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TITLE:

Confidence intervals for the proportional hazard premium for heavy-tailed claim amounts

SUMMARY:

Extreme events arise in a wide variety of domains: environment (flooding, heat waves), industry (industrial accident, fire), finance... and can cause considerable losses in insurers portfolio. It has therefore become crucial for insurance and reinsurance companies to determine adequate premiums for extreme risks. Several premium calculation principles have been proposed in the actuarial literature. One of the most popular is the proportional hazard premium (PHP). In this talk, we investigate the construction of confidence intervals for the PHP under high-excess loss layer. A straightforward method for calculating such intervals is based on the asymptotic normality of an estimator of the PHP, proposed by Necir et al. (2007). However, our simulations suggest that the coverage accuracy of these intervals can be quite far from the nominal confidence level. Thus, in this talk, we investigate an alternative method, namely, the likelihood ratio method. We establish its asymptotic properties, we assess its finite-sample performance via simulations, and we compare our results with the Wald-confidence intervals based on Necir et al. (2007). Finally, we apply the proposed method on a real data set (Danish fire losses).