Penalized estimate of the number of states in Gaussian linear AR with Markov regime

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Abstract

We deal with the estimation of the regime number in a linear Gaussian autoregressive process with a Markov regime (AR-MR). The problem of estimating the number of regimes in this type of series is that of determining the number of states in the hidden Markov chain controlling the process. We propose a method based on penalized maximum likelihood estimation and establish its strong consistency (almost sure) without assuming previous bounds on the number of states.

AMS 2000 subject classifications: Primary 62F05; secondary 62M05.

Keywords: Autoregressive processes, hidden Markov chains, penalized maximum likelihood.

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