Score Test Statistic for Change-point Detection in AR Time Series with Dependent Errors

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Abstract

Detecting changes in the parameter values of any model is of great importance for many sectors. With a model up to date we are able to give better predictions. Finding a change-point can help us understand the influence of some events on observed data. The efficient score test statistic was introduced in [5] for detecting changes in the parameters of autoregressive(AR) time series with independent identically distributed(i.i.d) errors. This test allows us to detect a change in all the parameters at once or in every parameter separately. We study the behavior of this statistic when the assumption of i.i.d. white noise is violated and replaced with the assumption of having martingale difference sequence. We present the simulation study which shows us the asymptotic behavior and the strength of this test statistic.

Keywords: Change-point detection, Invariance principle, Autoregressive time series.
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