JULY 2022

LONGEVITY HEDGES
HOW PRICING WORKS

PENSION SCHEMES ARE INCREASINGLY SEEKING TO HEDGE LONGEVITY RISK USING LONGEVITY SWAPS. A KEY QUESTION IS HOW SUCH TRANSACTIONS ARE PRICED. THIS PAPER OUTLINES THE FACTORS REINSURERS CONSIDER WHEN PRICING A LONGEVITY SWAP.

When a pension scheme enters into a longevity swap it must pay a series of fixed cashflows to a reinsurer (via an insurer). These fixed cashflows are effectively the price that the scheme is paying to remove its longevity risk. They will reflect two factors:

1. a best estimate projection of the cashflows likely to be payable to surviving scheme members for the next 50 to 60 years, and
2. a risk fee that reflects the level of risk to which the reinsurer is exposing itself by entering into the swap and taking on the scheme's longevity risk.

In this short paper we outline how a reinsurer determines the best estimate cashflows and an appropriate risk fee.

BEST ESTIMATE CASHFLOW PROJECTION

The best estimate cashflow projection is the reinsurer's best guess of the aggregate monthly pension amount that will be paid to the individuals underlying the longevity swap during the remainder of their lives. As such, the projection will take account of the following information:

- Member details
- Current pension amounts
- Benefit structure (e.g. pension increase types and contingent spouses benefits)

In order to generate a projection of the future, this information must be combined with an estimate of the life expectancy of each individual. This view of individuals' life expectancy is determined by considering current mortality rates (i.e. the probability of death at each age over the next 12 months) and how those rates might evolve in future (e.g. in response to medical developments or anticipated lifestyle changes).

Rather than use generic, population-wide mortality rates, the reinsurer must clearly use mortality rates that are appropriate to the individuals. There are two main ways that this can be done:

- **Socio-economic models:** Much like when pricing car insurance or life insurance, the reinsurer feeds member-specific data (e.g. age, gender, postcode, occupation) into its socio-economic model, which then generates a mortality table. The socio-economic model will have typically been pre-populated with vast amounts of historical mortality data, which is then used to determine the likely mortality for our individual given their specific characteristics.
- **Scheme-specific analysis:** For larger schemes with more members and a substantial amount of historical deaths data, the reinsurer will typically carry out a scheme-specific mortality analysis, placing no reliance on external data. In this case the reinsurer will use the historical scheme data to derive mortality rates for member sub-groups (e.g. females with pensions of more than £5,000 pa). The mortality rates for current scheme members will then simply be a function of which sub-group they belong to.

Although the current mortality rates will be member-specific, the longevity improvement assumptions that determine how those rates evolve through time typically won't be. They will often be derived from an analysis of population-wide data (e.g. the England and Wales data published by the Office for National Statistics).

This reflects the fact that you need a large body of data with a long history in order to produce a credible projection of the future. For example, five years of mortality data for a large pension scheme may be sufficient to determine suitable current mortality rates, but it would be of little use in determining how those rates might develop over the next 50 years.

As such, most reinsurers will use an approach similar to that underlying the model produced on an annual basis by the Continuous Mortality Investigation (CMI). The CMI model, which is used by most pension schemes, takes in historical England and Wales mortality data and combines it with a range of parameters to derive future longevity improvement rates. Reinsurers would then vary the parameters to reflect their view of factors such as the very long-term improvement rate and how quickly we might reach those rates. More sophisticated reinsurers might use different sets of improvement parameters for various socio-economic groups.

LONGEVITY RISK FEE

The longevity risk fee is the amount that the pension scheme must pay above the best estimate projection for the reinsurer to take on the longevity risk. If the reinsurer sets the fee too low, they will have a significant probability of making a loss, but if they set it too high it will be unattractive to potential clients. Reinsurers must therefore find the right balance between generating a sufficient return on their capital while at the same time offering a commercially attractive price.

The key factors a reinsurer will consider are:

- **Average age:** The younger the members, the greater the probability of their longevity deviating from initial expectations; they will typically have a greater probability of benefitting from future medical advances and more time to develop healthier lifestyles. As such, the younger the average age, the higher the risk fee is likely to be.
- **Benefit structure:** Higher pension increases magnify the impact of an individual living longer than expected. For example, extending life expectancy by one year in the case of a non-increasing pension might increase the current value by 4%. In the case of a pension linked to the inflation, the increase would be closer to 6%. As such, the more generous the pension increases, the higher the risk fee is likely to be.

PREPARING TO APPROACH THE MARKET

To increase their chances of securing the best possible pricing, there are a number of practical steps that a pension scheme could take before approaching the longevity swap market:

- **Specify members to reinsurer:** This will typically be all current pensioners, excluding any covered by an existing buy-in, but reinsurers are increasingly open to including deferred members.
- **Data preparation:** The underlying data in respect of the members to be reinsured must be clean and up to date. Scheme-specific mortality data should also be prepared in a similar way. An early conversation with a selection of the reinsurers can clarify what data should be provided.
- **Benefit structure:** A document setting out the nature of the benefits payable to the members must be prepared (e.g., pension increase types, payment timings, young spouse adjustments). In the case of a longevity swap, it may be worth simplifying some of the more complex benefits.
- **Existence check:** Reinsurers will expect schemes approaching them for a quotation to have carried out some form of existence-checking exercise to confirm the data relatively recently.
- **Rationale and process:** To secure the engagement of multiple reinsurers, it is important that schemes can explain why they are looking to put in place a longevity swap and to have given thought to the implementation process.

In our experience, schemes that take the time to fully prepare ahead of approaching the reinsurance market are more likely to benefit from a competitive process, enabling them to negotiate the best possible pricing and terms.

IMPORTANT INFORMATION

RISK DISCLOSURES

Investment in any strategy involves a risk of loss which may partly be due to exchange rate fluctuations.

Any projections or forecasts contained herein are based upon certain assumptions considered reasonable. Projections are speculative in nature and some or all of the assumptions underlying the projections may not materialize or vary significantly from the actual results. Accordingly, the projections are only an estimate.

ASSOCIATED INVESTMENT RISKS

Longevity

General advice

- The information within this document, and any related presentation, is intended only to provide general and preliminary information and does not address the circumstances of any particular customer. The content does not constitute professional, investment and/or financial advice, nor does any of the information herein constitute a complete statement of the matters related to this product or the relevant laws relating thereto.

Investment advice

- Insight will not provide any advisory services (including the provision of “proper advice” pursuant to section 36 of the Pensions Act 1995) to customers in connection with the Insight Longevity Platform (the Platform). Customers must ensure the suitability of the Platform in relation to their particular circumstances and are required to seek their own independent tax, regulatory and legal advice in connection with the Platform.

Third party

- Specific service providers that may be referenced within this document or during any associated presentation are intended as examples only and such references should not be taken as an endorsement or recommendation by Insight. Customers are required to conduct their own due diligence in consultation with their professional advisers prior to the selection and engagement of any such service providers and customers retain ultimate responsibility for such engagements.

Reliance

- Although the material contained herein, and any information which may be given in a related presentation, was prepared based on information and advice that Insight believes to be reliable, Insight is making the information regarding the Insight Longevity Platform available to the customer without representation or warranty, express or implied, by Insight as to the accuracy or completeness of that information and without any responsibility on Insight's part to revise or update the information. In addition, the customer should be aware that some of the information provided (for example pricing) is indicative only. The customer is required to make its own analysis and decisions with respect to the Platform and the associated documents and agreements, independently and without reliance on information provided by Insight and based upon such investigation and analysis, as it deems appropriate.

Limitation of liability

- Insight accepts no liability whatsoever (whether in contract, tort or otherwise) in relation to the Insight Longevity Platform, the associated documents and agreements or any activity undertaken by Insight in connection with them (except to the extent that any such liability cannot be excluded by law) including, but not limited to, the accuracy or reliability of any information provided by Insight.
- In no event will Insight be liable for direct, indirect, incidental, special or consequential damages resulting from the information provided herein or in any related presentation.

FIND OUT MORE

Institutional Business Development
businessdevelopment@insightinvestment.com
+44 20 7321 1552

European Business Development
europe@insightinvestment.com
+49 69 12014 2650
+44 20 7321 1928

Consultant Relationship Management
consultantrelations@insightinvestment.com
+44 20 7321 1023

@InsightInvestIM
company/insight-investment
www.insightinvestment.com