



Statistical Inference for ruin-related quantities for Lévy insurance risks

Yasutaka Shimizu*

Waseda University, Tokyo, Japan – shimizu@waseda.jp

We consider an insurance risk process, whose outgoing process is given by a Lévy subordinator. Our goal is to statistically estimate the expected discounted penalty function from given surplus data, which are discretely observed in time. The estimator is constructed by inverting a semiparametric estimator of the Fourier transform of the objective function. Although the estimator includes a tuning parameter, the L_2 -consistency is shown with the rate optimality by a suitable choice of the tuning parameter. We shall give a data-adaptive choice of the tuning parameter from given data. A simulation study is also presented to show the performance of the estimator under finite sample setting.

Keywords: Gerber-Shiu function; Lévy insurance risks; nonparametric estimation; discrete samples.