

Optimal Surrender Policy for Variable Annuity Guarantees

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Abstract

In this presentation, I discuss the optimal surrender strategy for a variable annuity (VA). I present an approach based on splitting the value of the VA into a European part and an early exercise premium following the work of Kim and Yu (1996)¹ and Carr, Jarrow and Myneni (1992)². For fees paid continuously as a fixed percentage of the fund, this approach allows me to obtain an integral representation. This is useful to study the value of the surrender option and the shape of the surrender region. The technique is first applied to the simplest VA with GMAB (path-independent benefits) and is then shown to be possibly generalized to the case when benefits are path-dependent. This approach is useful to investigate the impact of path-dependent benefits on surrender incentives.

¹KIM, I. J. and G. G. YU (1996): "An alternative approach to the valuation of American options and applications", *Review of Derivatives Research*, 1(1), 61-85.

²CARR, P., R. JARROW, and R. MYNENI (1992): "Alternative characterization of American put options," *Mathematical Finance*, 2(2), 87-106.