VARIABLE ANNUITIES AS OPTIONS PACKAGES: A MARKET-CONSISTENT VALUATION APPROACH

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Providers of life insurance and pension benefits have always had to deal with a number of risks involving their business of various nature: financial-economic, biometric, behavioural, ... . Nevertheless, the increasing competition led them to offer more and more complex products, in order to tailor as much as possible the needs of their customers. This implied that modern life and pension products are designed as packages of various riders, that can be either included or not in the insurance contract, along with its basic element. A typical example is constituted by the variable annuities, that package several types of options and guarantees, at the policyholder's discretion. Basically, these products are unit-linked investment policies providing a post-retirement income. The guarantees, commonly referred to as GMxBs (namely, Guaranteed Minimum Benefits of type `x'), include minimum benefits in case of death, survival and surrender. In this seminar, after providing a description of the most common guarantees offered by variable annuities, we define a quite general valuation framework for such guarantees under alternative assumptions underlying the policyholder behavior (static, mixed and dynamic approach). We show also some results concerning the case of state-dependent fees. Finally, we concentrate on the valuation of Guaranteed Minimum Withdrawal Benefits with the dynamic approach.

This presentation is based on the following papers: