Theme: Tail Estimation

**Efficient Estimation of the Extreme Value Index**

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A new class $\{\hat{\gamma}_k$, k = 1, 2, ..., [log$m_n$/log2]–1$\}$ of estimators of the extreme value index is introduced, where $m_n$ is the number of upper order statistics used in estimation. These estimators are based on spacings and hence location and scale invariant. Assuming differentiability and some second order condition on the underlying distribution, asymptotic normality is established and the asymptotic variances of these and earlier estimators are compared. It turns out that $\hat{\gamma}_5$ has rather good asymptotic efficiency. Our estimators are members of the wide class of location and scale invariant estimators considered in Drees (1995) and the asymptotic variance of $\hat{\gamma}_5$ is very close to the lower bound established by Drees.

Drees, H. (1995). On smooth statistical tail functionals. *Preprint, University of Cologne.*
Pereira, T.T. (1997). A spacing estimator for the extreme value index. Submitted.

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