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Non-linear Fractional Co-integration

Abstract: It is a well-documented common property of many financial time series that the phenomenon of long memory is observed only after applying certain transformations such as square or absolute value to the series. The long-memory stochastic volatility process is one of the models that have been proposed in recent literature to describe such a class of time series. The present paper concerns the estimation of the fractional co-integration coefficient for certain bivariate stationary systems that include the transformed long-memory stochastic volatility process as a special case. We propose an OLS estimator based on the block aggregates of the underlying time series. Consistency is proved for the estimator. Numerical work is also presented to demonstrate the proposed method.