PRESENTATION TO

Pensions Actuaries Seminar

Liability Driven Investment

A Bond Manager's Perspective

PRESENTED BY
Chris Hartley

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Agenda

- Identifying pension scheme risks
- Hedging pension scheme risks
- The industry today
- Reducing scheme sensitivity to hedgeable risks
- New benchmarks for Investment Managers
- The role of active management

The "Perfect Storm?" ...everything that can go wrong will

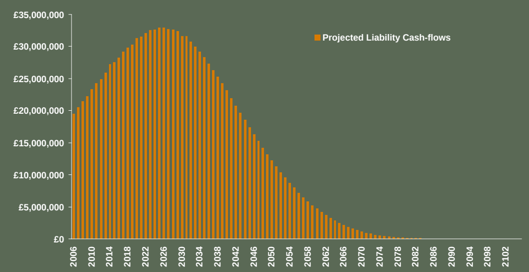
Asset markets:
- Equity markets collapse
- Long-term investment returns scaled back

Liabilities:
- Interest rates decline, credit spreads narrow
- Inflation expectations begin to rise
- Adverse demographic changes

Environment:
- Regulatory/accounting/tax changes (Myners, FRS17, IAS19, ACT)
- Maturing liabilities (DB scheme closure and move to DC)

Liability risks

PROJECTED LIABILITY CASH-FLOWS



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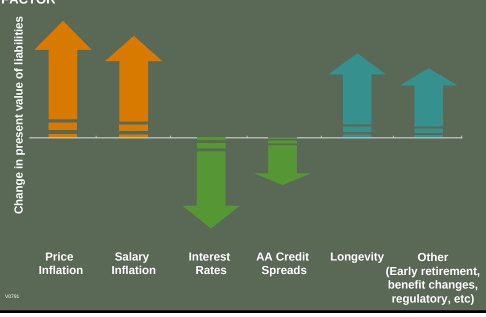
Liability risks

SENSITIVITY OF LIABILITIES TO CHANGE IN EACH FACTOR



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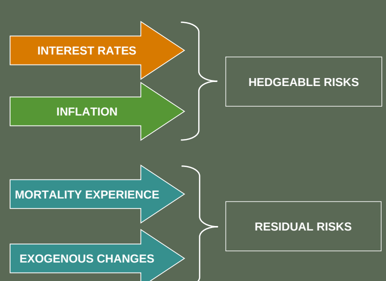
Some risks we can manage, some are more difficult …



- Target the key drivers of change
- Embed flexibility to manage residual risk

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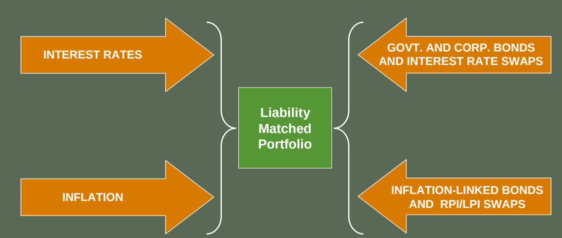
Capital markets have evolved new instruments

- 50-year maturity Government bonds – including index-linked
- Greater liquidity in long-maturity corporate bonds – up to 50 years
- A more competitive Swaps market
- Development of RPI and LPI Swaps

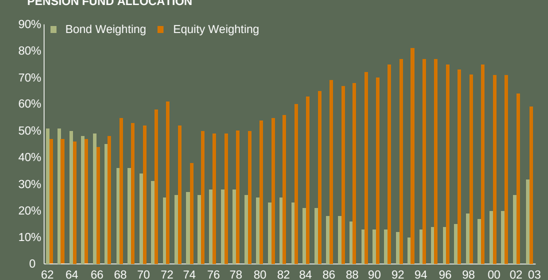
Building the liability-matched portfolio



- Minimise interest rate and inflation mismatch at minimum cost

The cult of equities

PENSION FUND ALLOCATION



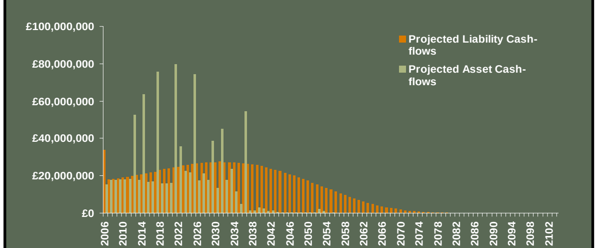
Source: Morgan Stanley/Watson Wyatt

Where are we today?
Typical pension scheme risks

	Exposure	Sensitivity	Annual Volatility	Impact
Assets				
Fund manager risk	100%	1	3 – 4%	3 – 4%
Equity	70%	1	15.5%	10.8%
Liabilities				
Interest rates	100%	20 yrs	1.1%	22.0%
Inflation	100%	20 yrs	1.0%	20.0%
Longevity				~5.0%

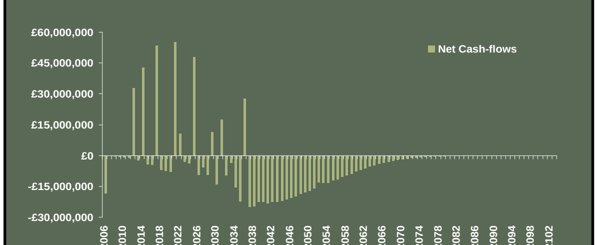
Typical cash-flow comparison (1)

PROJECTED SCHEME CASH FLOWS



Typical cash-flow comparison (2)

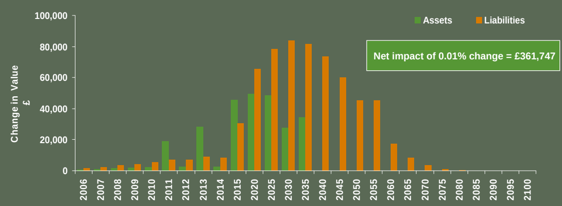
PROJECTED NET CASH FLOWS (ASSETS - LIABILITIES)



Analysing sensitivity to changes in inflation

- Example: XYZ Pension Scheme – Assets £455m

IMPACT OF 0.01% RISE IN INFLATION : CURRENT PORTFOLIO



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Modelling liabilities

Analyse the projected cash-flows in detail and split them into nominal and inflation-linked:

- Nominal liability cash-flows:
  - Modelled as zero-coupon bonds
  - Cash-flows mapped onto the relevant yield curve
  - Interest rate sensitivities calculated at each node
- Inflation-linked liability cash-flows:
  - Modelled as inflation-linked zero-coupon bonds
  - Cash-flows mapped onto the relevant inflation expectation curve
  - Inflation rate sensitivities calculated taking account of any LPI caps and floors

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The solution removes substantial un-rewarded risk from the funding level

	Impact on Scheme Funding Level (%)	
	Current Portfolio (£455m)	LDI Solution (£455m)
1 bps change in:		
Interest rates	4.52 bps	0.01 bps
	£206,053	£190
Inflation (RPI)	7.95 bps	0.01 bps
	£361,747	£250

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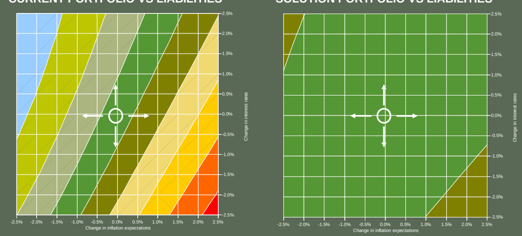
Scheme's funding level is much more stable

Change in funding level for extreme inflation and interest rate changes

CURRENT PORTFOLIO VS LIABILITIES | SOLUTION PORTFOLIO VS LIABILITIES



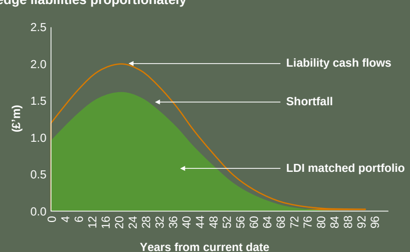
+25% to +35% | +15% to +25% | +5% to +15% | -5% to +5% | -15% to -5% | -25% to -15% | -35% to -25% | -45% to -35% | -55% to -45%

Moving from a Market Benchmark to a Scheme-specific Benchmark

Inflation and Interest Rate Risk can be effectively hedged → Scheme liabilities can be effectively matched → Scheme liabilities can become the Investment Manager's benchmark

Choice of LDI hedging basis (1)

Hedge liabilities proportionately



Choice of LDI hedging basis (2)

Hedge liabilities out to x years

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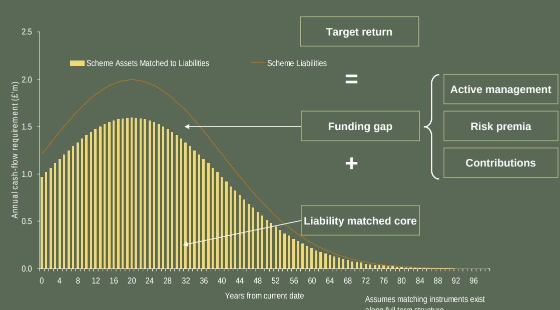
When the liability-matched portfolio's return falls short of target...



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Appropriate sources of return

EXCESS RETURN TARGET	LDI STRATEGY
■ 0%	■ Liability matched portfolio
■ From 0% to 1%	■ Credit enhanced liability matched portfolio with active fixed income management
■ From 1% to 4%	■ Liability matched portfolio enhanced with diversified alpha and risk premia

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The solution …

Objective: **Secure the Fund’s pension liabilities and eliminate the funding deficit**

Solution:

- **Remove unintended and un-rewarded risk**
  - Substantially eliminate existing inflation and interest rate mismatch
- **Diversify sources of return**
  - Reduce dependence on equity risk premium

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The evolving landscape

25 years ago	15 years ago	The Future
Peer Benchmarks	ALM & Asset Benchmarks	Liability Benchmarks

GREATER FOCUS ON LIABILITIES

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Notes

WE WOULD ALSO POINT OUT:

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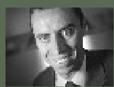

CHRIS HARTLEY – DIRECTOR, FIXED INCOME PRODUCT MANAGER

Chris joined Insight in 2002 as a director within the fixed income team with responsibility for institutional product management. Chris had previously worked at Foreign & Colonial Management Ltd (F&C) from 1992 until 2001 when F&C merged with Eureko's Asset Management Division. He joined F&C as a fixed income portfolio manager before being appointed head of the fixed income team in 1998, with responsibility for managing institutional bond portfolios invested in the sterling and European currency markets. Following F&C's move into the UK pensions market in 1996, Chris took responsibility for building its position as a fixed income specialist, in particular strengthening the investment process and team approach, and building relations with investment consultants and their clients. Chris began his financial services career in 1987 in the corporate banking division of Kleinwort Benson. Chris graduated from the London School of Economics in 1986 with a first class honours degree in Economics. He is a Member of the Securities Institute and holds the Securities Institute Diploma (MSIDip).