Trends in Extreme Value Index

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Background

- Classic extreme value analysis assumes that the observations are i.i.d.
- Recent studies aim at dealing with the case when observations are drawn from different distributions.
- This paper considers a continuously changing extreme value index and try to estimate the functional extreme value index accurately.

Model Setting

- Consider a set of distributions $F_s(x)$ for $s \in [0,1]$ and independent random variables $X_i \sim F_{\frac{i}{n}}(x)$ for $i = 1, \ldots, n$.
- Here $F_s(x)$ is assumed to be continuous with respect to s and x. And assume that $F_s \in D_{\gamma(s)}$.
- This article considers the case that the function γ is positive and continuous on $[0,1]$.
- The goal is to estimate the function γ and test the hypothesis that $\gamma = \gamma_0$ for some given function γ_0.

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