

Issue 105: Longevity risk solutions for all?

Led by the Babcock and Royal Sun Alliance deals earlier this year, there has been a surge in interest from UK occupational pension schemes seeking to hedge their longevity risk. To date, most of the interest from pension schemes has been focused on hedging only the longevity risk of the scheme's current pensioners. This has involved using what is known as a "bespoke" or "scheme specific" longevity swap, where those liabilities typically lie somewhere between £500M and £2bn. This is because, at this size and type of deal, the market has been priced most competitively.

However, as the market continues to expand, many schemes are considering an alternative form of longevity hedging product, known as the "index-based" or "population" hedge. This is of particular interest to schemes that fall outside the pricing "sweet spot" of £500M to £2bn and to those schemes that have considerable non-pensioner liabilities.

What is an index based longevity hedge?

Certain investment banks provide a market in a type of derivative contract which is linked to the observed life expectancy of a given population (e.g. "England and Wales" or "Scotland") as measured by a specified index (e.g. Office for National Statistics). Essentially, these derivatives allow schemes to lock-in to a fixed probability of death ("mortality rate") to apply at the end of a specified term (typically, 10 years) and over a given range of ages. These derivatives are typically termed "q-Forwards", in that you are effectively purchasing a "forward prices" on the observed probability of death in the national population, known in actuarial terminology as "q".

Typically, the index derivatives are sold in blocks according to age and sex (for example, it is possible to buy derivatives for males aged 60-69). By analysing the composition of the scheme's membership and exposure to longevity risk, it is possible to determine the combination of blocks that best matches the longevity risk faced by the scheme. This process is known as "calibrating the hedge".

To the extent that the hedge does not perfectly match the longevity risk faced by the scheme, then there is some "basis risk" faced by the scheme.

Why use an index solution instead of a bespoke swap?

Index based solutions may be of particular interest to trustees who want to reduce their scheme's exposure to longevity risk and where:

1. The scheme is not large enough to attract competitive pricing for a bespoke longevity swap;
2. The trustees wish to hedge the longevity risk in respect of non-pensioners either as well as or instead of the longevity risk in respect of pensioners; or
3. Index-based solutions are intended to be a more liquid instrument than a bespoke longevity swap. As such, they would appeal to trustees who have concerns over signing a long term contract with a provider and would prefer a more liquid solution.

How does this compare with a bespoke longevity swap?

On the plus side:

- Index derivatives should be easier to trade as the derivatives relate to a standard index population rather than a specific scheme's pensioners.
- Index solutions are generally easier to set up (they require less documentation and contractual work to set up).
- Index solutions are easier to obtain for younger members (whereas bespoke swaps are typically focused only on those currently in receipt of a pension).

However, trustees and sponsors need to take care when assessing index solutions:

- Index solutions can leave a significant 'basis risk' – the risk that the life expectancies of the pension scheme's members do not move in line with the life expectancy of the index population. It is possible that the scheme liabilities increase as its members live longer than expected but the value of the index derivatives goes down as the index population on average live shorter than expected.
- Index solutions only provide a hedge for the present value of the liabilities (whereas a bespoke longevity swap hedges the cashflows payable) and they need periodic rebalancing to ensure the right combination of age/sex blocks is held.
- Index solutions can be more difficult to understand, communicate and monitor (as they are not directly related to the benefits payable from the pension scheme).
- Index solutions only provide a hedge against longevity improvements (whereas bespoke longevity swaps can also provide protection against there being a higher than expected proportion of covered members dying with a spouse or dependant's pension coming into payment).

Is this a practical solution or just theory?

Longevity index derivatives are already in use within the insurance sector; for example the insurance company Lucida plc set up a longevity derivatives contract with JPMorgan towards the end of 2008.

But a major barrier to this market taking off is in understanding the level of residual 'basis risk' that a pension scheme might be left with – which means an index solution will, at best, only partially hedge the longevity risk the scheme is trying to remove. If there is not a significant pricing difference, most trustees have so far preferred a bespoke hedge. However, we are seeing a growing number of circumstances where a bespoke hedge has either not been feasible or affordable – in which case an index solution has been attractive for providing a reasonable level of protection against a pension scheme's longevity risk.

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