

Longevity Bond

A pension fund perspective

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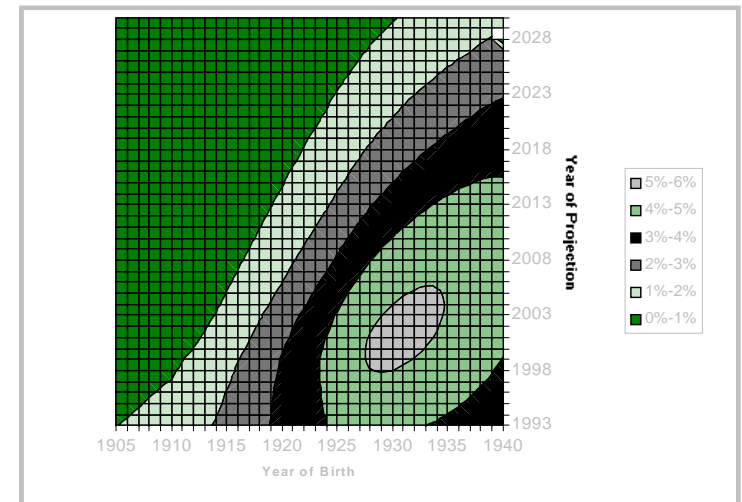
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Residual risks

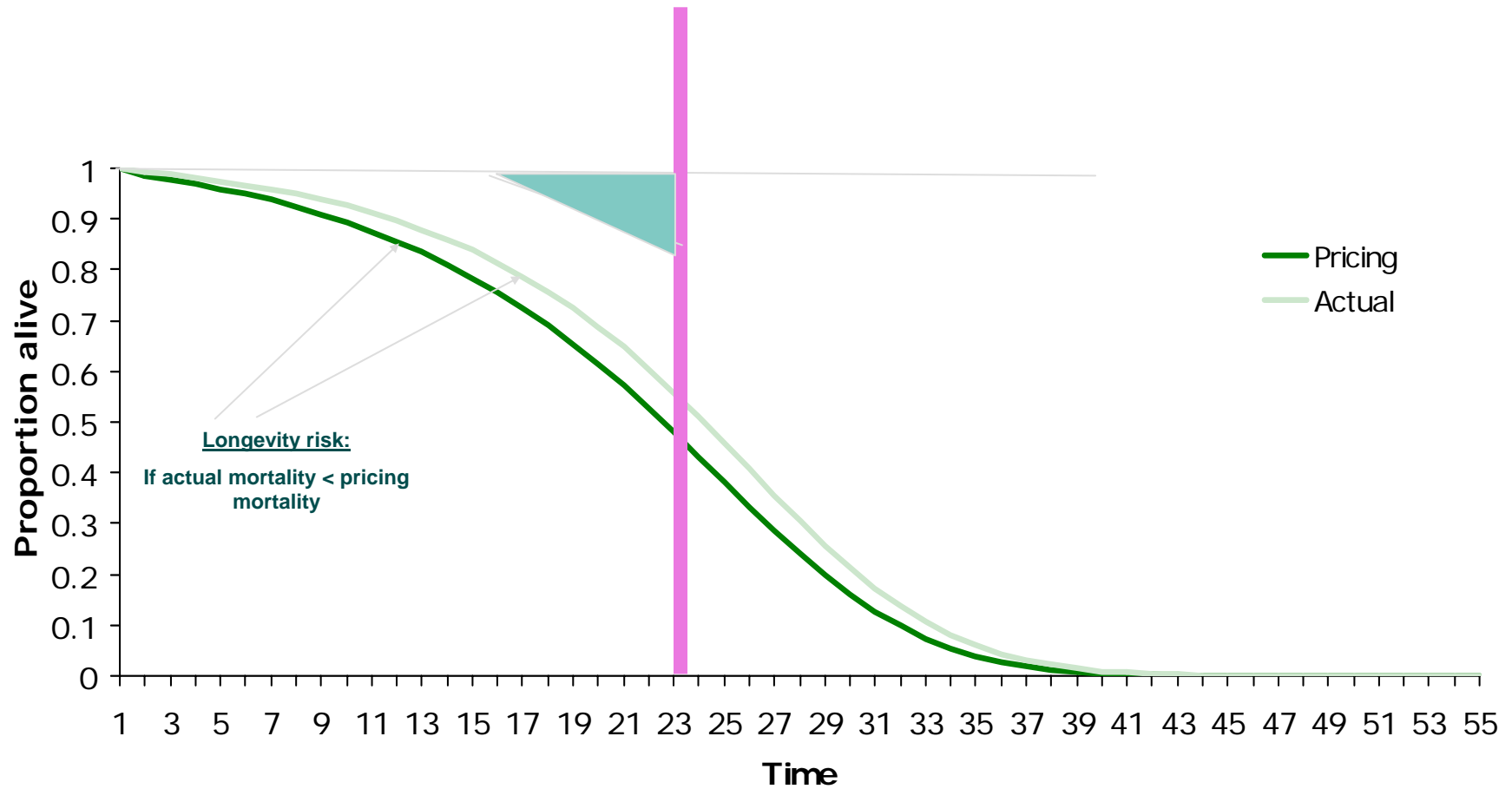
- **Tail risk**
 - difficulty in getting reinsurance cover for risk over 25 years into the future
- **Basis risk**
 - mortality experience is different to that used for the longevity bond
- **Uncertainty of mortality**
 - size of pension scheme
 - different cohorts
 - Allowance for improvements in pricing

Contour view of CMIB cohort mortality improvement



Ideal structure for longevity bonds in pension schemes

The ideal longevity bond would match the mortality experience and benefit design of the actual pension scheme



Some ideas for refinement

- Tail risk
 - lump sum payment e.g. 10 times' last payment
 - PV of tail
- Basis risk
 - use amounts or experience of a few large schemes to better reflect mortality experience
- Pricing
 - expensive to obtain reinsurance cover
 - limited capacity in the reinsurance market
- Inflation risk
 - existing longevity bond offer little protection against inflation
 - index-linked longevity bond?

Who will take the other side of the risk?

- Government - already has too much longevity risk on its books so why would it 'double-up'?
- Reinsurers - how big is their appetite?
 - historically there have been few longevity reinsurance deals
 - limitations on maturity
 - Future of longevity bonds dependent on capacity of reinsurance market
- Pharmaceutical companies without DB pension plans (what about Residential Care Homes & Housing Associations?)
- Banks take the super senior risk - what improvement in mortality is equivalent to super AAA?

Alternative approaches to longevity bonds

Benefit Cashflow Projection

This chart illustrates the projected benefit payments for a typical UK defined benefit pension scheme

If pension scheme wants to manage risk – cashflow match expected payments based on own expected longevity assumptions

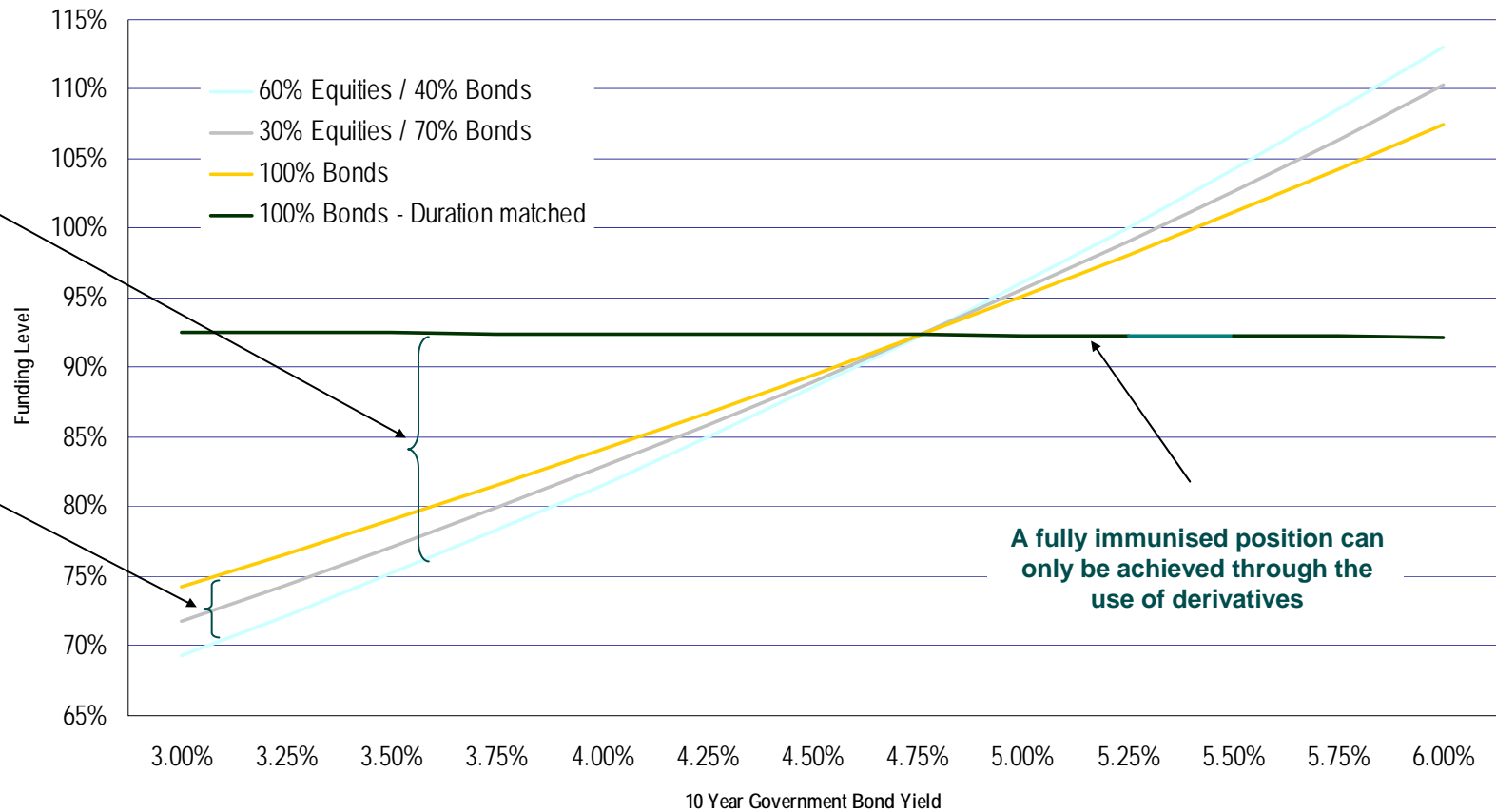


Pension schemes have other worries eg duration mismatch

- Pension fund liabilities are by nature of long duration (approximately 15 - 20 years)
- There are not bonds available of sufficient duration to match the liabilities
- The impact of sensitivity to interest rates associated with typical duration mis-match is often not recognised

Impact of current duration gap
In these scenarios, changes in interest rates impact the liabilities more than the assets

A traditional investment strategy can only partially reduce the duration mismatch

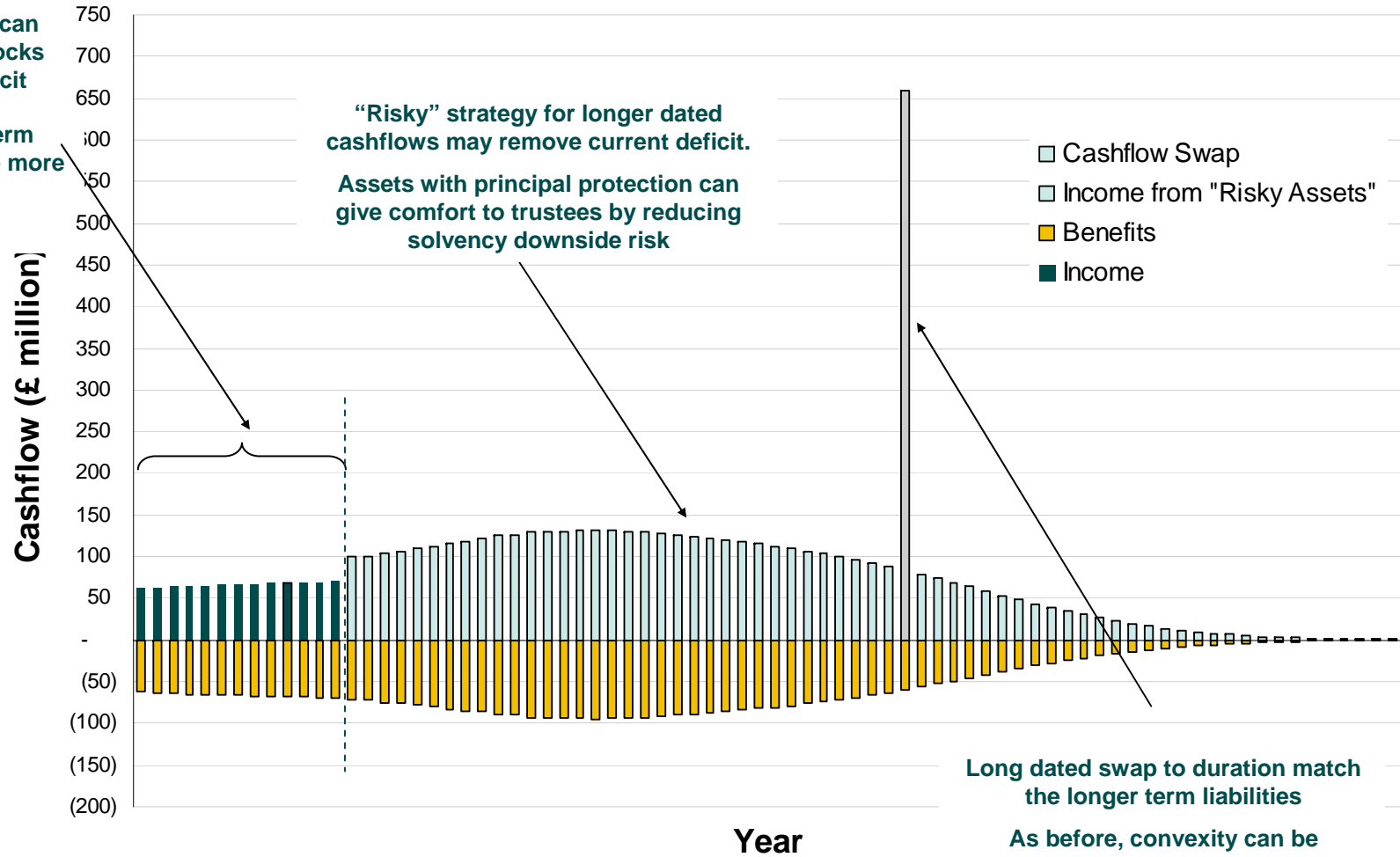


Longevity bonds are neat but what about the deficit?

Integrated Solution

Cashflow matching can be expensive and "locks in" the current deficit

Match the near term liabilities, which are more predictable



Long dated swap to duration match the longer term liabilities

As before, convexity can be matched using a series of swaps

Longevity Bond

Licensed to pay pensions

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