TITLE

Test for Change in the Autocorrelation Parameter for Multiple Time Series

ABSTRACT

A test for change in autocorrelation structure of multiple time series model is proposed. The test uses sieve bootstrap embedded into the backfitting algorithm to characterize the empirical distribution of the estimated autoregressive parameter. Simulation studies showed how the period of the change-point in autocorrelation, difference in the magnitude between pre- and post-changepoint, relationship between the number and length of time series, and clustering of autocorrelation parameter of the time series after changepoint affects the performance of the test. The test is correctly- sized in cases where changepoint occurred in the middle of the time series data and the number of time series is equal or less than the length of the time series. Power of the test increases as the overall change in the autocorrelation parameter of the time series increases for any number and length of time series. The test is then used in analyzing external debts of 18 Asian countries.

Keywords: changepoint analysis, backfitting algorithm, sieve bootstrap, autocorrelation