A user-friendly simulation model for pensions risk management

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We describe a stochastic model for some of the most important risk factors affecting a typical pension insurer. The selection of the risk factors is motivated by the need to financially hedge defined benefit pension liabilities. On the asset side, we model the investment returns on equities as well as fixed-rate, index-linked and corporate bonds. On the liability side, the risks are driven by future mortality developments as well as price and wage inflation. All the risk factors are described as a multivariate stochastic process (time series model) that captures the dynamics and the dependencies among the risk factors. The model is easy to simulate and to calibrate to historical data and user's views. We use the model to analyze the assets and liabilities of a UK pensions insurer.