

# Extended local Whittle estimation for non-stationary fractionally cointegrated systems

AMR ALGARHI \*  
*University of Exeter*

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## Abstract

This paper introduces a semiparametric extended local Whittle (XLW) estimator to be applied throughout the stationary and non stationary regions of the memory parameters for fractionally cointegrated systems based on the analysis in Algarhi (2011). The extended local Whittle estimator utilizes the idea of extended discrete Fourier transform and periodogram as in Phillips (1999) and Abadir et al. (2007). The model employed in this paper covers the multivariate framework. A Monte Carlo study exhibits the performance of the XLWE in non-stationary region. Finally, an empirical analysis of a trivariate series of US money aggregates ( $LTD_t$ ,  $M2_t$  and  $M3_t$ ) is presented. It is found that there is strong evidence of fractional cointegration between the growth rates ( $m2_t$  and  $m3_t$ ) concluding that  $m2_t$  can be considered as one of the main long-term contribution to the persistence properties in  $m3_t$ .

*JEL Classification:* C14, C32.

*Keywords:* Extended discrete Fourier transform, Fractional cointegration; Local Whittle; Money aggregates; Nonstationarity; Semiparametric estimation.

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