

Asymptotic finite-time ruin probabilities for a class of path-dependent claim amounts using Poisson spacings

Romain Biard*
Phd student

Université de Lyon, Université Claude Bernard Lyon 1, Institut de Science Financière et d'Assurances, 50 Avenue Tony Garnier, F-69007 Lyon, France, Tel +33 4 37 28 76 36.

Claude Lefèvre

Département de Mathématique, Université Libre de Bruxelles, Campus de la Plaine C.P. 210, B-1050 Bruxelles, Belgium

Stéphane Loisel

Université de Lyon, Université Claude Bernard Lyon 1, Institut de Science Financière et d'Assurances, 50 Avenue Tony Garnier, F-69007 Lyon, France

Haikady N.Nagaraja

Ohio State University, Department of Statistics, 440H Cockins Hall, 1958 Neil Avenue, Columbus OH 43210-1247, U.S.A.

Abstract

In the compound Poisson risk model, several strong hypotheses may be found too restrictive to model accurately the complex evolution of the reserves of an insurance company that faces risks like earthquake risk. For this kind of risk, claim amounts may be dependent and depend on the history of the process. In the case where claim sizes are heavy-tailed, we study the asymptotic behavior of finite-time ruin probabilities when each claim amount depends on the previous inter-occurrence time, or on all the preceding inter-occurrence times.

Key words: Finite-time ruin probabilities; ruin theory; processes with dependent increments; asymptotic behavior; non-stationarity; heavy-tailed claim size distribution; spacings; order statistics.

* Speaker at 2b) or not 2b) Conference

Email addresses: romain.biard@univ-lyon1.fr (Romain Biard), clefevre@ulb.ac.be (Claude Lefèvre), stephane.loisel@univ-lyon1.fr (Stéphane Loisel), hnn@stat.osu.edu (Haikady N.Nagaraja).