Paper Details

Title	Our New 'Old' Problem - Pricing Longevity Risk in Australia

Abstract

Longevity risk is a growing risk across the developed world as populations age. Australian post-retirement life expectancy, already some of the longest in the world, is growing rapidly (by around 2.5 months a year for males and 2 months a year for females). Associated with this growth in an older population is a social need to develop products to allow individuals to secure lifetime income, and a business need to attract capital to support this risk class.

This paper sets out factors for consideration in valuing longevity risk including variation in base mortality, and mortality improvements with estimates of the financial impact of this uncertainty applied to Australian data. It aims to highlight some key issues to actuaries who are faced with the task of setting longevity assumptions in an Australian context at the current time.

In particular we show that the key drivers of mortality experience include socio-economic class (benefit level, residence and occupation as proxies) and the self selection in annuity buying behaviour. The significant variation in current mortality rates, without allowance for future improvements, can be of the order of four or more years of life expectancy at age 65, equivalent to variation in annuity cost in excess of 10%. But current mortality rates are observable; future mortality improvements are that much more uncertain and require some modelling of mortality evolution. This paper applies three models to extrapolate Australian mortality improvement and evaluates the financial impact of these risks. It shows that the risk arising from uncertainty within a single model is of the same order as that arising from the model risk (due to choice of model). This level of uncertainty should be considered in setting capital requirements for longevity risk products and in pricing annuity and longevity swap transactions.

Finally, we discuss the implications of uncertainty in current and future mortality for the transfer of longevity risk with a focus on reinsurance solutions. In particular, we consider the implications of basis risk between annuitant / pensioner and population mortality, the need for risk transfer over extremely long durations and the diversification benefits for a reinsurer of combining annuitant portfolios with long-term guaranteed mortality risks.

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