

Original Articles

Ruin Probabilities under a Markovian Risk Model

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摘要 In this paper, a Markovian risk model is developed, in which the occurrence of the claims is described by a point process $\{N(t)\}_{t \geq 0}$ with $N(t)$ being the number of jumps of a Markov chain during the interval $[0, t]$. For the model, the explicit form of the ruin probability $\Psi(0)$ and the bound for the convergence rate of the ruin probability $\Psi(u)$ are given by using the generalized renewal technique developed in this paper. Finally, we prove that the ruin probability $\Psi(u)$ is a linear combination of some negative exponential functions in a special case when the claims are exponentially distributed and the Markov chain has an intensity matrix $(q_{ij})_{i,j \in E}$ such that $q_m = q_{(m1)}$ and $q_i = q_{(i(i+1))}$, $1 \leq i \leq m-1$.

关键词 [risk processes](#) [ruin probabilities](#) [markov chains](#)

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Abstract In this paper, a Markovian risk model is developed, in which the occurrence of the claims is described by a point process $\{N(t)\}_{t \geq 0}$ with $N(t)$ being the number of jumps of a Markov chain during the interval $[0, t]$. For the model, the explicit form of the ruin probability $\Psi(0)$ and the bound for the convergence rate of the ruin probability $\Psi(u)$ are given by using the generalized renewal technique developed in this paper. Finally, we prove that the ruin probability $\Psi(u)$ is a linear combination of some negative exponential functions in a special case when the claims are exponentially distributed and the Markov chain has an intensity matrix $(q_{ij})_{i,j \in E}$ such that $q_m = q_{(m1)}$ and $q_i = q_{(i(i+1))}$, $1 \leq i \leq m-1$.

Key words [risk processes](#) [ruin probabilities](#) [markov chains](#)

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