

Optimal dividend strategies for a catastrophe insurer

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Abstract

We study the problem of optimally paying out dividends from an insurance portfolio, when the criterion is to maximize the expected discounted dividends over the lifetime of the company and the portfolio contains claims due to natural catastrophes, modelled by a shot-noise Cox claim number process. We solve the resulting two-dimensional stochastic control problem, and uniformly approximate the optimal value function through a discretization of the space of the free surplus of the portfolio and the current claim intensity level. It is shown that the nature of the barrier and band strategies known from the classical models with constant Poisson claim intensity carry over in a certain way to this more general situation, leading to action and non-action regions for the dividend payments as a function of the current surplus and intensity level. We also discuss some interpretations in terms of upward potential for shareholders when including a catastrophe sector in the portfolio. This is joint work with Pablo Azcue and Nora Muler.

Keywords: Shot-noise Cox process, Risk Theory, Stochastic Control, Dividends

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