

Jasiulewicz, Helena; Kordecki, Wojciech

Ruin probability of a discrete-time risk process with proportional reinsurance and investment for exponential and Pareto distributions. (English) [Zbl 1395.91254](#)

Oper. Res. Decis. 25, No. 3, 17-57 (2015).

Summary: The paper focuses on a quantitative analysis of the probability of ruin in a finite time for a discrete risk process with proportional reinsurance and investment of the financial surplus. It is assumed that the total loss on a unit interval has either a light-tailed distribution – exponential distribution or a heavy-tailed distribution – Pareto distribution. The ruin probabilities for the finite-horizons 5 and 10 were determined from recurrence equations. Moreover, the upper bound of the ruin probability is given for the exponential distribution based on the Lundberg adjustment coefficient. This adjustment coefficient does not exist for the Pareto distribution, hence an asymptotic approximation is given for the ruin probability when the initial capital tends to infinity. The numerical results obtained are illustrated by tables and figures.

MSC:

91B30 Risk theory, insurance (MSC2010)

Keywords:

discrete time risk process; ruin probability; proportional reinsurance; Lundberg's inequality; regularly varying tail

Full Text: [DOI](#)