Approximation of the Hill Estimator Process

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Abstract

An approximation result for a vector of Hill estimators — addressed as Hill process — is proven. It is shown that the Hill process can be approximated on a suitable probability space by a Wiener process and a deterministic bias term. The accuracy of the approximation is, roughly speaking, given by the rate of convergence of a certain term in the Karamata representation of the quantile function. Moreover, approximation results for smoothed versions of Hill estimators are proven.