Quantitative Finance > Risk Management

Optimal retirement consumption with a stochastic force of mortality

Huaxiong Huang, Moshe A. Milevsky, Thomas S. Salisbury

(Submitted on 10 May 2012)

We extend the lifecycle model (LCM) of consumption over a random horizon (a.k.a. the Yaari model) to a world in which (i.) the force of mortality obeys a diffusion process as opposed to being deterministic, and (ii.) a consumer can adapt their consumption strategy to new information about their mortality rate (a.k.a. health status) as it becomes available. In particular, we derive the optimal consumption rate and focus on the impact of mortality rate uncertainty vs. simple lifetime uncertainty -- assuming the actuarial survival curves are initially identical -- in the retirement phase where this risk plays a greater role.

In addition to deriving and numerically solving the PDE for the optimal consumption rate, our main general result is that when utility preferences are logarithmic the initial consumption rates are identical. But, in a CRRA framework in which the coefficient of relative risk aversion is greater (smaller) than one, the consumption rate is higher (lower) and a stochastic force of mortality does make a difference.

That said, numerical experiments indicate that even for non-logarithmic preferences, the stochastic mortality effect is relatively minor from the individual's perspective. Our results should be relevant to researchers interested in calibrating the lifecycle model as well as those who provide normative guidance (a.k.a. financial advice) to retirees.

Subjects:	**Risk Management (q-fin.RM)**
Journal reference:	Insurance: Mathematics and Economics 51 (2012), pp. 282-291
Cite as:	**arXiv:1205.2295v1 [q-fin.RM]**

Submission history

From: Thomas Salisbury [view email]
[v1] Thu, 10 May 2012 15:45:07 GMT (30kb)

Which authors of this paper are endorsers?