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Financial valuation of guaranteed minimum withdrawal benefits

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Abstract

Financial valuation OF GMWBs: We develop a variety of methods for assessing the cost and value of a very popular 'rider' available to North American investors on variable annuity (VA) policies called a Guaranteed Minimum Withdrawal Benefit (GMWB). The GMWB promises to return the entire initial investment, albeit spread over an extended period of time, regardless of subsequent market performance. First, we take a *static* approach that assumes individuals behave passively and holds the product to maturity. We show how the product can be decomposed into a Quanto Asian Put plus a generic term-certain annuity. At the other extreme of consumer behavior, the *dynamic* approach leads to an optimal stopping problem akin to pricing an American put option, albeit complicated by the non-traditional payment structure. Our main result is that the No Arbitrage hedging cost of a GMWB ranges from 73 to 160 basis points of assets. In contrast, most products in the market only charge 30–45 basis points. Although we suggest a number of behavioral reasons for the apparent under-pricing of this feature in a typically overpriced VA market, we conclude by arguing that current pricing is not sustainable and that GMWB fees will eventually have to increase or product design will have to change in order to avoid blatant arbitrage opportunities.

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