

Smoothing the Huber estimator

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Abstract

Hampel (1996) suggested to smooth the ψ -function of the Huber-estimator by taking instead the expectation of $\psi(x + U)$, U distributed as the Huber M-estimator under the target distribution. The smoothing depends on the sample size so that the resulting smoothed M-estimator coincides with the Huber estimator for $n \rightarrow \infty$. The smoothing principle is motivated by an analysis of the requirements of the proof of the Cramér-Rao bound. The principle can be applied to every M-estimator. A simulation study has been carried out where the small sample efficiency of the smoothed Huber and ML-estimators has been compared with their non-smoothed counterparts and Pitman estimators, which led to encouraging results of the smoothed estimators.

References

HAMPEL, F. (1996): On the philosophical foundations of statistics: bridges to Huber's work and recent results. In H. Rieder (ed.): *Robust Statistic, Data Analysis and Computer Intensive Methods; In Honor of Peter Huber's 60th birthday*, Springer, New York, 185-196.

Keywords

ML-estimators, small sample efficiency