

A Modeling Framework for Optimal Long-Term Care Insurance Purchase Decisions in Retirement Planning

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Abstract

The level of need and costs of obtaining long-term care (LTC) during retired life require that planning for it is an integral part of retirement planning. In this paper, we divide retirement planning into two phases, pre-retirement and post-retirement. On the basis of four interrelated models for health evolution, wealth evolution, LTC insurance premiums and coverage, and LTC cost structure, a framework for optimal LTC insurance purchase decisions in the pre-retirement phase is developed. Optimal decisions are obtained by developing a trade-off between post-retirement LTC costs and LTC insurance premiums and coverage. Two-way branching models are used to model the stochastic health events and asset returns. The optimization problem is formulated as a dynamic programming problem. We compare the optimal decision under two insurance purchase scenarios, one where insurance is purchased for good and other where it may be purchased, relinquished and re-purchased. Sensitivity analysis is performed for the retirement age.

Keywords: Long-term Care Insurance, Elderly Health-care Financing, Retirement Planning, Dynamic Programming, Optimization