

Multivariate regular variation and its applications

T. Mikosch (Copenhagen)

If one is on search for multivariate extensions of heavy-tailed one-dimensional distributions regularly varying distributions are natural candidates. They are extensions of one-dimensional distributions with power law tails to the multivariate case. Although they have been known for many years in extreme value and fluctuation theory, they have attracted more attention in the last few years — as a possible heavy-tailed alternative to the multivariate Gaussian distribution. Among others, they occur as finite-dimensional distributions for ARCH and GARCH processes.

We give an introduction to the notion of regular variation and show how this notion can be used for the asymptotic theory of the sample autocorrelation function of non-linear time series, the maximum likelihood estimator of GARCH processes or the Takens estimator of the correlation dimension.