



# Fixed accuracy estimation of parameters in a threshold autoregressive model

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## Abstract

For parameters in a threshold autoregressive process, the paper proposes a sequential modification of the least squares estimates with a specific stopping rule for collecting the data for each parameter. In the case of normal residuals, these estimates are exactly normally distributed in a wide range of unknown parameters. On the base of these estimates, a fixed-size confidence ellipsoid covering true values of parameters with prescribed probability is constructed. In the i.i.d. case with unspecified error distributions, the sequential estimates are asymptotically normally distributed uniformly in parameters belonging to any compact set in the ergodicity parametric region. Small-sample behavior of the estimates is studied via simulation data.

**Keywords** TAR process · Sequential estimates · Fixed-size confidence ellipsoid

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