



Sequential fixed accuracy estimation for nonstationary autoregressive processes

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Abstract

For an autoregressive process of order p , the paper proposes new sequential estimates for the unknown parameters based on the least squares (LS) method. The sequential estimates use p stopping rules for collecting the data and presumes a special modification the sample Fisher information matrix in the LS estimates. In case of Gaussian disturbances, the proposed estimates have non-asymptotic normal joint distribution for any values of unknown autoregressive parameters. It is shown that in the i.i.d. case with unspecified error distributions, the new estimates have the property of uniform asymptotic normality for unstable autoregressive processes under some general condition on the parameters. Examples of unstable autoregressive models satisfying this condition are considered.

Keywords Unstable autoregressive process · Non-asymptotic distribution of estimates · Sequential least squares method · Uniform asymptotic normality of estimates

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