Guaranteed Minimum Surrender Benefits and Variable Annuities: The Impact of Regulator-Imposed Guarantees

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Abstract  
Variable annuities are fund-linked products that come with a wide range of guarantees. Usually, when the policyholder decides to discontinue their contract, only the fund value of the contract (less surrender fees) is paid out – any additional time value of the forfeited guarantee remains with the insurer. If this time value is to be incorporated within the surrender value of the contract, e.g. by way of guaranteed minimum surrender benefits (GMSB), additional risks arise for the insurer. In this paper, we analyze the implications of regulatory-imposed GMSB within variable annuities. To this end, we consider different variations of GMSB and evaluate their impact on pricing, hedging and risk of a variable annuity that guarantees a minimum accumulation benefit (GMAB). In particular, we focus on the risk the insurer faces if assumptions on surrender behavior and required surrender values prove to be inaccurate after the contract is concluded. To analyze this risk in detail, we consider different models of the policyholders’ behavior, including deterministic, path-dependent and optimal (value maximizing) behavior. Besides showing that the analyzed risk is substantial, our results reveal the considerable impact the specific design of the GMSB has on the sensitivity of pricing and hedging outcomes to policyholder behavior.

Keywords  
Variable Annuities, Guaranteed Minimum Surrender Benefits, Policyholder Behavior, Pricing, Hedging, Hedge Performance
Dr. Alexander Kling is partner at the Institut für Finanz- und Aktuarwissenschaften (Institute for Financial and Actuarial Sciences), Ulm Germany. The main focus of his work is on the development and design of unit-linked life insurance products with guarantees and variable annuities. Besides his consulting work, he is a lecturer at Ludwig-Maximilians-Universität Munich.

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