Risk components in the Solvency Valuation: the Cash Flow Analysis

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Abstract. The paper takes into account the problem of the solvency of an insurance company referring to the reserve valuation. Considering a portfolio of deferred life annuities the paper presents a model to front this kind of problem based on the consideration of the insurance company portfolio as a block of business, that is as a cash flow of assets and liabilities. In this order of ideas, a stochastic interest environment is assumed; in particular the force of interest is supposed to be modelled by an Ornstein – Uhlenbeck process, and by means of the traditional actuarial functions the reserve is evaluated by calculating the expected value of the portfolio random loss and its variability computing the variance. Then the impact of the longevity risk on the obtained results is studied introducing projected mortality tables. Numerical applications are discussed.

Key words: Life annuity portfolio, Ornstein-Uhlenbeck process, cash flow analysis, insolvency risk, investment risk, longevity risk.

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