

Jean-Pierre URBAIN, Maastricht University

Cross-sectional dependence robust block bootstrap panel unit root tests

In this paper we consider the issue of unit root testing in cross-sectionally dependent panels. We consider panels that may be characterized by various forms of cross-sectional dependence including (but not exclusive to) the popular common factor framework. We consider block bootstrap versions of the group-mean Im, Pesaran, and Shin (2003) and the pooled Levin, Lin, and Chu (2002) unit root coefficient DF-tests for panel data, originally proposed for a setting of no cross-sectional dependence beyond a common time effect. The tests, suited for testing for unit roots in the observed data, can be easily implemented as no specification or estimation of the dependence structure is required. Asymptotic properties of the tests are derived for T going to infinity and N finite. Asymptotic validity of the bootstrap tests is established in very general settings, including the presence of common factors and even cointegration across units. Properties under the alternative hypothesis are also considered. In a Monte Carlo simulation, the bootstrap tests are found to have rejection frequencies that are much closer to nominal size than the rejection frequencies for the corresponding asymptotic tests. The power properties of the bootstrap tests appear to be similar to those of the asymptotic tests.

(This is joint work with F. Palm and S. Smeekes.)