DIVIDEND PAYOUTS IN A PERTURBED RISK PROCESS COMPOUNDED BY INVESTMENTS OF THE BLACK-SCHOLES TYPE

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Abstract
This work addresses the issue of dividend payouts of an insurer whose portfolio is exposed to insurance risk. The insurance risk arises from the perturbed classical surplus process commonly known as the Cramér-Lundberg model in the insurance literature. To enhance her financial base, the insurer invests into assets whose price dynamics are governed by a Black-Scholes model. We derive a linear Volterra integral equation of the second kind and solve the equations for each chosen barrier, thus generating corresponding dividend value functions. We have obtained the optimal barrier that maximises the expected discounted dividend payouts prior to ruin.

Keywords:
Cramér-Lundberg model,
Insurance,
Volterra integral equations,
Barrier strategy,
Dividends.