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Abstract

Title: Trends in extreme value indices

We consider extreme value analysis for independent but non-identically distributed observations. In particular, the observations do not share the same extreme value index. This situation is related to, but differs from, heteroscedastic extremes in Einmahl et al. (2016). Compared to the heteroscedastic extremes, our model allows for a broader class in which tails of the probability distributions of different observations are of different order. In other words, we are dealing with distributions that differ much more than the heteroscedastic extremes. Assuming continuously changing extreme value indices, we provide a non-parametric estimate for the functional extreme value index. Besides estimating the extreme value index locally, we also provide a global estimator for the trend and its joint asymptotic property. The global asymptotic property can be used for testing a pre-specified parametric trend in the extreme value indices. In particular, it can be applied to test whether the extreme value index remains at a constant level across all observations.