Inference for unit roots in dynamic panels with heteroscedastic and serially correlated errors

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In this paper we introduce a unit root test for dynamic panel data models, allowing for cross-sectional heteroscedasticity and serial correlation in the disturbance term. The limiting distribution of the test statistic is derived under the assumption that the time dimension of the panel is fixed. The test statistic is based on the pooled Least Squares estimator of the autoregressive coefficient of the panel data model, adjusted for the inconsistency that arises due to the serial correlation of the disturbance term. The limiting distribution of the test is normal with a variance that depends on the serial correlation and heteroscedasticity nuisance parameters. The paper examines the consequences of ignoring heteroscedasticity and serial correlation in panel data unit root tests.

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