

SMOOTH-TRANSITION COINTEGRATION

Changli He

Dalarna University, Sweden

This paper studies a smooth-transition (ST) type cointegration, in which it allows for regime switching structure in a cointegrated system, and nests the linear cointegration developed by Engle and Granger (1987) and the threshold cointegration studied by Balke and Fomby (1997). Based on a class of vector ST cointegrating regression models, we develop F -type tests for examining linear cointegration against ST cointegration. The null asymptotic distributions of the tests with choosing various stationary transition variables are derived. Finite-sample distributions of those tests are studied by Monte Carlo simulation. The small-sample performance of the tests are also included and it is shown that our F -type tests have a better power when the system contains a ST cointegration than that when the system is linearly cointegrated. The empirical example for the purchasing power parity (PPP) data is illustrated by applying the testing procedures in this paper. It is found that there is no linear cointegration in the system, but there exists a ST cointegration in the system.

Keywords: Cointegration, Smooth-Transition, Nonlinear Autoregression models

References:

- Engle, R.F., C.W.J. Granger (1987) Cointegration and error correction: representation, estimation and testing. *Econometrica*, Vol. 55, 251-276.
- He, C., R. Sandberg (2006) Dickey-Fuller type of tests against nonlinear dynamic models. *Oxford Bulletin of Economics and Statistics* **68**, 835-861
- Teräsvirta, T. (1994) Specification, estimation, and evaluation of smooth transition autoregressive models. *Journal of the American Statistical Association*, Vol. 89, 208-218.