

Abstract for IME 2015

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Title: An integral equation approach for the dual risk model with risky investment

Abstract: We consider a dual risk process in which surplus is invested into a risky asset following geometric Brownian motion. In each of the following model: classical, risk-free, and risky investment, the integro-differential equation of the ruin probability can be written as a Fredholm integral equation of second kind, each with different kernels. In the classical case, one gets exact exponential expression using Wiener-Hopf factorization whereas in the risk-free model, it reduces to a back-substitution problem. In the risky model, the ruin probability decays algebraically for small volatility and ruin is certain for large volatility.

Keywords: Dual risk model, geometric Brownian motion, integral equation