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Philipp Sibbertsen, Christian Leschinski, Marie Busch

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A Multivariate Test Against Spurious Long Memory

Philipp Sibbertsen,[1] Christian Leschinski and Marie Busch

Institute of Statistics, Faculty of Economics and Management,
Leibniz University Hannover, D-30167 Hannover, Germany

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Abstract

This paper provides a multivariate score-type test against spurious long memory. We prove the consistency of the test against the alternatives of random level shifts and smooth trends. The test statistic is based on the weighted sum of the partial derivatives of the multivariate local Whittle likelihood function. To apply the test to fractionally cointegrated series, the test statistic is calculated for the linearly transformed system after estimating the cointegrating matrix. We derive the limiting distribution and show consistency of this procedure. The test is applied to log-absolute returns and log-realized volatilities of the S&P 500, DAX, FTSE, and NIKKEI.

JEL-Numbers: C12, C32

Keywords: Multivariate Long Memory · Semiparametric Estimation · Spurious Long Memory · Fractional Cointegration · Volatility

[1]Corresponding author:
Address: Königsworther Platz 1, 30167 Hannover, Germany
Phone: +49-511-762-3783
Fax: +49-511-762-3923
E-Mail: sibbertsen@statistik.uni-hannover.de

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