Modelling retirement outcomes

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Abstract

The Australian retirement income system obligates employers to pay a percentage of salary (currently 9.5%) on behalf of each employee directly into a superannuation fund which cannot be accessed (except in extraordinary circumstances) prior to the national minimum retirement age. The system has received strong praise for its high participation rates (driven by compulsion) and for ensuring retirees have resources from which they can support their own post-retirement lifestyle. However, recent discourse, particularly in the context of increasing life expectancy and a maturing superannuation system, has highlighted the potential inadequacy of savings provision under the superannuation systems current structure. In this paper we consider the question of adequacy. We build a stochastic model of superannuation, the *SUPA (Simulation of Uncertainty for Pension Analysis)* model, and use this model to simulate the evolution of superannuation fund balances across time. The model comprises four elements: (i) a stochastic projection of investment returns; (ii) a stochastic projection of income levels (upon which contributions to the fund are based); (iii) a projection of levels of withdrawal in retirement; and (iv) a stochastic projection of increasing longevity. The combination of these four elements into the SUPA model along with some applications are described in detail in this paper. In particular, we show how the model can be used to forecast likely outcomes (i.e. whether individuals will have sufficient funds in retirement), under the current superannuation structures. It can also be used to statistically model the potential impacts of any changes to the superannuation system, i.e. changing retirement ages or contribution rates.

Keywords Superannuation, Mortality, Simulation, Ruin