

Stochastic Optimal Control of Occupational Pension Funds Under Dynamic Risk Constraints

Wednesday, 3 August 2022 14:30 (20 minutes)

In this presentation we consider occupational pension funds provided by a company to its employees. A special feature of such pension funds is that collectives of insured persons are typically smaller and benefit payments depend on seniority and salary of the insured.

Therefore, temporal fluctuations of the composition of the collective of insured persons w.r.t. age, seniority and salary can not be neglected in the computation of actuarial liabilities and the company's financial contributions to the fund.

We describe the stochastic dynamics for the composition of the collective of insured by a discrete-time Markov-chain model. The resulting actuarial liabilities which are functional of the Markov-chain are approximated by a diffusion process. The latter is used to formulate stochastic optimal control arising in the cost-optimal management of occupational pension funds. We focus on discrete-time problems which can be treated as a Markov Decision Process (MDP). Numerical results are presented.

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