Vytautė Pilipauskaitė

Statistical inference from panel random-coefficient AR(1) data

Joint with Remigijus Leipus (Vilnius University), Anne Philippe (Université de Nantes), Donatas Surgailis (Vilnius University)

We discuss nonparametric estimation of the distribution function G of the autoregressive coefficient $a \in (-1, 1)$ from N random-coefficient AR(1) series, each of length n. We estimate G by the empirical distribution function of lag 1 sample autocorrelations of individual AR(1) series. We study the limit of the corresponding empirical process under some regularity conditions on G as N and n increase to infinity. We apply the obtained result to testing with Kolmogorov–Smirnov statistic both simple and composite hypotheses that a is beta distributed. A simulation study for goodness-of-fit testing compares the finite-sample performance of our nonparametric estimator to the performance of its parametric analogue discussed by Beran et al. (2010).