Society of Actuaries in Ireland

LDI Strategies In Ireland
Challenges & Opportunities

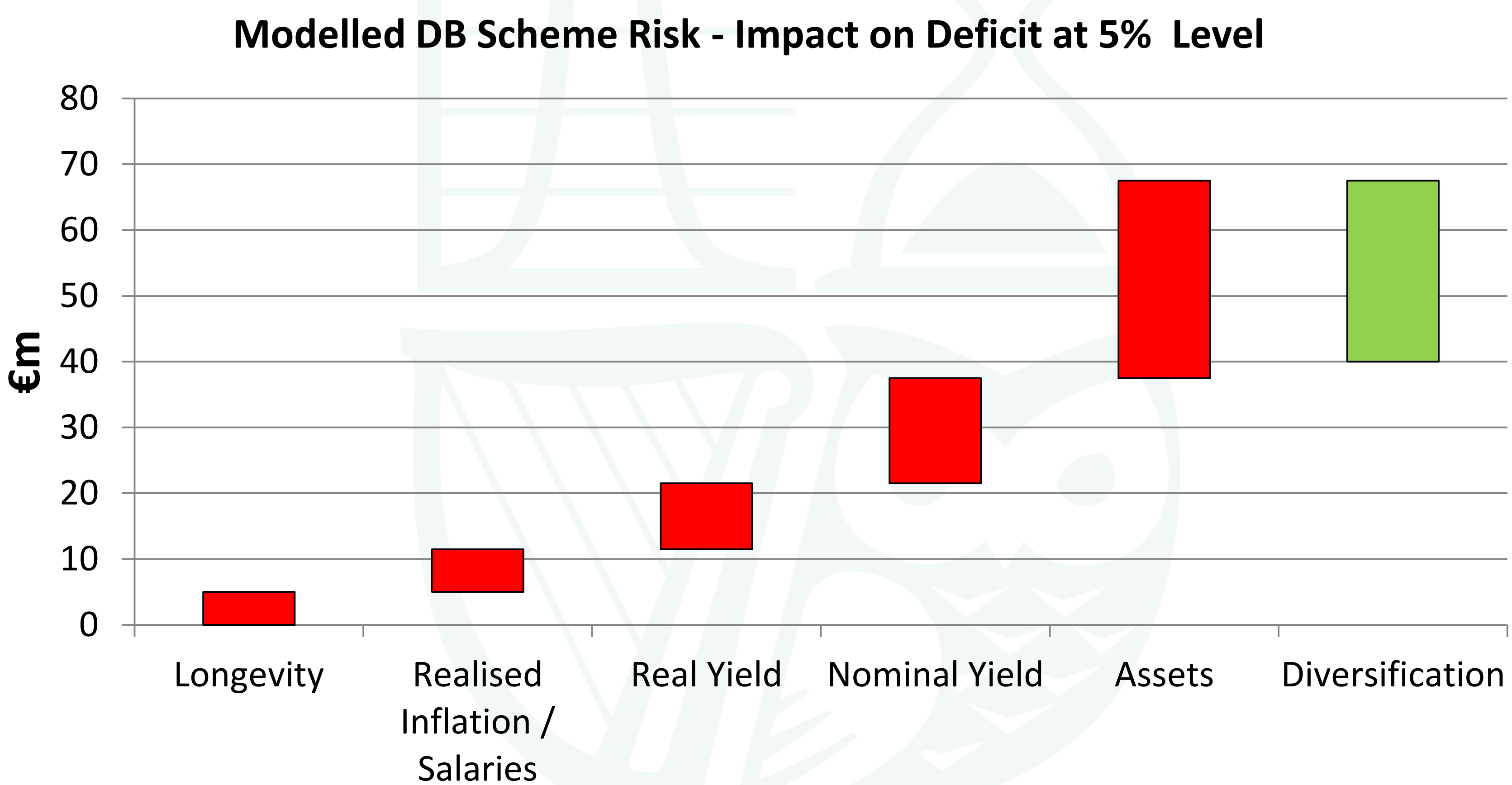
23rd February 2016

Liability Driven Investment?

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

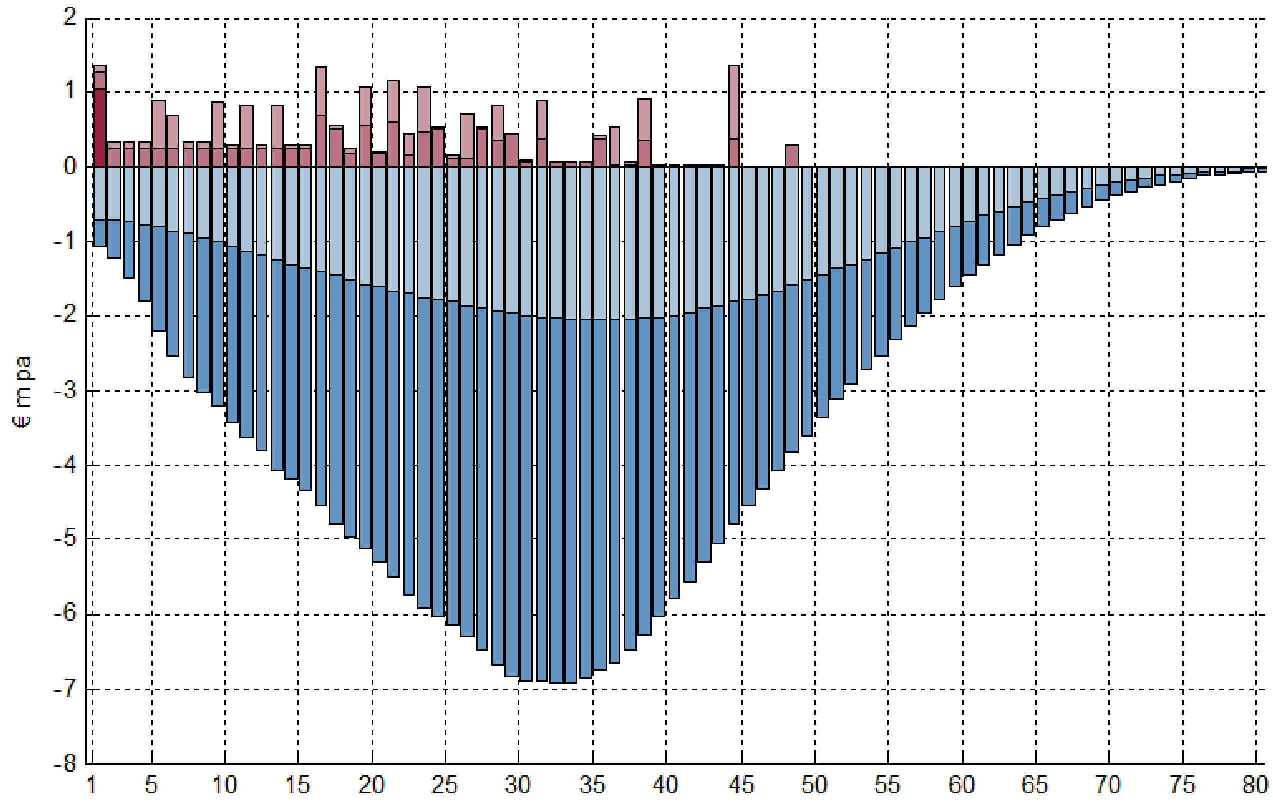
ALBERT EINSTEIN'S GENERAL THEORY OF RELATIVITY, 1916

Pension Scheme Risk



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

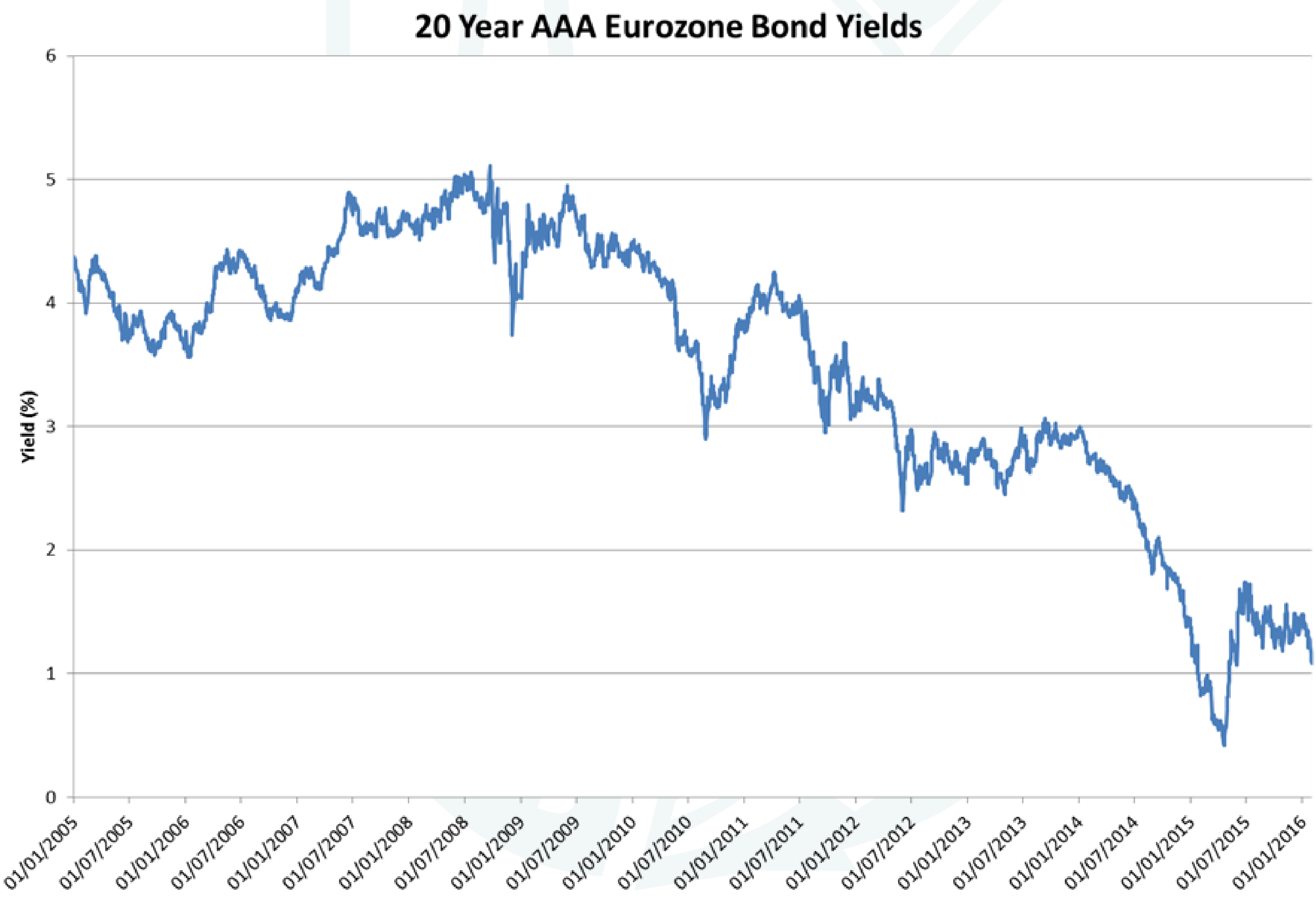
LDI Plan

Dublin
United Kingdom
Denmark
Belarus
Poland
Germany
Ukraine
Austria
France
Romania
92 h
6,362 km
92 h
6,388 km
Portugal
Greece
Tunisia
Morocco
Algeria
Libya
Egypt
Western Sahara
Niger
Timbuktu
Chad
Sudan
Burkina Faso
Guinea
Nigeria

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

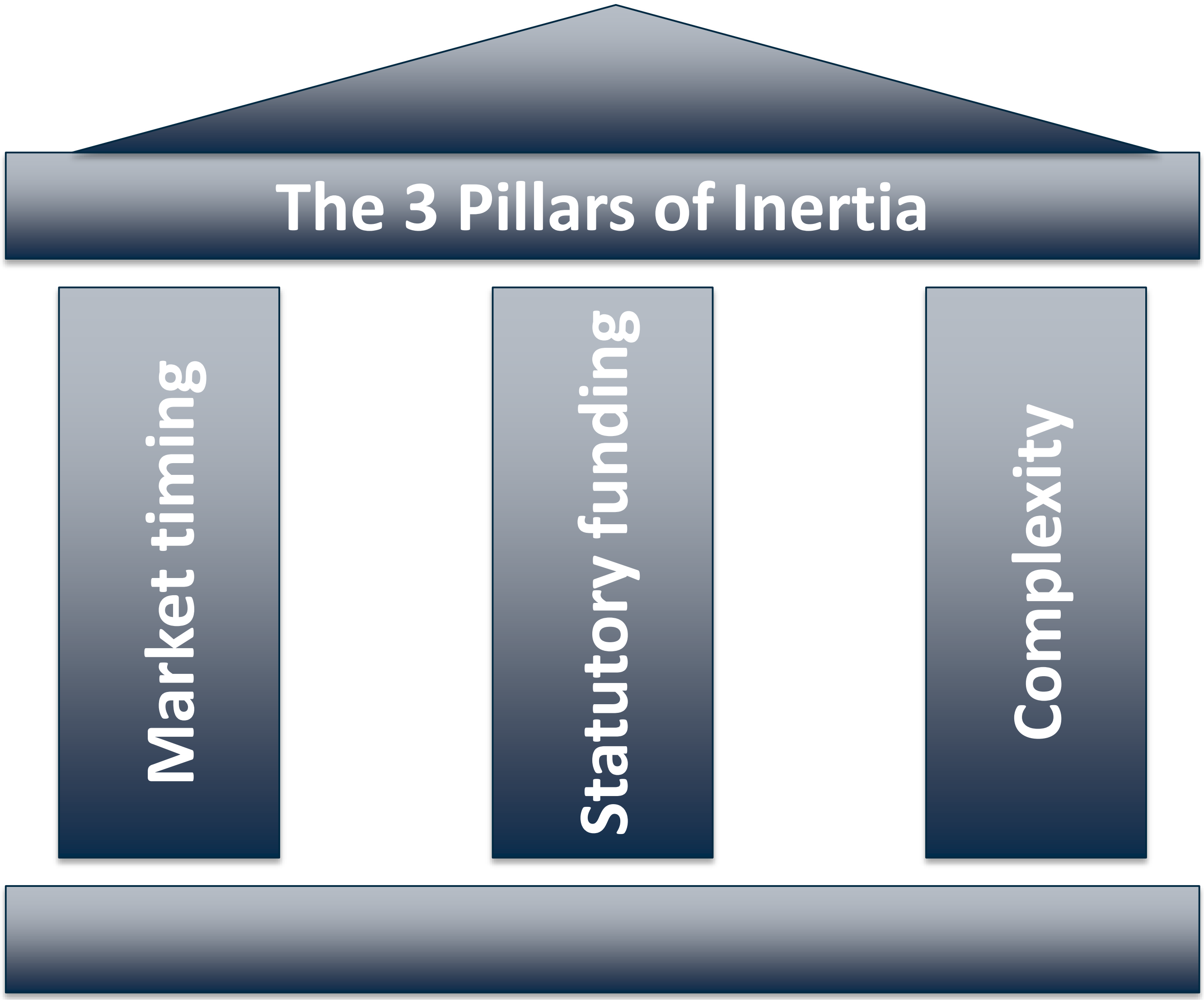
- Over hedging Funding Standard MFS risk
- Understanding short-term behaviour of Leveraged assets for Funding Proposals
- Treatment of leveraged assets in funding standard reserve calculation

Society of Actuaries in Ireland

LDI Strategies In Ireland
Challenges & Opportunities

23rd February 2016

Low LDI adoption in Ireland

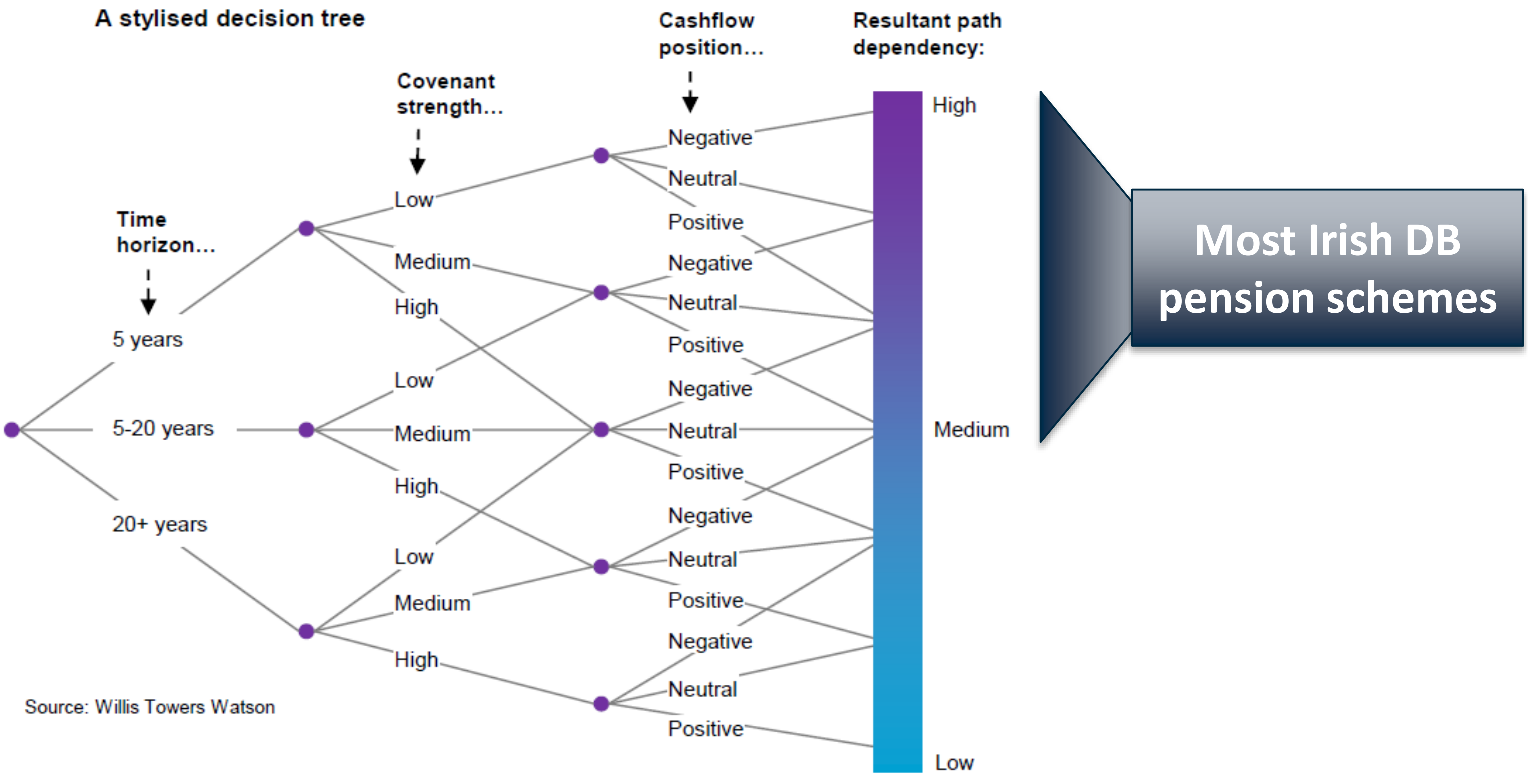


“Now isn’t the right time to hedge”

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

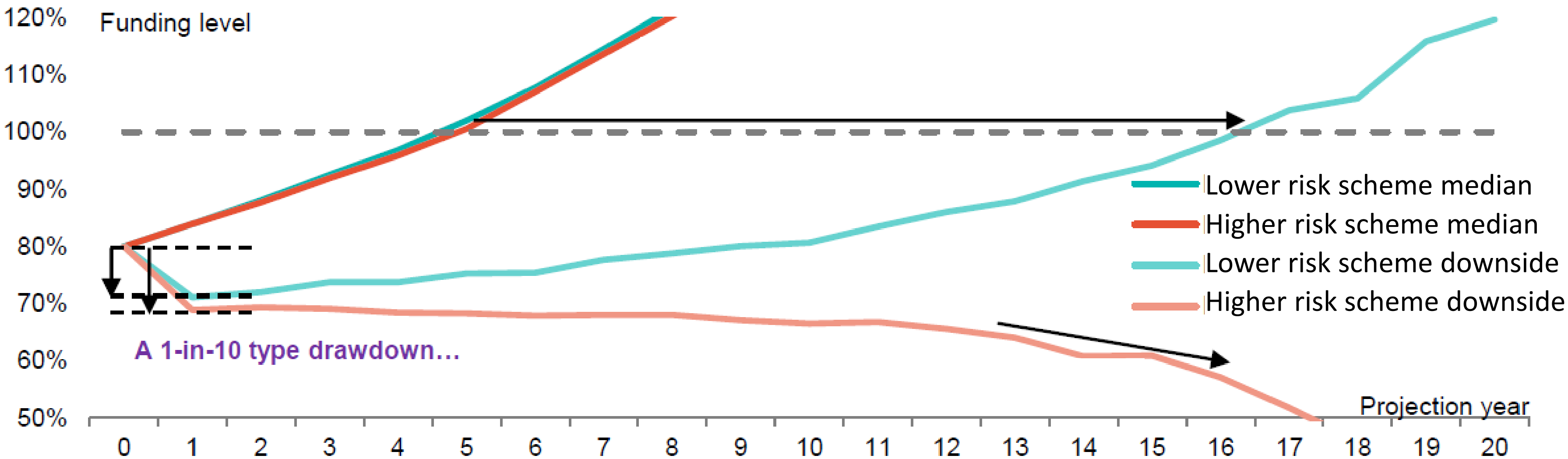
Yield levels / market timing

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



Yield levels / market timing

- Can you afford not to hedge now?



Regret risk & other bad behavior

- Liability hedging conversations are rife with behavioral issues

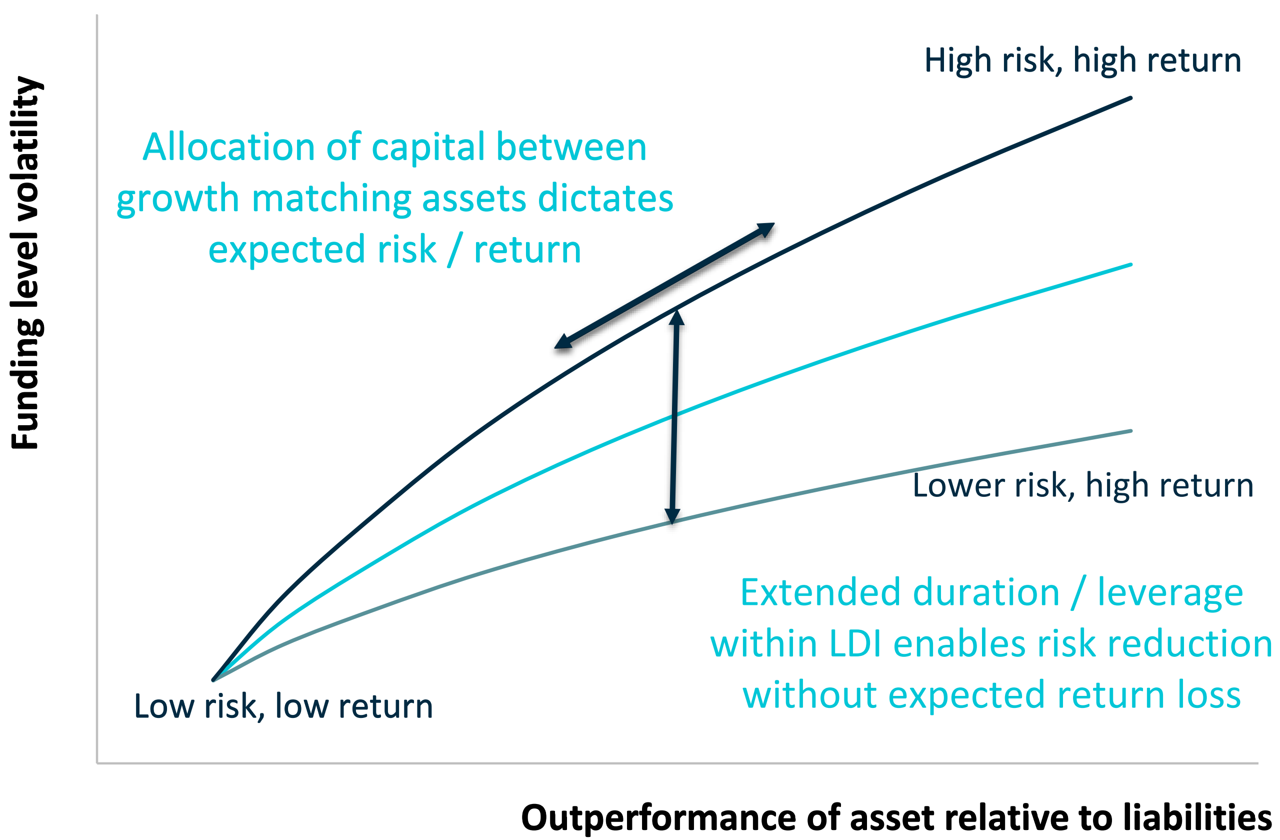
Behavioral bias	Some examples from the field…	Implication
Anchoring	*So yields are low, therefore hedging is unattractive*	Fixation on return and not risk management / sustainability
Gamblers fallacy	*Yields are at record lows, they can't stay here*	Naïve belief in mean reversion and lack of consideration for regime change
Overconfidence	*Bonds are expensive, let's wait until yields are 2% higher to hedge*	The individual has superior insight to knowledge of the crowd (the market)

Regret risk & other bad behavior

"Know thyself"
Socrates

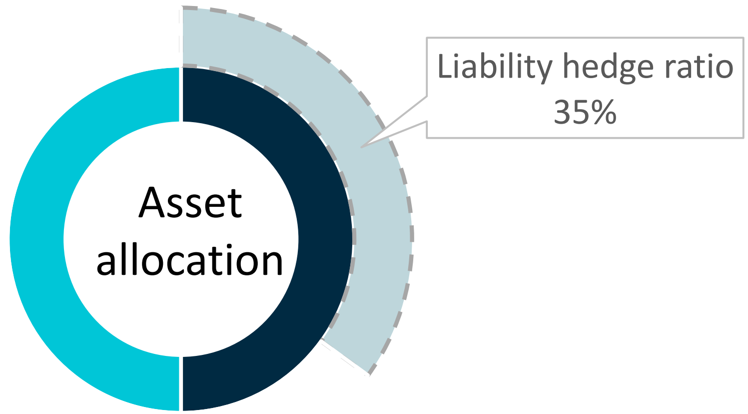
Affordability (1)

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

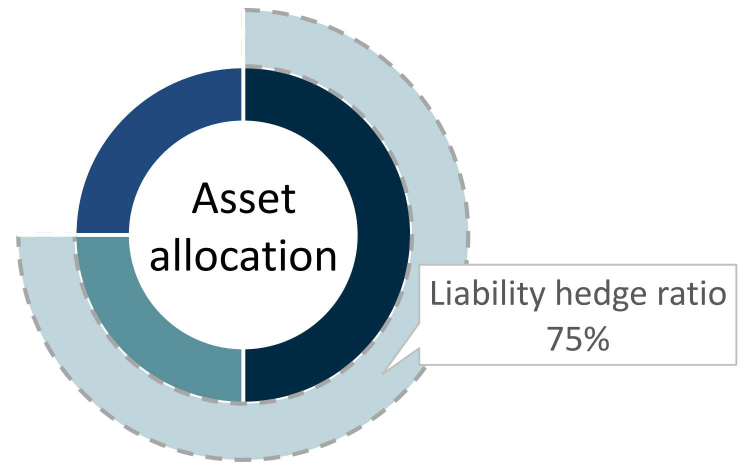


Affordability (2)

Traditional equity bond portfolio

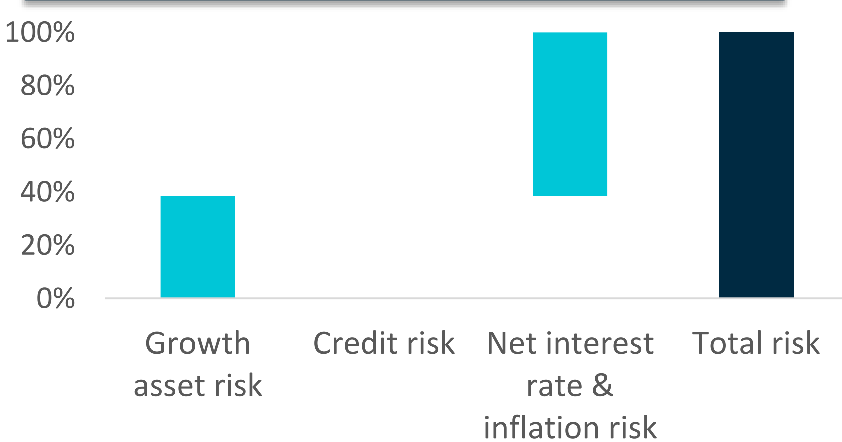


Portfolio with LDI

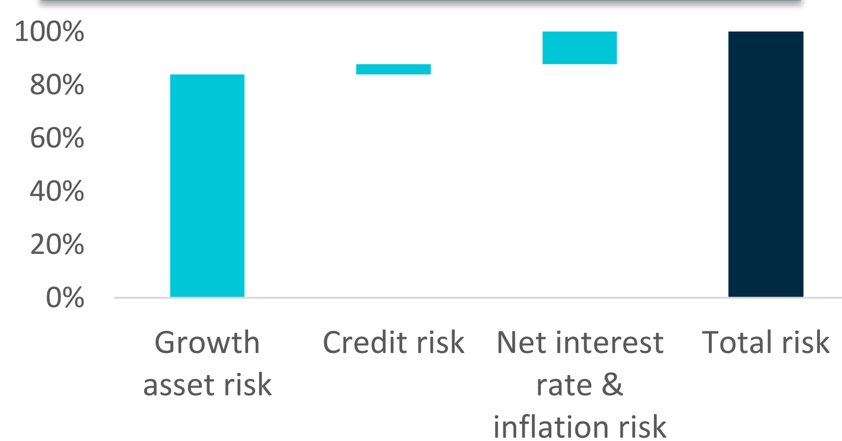


■ Growth assets ■ Government bonds ■ Credit assets ■ LDI Liability hedge ratio

Funding level volatility = 11.3%



Funding level volatility = 7.7%



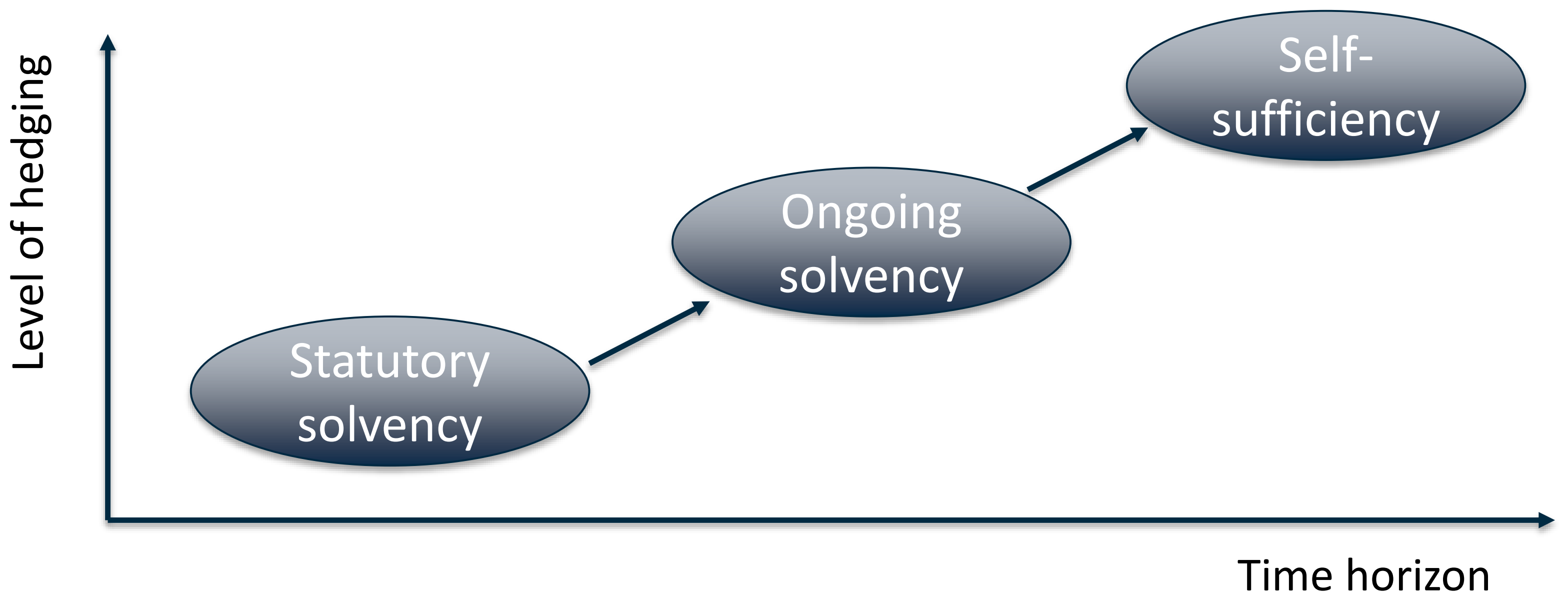
“But we’re focused on our statutory funding”

- 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 <u>plus</u>
- 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”

Central clearing

Leverage

Which liability basis to hedge?

Yield reversion

Expected return?

Minimum Funding Standard

Collateralisation

Instrument selection

Inflation basis risk

Counterparty risk management

- 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