

DAVE SAUNDERS, University of Pittsburgh, Pittsburgh, Pennsylvania 15260, USA

*Optimal structuring of asset portfolios for insurance products with minimum guarantee provisions*

Modern insurance products are becoming increasingly complex, offering various guarantees, surrender options and bonus provisions. Typical products allow investors to participate in the returns of a reference portfolio, subject to some minimum guaranteed floor on the level of returns. The option-like nature of the payout to the investor is evident, and much work has been done on finding appropriate pricing algorithms under various assumptions on the stochastic behaviour of the reference portfolio and market risk factors. Little effort has been devoted to the problem of optimally structuring the reference portfolio. We consider this problem from the point of view of the firm offering the product. The resulting optimization problem is a nonlinear stochastic programming problem. We discuss properties of its solution and different solution algorithms. Examples illustrate how the model can be used to analyze different policy features and offer the optimally structured product for investors and shareholders.