Optimal Allocation between Fixed and Variable Subaccounts in Variable Annuities

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Abstract: We determine the optimal allocation of funds between the fixed and variable subaccounts in a variable annuity with a GMDB clause featuring partial withdrawals by using a utility-based approach. We apply the Merton method in this paper by assuming that individuals allocate funds in order to maximize the expected utility of lifetime consumption, and include the effect on asset allocation from both savings (accumulation) and dissavings (consumption). We also reflect bequest motives by including the utility of the recipient of the policyholders guaranteed death benefits. We derive the optimal transfer choice by the insured, and furthermore price the GMDB through maximizing the discounted expected utility of the policyholders and beneficiaries by investing dynamically in the fixed account and variable fund and withdrawing optimally.