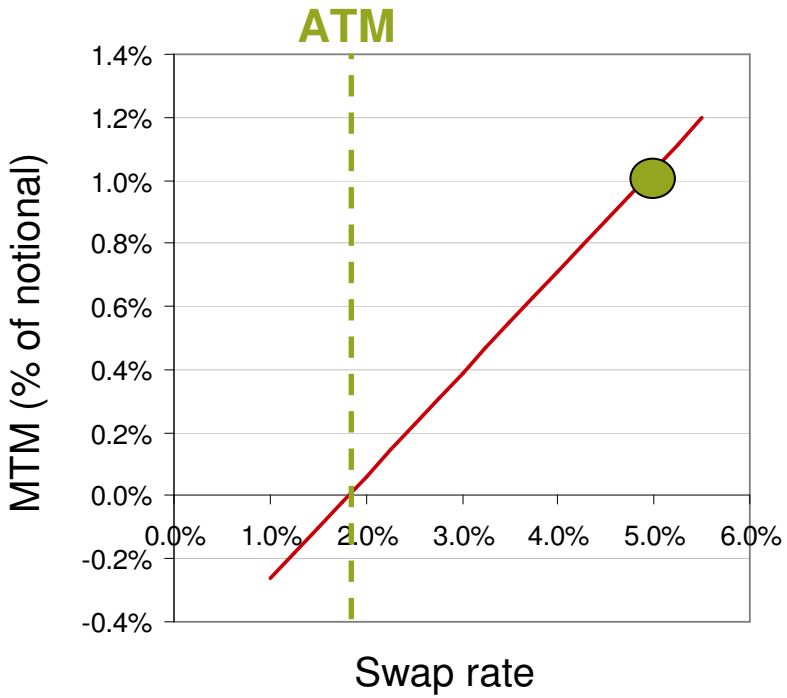


Source: RBS 24th October 2012

Impact on swap contracts held by Insurers

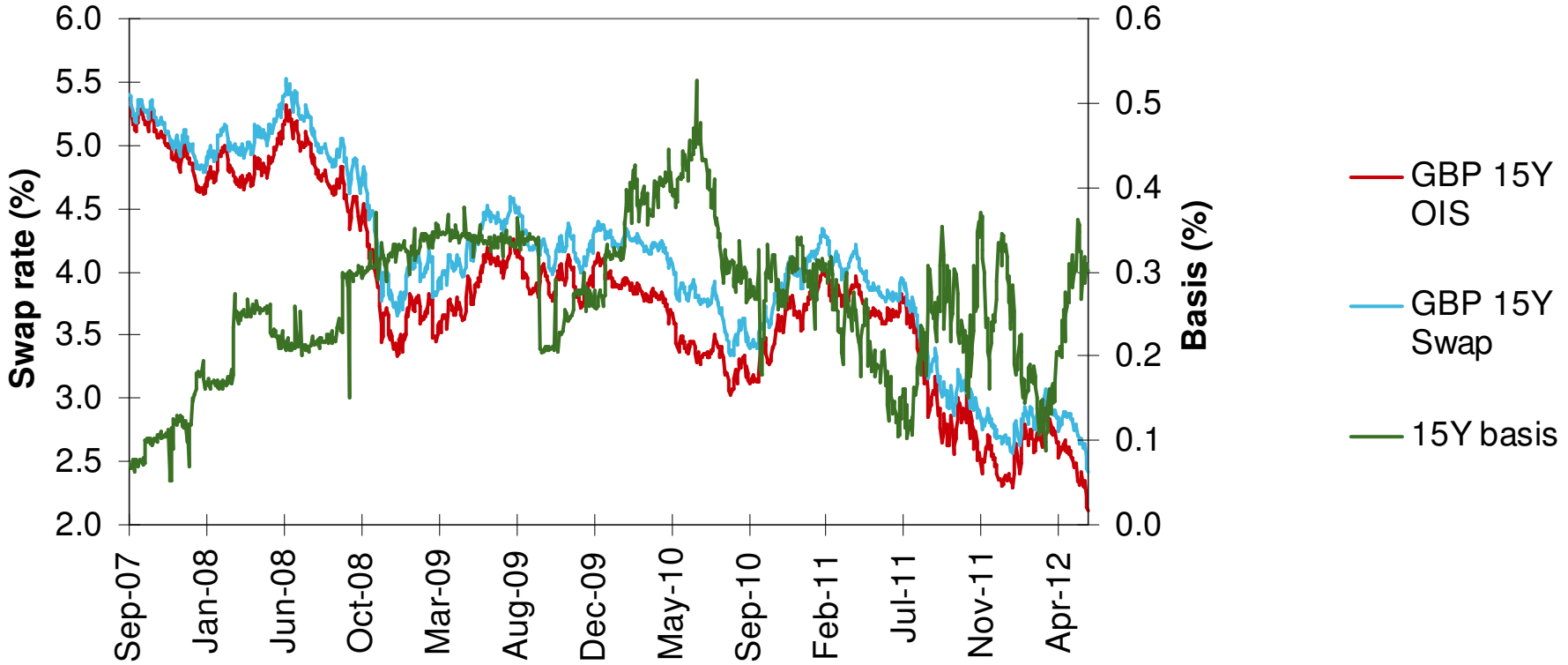
Example:

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:

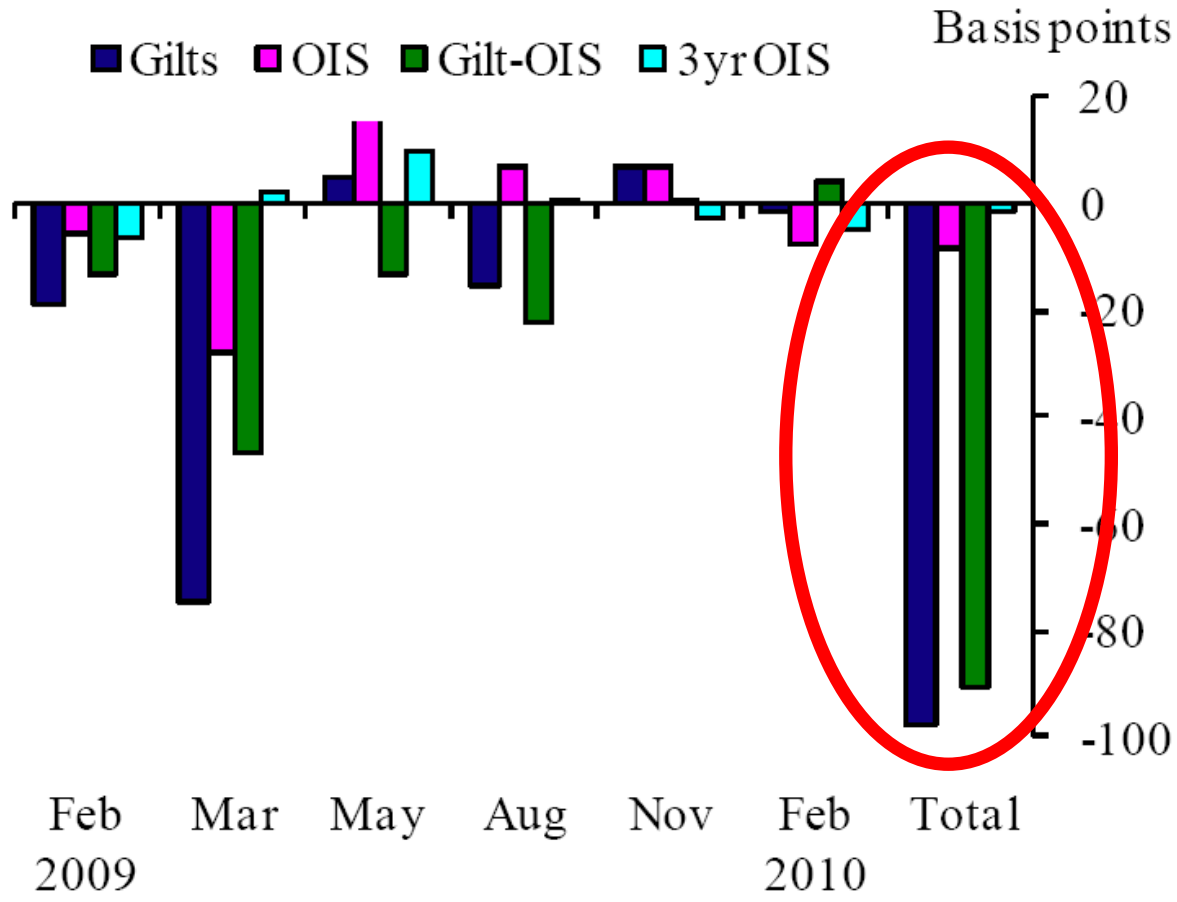
final report

- *"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

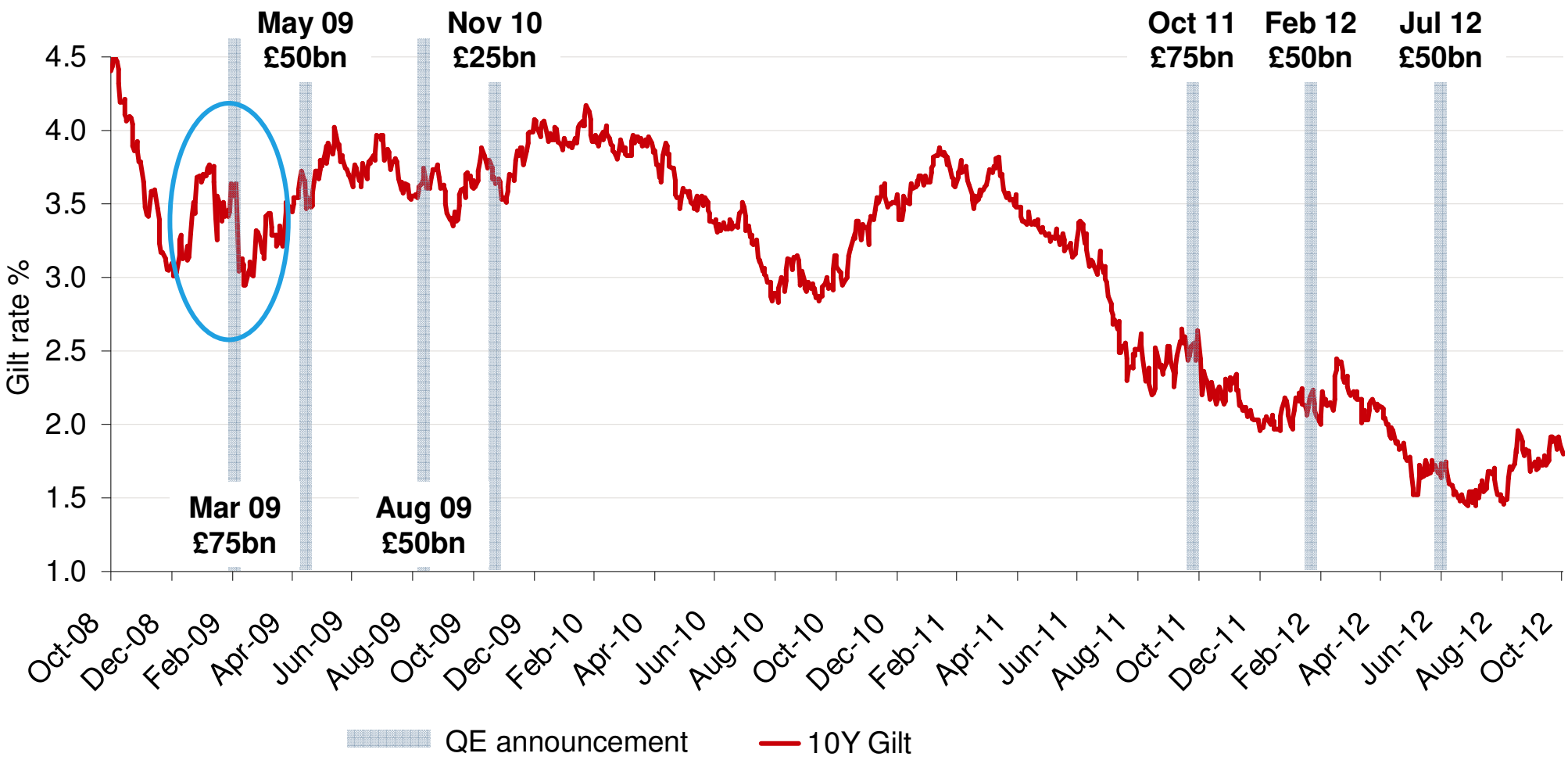
Central Bank Operations

"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.

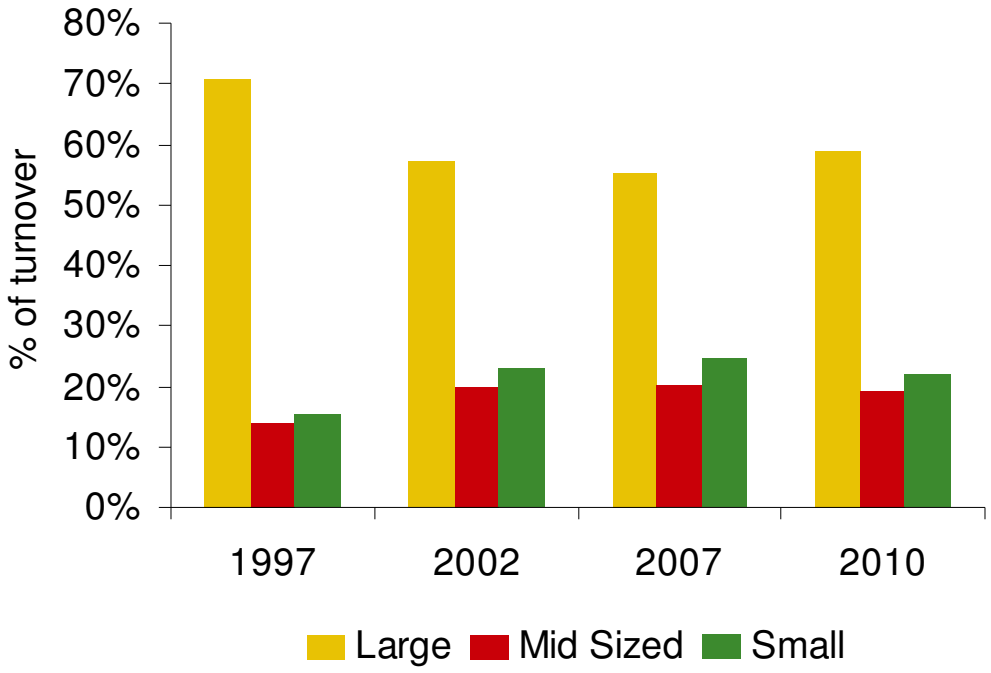
Buy the rumour, sell the fact …



Changing Central Bank reaction functions …

Shift from QE to FLS

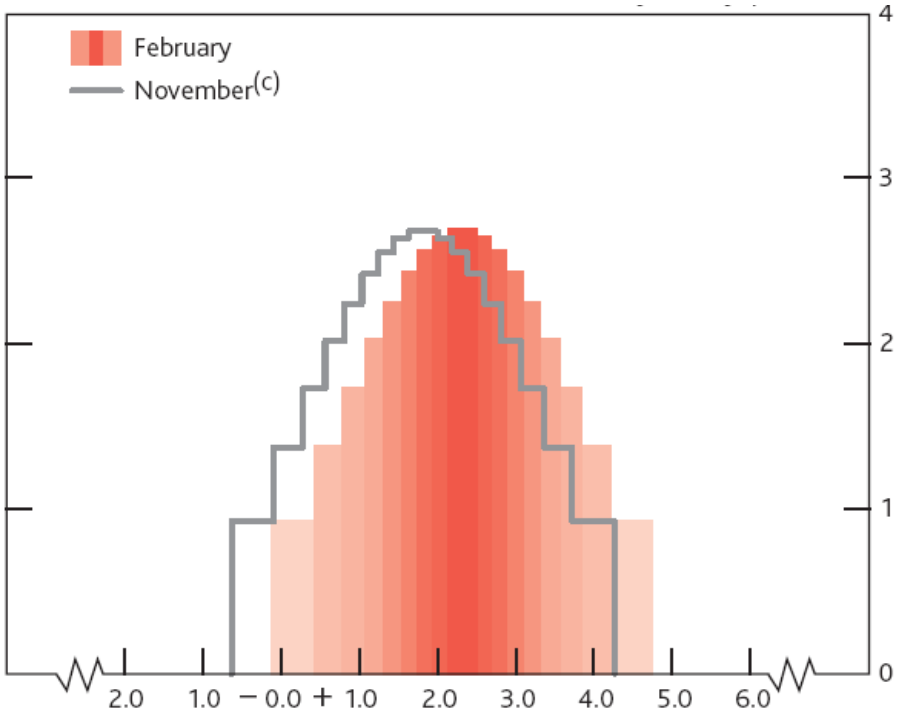
SME's are crucial to economy …



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)

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



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



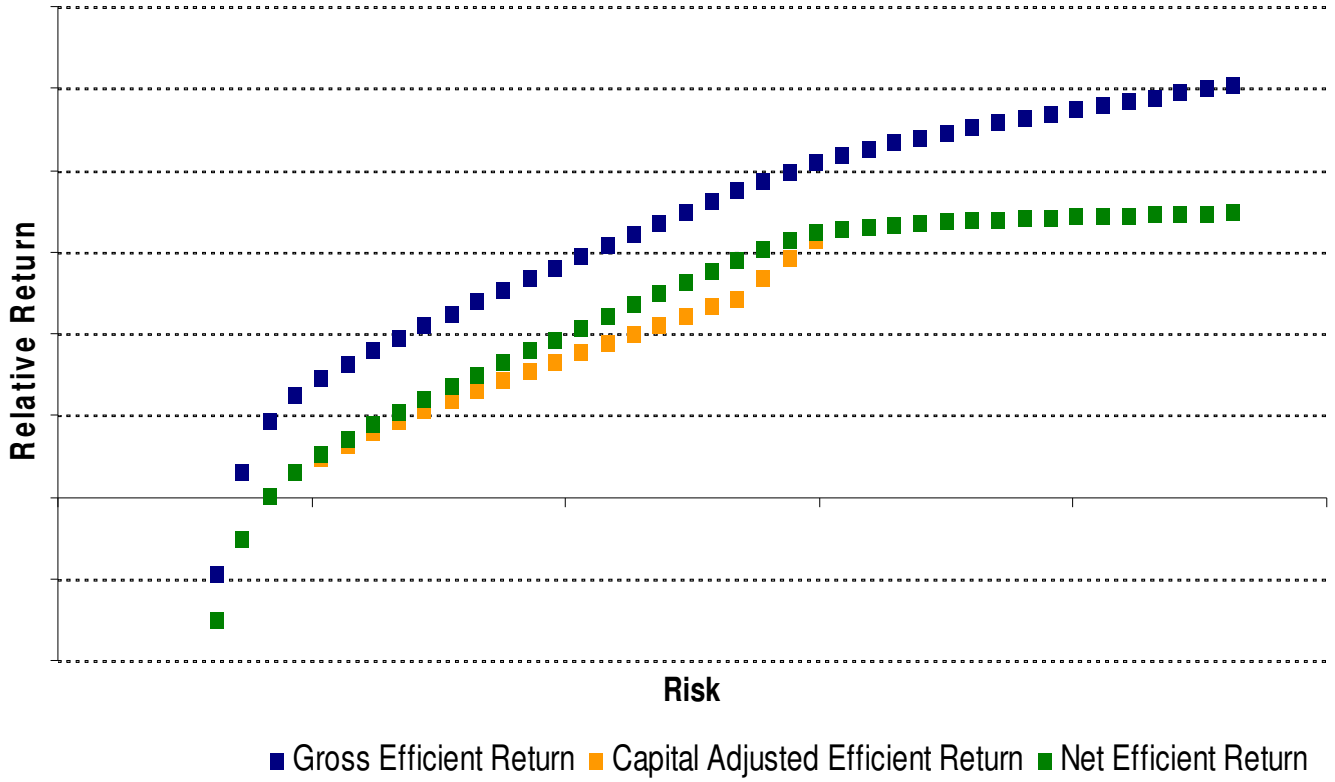
Efficient frontiers

If the cost of capital penalises risk …

… then Investors may switch to lower risk assets …

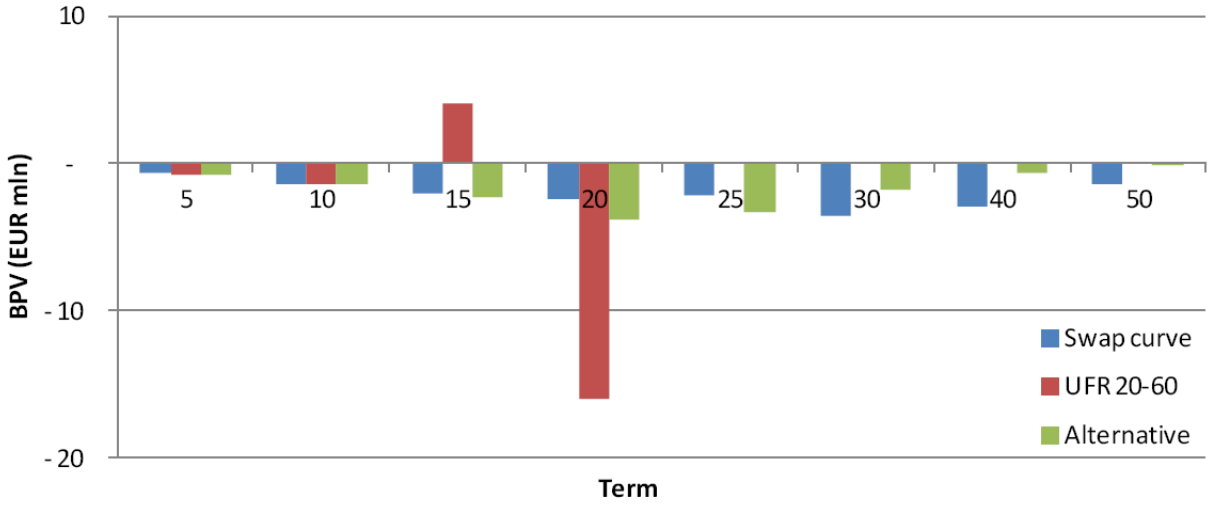
… hence reducing risk-free yields

Efficient portfolio returns relative to liabilities

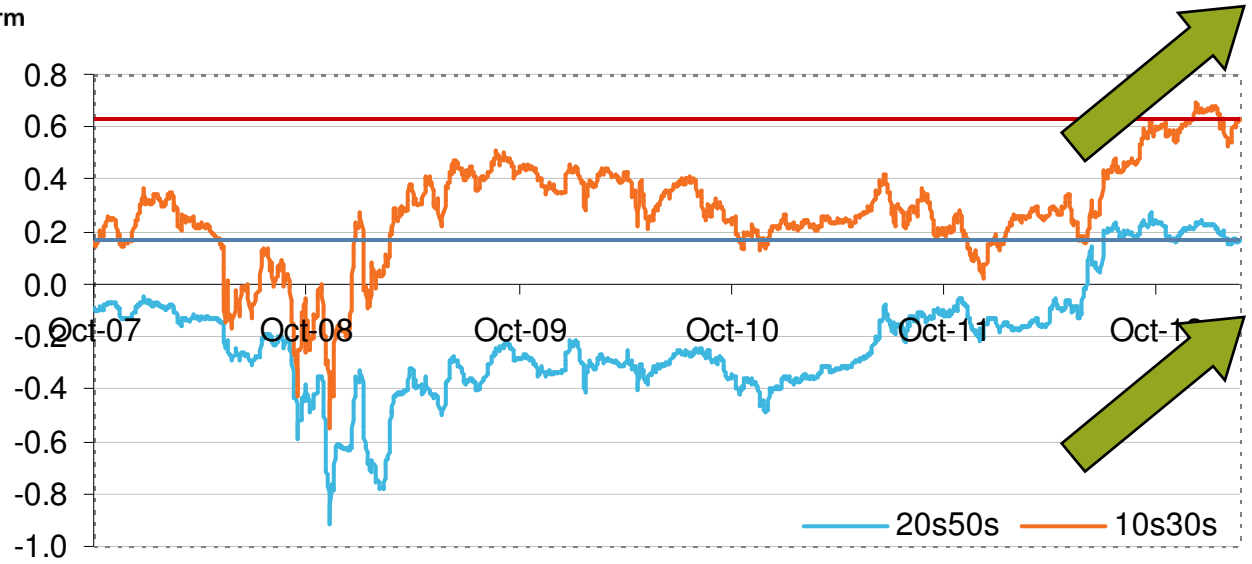


Dutch leading the charge

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



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



Source: RBS

Any questions?

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Non-Insurance Regulation

Investment Decisions



Politics

Economic Environment

Central Bank Operations