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Conclusions

Exiting tests for nonlinearity in Error Correction Models (ECM) are of the supLM type, with non standard asymptotic distribution. Furthermore, even though they are designed against specific alternative hypothesis, they have considerable power against other nonlinearities, even though lacking consistency. We have proposed a simple F type test, with χ^2 asymptotic distribution, designed against a more general alternative. In small samples, the proposed test has similar power when testing for the specific alternatives for the existing tests and better power when testing for a diverse nonlinearity. We also provide a condition on the derivatives of the nonlinear function, which is attended by any Smooth Transition Model, under which a two step estimator for the parameters in the model has normal asymptotic distribution. The first stage is a Ordinary Least Squares, while the second is a Nonlinear Least Squares. While there is no formal way to determine which function to estimate, we provide a heuristic approach based on a semi-parametric investigation of the data to help the choice process.

Both contributions follow the literature in assuming a known number of cointegration relations. A important aim for future research in the field is a test for the cointegration rank in the presence of this kind of nonlinear behavior.

Testing for non linearities in the adjustment of agricultural commodities prices in different countries shows strong evidence of nonlinear adjustment between wheat prices from Argentina, Brazil and United States. A semi-parametric regression points to a Smooth Transition ECM of the type used in Suárez-Fariñas, Pedreira and Medeiros [24], in which there is no price adjustment for disequilibria below a certain threshold. The estimated threshold is 17.4% for the equilibrium between prices in United States and Argentina and 12.1% between prices in Brazil and Argentina. This result is consistent with the presence of transaction costs, putting higher costs between more distant markets.