

Kartashov, N. V.

On ruin probability for a risk process with bounded reserves. (English. Ukrainian original)

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Theory Probab. Math. Stat. 60, 53-65 (2000); translation from Teor. Jmovirn. Mat. Stat. 60, 46-58 (1999).

Let $U(t)$ be a classical risk process

$$U(t) = u + ct - X(t), \quad (1)$$

where u and c are constants and $X(t) = \sum_{k=1}^{N(t)} X_k$, where $N(t)$ is a Poisson process with intensity λ , and X_k , $k \geq 1$, are independent identically distributed random variables. The random variable X_1 has density $f(x)$, finite mean $\mu = EX_1$ and $EX_1^2 < \infty$. The author considers the following limit modification of the process (1),

$$dU_b(t) = DU(t) - \mathbf{1}_{U_b(t)=b} c dt, \quad (2)$$

where $b \geq U$ is a limit level. Process (2) coincides with process (1) until the process $X(t)$ achieves the level b and stay on this level until the first jump of the process $X(t)$. The process U_b may be interpreted as a risk process with bounded reserves. The Laplace transform of the distribution of the ruin time, probability of ruin on certain interval and other characteristics of the process U_b are found.

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MSC:

[60J05](#) Discrete-time Markov processes on general state spaces
[60J45](#) Probabilistic potential theory

Cited in **1** Review
Cited in **2** Documents

Keywords:

[ruin probability](#); [storage process](#); [risk theory](#); [Poisson process](#); [absorbing upper barrier](#)