THE UNIVERSITY  OF HONG KONG

Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

Asymptotic and Numerical Solutions for Diffusion Models for Compounded Risk Reserves with Dividend Payments

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Abstract

We study a family of diffusion models for compounded risk reserves, which account for the investment income earned and for the inflation experienced on claim amounts. We are interested in the models which the dividend payments are paid from the risk reserves. After defining the process of conditional probability over finite time, the classical diffusion processes results turn the nonlinear stochastic differential equation into a special class of boundary value problems described by a parabolic partial differential equation with a non-smooth coefficient in the convection term. Based on the behavior of the total income flow, asymptotic and numerical methods are employed to solve this special class of the parabolic equations, which governing the conditional ruin probability over finite time. Our aim is to understand how the rates of the reserve growth and dividend payments affect the behavior of the conditional probability of ruin at a given reserve level.

All are welcome