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LDI case study - a consultant's perspective

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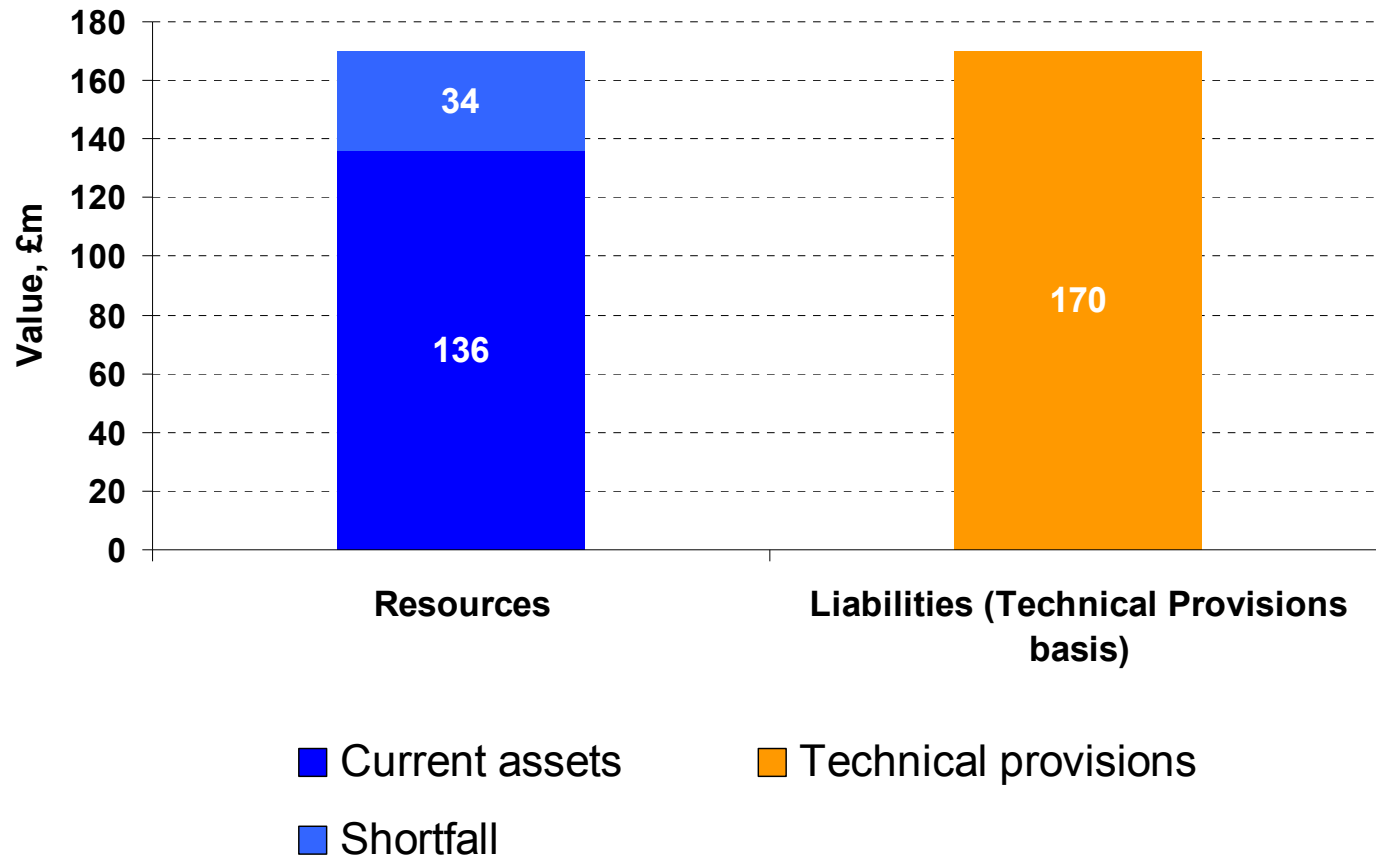
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Case study

Case study

Funding on a Technical Provisions basis

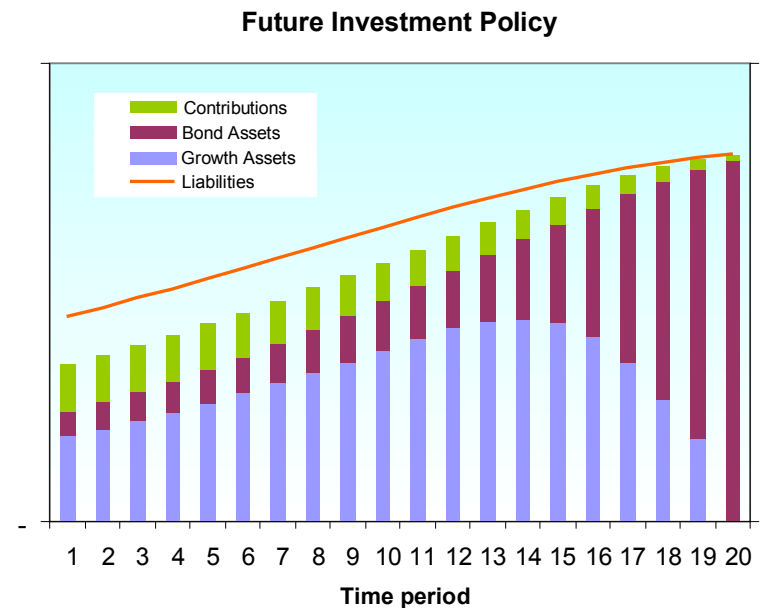
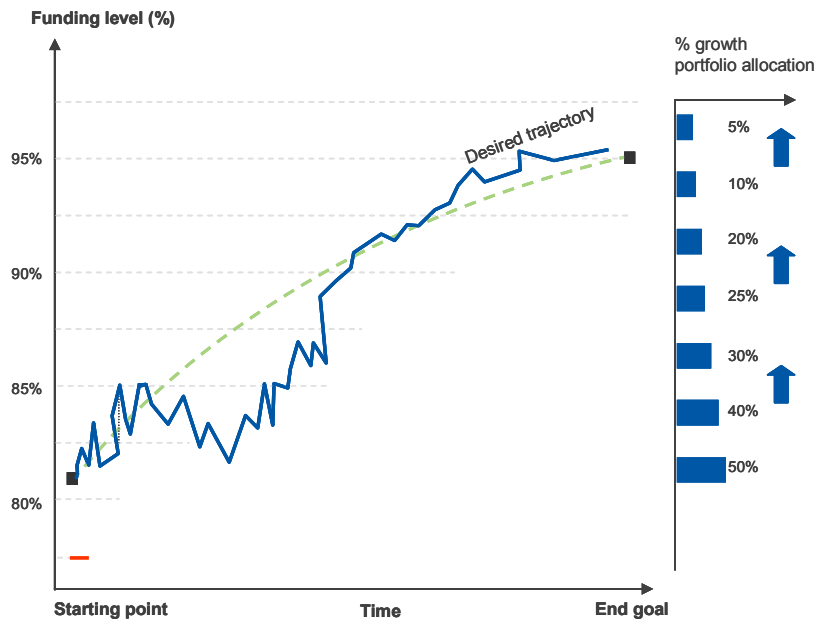
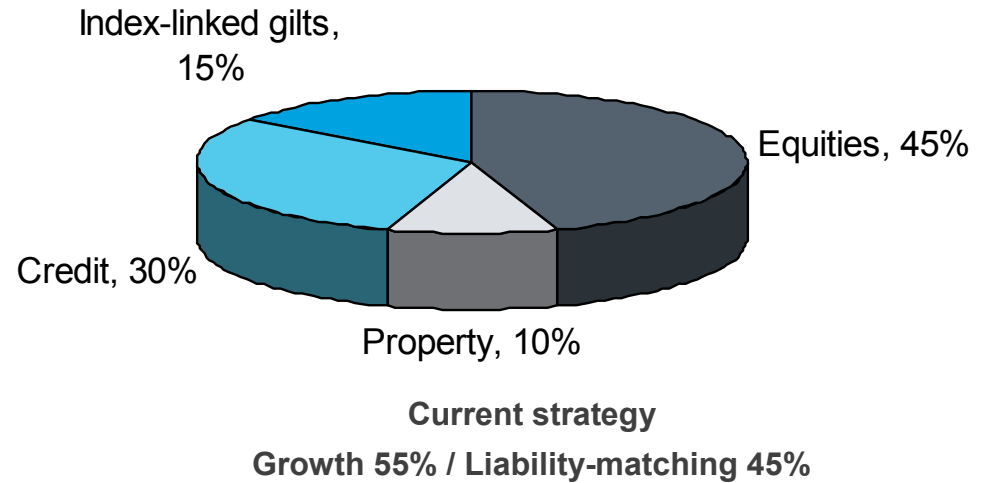


- The liabilities are discounted at a rate equivalent to gilts + 0.3% p.a.

Case study

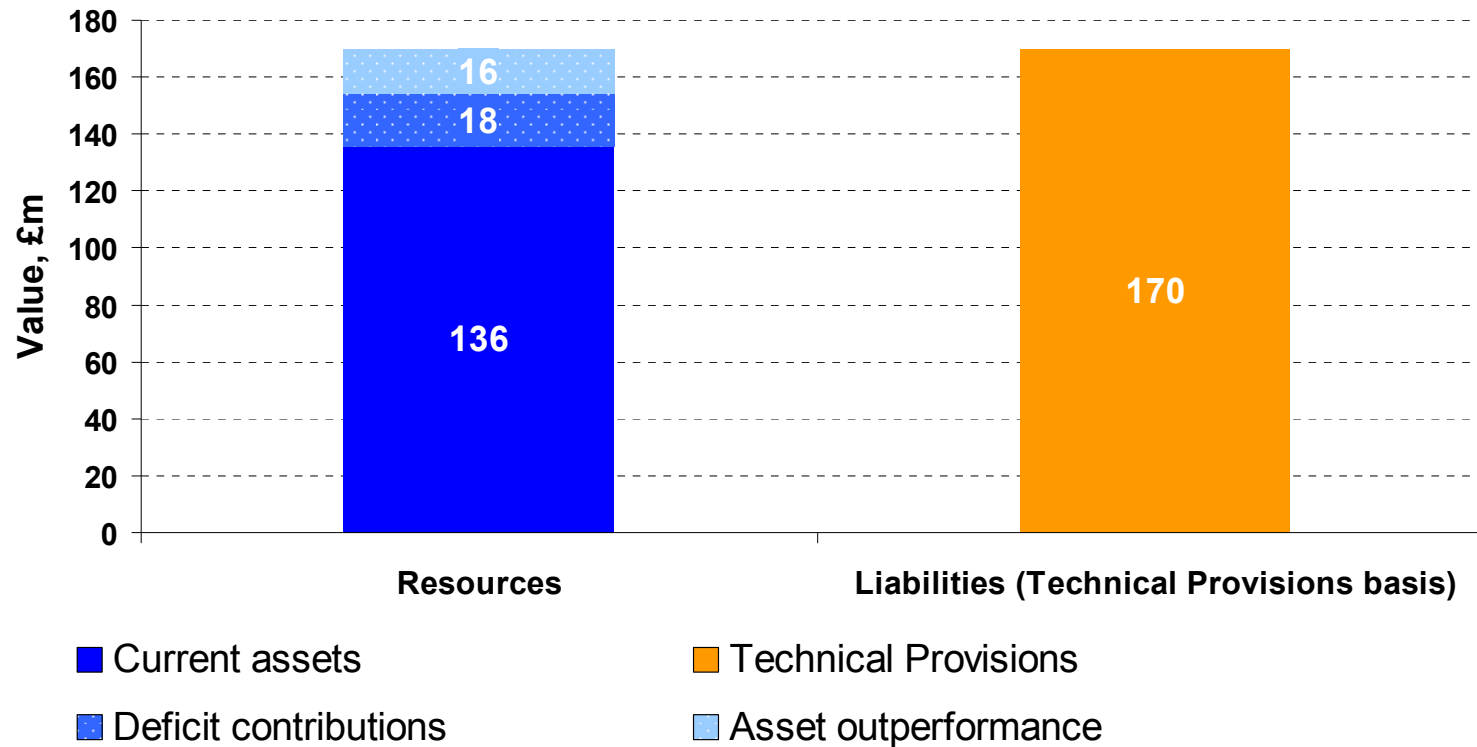
Long-term de-risking

- De-risking rules must generate sufficient investment returns to restore funding in combination with recovery contributions
- Falls in un-hedged liabilities will also improve the position



Case study

Deficit contributions + asset performance should recover the position

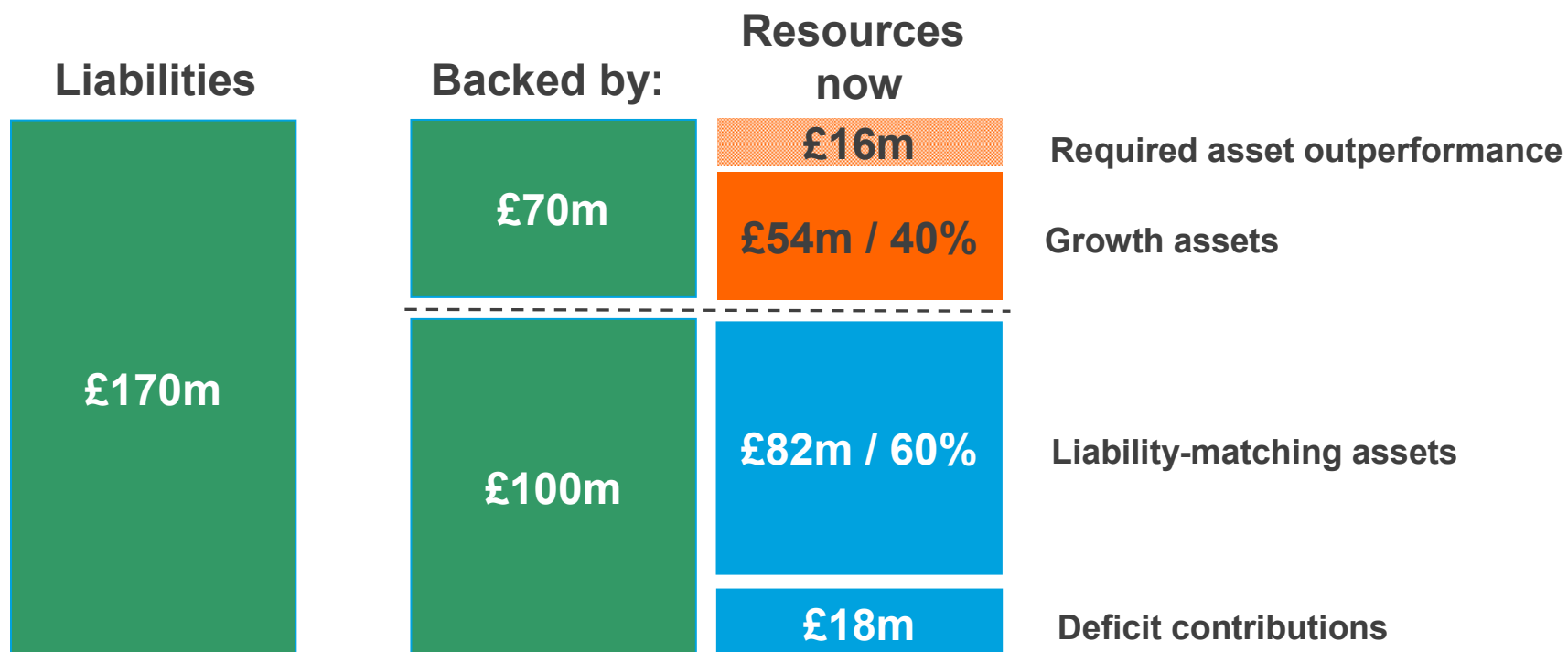


- Expect recovery contributions present value = £18m
- Current investment strategy is expected to outperform gilts by c.1.4% p.a.

Case study

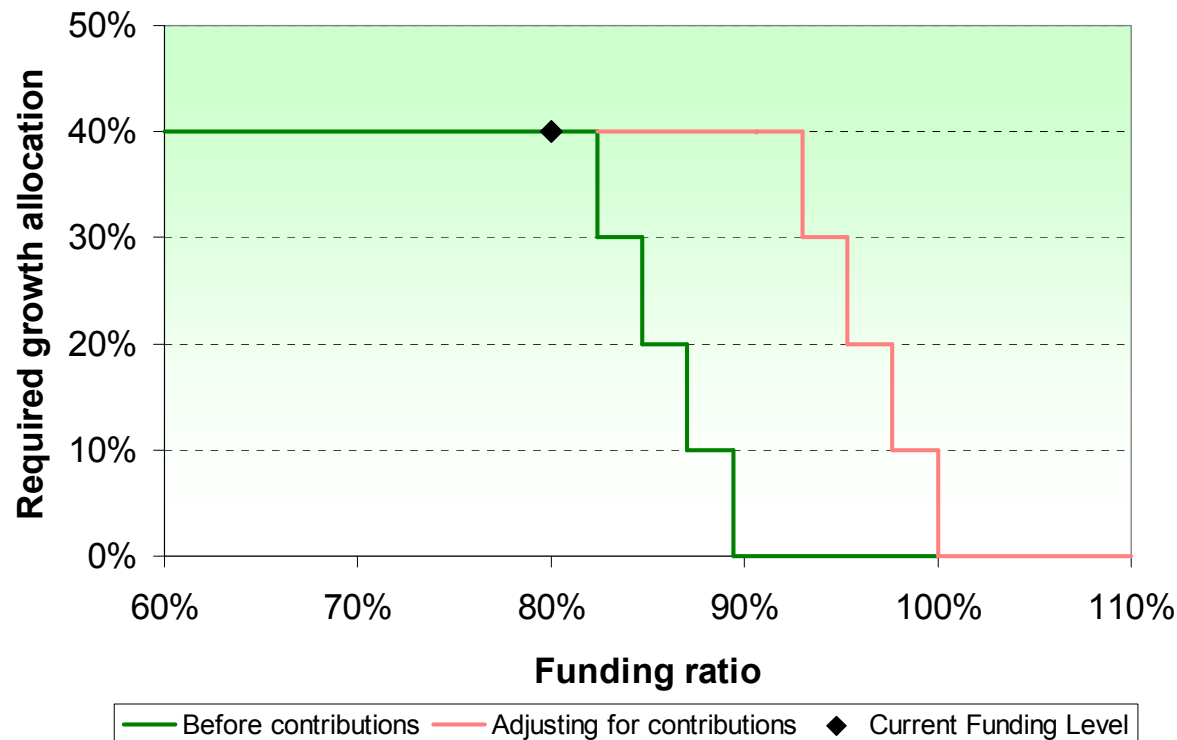
Dynamic de-risking requires setting the mix of growth & liability matching assets with reference to the funding level improvements

- Current funding shortfall requires growth assets of circa 40%
- As the funding gaps closes:
 - the remaining investment return requirement will decline, permitting the investment strategy to become more conservative
- Deficit contributions may also decline, granting some relief to the sponsor



Case study

Further de-risking triggers



Key deliverables

- Frequent monitoring & execution capability
- As funding level improves, gains are “banked” by:
 - reducing assets held in the growth portfolio
 - Investing proceeds in suitable liability matching assets

Case study – summary

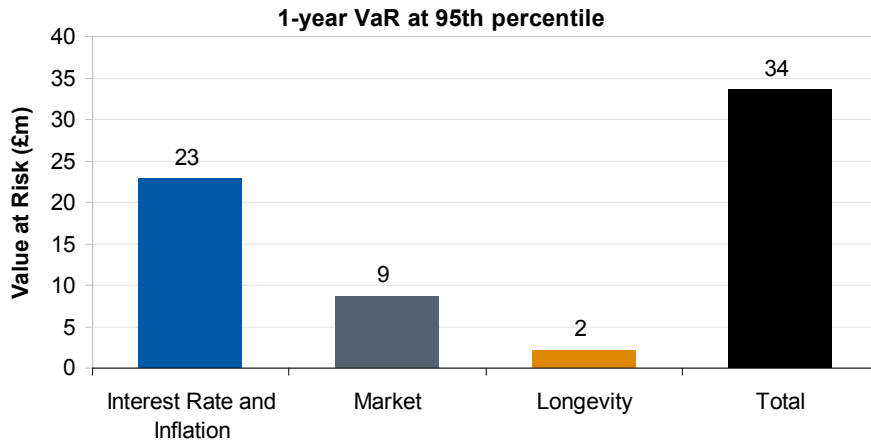
- A dynamic de-risking roadmap reflects the required trade-off between desired de-risking & future contribution relief
- Aim is to progressively de-risk as funding level improves
 - Switching from “growth” into “liability” assets
- Bonds won't match liabilities
 - Limited supply
 - Wrong payment profile, maturity
 - Etc.
- **Investment gains are only truly “banked” & the Scheme “de-risked” if the liability-related risks are managed**

Enter LDI....

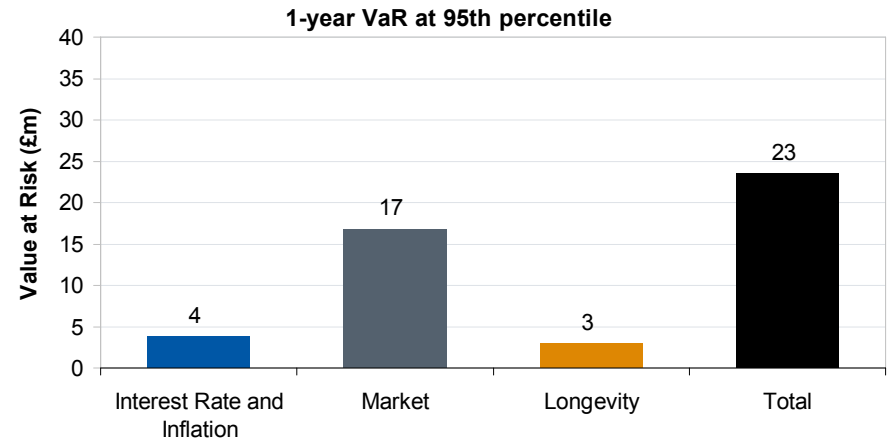
Case study

Hedging 80% of the interest rate and inflation risk now

Current Strategy



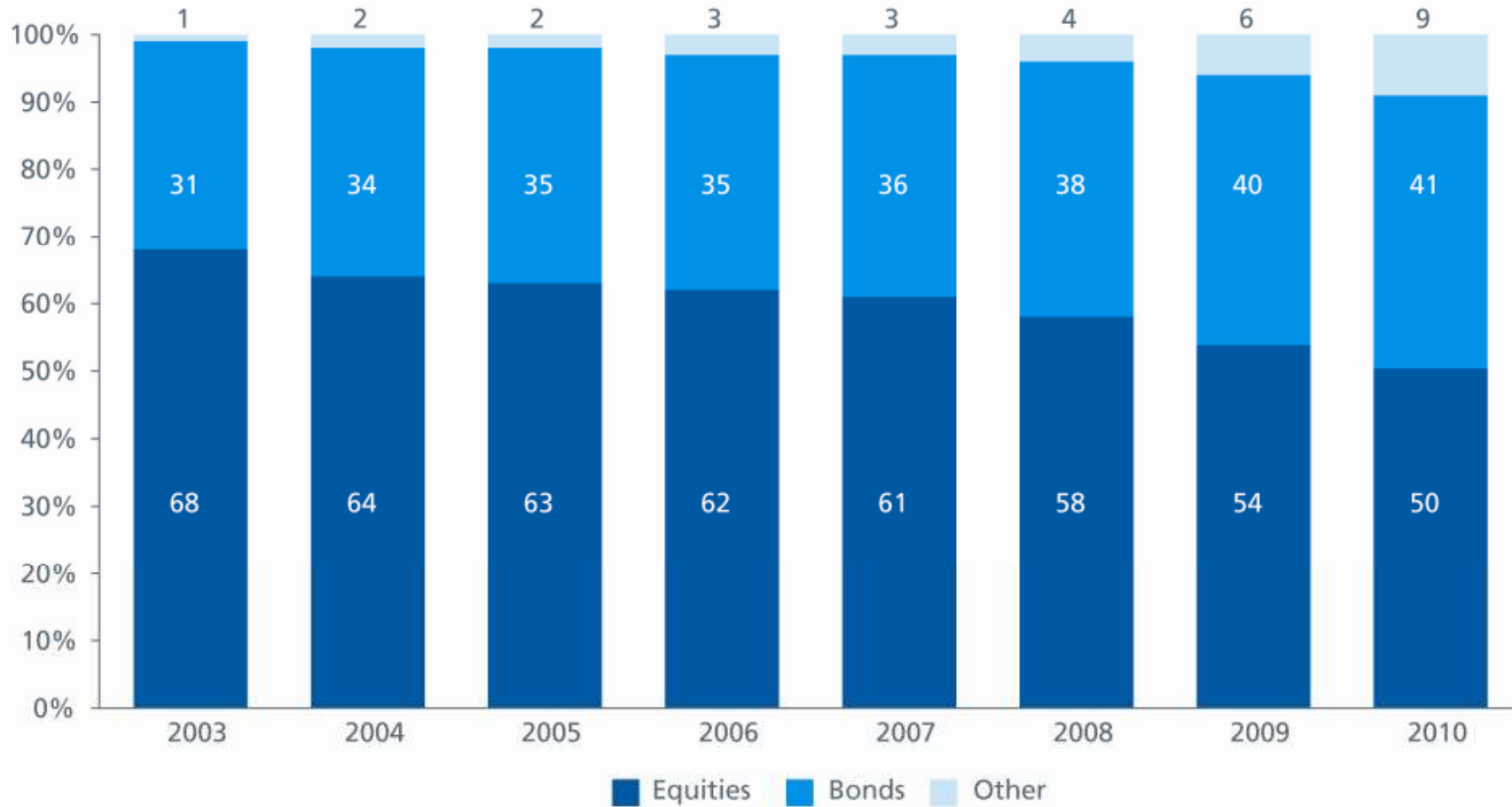
Interest rate and inflation risks hedged



- Interest rate & inflation risks could be hedged without changing the Growth & Non-growth asset mix
- Leaves residual risks
 - (1) Deficit leads to “valuation” risk
 - (2) Market risk
- Hedging would forego liability-relative gains if rates rise

Are UK Plans de-risking?

The evidence so far suggests that bond allocations are increasing
Mercer's European asset allocation survey (1000 plans €500 billion)



But only around 10% of Mercer's UK clients have implemented LDI
 LDI survey as at 31 December 2008 - Mercer UK client base

By number	Asset value up to £100m	Asset value £101m to £500m	Asset value £501m to £1bn	Asset value over £1bn	Total
Clients hedging	17	20	7	16	60
Total Mercer clients	552	171	45	52	820
%	3%	12%	16%	31%	7%

By AUM	Asset value up to £100m	Asset value £101m to £500m	Asset value £501m to £1bn	Asset value over £1bn	Total
Clients hedging	£0.7bn	£5.1bn	£4.9bn	£59.5bn	£70.2bn
Total Mercer clients	£17bn	£34bn	£31bn	£243bn	£325bn
%	4%	15%	16%	25%	22%

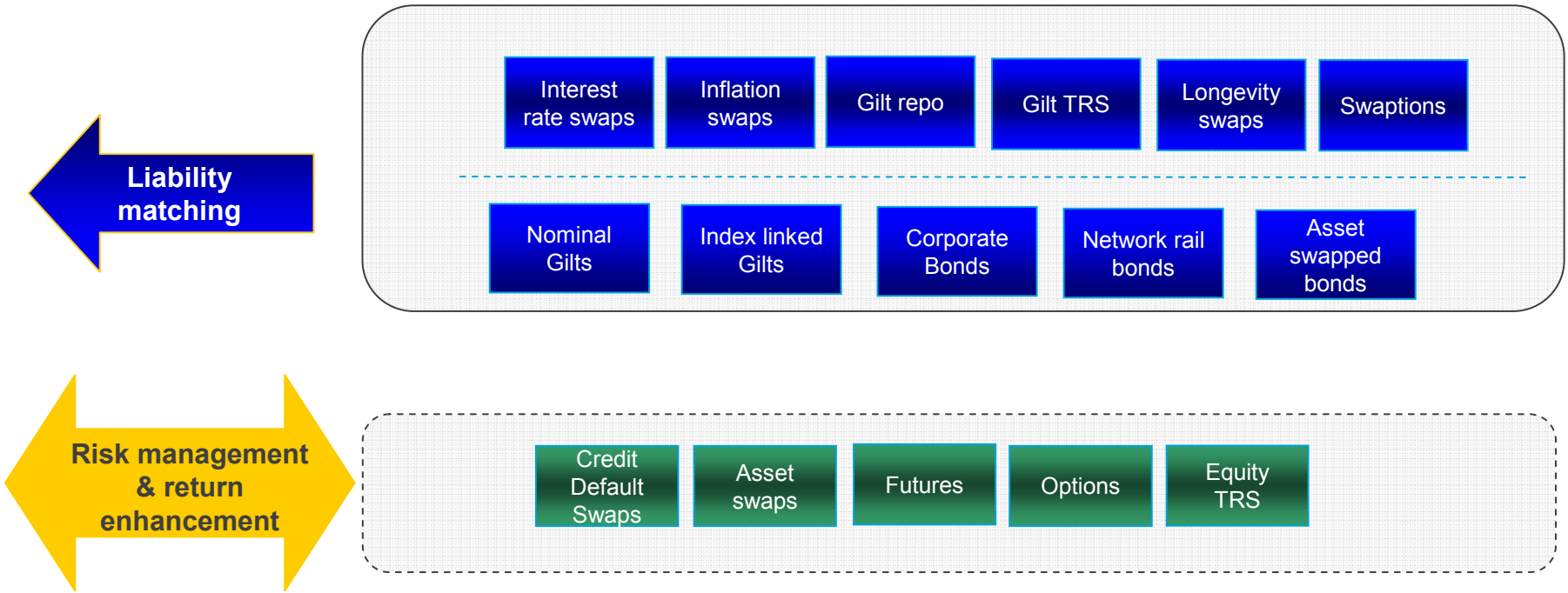
What is holding things up?

1. Poor funding levels
2. Awareness issues
 - Restricted governance budget
 - Actually considered risk increasing e.g. counterparty risk
 - Don't like the sound of it!
 - Benefits not appreciated, valued or understood
3. "Strategy under review"
4. High risk appetite/budget negates the need ...
5. Benefits *are* appreciated but waiting for a "better time"
 - "...market levels are below *fair value*..."
6. LDI programme in place but triggers aren't being met

Implementing LDI

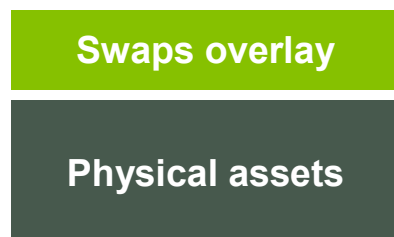
What do LDI providers offer nowadays?

Ever expanding toolkit



Investment vehicles

Segregated portfolio

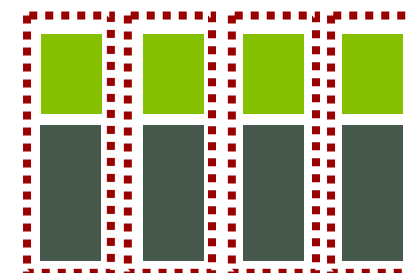


Scheme-specific unitised



Fund wrapper

Multi-client unitised



Fund wrappers

Key considerations

- Portability
- Flexibility
- Counterparty Risk
- Governance
- Legal issues
- Set up speed
- Limited Liability
- Reporting
- Anonymity
- Cost
- Tax efficiency e.g. VAT



Mandate

Opt for a plan-specific unitised or segregated arrangement...if possible

The mandate must have flexibility to allow for:

- Ongoing monitoring & implementation based on triggers
- Views on timing, levels & relative value of hedging instruments to be expressed
- New market opportunities to be exploited
- Due diligence of manager back-office operations



Fees

- Avoid overpaying
 - carve out existing bond / collateral exposures
 - Avoid spurious liability benchmarks unless you are well hedged
- Performance fees are tricky
 - This is a risk mitigation mandate
 - Performance measurement issues
- Scrutinize list services
- Rates and inflation hedging is a commodity product, but
 - ...superior instrument selection & client servicing commands a premium
- Separate ongoing & execution fees
- Demand sliding fee scales

Hedging criteria

Set scaled market and funding level related hedging triggers

- A sliding scale of triggers increases the amount of hedging as
 - rates rise towards fair value
 - or the funding level improves
- Hedging is completed at or before “Fair Value” is reached
- Logic:
 - “Fair Value” estimates are subjective & could be wrong
 - If Fair Value assumption is too high, there is less hedging prior to a period during which rates fall
 - As rates rise, the risk/return trade-off from not hedging deteriorates
 - Potential for further liability-relative gains reduces
 - Potential downside increases
- Beware of material independent interest rate & inflation hedging

Example liability hedging triggers

Benefits of hedging more than 75% of interest & inflation risks are debateable

Tranche number	Base minimum real yield requirement	Proportion of real liabilities hedged	Funding level override
1	0.85%	20%	80%
2	0.95%	27%	85%
3	1.05%	34%	85%
4	1.15%	40%	85%
5	1.25%	47%	90%
6	1.35%	54%	90%
7	1.45%	60%	90%
8	1.55%	67%	95%
9	1.65%	75%	95%

Rationale for market-related hedging triggers

- Trigger levels depend on
 - **Level of conviction** in the levels
 - **Time horizon**: relative importance of short & long-term risk
 - **Scope for divergence** in rates, relative to fair value.
 - economic factors
 - market dynamics? e.g. the supply/demand imbalances
- Is the Trustee willing / able to take a longer-term view?
- A short-term focus means hedging to a greater degree at lower rates

Wrap-up



Takeaways

- De-risking requires liability-related risks to be managed
- Treat rates & inflation hedging as a commodity
 - price will fluctuate will supply/demand
- Scrutinize providers
 - Risk management
 - Strategy ideas
 - Market access
 - Price discovery, execution & back office
 - Reporting
 - Client servicing
- Beware of complicated / spurious fee structures
- Seek client-specific implementation vehicles...if possible
- Set market-related triggers

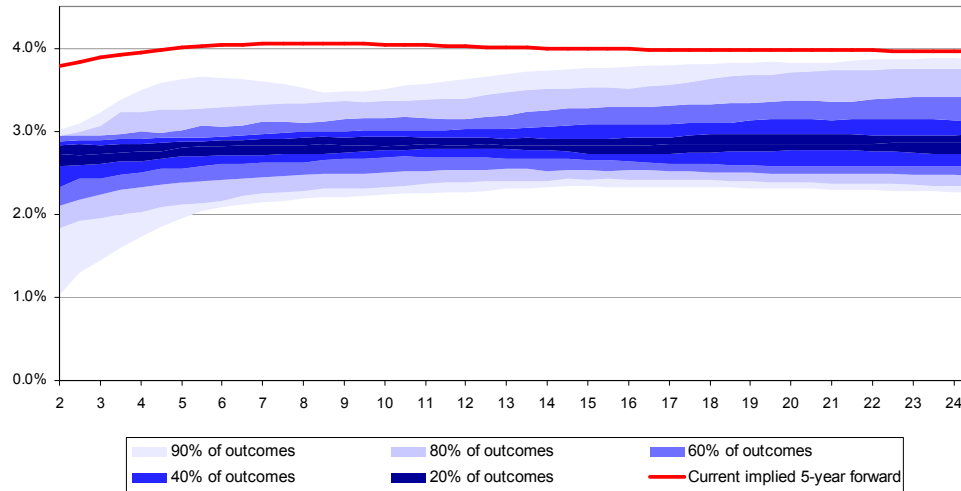
Appendix



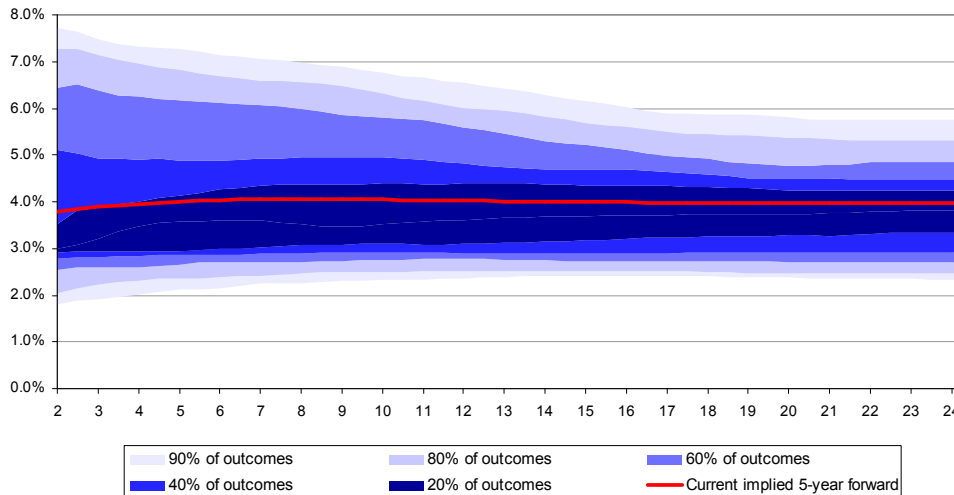
**Market conditions
Defining “Fair Value”**

Current market levels for inflation rates versus history

Heat map: historical gilt implied inflation



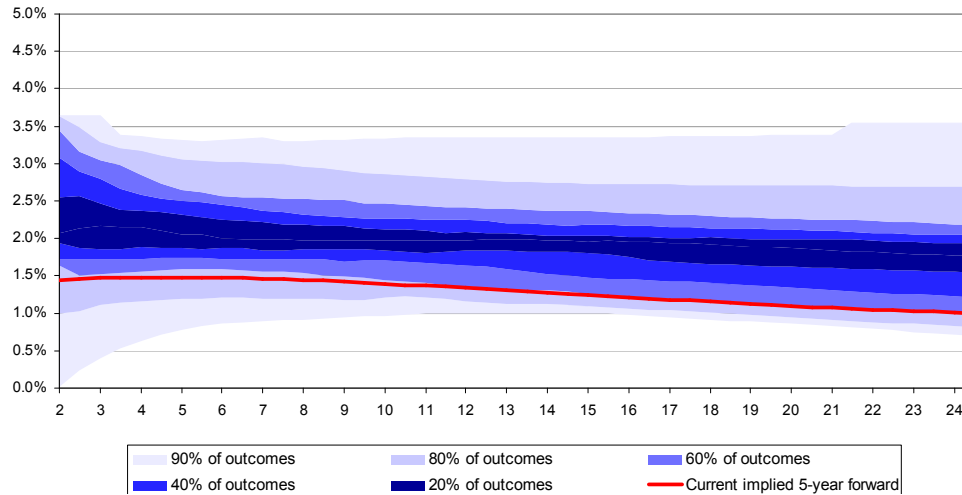
Heat map: historical gilt implied inflation



- Upper chart: range since 1997
- Lower chart: range since 1985
- “Current” rates show the inflation curve implied by current rates for 5 years’ time

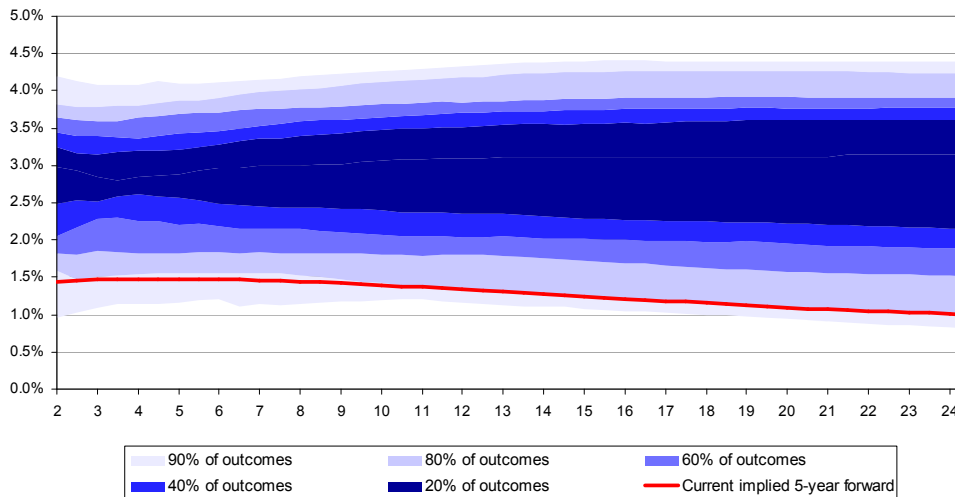
Current market levels for real rates are at relatively low levels

Heat map: historical real gilt yields



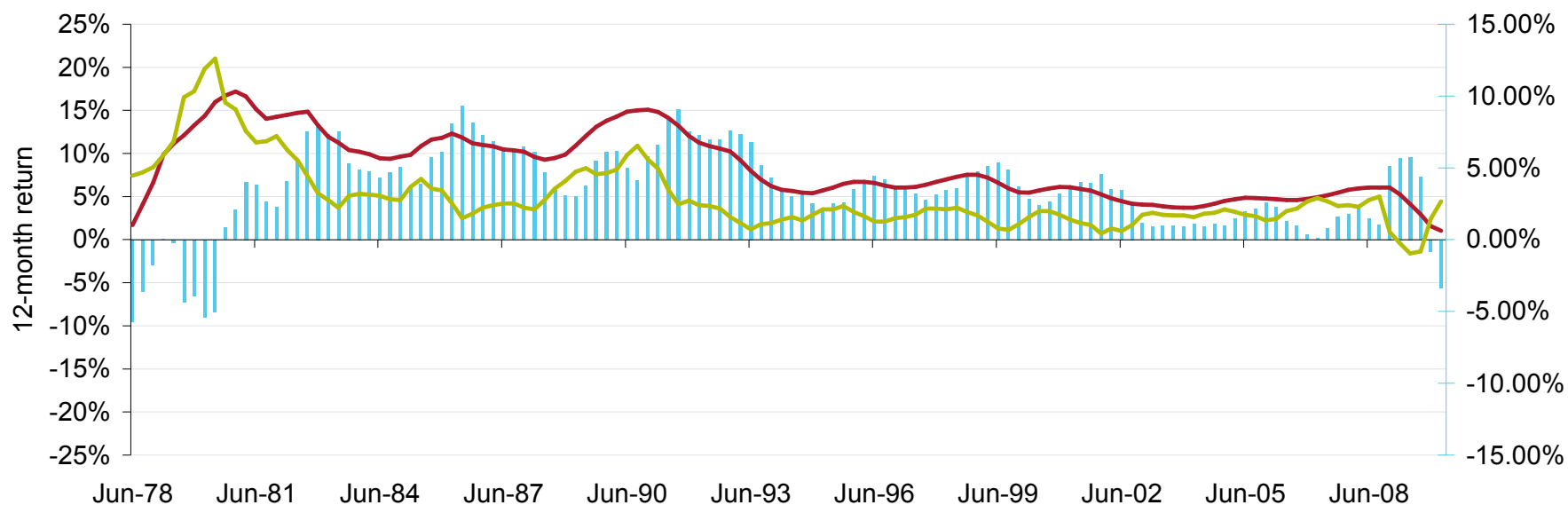
- Upper chart compares real rates since 1997
- Lower chart compares real rates since 1985
- Implied rates for terms over 25 years are even lower still

Heat map: historical real gilt yields



Relationship between short rates and inflation

12-month LIBID/LIBOR Returns versus 12-month RPI Rate 1975-2010



Source: Mercer based on data from the Bank of England and the Office for National Statistics.

■ Difference ■ LIBID/LIBOR ■ RPI rate

Interbank rates are a LIBID/LIBOR mean, so will slightly understate LIBOR returns.

Real return on 3-month LIBOR/LIBID

Since 1977	+1.9%
Since 1979	+3.7%
Since 1992	+2.7%
Since mid 1997	+2.2%

- Over past 30 years, LIBOR has averaged 2%+ in excess of RPI
- Past year has seen first negative real return on LIBOR since late 1970s

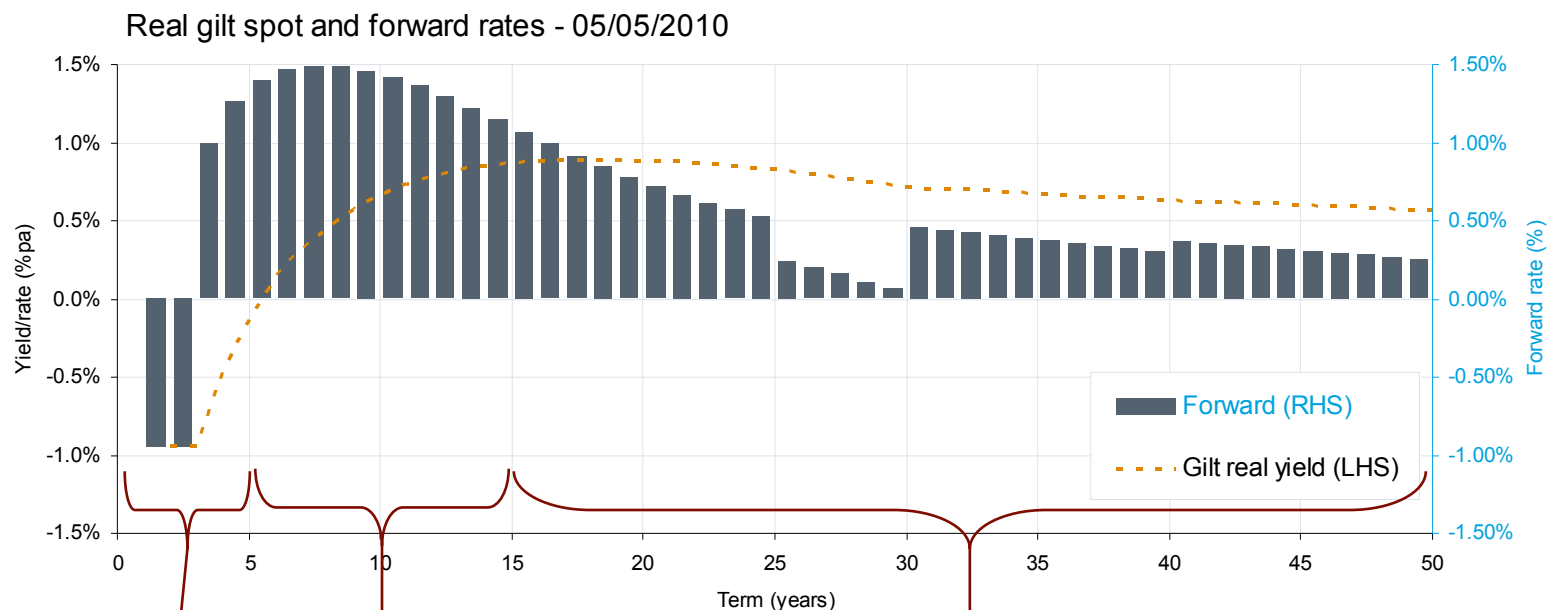
Deriving the long-term nominal fair value rate

- Nominal fair value is broadly the sum of fair value real rate and fair value implied inflation
- Long-term gilt nominal forward rates of **4.75%pa - 5.25%pa**
- For shorter-term rates - take into account current position in the interest rate cycle
- Allow margin of 0.15% - 0.30% for swaps for credit risk

Consumer price index (CPI) target	2.00%
Retail price index (RPI) premium (0.75%)	2.75%
Inflation risk premium (0.25% - 0.5%)	3.00% to 3.25%
Add fair value real rate	Add 1.75% to 2.00%
Fair value nominal rate	4.75% to 5.25%

Recent forward real rates Mercer view

Source: Bank of England and Barcap



- 0-5 year market rates **fair value**
- Loose monetary policy in short-term will keep base rates below inflation. Rates then expected to rise.

- Rising then falling real forward rates 5-15 years are logical as base rates rise to control inflation, then return to normal.
- **Overvalued:** real rates peak too low – peak should exceed the long-term average if inflation is to be controlled.

- **Overvalued:** Rates are below a reasonable long-run average of 1.75% - 2.00%pa

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