Liability Driven Investment?

\[ R_{ab} - \frac{1}{2} R g_{ab} = \frac{8\pi G}{c^4} T_{ab} \]

*Albert Einstein’s General Theory of Relativity, 1916*
Pension Scheme Risk

Modelled DB Scheme Risk - Impact on Deficit at 5% Level

- Longevity
- Realised Inflation / Salaries
- Real Yield
- Nominal Yield
- Assets
- Diversification
Interest Rate Risk

Example Long Bond Portfolio vs Liabilities of poorly funded scheme

Interest Rate Hedge:
30% Bonds x 50% Funded x ½ for Duration Mismatch
= 7.5% Hedged Interest Rates
Reducing Risk - Options

- Allocated more of existing assets to matching assets

Or

- Better diversification

- Leveraged matching assets
LDI Plan
Universal LDI Challenges

• Trustee Understanding
  – Leveraged Assets / Perceived Risks
  – Derivatives
  – Signing off on derisking strategy

• Additional Advisors
  – Costs
  – Control for Scheme Actuary
  – Conflicts of Interest
Did I mention bond yields are at historic lows!

Source: European Central Bank
Ireland Specific LDI Issues

- Smaller Schemes
- Trustee Expertise / Trustee Powers
- Availability of € Leveraged Fixed Income Assets
- Matching Irish inflation
Additional Funding Standard Issues

- Over hedging Funding Standard MFS risk
- Understanding short-term behaviour of Leveraged assets for Funding Proposals
- Treatment of leveraged assets in funding standard reserve calculation
Low LDI adoption in Ireland

The 3 Pillars of Inertia

Market timing

Statutory funding

Complexity
“Now isn’t the right time to hedge”

- Three main timing issues
  - Yield levels / market timing
  - Regret risk
  - Affordability
Yield levels / market timing

- Deferring hedging assumes Trustees can defer risk management
- ...and that the path to securing all benefits is not time dependent

A stylised decision tree

- Time horizon...
  - 5 years
  - 5-20 years
  - 20+ years

- Covenant strength...
  - High
  - Medium
  - Low

- Cashflow position...
  - Negative
  - Neutral
  - Positive

- Resultant path dependency:
  - High
  - Medium
  - Low

Most Irish DB pension schemes

Source: Willis Towers Watson
Yield levels / market timing

- Can you afford not to hedge now?
Regret risk & other bad behavior

- Liability hedging conversations are rife with behavioral issues

<table>
<thead>
<tr>
<th>Behavioral bias</th>
<th>Some examples from the field...</th>
<th>Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchoring</td>
<td><em>So yields are low, therefore hedging is unattractive</em></td>
<td>Fixation on return and not risk management / sustainability</td>
</tr>
<tr>
<td>Gamblers fallacy</td>
<td><em>Yields are at record lows, they can’t stay here</em></td>
<td>Naïve belief in mean reversion and lack of consideration for regime change</td>
</tr>
<tr>
<td>Overconfidence</td>
<td><em>Bonds are expensive, let’s wait until yields are 2% higher to hedge</em></td>
<td>The individual has superior insight to knowledge of the crowd (the market)</td>
</tr>
</tbody>
</table>
Regret risk & other bad behavior

“Know thyself”
Socrates
Affordability (1)

- Affordability is a problem in a 2D world (growth, matching)
- Not a problem in a 3D world (growth, matching, leverage)

Allocation of capital between growth matching assets dictates expected risk / return

Low risk, low return

High risk, high return

Lower risk, high return

Extended duration / leverage within LDI enables risk reduction without expected return loss

Outperformance of asset relative to liabilities
Affordability (2)

Traditional equity bond portfolio

Asset allocation

- Liability hedge ratio 35%

Portfolio with LDI

Asset allocation

- Liability hedge ratio 75%

Funding level volatility = 11.3%

Funding level volatility = 7.7%

- Growth asset risk
- Credit risk
- Net interest rate & inflation risk
- Total risk

- Growth asset risk
- Credit risk
- Net interest rate & inflation risk
- Total risk
“But we’re focused on our statutory funding”

- Minimum Funding Standard (MFS) is not a basis for good long-term risk management

- Main statutory funding issues
  - Managing risk on multiple conflicting liability measures
  - Yield reversion
  - Funding Standard Reserve (FSR) treatment
Managing risk on multiple liability measures (1)

- Typical Irish scheme
  - Still below or just above 100% on MFS basis
  - Still concerned with meeting the MFS / FSR
  - Hedging 60-100% of MFS interest rate risk
  - Hedging 20-40% of total cashflow duration
  - On a journey to better funding and more hedging
Managing risk on multiple liability measures (2)

• LDI is just as important for schemes focused on statutory funding
  – Path dependency / risk management
  – Making assets work harder
  – Funding Standard Reserve
  – Building risk management infrastructure for the future
Yield reversion

- Increased hedging will reduce the positive impact of assumed yield reversion...
- ...but can Trustees rely on yield reversion

- Need regulatory flexibility
Funding Standard Reserve

Amount:
- 15% of funding standard liabilities less EU sovereign bonds/cash held plus
- Effect on funding standard liabilities of ½% drop in interest rates less the amount by which resources would increase as a result of the same change

- LDI reduces FSR interest rate sensitivity
- May add to FSR due to definition
  - Derivatives not an offsetting asset
  - Cash definition somewhat ambiguous
- Issues are not insurmountable
“It’s too complex”

- Trustees already accept & outsource complexity
- Simple approaches capture much of the benefit
- Focus on the key characteristics not the minutiae
Conclusions

• Risk management is critical
• LDI is a powerful & under utilised tool
• Current issues are not insurmountable