

# THE ACTUARIAL CTE RISK MEASURE FOR HEAVYTAILED LOSSES: A NEW ESTIMATOR AND CONFIDENCE INTERVALS

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**Abstract.** The conditional tail expectation (CTE) is a popular 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 non-parametric CTE estimator has already been established in the literature. That 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.

**Keywords and phrases:** Conditional tail expectation, expected shortfall, value-at-risk, quantile, risk measure, extreme value, order statistic, heavy-tailed distribution, loss distribution, Hill estimator, insurance, financial risk.