Estimating the Conditional Tail Expectation in the Case of Heavy-Tailed Losses

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Abstract

The conditional tail expectation (CTE) is an important actuarial risk measure and a useful tool in financial risk assessment. Under the classical assumption that the second moment of the loss variable is finite, the asymptotic normality of the nonparametric CTE estimator has already been established in the literature. The noted result, however, is not applicable when the loss variable follows any distribution with infinite second moment, which is a frequent situation in practice. With a help of extreme-value methodology, in this paper, we offer a solution to the problem by suggesting a new CTE estimator, which is applicable when losses have finite means but infinite variances.

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