Testing for Parameter Constancy in the Time-Series Direction in Fixed-Effect Panel Data Models

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Abstract

We propose tests for parameter constancy in the time-series direction in fixed-effect panel data models. We construct the locally best invariant test (LBI test) based on Tanaka (1996) and the asymptotically point optimal test based on Elliott and Müller (2006), under both the homogeneous and heterogeneous models. We derive the limiting distributions of the test statistics and calculate the critical values by applying numerical integration and response surface regression. We find that the tests based on the homogeneous model suffer from serious size distortion when the true model is heterogeneous. Simulation results show that the proposed tests perform well if we apply the tests appropriately.

JEL classification: C12, C32, C33

Key words: parameter constancy, panel data, locally optimal test, point optimal test, characteristic function, response surface regression

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