

Local Whittle estimation for multivariate stationary fractionally cointegrated systems

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Abstract

This paper proposes a semiparametric estimator for multivariate fractionally cointegrated systems where the values of the memory parameter (d) lie between 0 and $\frac{1}{2}$ by optimising a local Whittle function in the frequency domain. The proposed local Whittle estimator (LWE) is used to jointly estimate the memory, cointegrating and phase parameters. To derive this estimator, a general shape of the spectral density matrix first noted in Davidson and Hashimzade (2008) is utilised to cover multivariate jointly dependent long memory time series. A Monte Carlo study exhibits the performance of the LWE for different sample sizes. Finally, three different empirically relevant examples are presented to examine the existence of stationary fractional cointegration relationships.

JEL Classification: C14, C32.

Keywords: Fractional cointegration; Frequency domain; Long memory; Semiparametric estimation; Whittle likelihood.

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