



A presentation *from* **BARCLAYS GLOBAL INVESTORS**

Liability driven benchmarks

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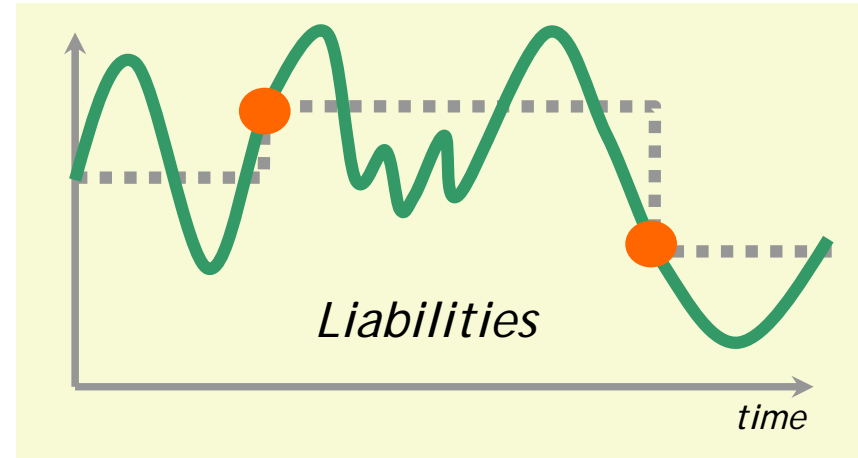
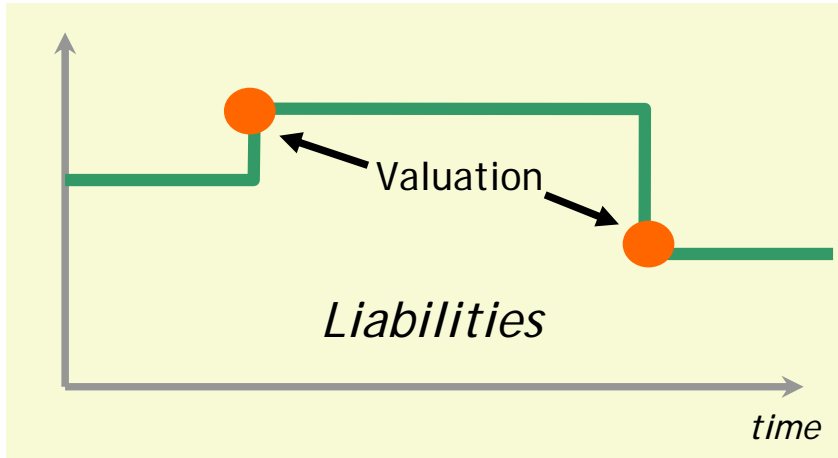
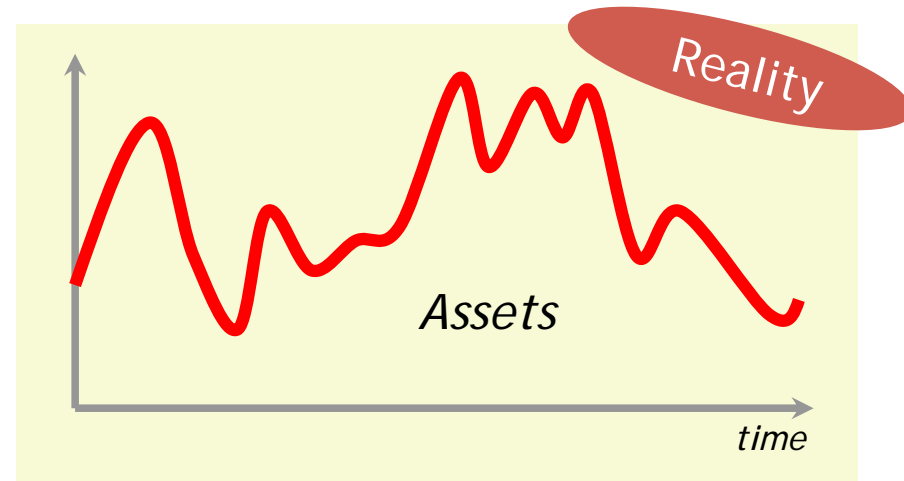
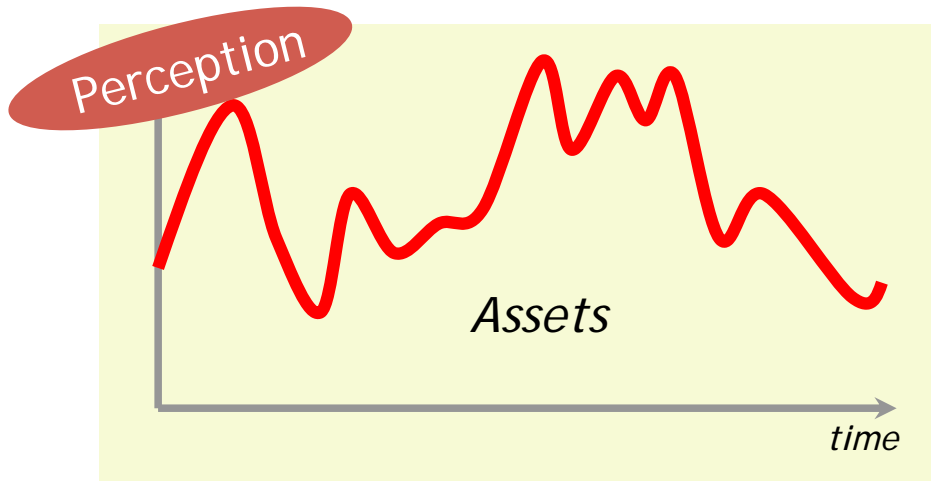
Strategic Solutions Group, Barclays Global Investors

Agenda

Constructing liability driven investment benchmarks

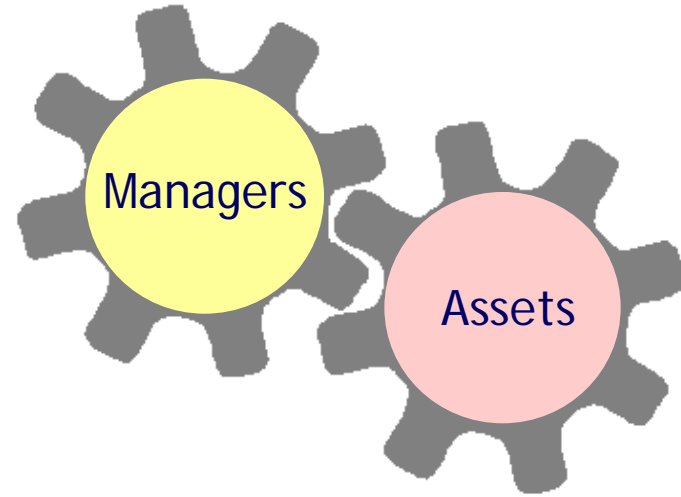
- Evolution of bond benchmarks into LDI benchmarks
- Typical approaches
- Asset management challenges

Perception versus reality



Source: Barclays Global Investors

Evolution of investment objectives



beat the peer group

Scheme specific benchmarks:
market indices + outperformance

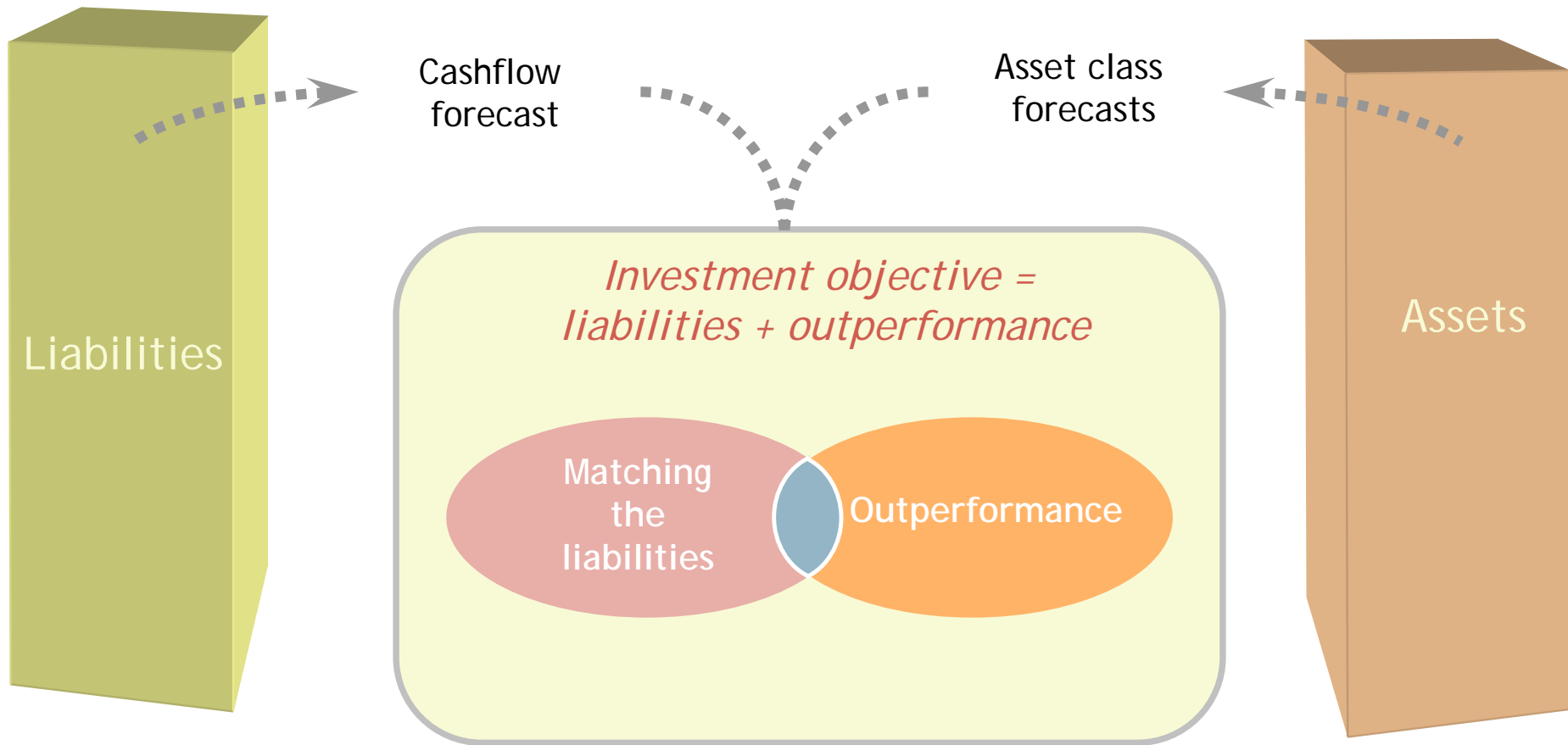
1990

Mid 90's

Now

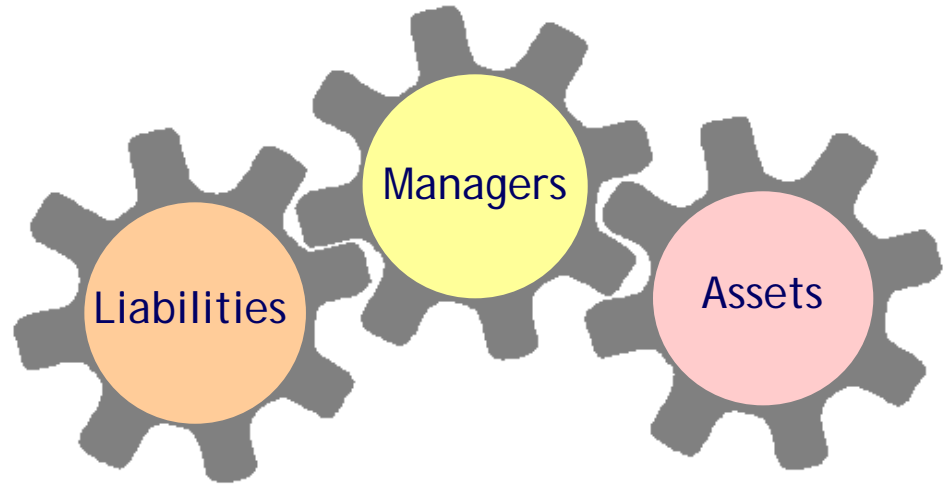
Source: Barclays Global Investors

Liability driven approach for setting investment objectives



Source: Barclays Global Investors

Evolution of investment objectives



beat the peer group

Scheme specific benchmarks:
market indices + outperformance

Liability driven benchmarks:
liabilities + outperformance

1990

Mid 90's

Now

Source: Barclays Global Investors

Liability driven investment objective

Investment objective = liabilities + outperformance of $x\%$ p.a.

E.g.

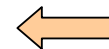
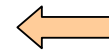
'Match the annual change in liabilities plus outperformance of $x\%$ per annum over the change in liabilities'

Source: Barclays Global Investors

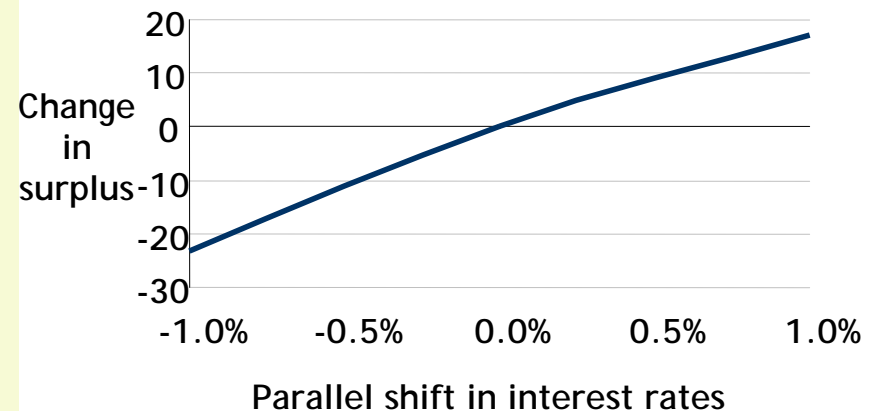
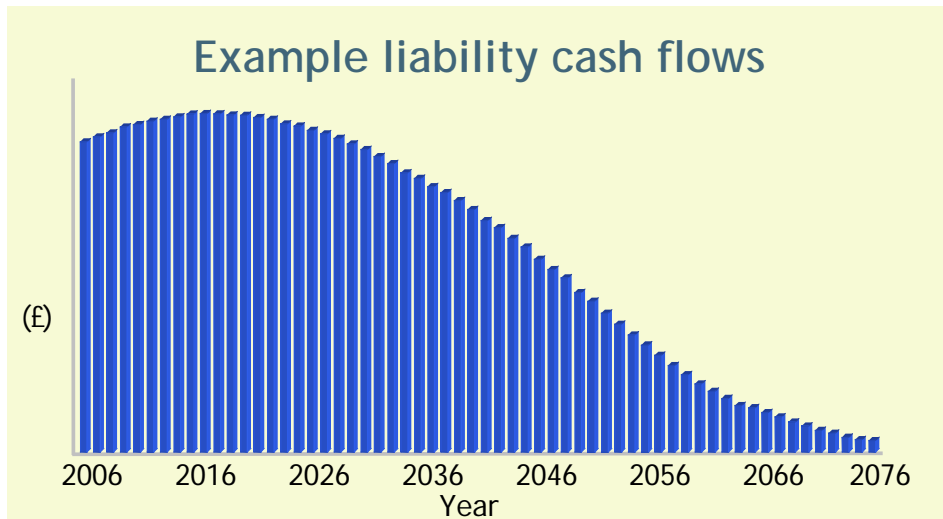
From liabilities to a benchmark (1)

Be clear about the objective

- Liabilities are future cash flows dependent upon:
 - Longevity
 - Scheme demographics (leaver rates, salaries etc.)
 - Inflation
- Value of liabilities also depends on interest rates



Manage these risks through investment strategy

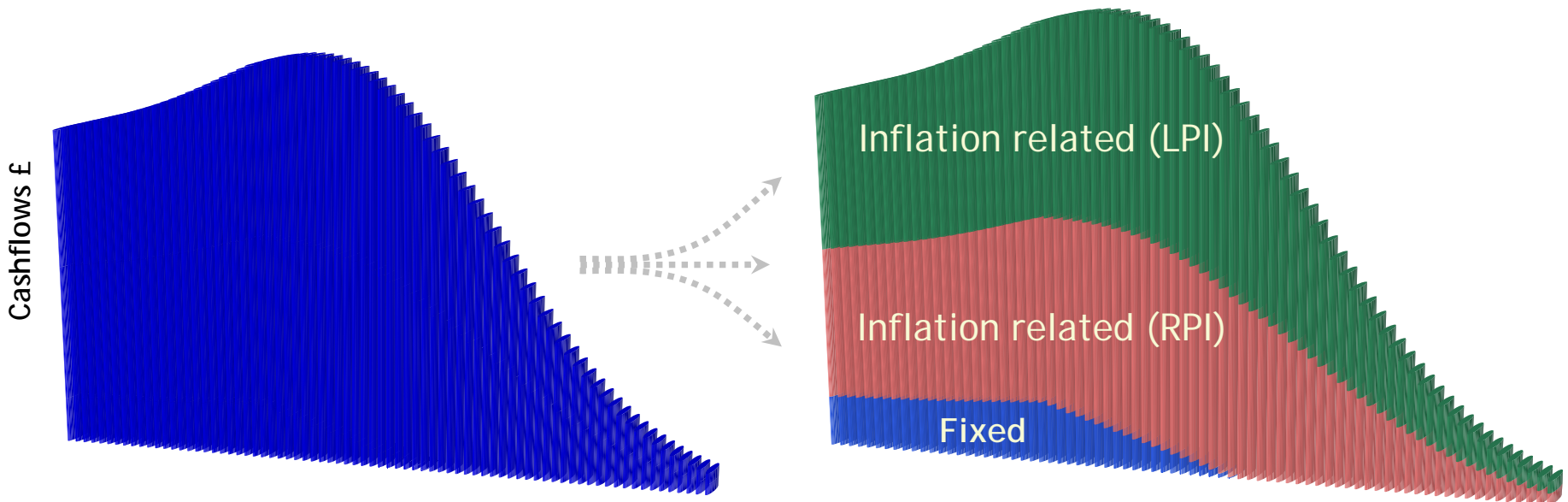


From liabilities to a benchmark (2)

- Basic idea: project cash flows using best estimates for longevity risks etc
- Need a split into real and nominal components so that inflation sensitivity can be hedged. There are two basic approaches:
 - There may be a natural split - if so, use that!
 - Project on a number of inflation assumptions and *derive* the sensitivity - actual inflation exposure often complex e.g. only sensitive pre or post retirement
- Existing accruals normally dwarf future accruals, so easiest to use that
- If future accruals are significant / material, then need to think about overall investment strategy objective: hedge PBO or also hedge future contribution rates? Likeliest outcome is that precision of hedge will be much lower.

Projected liability cashflows – split by sensitivity

Aggregate Liability Cash Flows (£)



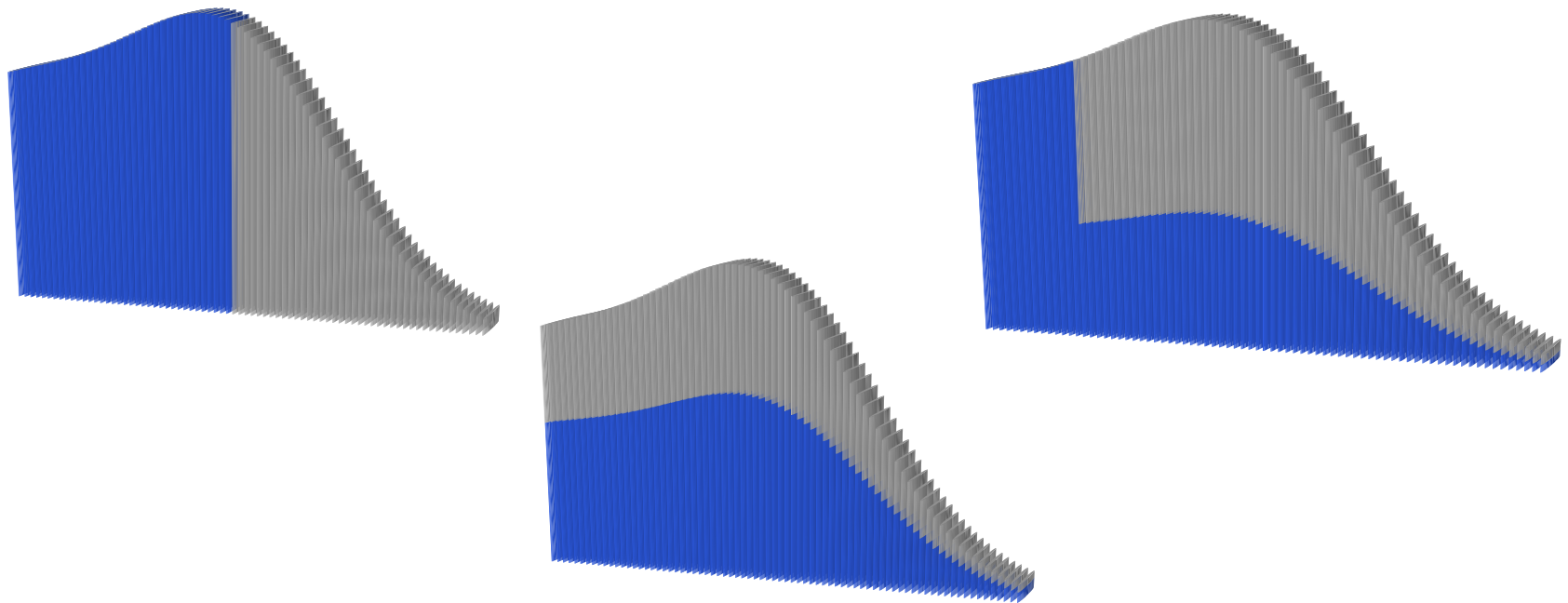
From liabilities to a benchmark (3)

- Benchmark is then the change in *value* of the projected liability cashflows.
- Need to choose an appropriate discounting approach
 - Preferably reflecting something that is investable, so that performance measurement and risk management can be sensibly undertaken
 - Usually swap discount or government bonds
- Some funds use corporate bond discount
 - E.g. discount using the yield on some favourite index
 - Difficult to manage this risk as the benchmark can't be achieved without taking risk (default risk & curve risk)

Managing against liability driven benchmarks

Manager's benchmark will not be the whole liability profile in general

- Although the scheme's benchmark may now be defined, the benchmark for an individual manager may be different / more complex

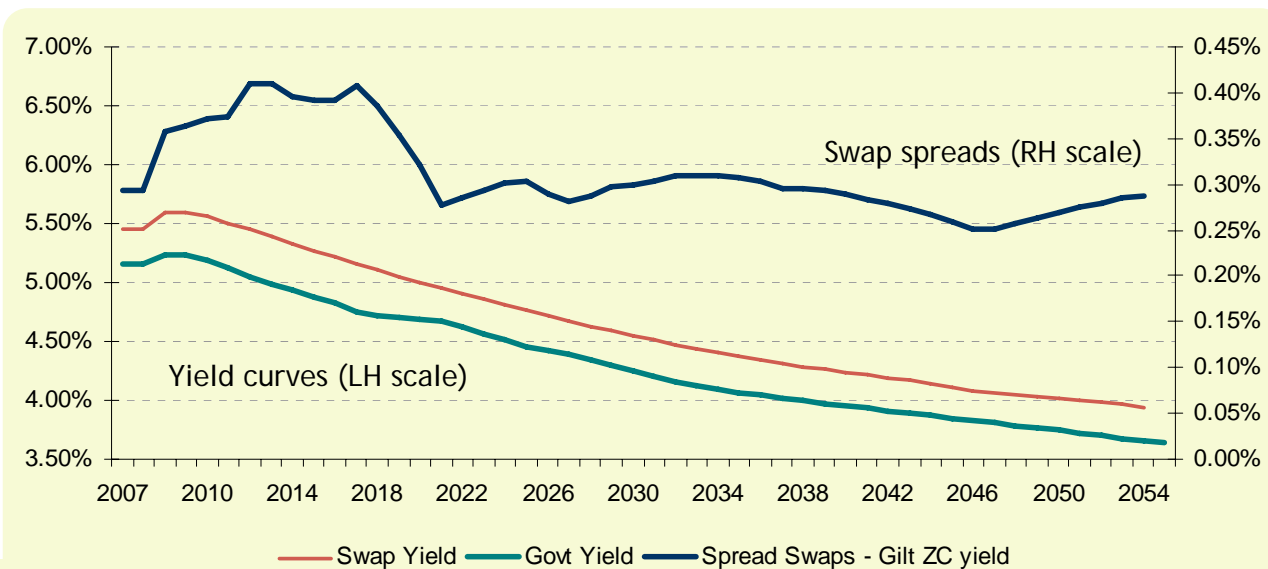


Slicing the liabilities: strategic risk management

- Horizontal slice (same % at each maturity)
 - May not be 100% funded; so only hedge funded portion
 - May split mandate across multiple managers
- Vertical slice (e.g. first 15 years' cash flows)
 - Cash flow management rather than risk management
 - Most of the interest rate risk is in the later cash flows
- Some combination
 - Match first 5 years' cash flows plus hedge the rest

Slicing the liabilities: tactical risk management

- (UK) Yield curve is currently highly inverted
- Many clients want to retain capacity to profit from a steepening
 - Even more than the profit they would gain from the fall in their liability value
 - So choose to use (e.g.) 10 year instruments rather than (e.g.) 30 year instruments to hedge their liability interest rate exposure

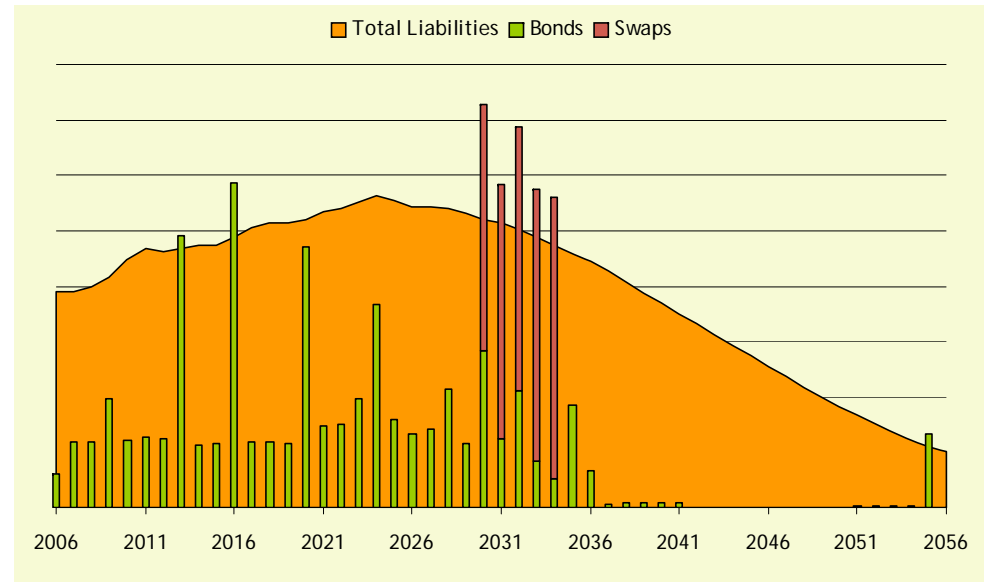


Slicing the liabilities: aggregation

- Common for many active bond managers to manage portfolios against market indices rather than liability benchmark or cash
- Pension plan wanting to retain such a manager thus faces a dilemma:
 - Lose the active management they like; or
 - Leave liability interest rate risk unhedged
- Solutions:
 - (Rare) Hedge out the bond benchmark they don't need ('portable beta'); or
 - Construct a liability hedge as the difference between the projected liability cash flows and the bond indices from the active bond managers

Benchmark crucial but need not define actual holdings

- Combination of strategic and tactical views common in practice
- Investor may define fairly precisely the set of instruments available for use in their mandate
- Example: use 30 year swap based pooled funds to hedge x% of difference between (a) liabilities and (b) existing bonds
- x and range of instruments will increase as the funding level goes up



Asset management issues

- Managing swap portfolios requires strong infrastructure capability
 - Portfolio manager needs to be able to analyse risk relative to benchmark
 - Over the counter derivatives require pricing capability
 - Collateral accounts etc need to be transparent to client, their accountant, their custodian etc
- Attribution of performance can be tricky
 - E.g. for complex mandates where there is an underlying bond index, plus a swap overlay to bring exposure into line with liability profile
 - Contributions from changes in credit spread / swap spread / curve shape
- Need to take account of how mandates will evolve
 - Liability benchmark will be updated by actuary on a regular basis
 - Balance between cash flow and risk management

Conclusions

- Move to liability benchmarks enables plans to focus on the right risks
 - Asset liability mismatch rather than active management capability
- Manager's incentives closely aligned with the plan's
- Places additional burden on asset managers
 - Must be capable of managing against these benchmarks
 - Transparent reporting required
 - Liaison with accountant / custodian