Funding pension plans with longevity swaps: how risky is the future?

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Abstract

Defined benefit pension plans are considering so-called longevity derivatives in order to separately hedge their demographic risk, which corresponds to the fact that participants may live longer than expected. Beyond traditional buy-out and buy-in solutions, these relatively new instruments, such as longevity swaps, offer an attractive financial strategy as they avoid the payment of a single premium, while allowing to access large pension volumes.

Among the different longevity swaps, those based on a national longevity index offer the advantage of equal information between the buyer and the seller, compared to those related to the pension plan experience data. In this context, the quality of demographic data such as general population mortality tables is crucial in order to guarantee reasonable longevity forecasts. These forecasts are indeed used to compute the price of the solution, but also to assess the accuracy of the hedging strategy.

This presentation will review the currently growing longevity market activity, and describe the main features of the related instruments. We will then propose a case study based on a pension plan hedging strategy with a combination of longevity swaps, and present the sensitivity of the results to the quality of the underlying demographic data, the complexity of the forecasting model, and the country considered. Particular attention will be dedicated to the innovation opportunity raised by these alternative solutions, and the assessment of the main challenges and relating risks coming with their implementation.

Bio

Alexandre Boumezoued is Senior Consultant in the Research & Development team in Milliman Paris office, covering technical risks modelling topics in life and non-life insurance. Alexandre's research interests deal with stochastic micro/macro non-life reserving models, stochastic population dynamics and its use for longevity risk purposes, as well as data reliability issues for biometric risk assessment. During the last years, Alexandre has given talks in around 30 international conferences and working groups worldwide, and courses in several actuarial centers. Alexandre received his PhD in Applied Mathematics from Paris 6 University (Probability and Random Models Laboratory), for which he has been awarded by the 2016 PhD SCOR Actuarial Prize.