

Frolova, Anna; Kabanov, Yuri; Pergamenschikov, Serguei

In the insurance business risky investments are dangerous. (English) Zbl 1002.91037
Finance Stoch. 6, No. 2, 227-235 (2002).

The authors consider the process of insurance company capital X_t^u driven by the equation

$$X_t = u + a \int_0^t X_s ds + \sigma \int_0^t X_s dw_s + ct - \int_0^t \int x p(ds, dx),$$

where a, σ are arbitrary constants, $c \geq 0$; w_t is a Wiener process independent on the integer-valued random measure $p(dt, dx)$ with the compensator $\tilde{p}(dt, dx) = \alpha dt F(dx)$; $F(dx)$ is a probability distribution. Let $\tau^u = \inf\{t : X_t^u \leq 0\}$, $\Psi(u) = P(\tau^u < \infty)$. The following result is proved.

Assume that $\sigma > 0$ and let $F(x) = 1 - e^{-x/\mu}$, $x > 0$. If $\rho = 2a/\sigma^2 > 1$, then for some $K > 0$ $\Psi(u) = Ku^{1-\rho}(1 + o(1))$, $u \rightarrow \infty$. If $\rho < 1$, then $\Psi(u) = 1$ for all u .

Reviewer: [A.D.Borisenko \(Kyiv\)](#)

MSC:

91B30 Risk theory, insurance (MSC2010)

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risk process; geometric Brownian motion; ruin probability

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