



Institute
and Faculty
of Actuaries

Pension Scheme Investment in a Low Interest Rate Environment

Ian Maybury

21 May 2013



Institute
and Faculty
of Actuaries

Pension Scheme Investment in a Low Interest Rate Environment

erlise
nsorship
Thought leadership
Progress
Community
Sessional Meetings
Education
Working parties
Volunteering
Research
Shaping the future
Networking
Professional support
Enterprise and risk
Learned society
Opportunity
International profile
Journals
Support

21 May 2013

Investment in a low interest rate environment

Agenda

- Introduction
- Inflation only hedging and CPAC
- QE and growth assets
- Flight paths and triggers
- Swaptions
- Case study
- Summary



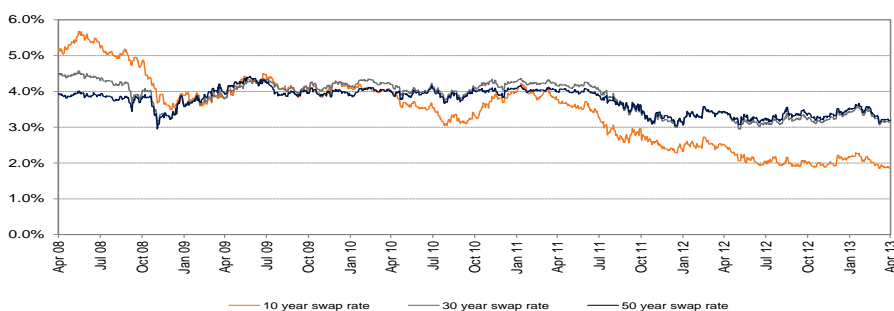
21 May 2013

3

Investment in a Low Interest Rate Environment

Introduction: yields trend lower after introduction of QE

Zero coupon interest rate swaps



- Fall in nominal rates has been more pronounced at the shorter maturities
- Are rates at longer maturities particularly low?

Source: Schroders, for illustration only.



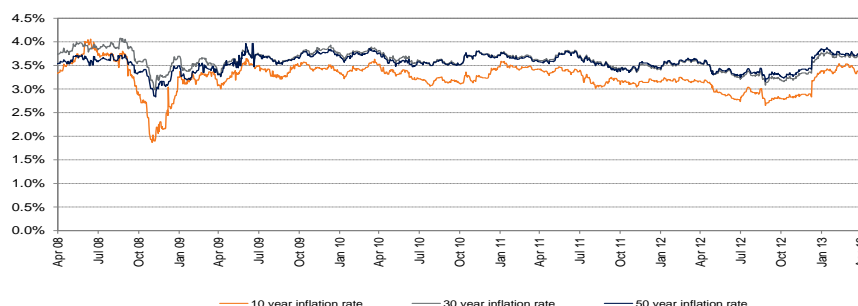
21 May 2013

4

Investment in a Low Interest Rate Environment

Introduction: inflation impact more muted

Inflation swaps



- Inflation rates relatively stable with pronounced impact from CPAC
- Is the biggest worry inflation or deflation?

Source: Schroders, for illustration only.



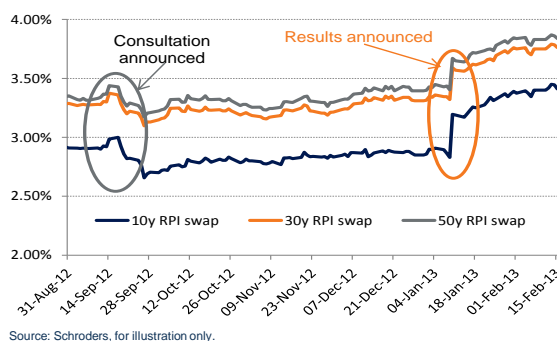
21 May 2013

5

Investment in a Low Interest Rate Environment

Introduction: CPAC impact

- Political impacts difficult to anticipate
- In this case provided opportunities that persisted for a number of months
- Reactions varied from those anticipating lower future RPI and delaying or reducing hedges to those who took advantage of opportunity to extend their hedges
- Where next?



Source: Schroders, for illustration only.



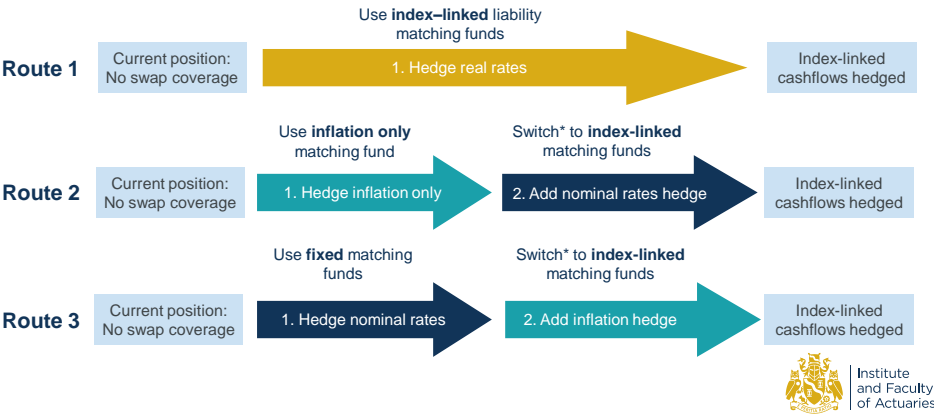
21 May 2013

6

Investment in a Low Interest Rate Environment

Inflation only hedging

Pooled liability matching funds allow real interest rate exposure of index-linked cashflows to be hedged in stages



7

Investment in a Low Interest Rate Environment

Example outcomes from inflation only coverage

The table below shows two example scenarios

| Economic scenario | Potential market outcome | Hedging outcome | Comments |
|----------------------------------|--|--|---|
| High inflation and strong growth | Increases in implied inflation and interest rates. Real interest rates unchanged | Inflation only hedging assets rise in value Interest rate coverage achieved at better levels. | Scheme achieves funding level gain as a result of strategy |
| Falling inflation and low growth | Falls in implied inflation and interest rates. Real interest rates unchanged | Inflation only hedging assets <i>fall</i> in value. Fall in interest rates increases value of liabilities covered by inflation only hedge. Value of inflation linked liabilities remains unchanged | Scheme suffers funding level loss as a result of strategy |

These illustrate that two very plausible outcomes will generate very different funding outcomes

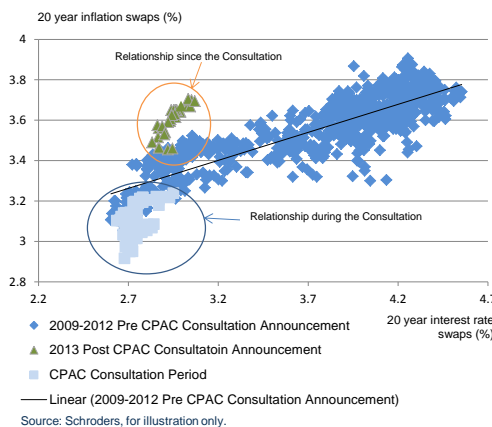
Risk estimates are from our internal modelling based on the data provided and our assumptions. The risk estimates forecasts are the result of statistical modelling, based on a number of assumptions. There is no assurance or guarantee that the forecast will be achieved and it should not be considered as a prediction of actual returns that may be realised in the future from the portfolio. Assumptions may change materially with changes in underlying assumptions that may occur, among other things, as economic and market conditions change. Risk numbers exclude other non-investment risks (such as longevity).

8

Investment in a Low Interest Rate Environment

Introduction: where does RPI go from here?

- Significant part of changes in inflation 'explained' by changes in nominal rates
- During consultation inflation was below trend (light blues)
- Since announcement moved to well above trend (green)



21 May 2013

9

Investment in a Low Interest Rate Environment

Future Level of RPI – is inflation hedging still attractive?

- Monetary Policy Target 2.0%
 - but
 - BoE not hit it recently
 - Shift away from inflation targeting
 - New Governor?
- CPI-RPI wedge 1.0-1.4%
- Risk Premium 0.2-0.3%
 - Risk managers 'happy/willing' to pay premium
 - Demand will exceed supply for foreseeable future



21 May 2013

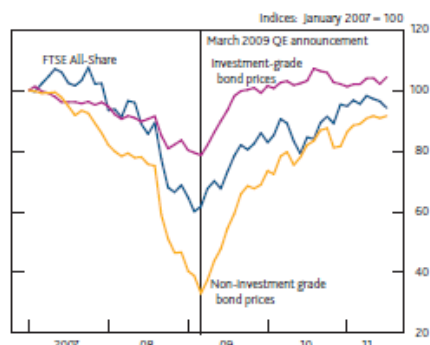
10

Investment in a Low Interest Rate Environment

QE has meant lower rates, but...

- Substantial benefits for growth assets
- Difficult to be certain of cause and effect
- Overall impact on funding levels depends on
 - Allocation to growth assets
 - Proportion of interest rate and inflation

Chart 8 Changes in major UK asset prices



Source: Schroders, for illustration only.



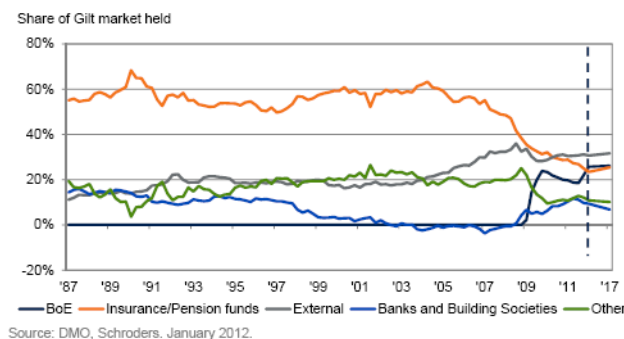
Institute
and Faculty
of Actuaries

21 May 2013

11

Investment in a Low Interest Rate Environment

Gilts – Demand and Supply



- Significant Gilt issuance required up to 2017
- Insurers and pension funds need to replace BoE as buyer



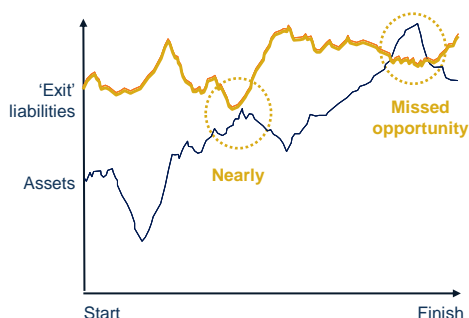
Institute
and Faculty
of Actuaries

21 May 2013

12

Investment in a Low Interest Rate Environment Triggers and Flight Paths

Traditional governance models: Potential for missed opportunities



Key questions:

- How will the de-risking plan be managed?
- What tools do we need?

How can schemes avoid missed opportunities?

Source: Schroders, for illustration only

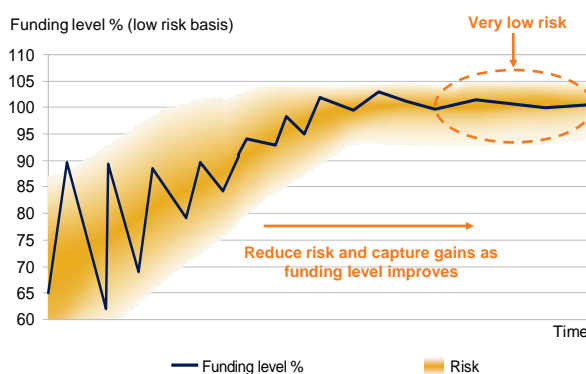


21 May 2013

13

Investment in a Low Interest Rate Environment Flight Paths

- 1) Only take risk when need the reward
- 2) Look to take rewarded risks only
- 3) The Flight Path strategy should enhance plan governance



A Flight Path is a way of plotting a smoother path to a lower risk strategy

Source: Schroders, for illustration only

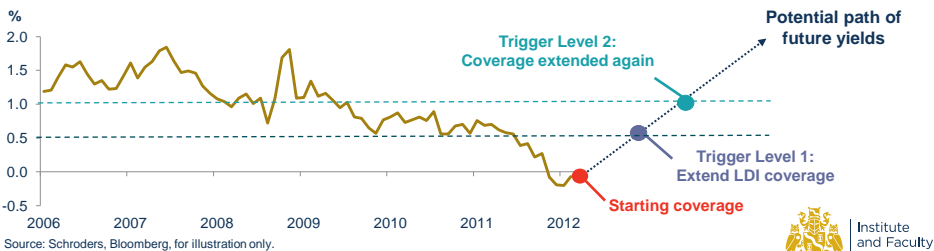


Investment in a Low Interest Rate Environment
Triggers and Flight Paths

Market based triggers

- Markets are expensive now; leave some risk on the table
- Monitor market interest rates / inflation rates
- When threshold rate is reached, increase liability risk coverage
- Locks in attractive rates – but may not happen

Example market yield based trigger levels



21 May 2013

1
5

Investment in a Low Interest Rate Environment
Triggers and Flight Paths

| Trigger mechanism: | Potential advantage: |
|--------------------|--|
| Funding level | Ensures the Plan does not leave uncovered funding risk as the funding level improves |

A key principle
of the flight path:

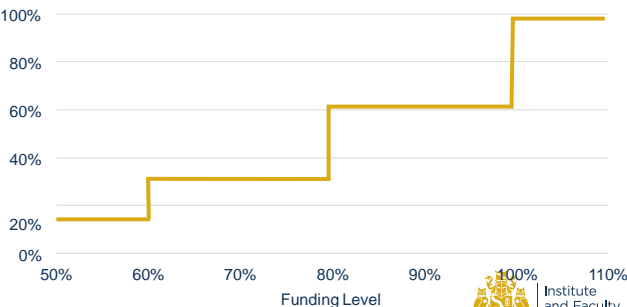
Take less risk as the
funding level improves

- less growth risk
- greater liability
risk coverage

The two can be managed
independently

Example: Liability coverage and funding level

Liability risk coverage (% PV01)



Source: Schroders. For illustration only

21 May 2013

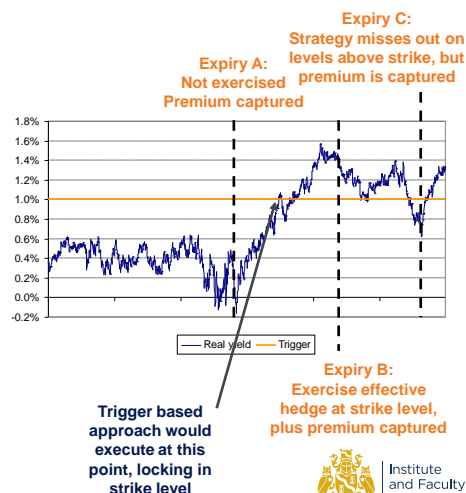
16

Investment in a Low Interest Rate Environment

Swaptions: an alternative approach to triggers

Rather than using a trigger based mechanism, the scheme could sell payer swaptions

- automatically locks in the higher rates if achievable at expiry
- The scheme also gains from the up front premium
- If the option is not exercised, it can simply be refreshed capturing another premium
- However, the scheme would be worse off if achievable rates rise above the trigger/strike level and then fall back before expiry of the swaption as coverage would not be implemented, missing the opportunity to protect against the subsequent falls



Source: Schroders. For illustration only

21 May 2013

17

Investment in a Low Interest Rate Environment

Case Study

April 2008

- Funded to buyout
- High proportion of equities
- Little or no coverage of interest rate and inflation exposures
- Not ready to transact...
- ...or even to adjust asset allocation

Result

- Funding level deteriorated during the financial crisis

April 2013

- Governance framework in place involving all key stakeholders including daily monitoring of funding level
- Funding level recovered to 90%+
- Interest rate and inflation risks hedged to the funding level
- Growth assets diversified

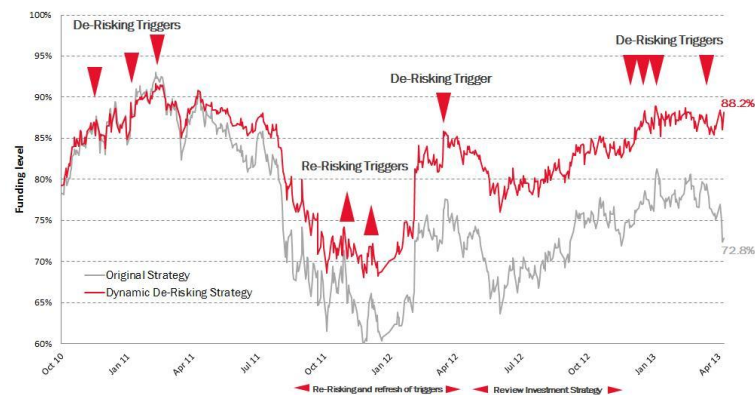
Result

- Funding level volatility significantly reduced

21 May 2013

18

Investment in a Low Interest Rate Environment Case Study



Source: Redington



21 May 2013

19

Investment in a Low Interest Rate Environment Case Study

- Collaboration between Trustees, Sponsor, Investment Consultant, Scheme Actuary and Asset Manager
- Outcomes
 - Improved funding level
 - Reduced dependence on sponsor contributions
 - Lower volatility
 - Enhanced governance

Measuring the benefits of de-risking

| | Original ¹ | New ² without de-risking | New ² with de-risking |
|-----------------------------|-----------------------|-------------------------------------|----------------------------------|
| Funding level 1-Oct-10 | 78.4% | 79.2% | 79.2% |
| Funding level 18-Aug-11 | 68.6% | 72.4% | 77.3% |
| Volatility of funding level | 16.7% | 15.5% | 12.7% |

¹Old strategy prior to Schroders' appointment
²New strategy implemented by Schroders consisting of index-linked gilts, Synthetic Gilt Funds, corporate bonds and synthetic assets.



Source: Schroders , as at 31 December 2011.

21 May 2013

20

Investment in a Low Interest Rate Environment Summary

- Significant uncertainty regarding the future path of interest rates and inflation
- If you are confident on direction what about timing
- Volatility creates opportunities if you are prepared and have a plan
- Even though interest rates are expensive opportunities exist
 - inflation only coverage may be attractive
 - Swaptions as an alternative to triggers

Intelligent implementation and management can exploit the opportunities that are available in a low rate environment

