

1020-60-169

Ruihua Liu* (ruihua.liu@notes.udayton.edu), Department of Mathematics, University of Dayton, 300 College Park, Dayton, OH 45469. *Valuing Guaranteed Unit-Linked Life Insurance Under Regime-Switching Model.*

We consider in this paper the valuation of guaranteed unit-linked life insurance within the regime-switching modelling framework. Both the reference equity fund and the stochastic interest rate are assumed regime dependent while regime is modelled by a continuous-time and finite state Markov chain. Two approaches are developed for the single premium contracts. The first method derives the characteristic function of the equity process and then obtains the option values by numerically inverting Fourier transform. The second method combines Monte-carlo simulation with analytical formula. For a given realization of the underlying Markov chain, the conditional option values are obtained by a Black-scholes-Merton like analytical formula in which both the volatility and the discount factor are integrals with respect to the given sample path of the Markov chain. As a consequence, we need only to calculate the conditional option values for a number of sample paths of the Markov chain, and then take average of these values to get an approximation of the option values. Numerical results are reported and compared. (Received August 27, 2006)