Estimating a change point in the long memory parameter

Keiko Yamaguchi

We propose an estimator of change point in the long memory parameter d of an ARFIMA(p, d, q) process using the sup Wald test. We derive the consistency and the rate of convergence of the estimator for the time of change. The convergence rate of our change point estimator depends on the magnitude of a shift. Furthermore, we obtain the limiting distribution of our change point estimator without depending on the distribution of the process. Therefore, we can construct confidence intervals for the change point. Simulations show the validity of the asymptotic theory of our estimator if the sample size is large enough. We apply our change point estimator to the yearly Nile river minimum water level.

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