All Things Considered: An Integrated Framework for Multidimensional Longevity Risk Concerns

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Abstract

In this paper, we propose that individuals are challenged with multi-dimensional longevity risk consideration so that the documented low demand for annuities ("The Annuity Puzzle") is not due to their ignorance of longevity risk, but rather their awareness of the multi-dimensional nature of longevity risk. A growing body of evidence shows that individuals' average annual out-of pocket medical expenditures rise very rapidly with age (Sinclair and Smetters 2004, De Nardi et. al. 2010). Incorporating this consideration into a retiree's asset allocation decision process, we argue that individuals exposed to higher longevity risk face a tradeoff between securing retirement income (e.g., annuity purchase) and saving for uncertain medical shocks (including catastrophic illness and/or the need for long-term care): annuity products become more valuable for people facing longevity uncertainty to provide income, but at the same time constrains them from dealing with medical shocks. As a result, we show that when the perceived medical shock probability or size is sufficiently large, people may rationally prefer more disposable precautionary saving and purchase less annuities as longevity risk becomes more significant. We design and collect survey-based individual level data to calibrate this tradeoff and provide quantitative insights. We further explore the implications of consumers' integrated longevity considerations on insurance companies' product design and risk transfer strategies. We show that product innovations such as the "delayed purchase annuities" and "longevity annuities" as proposed by Scott et al. (2011), and bundled products of both annuity and medical insurance such as the bundles of annuity and long-term care insurance as proposed by Webb (2009), can enhance consumers' demand and are beneficial for the insurers. Moreover, insurance companies can partially hedge their longevity risk due to the existence of natural hedge between annuity and medical insurance, making the transfer of residual risks more feasible economically.

Keywords: Longevity risk, Annuity puzzle, healthcare expenditure shock, longevity risk hedging

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