



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Asymptotic and Finite-Sample Properties of Panel Unit Root Tests
Under Cross-Sectional Dependence

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ABSTRACT

In this paper, we consider panel unit root tests in large panels under the assumption of cross-sectional dependence. The asymptotic behavior of the test statistic based on an ordinary least squares estimator is studied, when both the cross-section and time series dimensions grow large simultaneously. We derive the limiting distribution of the test statistic, which is non-standard and depends on the eigenvalues of contemporaneous covariance matrix. This is quite different from the normal limiting distributions studied by most previous literature, which are not applicable when the cross-sectional dependence is strong. A new form of matrix consistency and a plug-in calibration method are introduced to guarantee the validness of the test procedure. Monte Carlo simulations show that our new method performs well in terms of size and power, especially in the presence of strong contemporaneously correlated errors. The test is applied to assess empirical evidence for the purchasing power parity.