



The Actuarial Profession

making financial sense of the future

Speaker from Towers Watson

Current Issues in Pensions

Alternative Investments, Discount Rates and Swaps

Agenda

- What do we mean by ‘alternative investments’?
- Why are they becoming more popular?
- Recent trends
- Implications for setting of discount rates
- Swap overlays

Note – any opinions expressed are those of the presenter and not necessarily those of Towers Watson

What is an 'alternative investment'?

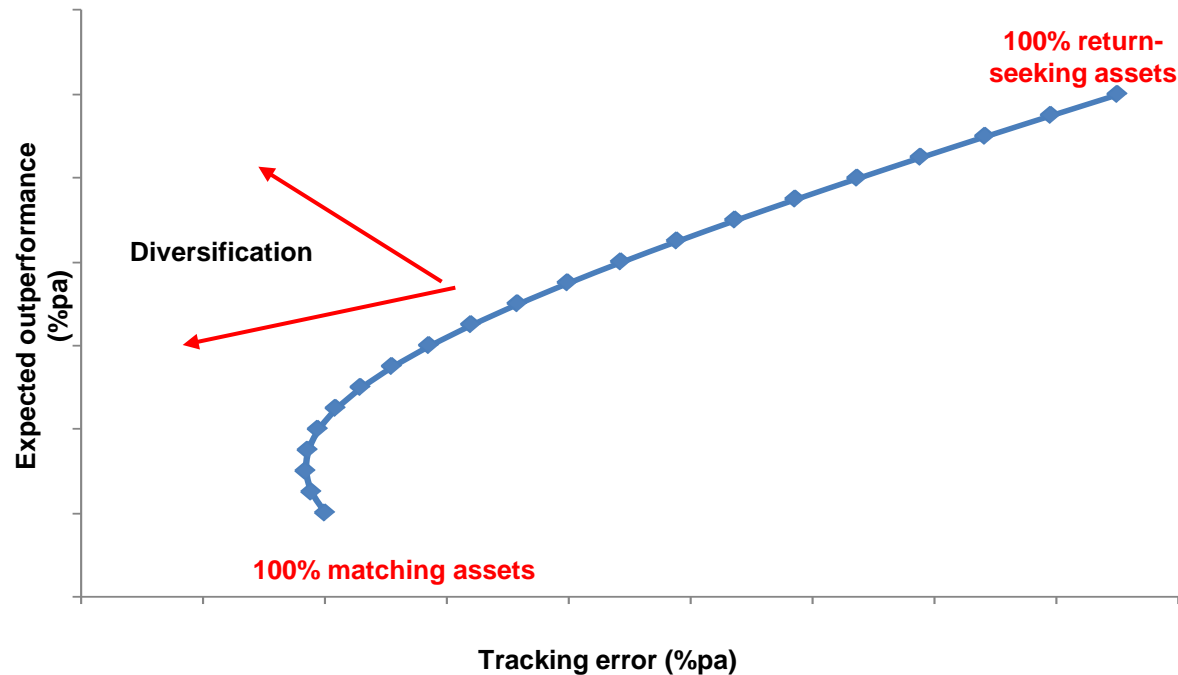
A return-seeking asset
that is not classified as
traditional equities

Alternative Investments

Why are they becoming more popular?

The benefits of diversification

- Maximising financial efficiency
- Exposure to wider range of opportunities for long-term outperformance



Diversification is one method of improving the risk/return efficiency of a portfolio

Sources of return

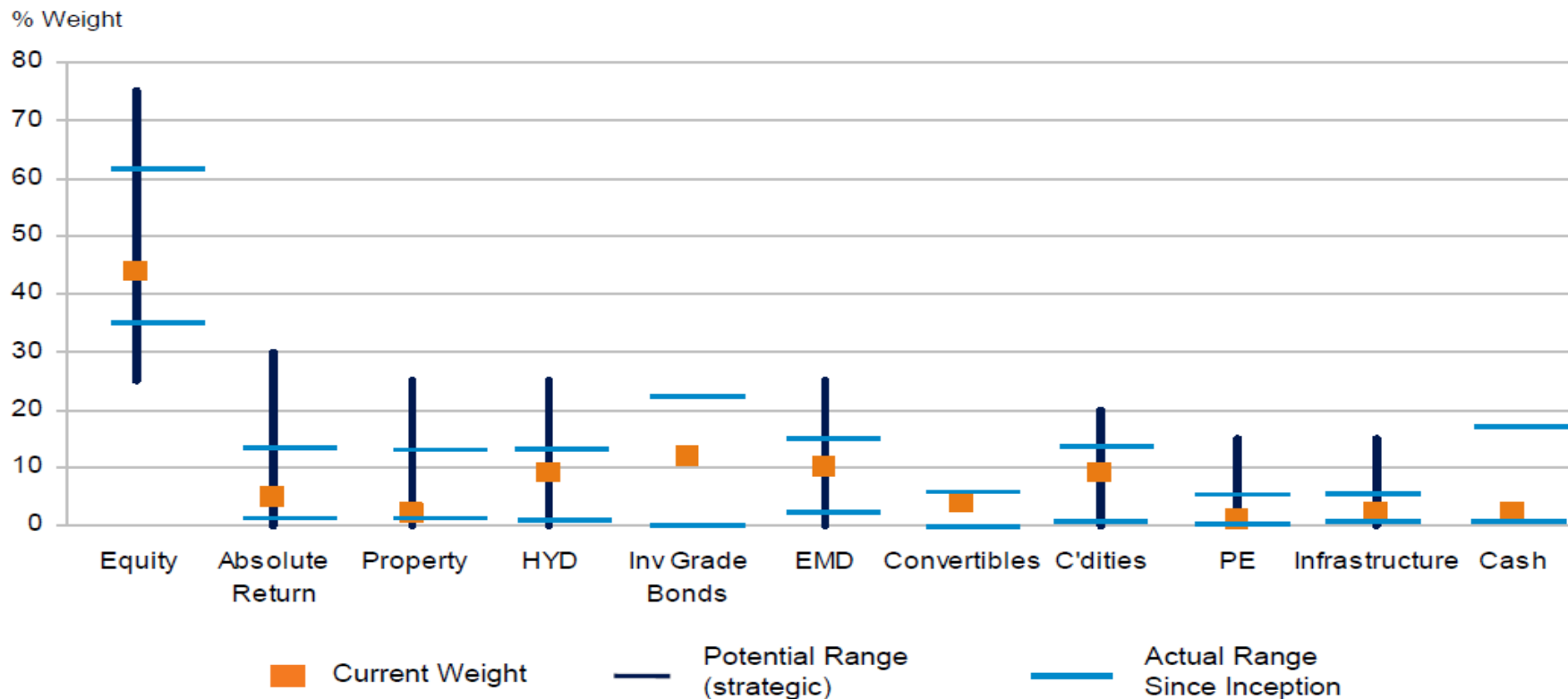
Return driver	Investors are rewarded for bearing the risk of	Example strategies
Equity risk	Being lower down the capital structure in the event of corporate default	Public equity Private equity Some hedge fund strategies
Credit risk	Corporate bond issuers defaulting on their bond obligations	Corporate bonds High yield bonds
Illiquidity	Holding an asset that cannot be quickly or cheaply sold	Property Infrastructure
Inflation	Inflation being higher than anticipated and therefore reducing real returns on fixed-interest bonds	Fixed-interest bonds High yield bonds
Insurance risk	Providing protection against extreme losses	Commodity futures Catastrophe bonds
Currency	The risk that the purchasing power of the currency falls due to a currency crisis	Emerging market currency
Skill risk	A manager, previously considered skilful, underperforming its benchmark	Active management Hedge funds

Range of alternative asset classes



Diversified growth funds

Sample asset allocation



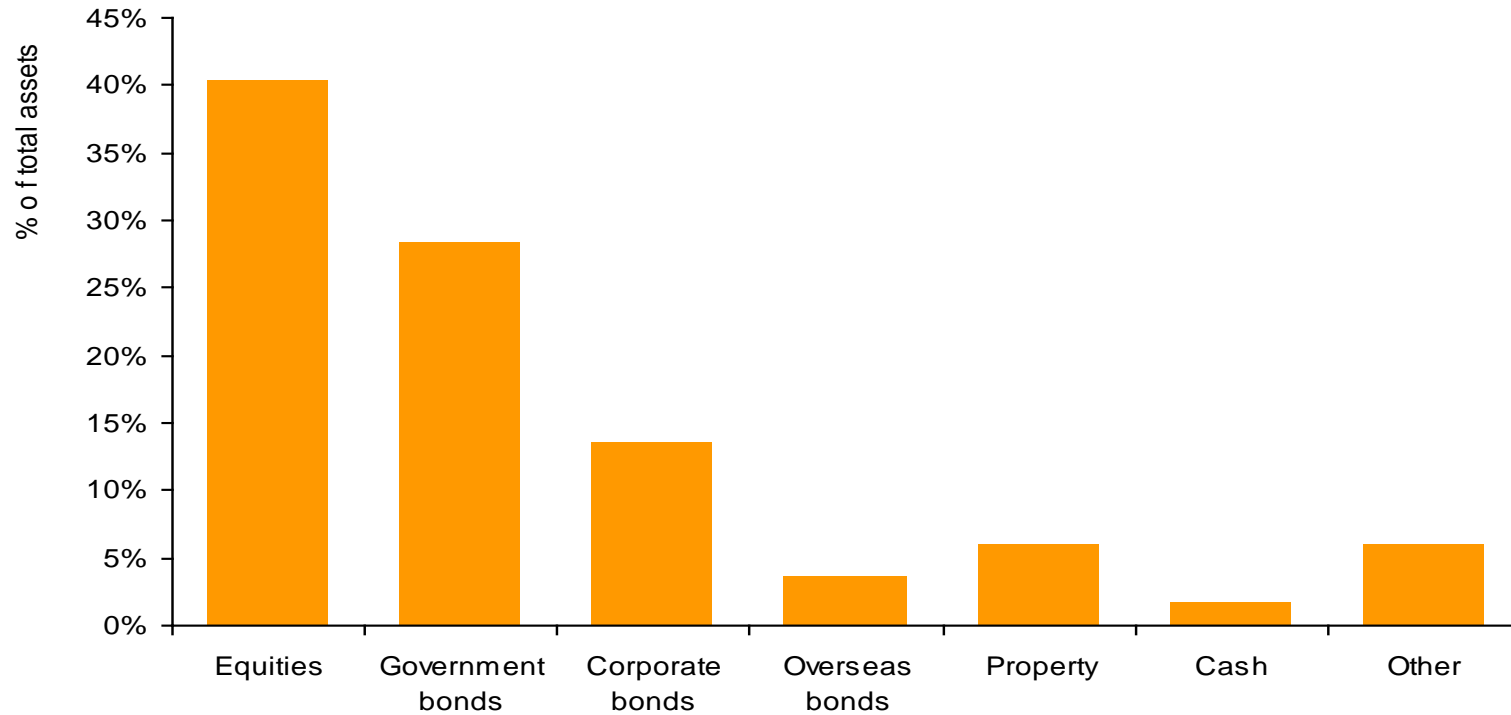
Source: Schroder Diversified Growth Fund 2009

Alternative Investments, Discount Rates and Swaps

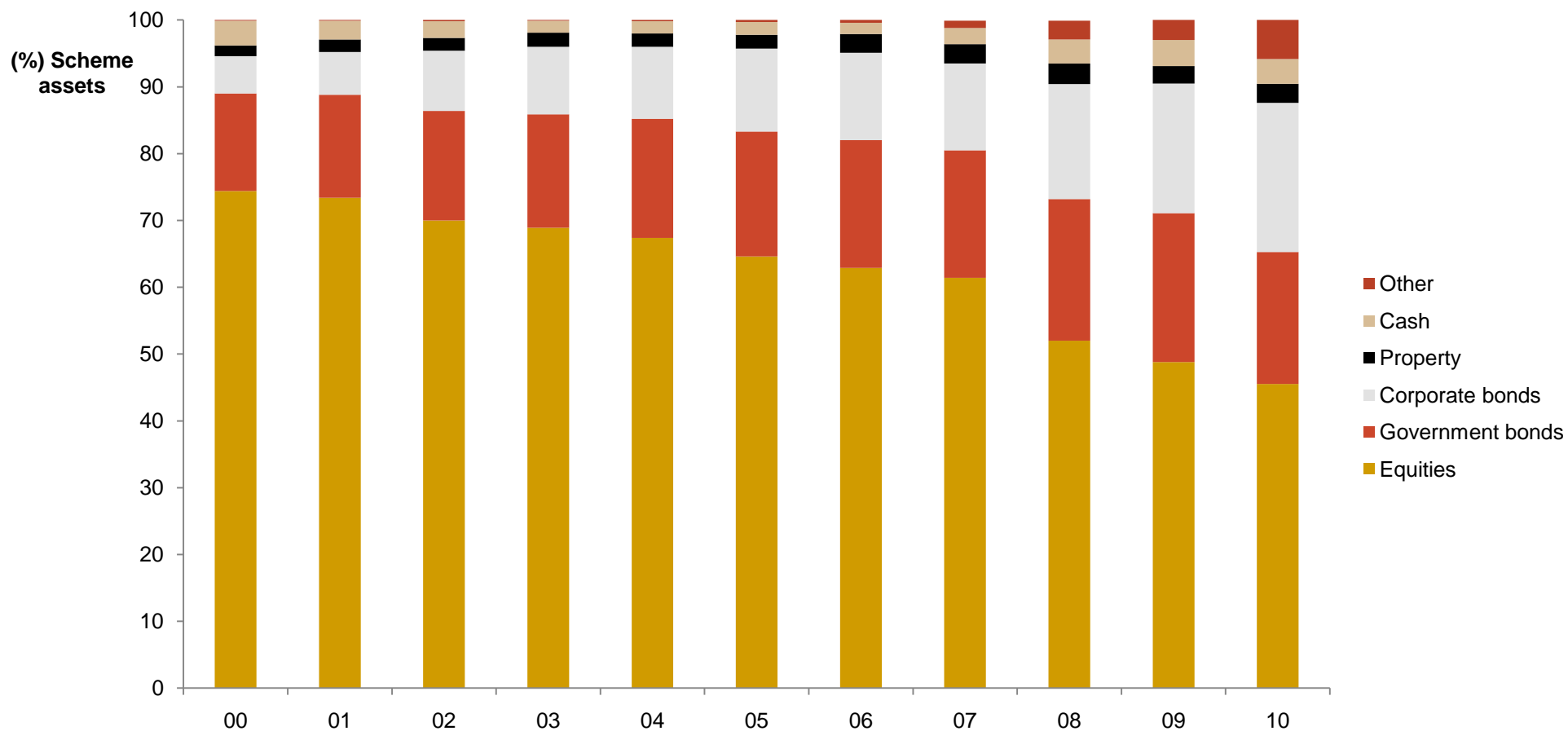
Recent trends

Analysis for larger schemes (over £500 million)

Total asset size - £281 billion
Source: Towers Watson



Historical trends



Source: Mellon Analytical Solutions. UK Pension Funds at 30 June 2010

Recent trends (from tPR's Purple Book 2009)

Table 7.1 | Average asset allocation for all schemes in Purple 2006, Purple 2007, Purple 2008 and Purple 2009*

	Extended Purple 2006	Extended Purple 2007	Extended Purple 2008	Purple 2009
Equities	61.1%	59.5%	53.6%	46.4%
Gilts and fixed interest	28.3%	29.6%	32.9%	37.1%
Insurance policies	0.9%	0.8%	1.1%	1.4%
Cash and deposits	2.3%	2.3%	3.0%	3.9%
Property	4.3%	5.2%	5.6%	5.2%
Other Investments				
- 'Other'	3.1%	2.5%	3.8%	4.5%
- Hedge funds	N/A	N/A	N/A	1.5%

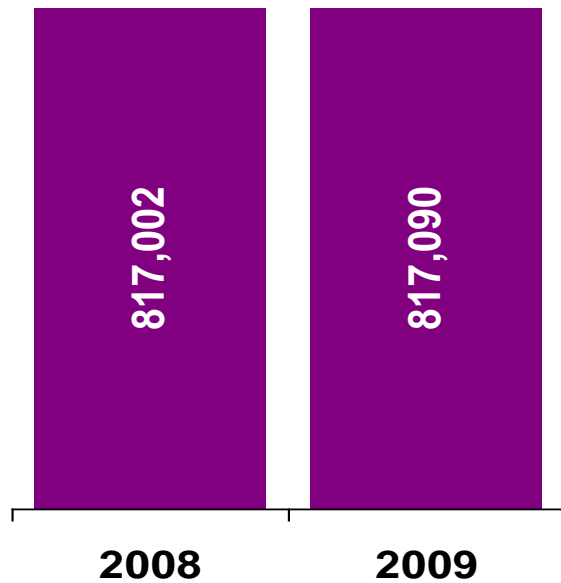
Source: PPF/The Pensions Regulator

*Some columns do not sum to 100 per cent due to rounding.

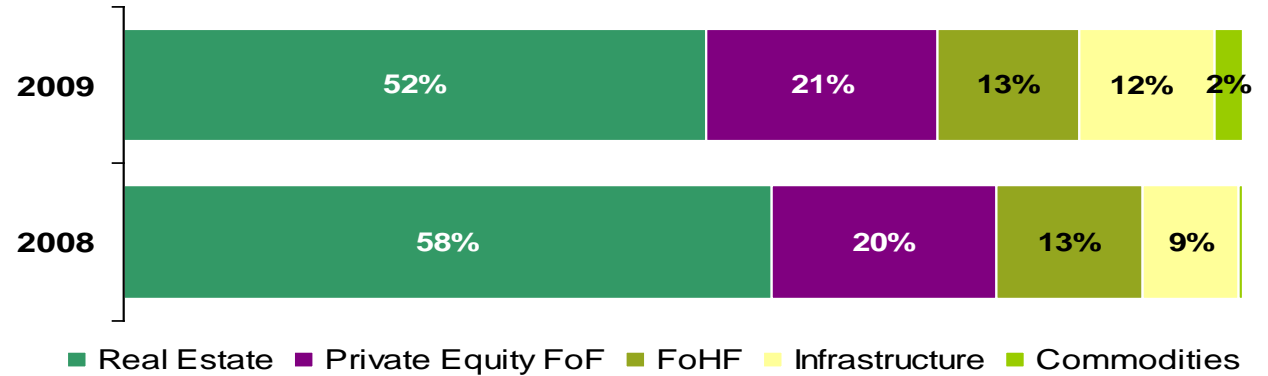
Alternative asset classes have become more widely held since 2003, helping to improve the diversity of scheme portfolios. The latest Purple dataset shows the share of other investments to have increased to 6.0 per cent, up from 3.8 per cent in the extended 2008 dataset and 2.5 per cent in the equivalent for 2007. Twenty per cent of the Purple 2009 schemes invest a share of their assets in the 'other' asset category, up from 17 per cent in the extended 2007 dataset. In support of this, a 2009 survey of 245 defined benefit pension schemes by the National Association of Pension Funds (NAPF) suggests that 28 per cent of defined benefit schemes now invest in alternative assets, compared with 18 per cent in 2007.⁵¹

Top 100 Asset Managers

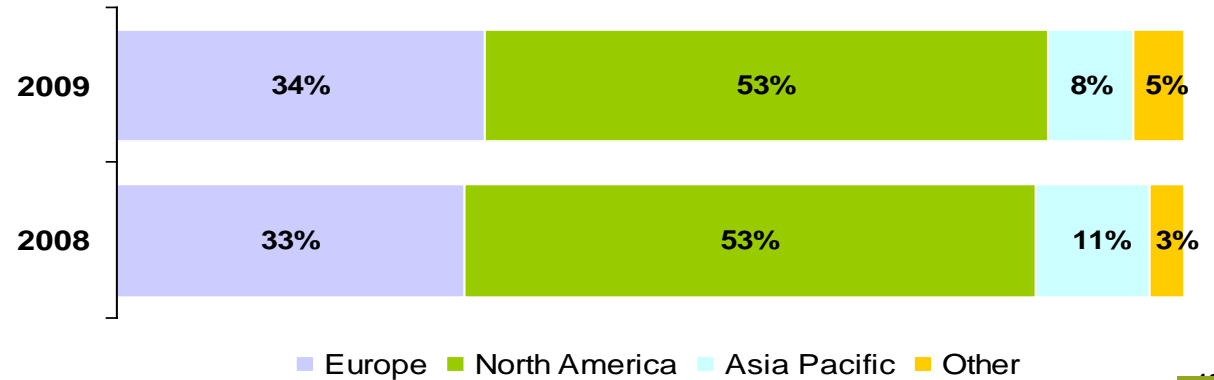
Pension AuM
USD million



Distribution by Asset Class



Distribution by Region

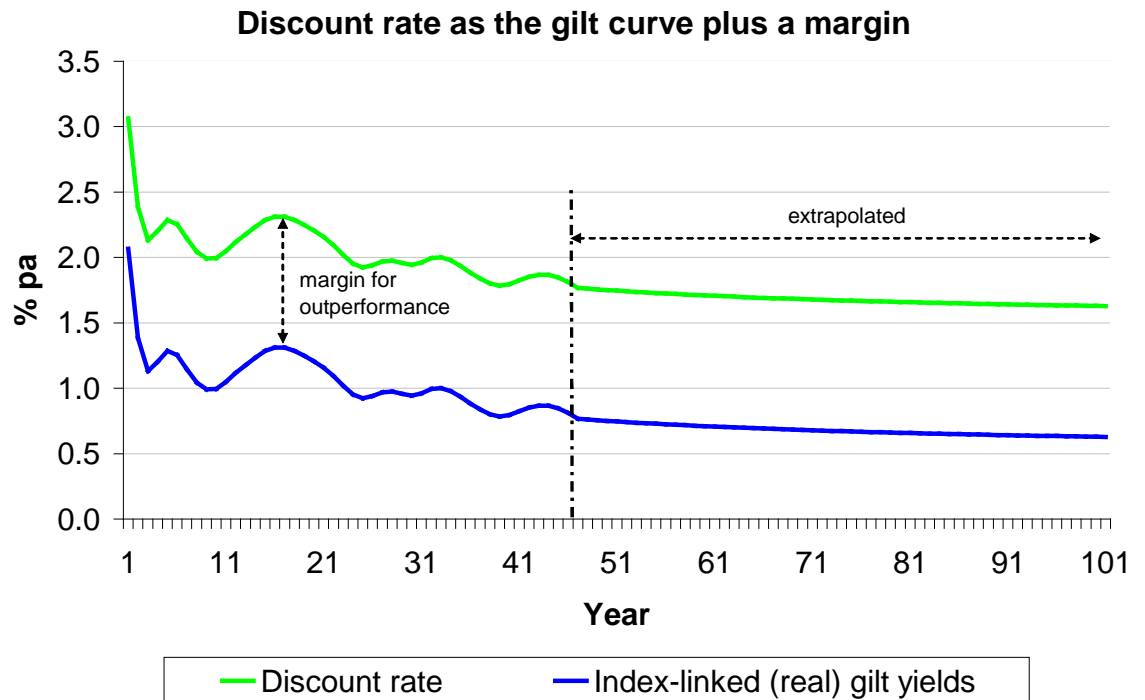


Alternative Investments, Discount Rates and Swaps

Implications for discount rates

Principles for setting discount rates

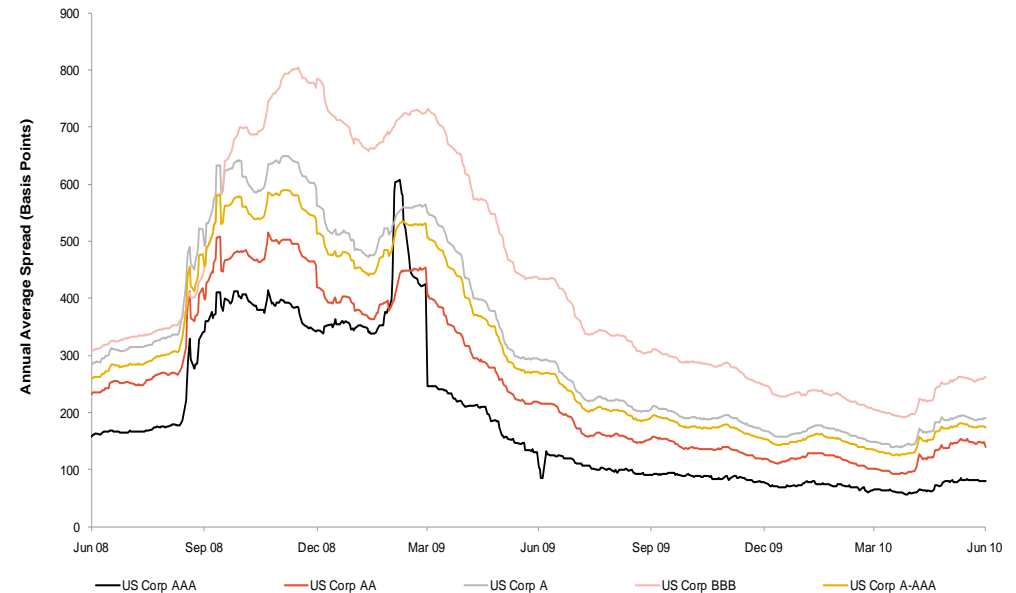
- Allow for returns on assets from the valuation date
- Expected return will depend on:
 - Drivers for excess return above risk-free rate
 - Model for investment returns
 - Trustees' investment beliefs
 - Required level of prudence
- Diversification benefit
- Allowance for manager skill
- Complexity of modelling



Asset classes: credit

- Starting point will be current yield spreads over gilts/swaps with an allowance for default/downgrading risk
- Historic default rates over long periods have been around 50 bp for all investment grade
- Returns from higher risk debt should be greater (depends on credit and illiquidity components).
- Some bond portfolios have significant skill dependence

Investment grade credit spreads over gilts



Asset classes: equity-related

Private equity

- Geared equity, therefore expected return should be higher than global equities
- But high manager fees and other costs should be deducted
- Tend to be volatile, so larger deduction may be appropriate in a prudent world

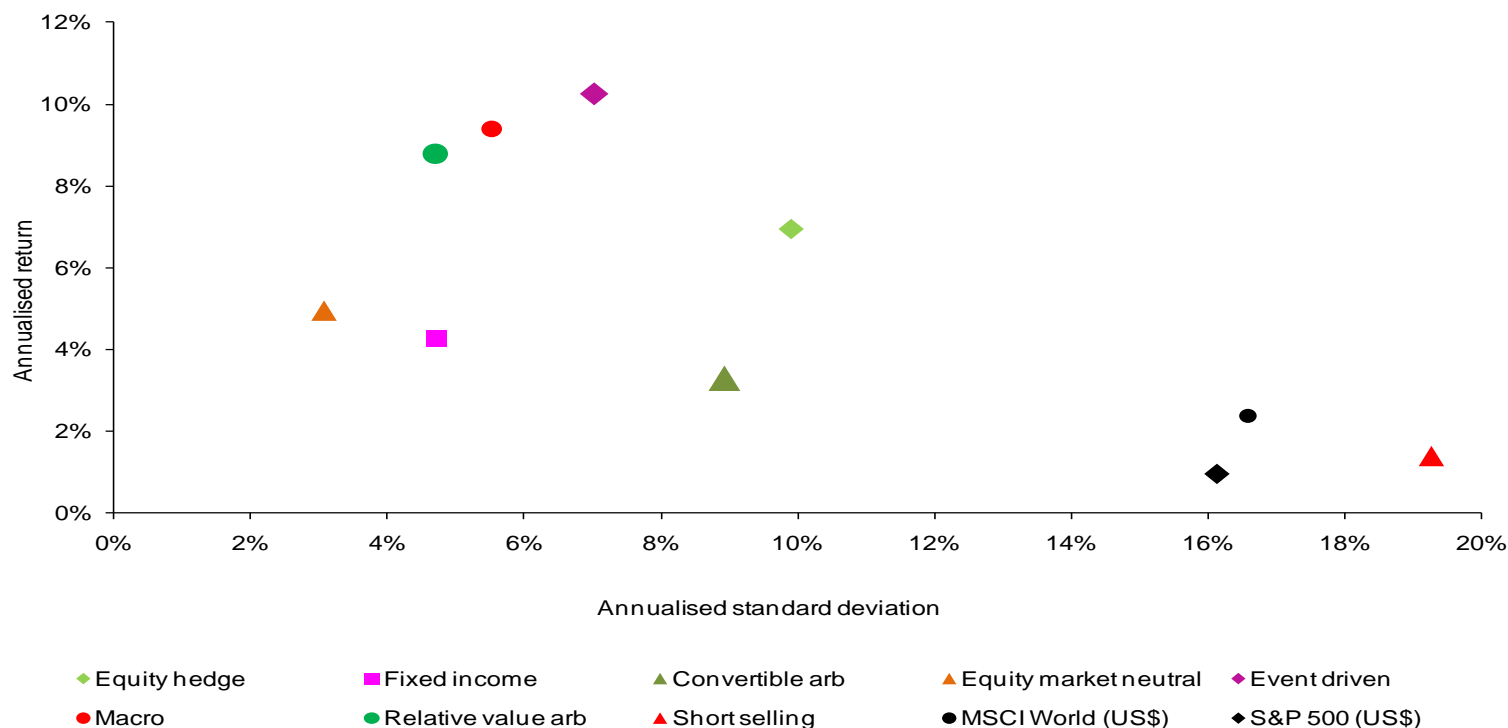
Long term equity/long short equity

- Starting point for long-term equity would be global equity return assumption, possibly with some allowance for skill
- Long short equity should produce lower returns due to generally less equity market exposure. Skill dependence is higher, but may be prudent to discount some of this.

Fund of hedge funds

- Combines some traditional equity market exposure and exposure to a range of non-traditional markets. Little historic data on return expectations
- Relatively low volatility suggests return expectations between credit and equities

Performance of various hedge fund strategies 10 years ending 31 December 2009



Data from Hedge Fund Research for various hedge fund strategies (in US\$), together with traditional US asset classes
Source – Towers Watson

Asset classes: property/infrastructure

Property

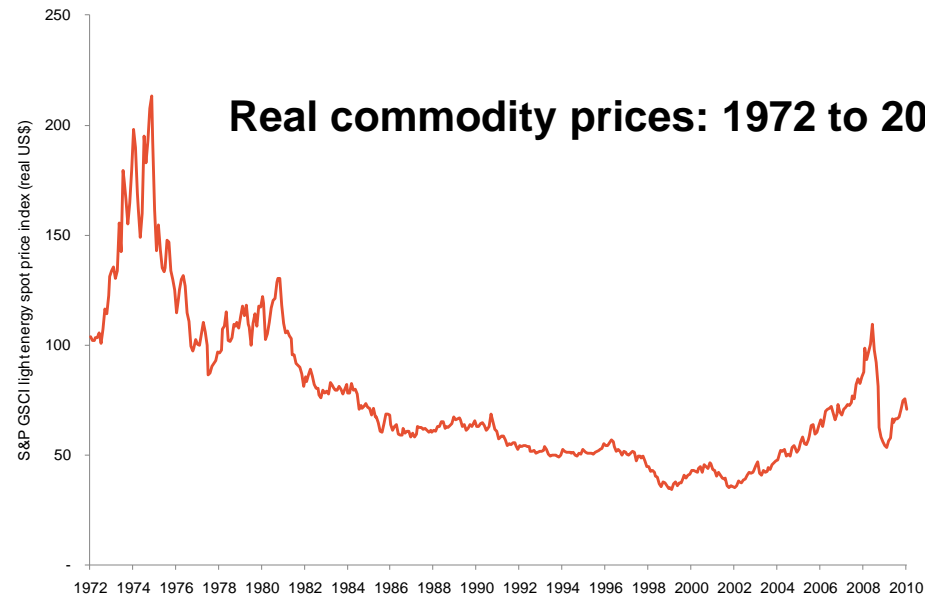
- Plenty of market data and commentary available. Current rental income well-known. Yields of 6-7% for UK property are realistic.
- Need to deduct allowance for costs of management and void periods
- Rental growth likely to be below inflation in long-term, except where new-build is restricted.
- Can be thought of as partly credit risk and partly illiquidity risk

Infrastructure

- Primary infrastructure involves development and construction of new projects. Secondary infrastructure means investing in projects already completed.
- Compared to property, secondary infrastructure generally carries lower credit risk but higher illiquidity risk.
- Could also build up from index-linked gilt yields + credit premium + illiquidity premium

Asset classes: commodities

- Investment in commodities is usually through passively managed futures.
- Investment return comes from a combination of:
 - cash returns on the collateral
 - changes in spot prices over the duration of the contract
 - 'roll return': the difference between the spot price and the price of the future



Source: Bloomberg

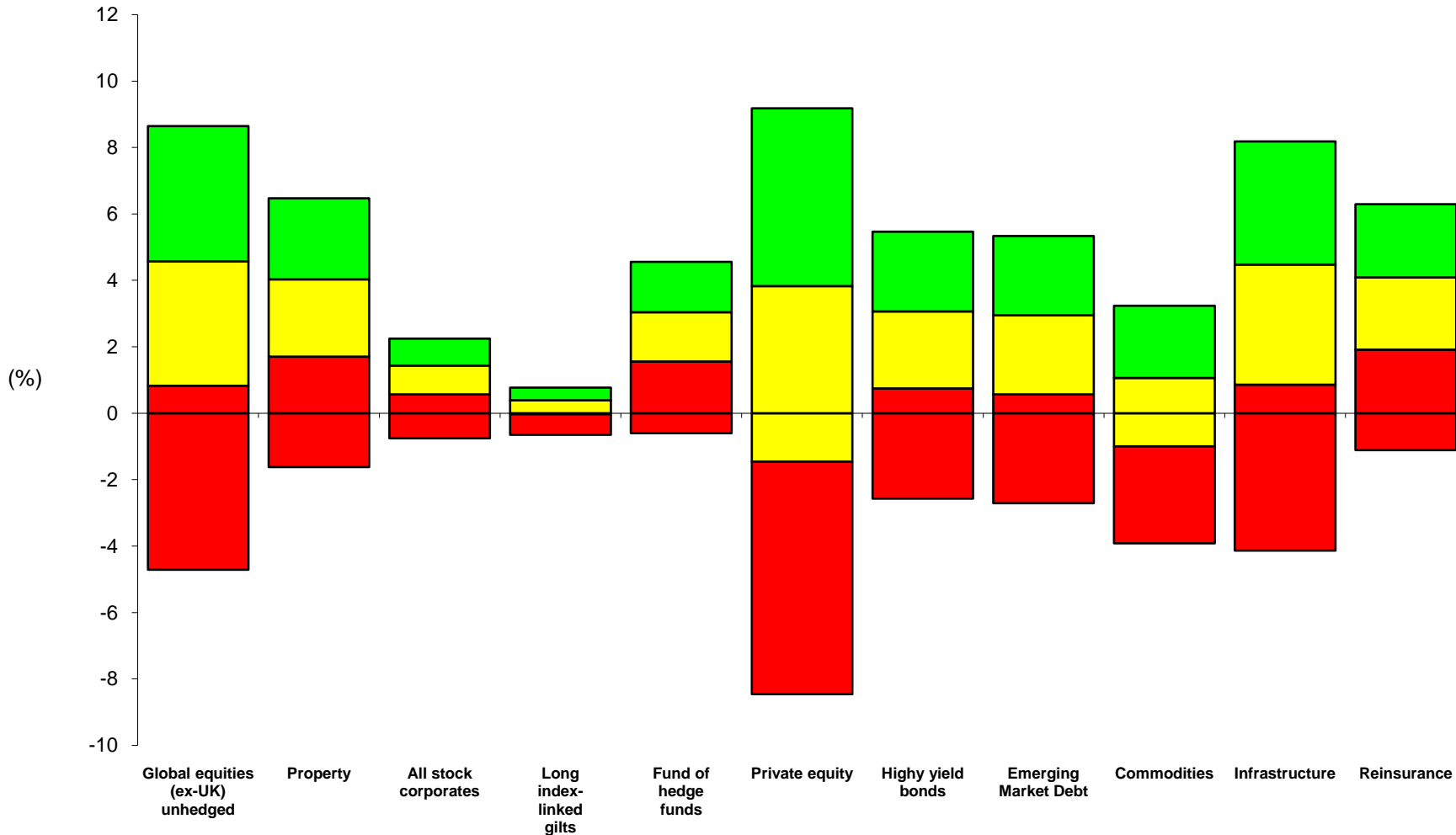
Asset classes: insurance/reinsurance

- Relatively new area for UK pension schemes
- Insurance against extreme events, such as hurricanes, earthquakes etc
- Generally accessible by pooled funds investing in a variety of insurance instruments (CAT bonds, derivatives)
- Returns will depend on the premium rates that can be charged for the underlying risks and the incidence and amount of claims
- Can be relatively low volatility but with chance of extreme outcomes
- Attractively uncorrelated with equities
- Too early to judge long-term return potential

Allowance for skill

- Pursuit of 'alpha' through active management in developed equity markets is a negative sum game
- Should be more easy to generate 'alpha' in alternative assets because of wider opportunity set and, in some cases, quality of managers
- Choosing best-in-class managers is a high governance process
- Allowance for skill is fundamentally a 'belief', but may be necessary for some asset classes that are highly dependent on skill for return ('market neutral')
- Analysis of managers in alternative equity markets (absolute return, long short) does suggest that they can deliver higher risk-adjusted returns
- Additional return expectation from skill should be low if trustees don't have the governance capacity to manage actively

Range of expected real returns over 10 years



To model or not to model – some practical issues (1)

- Actuary's responsibility
- TAS-M
- Consistency with investment adviser
- Client view of modelling generally
- Sophistication of models
- Categorisation of asset classes

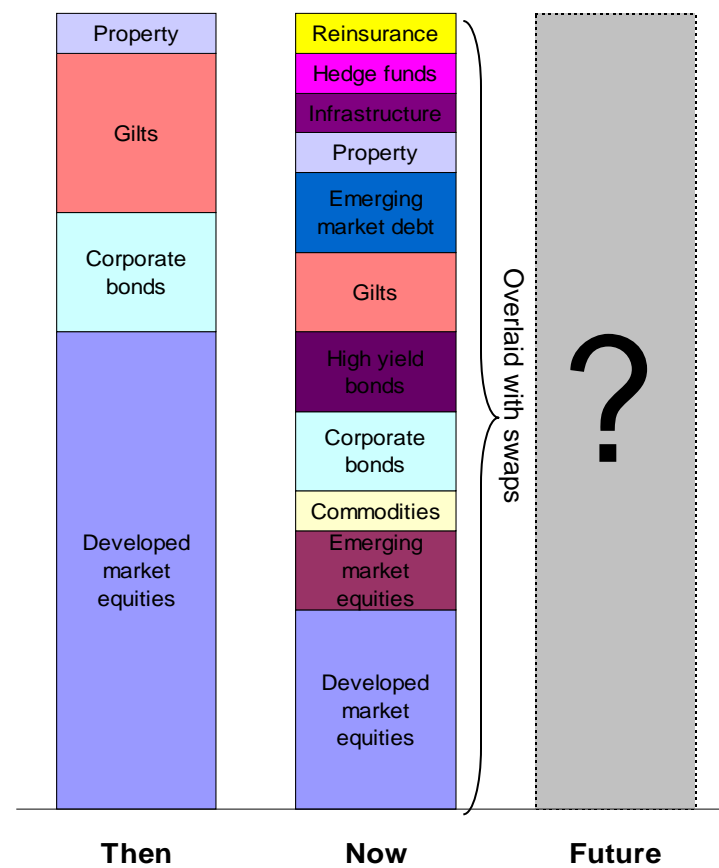
Practical issues (2)

- Size / materiality of alternative asset holding
- Performance benchmarks
- Choice of valuation assumption should not drive investment decisions
- Impact of employer covenant

Concluding thought

To what extent should the long-term funding plan reflect current short/medium term investment decisions?

- Some alternative assets are expected to be attractive for a limited period (before the rest of the world catches up)
- Trustees may manage investments to specific risk/return criteria, resulting in large changes in asset allocation over time
- The investment strategy may change anyway as the liabilities mature



Alternative Investments, Discount Rates and Swaps

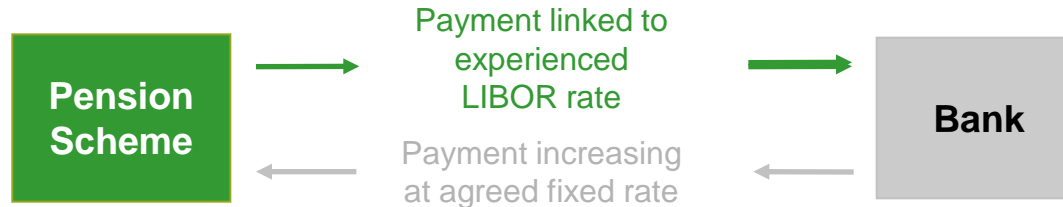
Swaps

Allowance for swaps – a special case

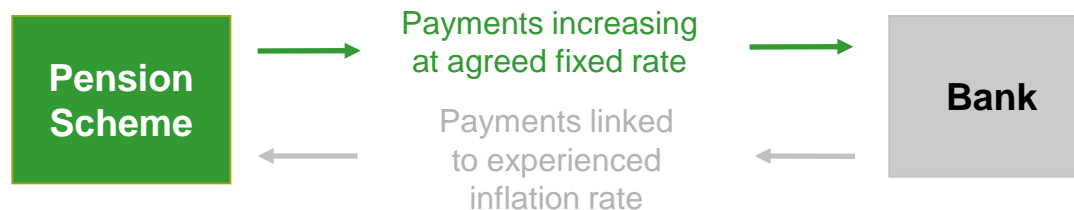
Swaps have some special features:

- Zero market value at outset, positive or negative market value after inception
- May have small market value but “return distribution” is potentially huge (e.g. can generate returns below -100%)
- Can be thought of as “overlaying” other types of assets
- Treating this as just another asset class is unlikely to work

Interest rate swap:



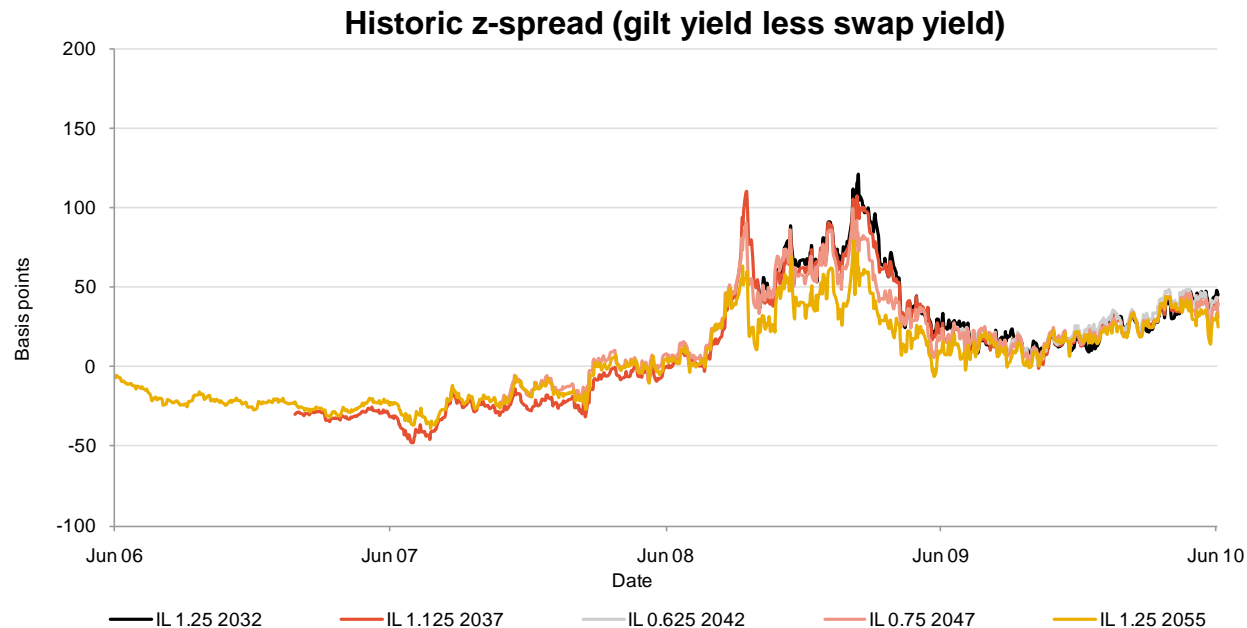
Inflation / LPI swap:



Allowance for swaps – factors to consider

The appropriate allowance for a swap depends on the following factors:

- The nominal amount of the swap (more important than market value)
- What other “physical” assets are in place to back the swaps, e.g.:
 - Cash
 - Bonds
 - Equities
- Whether the swap is managed regularly
- View on future interest rates (see chart below) / inflation



Inflation swaps

- Inflation swaps (perhaps) more straightforward: scheme pays fixed payments and receives typically RPI-linked payments
- Swap inflation curve at the valuation date gives market's view as to what future RPI payments will be for each term
- Marked-to-market value of the swaps will reflect changes in swap inflation since contracts were effected
- To value liabilities consistently with assets, should use swap inflation assumption, at least for the liabilities covered by swaps

Inflation swaps – practical issues

- Swap inflation often (but not always) higher than valuation assumption chosen by reference to other indicators – valuation will crystallise loss of return over duration of the contracts
- Inflation swaps may only cover part of the liabilities: adopt different inflation assumptions?
- Valuation inflation assumption might be single equivalent of a strongly term-related inflation curve. It is the relationship between swap inflation and the underlying inflation curve that matters.
- Swaps might have a significant marked to market value. If underlying assumptions are borne out, these assets will only grow in value in line with LIBOR (or changes in LIBOR).
- Schemes may hold LPI swaps
- Swap inflation/yield curves are not unique
- If swaps not yet purchased, note there is likely to be a dealing spread, so expect a loss at the outset
- Inflation lag

Interest rate swaps

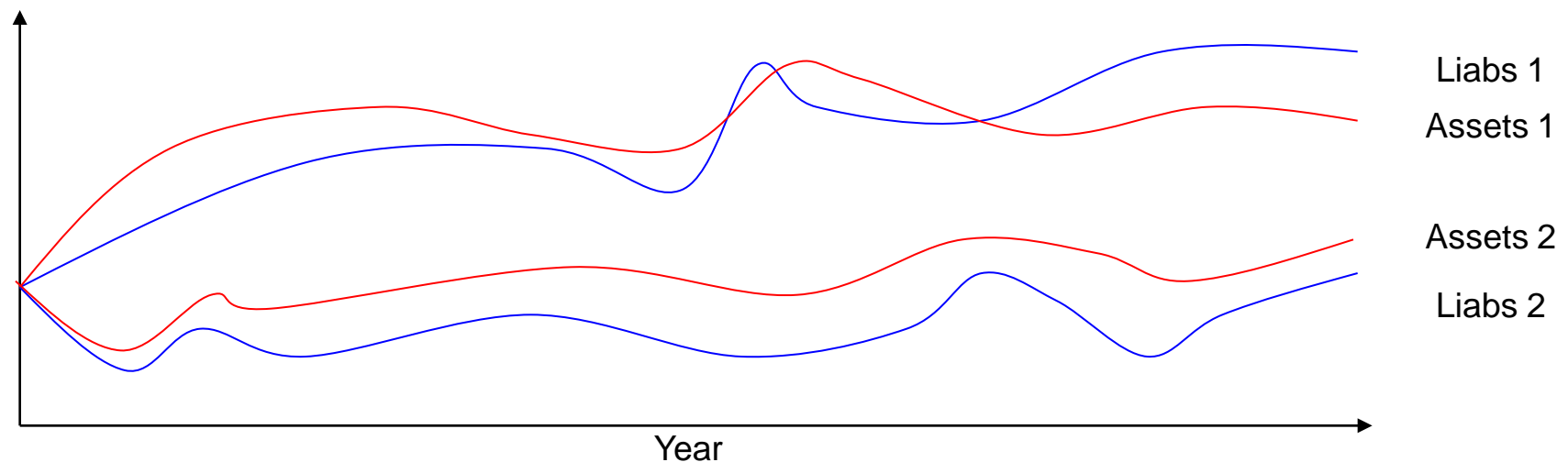
- Scheme receives fixed payments and pays LIBOR (similar to short-term deposit rate)
- Increases interest-rate sensitivity of the assets to reflect typically longer duration of the liabilities
- Similar practical issues to inflation swaps – only LIBOR return expected on marked to market value of the swaps
- Could use a weighted average discount rate to reflect lower anticipated return on the swap % of the asset portfolio, but should accurately reflect duration, eg by solving:

$$\begin{aligned} & SN \times (1 + \text{LIBOR})^n + (A - SN) (1 + \text{asset return})^m \\ &= SN (1 + i)^n + (A - SN) (1 + i)^m \end{aligned}$$

SN = Swap nominal value
A = Asset value
n = Duration of swaps
m = duration of liabilities

Modelling interest rate swaps

- Scheme contracts to pay LIBOR and receive fixed payments, so swaps will affect the distribution of returns from the assets
- A swap overlay covering a large part of the liabilities may have a zero marked to market value, but may still alter future return expectations
- The extent of the impact will depend on the correlation between returns on backing assets and LIBOR – need to consider what the backing assets are
- If backing assets are largely return-seeking, may be possible to ignore because correlation with LIBOR small compared to overall spread of returns
- If backing assets include significant bond component, detailed modelling may be needed, allowing for duration dependence of assets and liabilities



Interest rate swaps – practical issues

- Swaps might not be an exact match to the liabilities – makes approximate modelling more difficult
- The swap might have a negative market value. In this situation, it would be prudent to limit the discount rate to the return on the physical assets.
- Doesn't fit easily with dual discount rate approach. Not easy to determine what are the backing assets
- Frequently a wide spread of swaps with different durations, making the modelling more complex
- Might prompt a change from single/dual discount rate approach to full term-dependent discount rate approach using gilt or swap curve. Modelling can then take account of the extent of the swap overlay at each duration

Alternative Investments, Discount Rates and Swaps

Any questions?