Inverse autocovariance matrix estimation of long memory process

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Abstract

This work aims at estimating inverse autocovariance matrices of long memory processes. A modified Cholesky decomposition is used in conjunction with an increasing order autoregressive model to achieve this goal. The spectral norm consistency of the proposed estimate is established. We then apply this result to linear regression models with long-memory stationary errors. In particular, we show that when the target is to consistently estimate the inverse autocovariance matrix of the error process, the same approach still works if the estimated (by least squares) errors are used in place of the unobservable ones. Finally, a simulation study is performed to illustrate our theoretical findings.

Keywords: inverse autocovariance matrix; linear regression model; long memory process; modified Cholesky decomposition.