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On the estimation of the variability in the distribution tail. (English) Zbl 1478.62107
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Summary: We propose a new measure of variability in the tail of a distribution by applying a Box-Cox transformation of parameter $p \geq 0$ to the tail-Gini functional. It is shown that the so-called Box-Cox Tail Gini Variability measure is a valid variability measure whose condition of existence may be as weak as necessary thanks to the tuning parameter $p$. The tail behaviour of the measure is investigated under a general extreme-value condition on the distribution tail. We then show how to estimate the Box-Cox Tail Gini Variability measure within the range of the data. These methods provide us with basic estimators that are then extrapolated using the extreme-value assumption to estimate the variability in the very far tails. The finite sample behaviour of the estimators is illustrated both on simulated and real data.

MSC:
62G32 Statistics of extreme values; tail inference
62G20 Asymptotic properties of nonparametric inference

Keywords:
Gini functional; risk measure; variability measure; distribution tail; extreme-value theory

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