

Testing for Stationarity in Heterogenous Panel Data

Kaddour Hadri

Abstract: This paper proposes a residual based Lagrange-Multiplier (LM) tests for a null that the individual observed series are stationary around a deterministic level or around a deterministic trend against the alternative of a unit root in panel data. The tests belong to the locally best invariant unbiased (LBIU) test statistics. The asymptotic distributions of the statistics are derived under the null and are shown to be normally distributed. Finite sample sizes and powers are considered in a Monte-Carlo experiment. The empirical sizes of the tests are close to the true size even in small samples.

The testing procedure is easy to apply including to panel data models with fixed effects, individual deterministic trends and heterogeneous errors.

It is also shown how to apply the tests to the more general case of stationary disturbance term.

Keywords: Panel data; Unit roots; LBIU test; LM test; Central limit theorem; Brownian bridge

JEL Classification: C22 C23

Correspondence:

Department of Economics
City University
Northampton Square
London, EC1 VOHB,
UK
K.HADRI@city.ac.uk