

Stability Tests for Heterogeneous Panel Data

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Summary

This paper proposes a new test for structural stability in panels by extending the testing procedure proposed in the seminal work of Andrews (2003) originally developed for time series. The test is robust to non-normal, heteroskedastic and serially correlated errors, and, importantly, allows for the number of post break observations to be small. Moreover, the test accommodates the possibility of a break affecting only some – and not all – individuals of the panel. The test statistic is constructed as a standardised average of independent test statistics computed for each cross section. Under mild assumptions and thanks to the cross sectional dimension of panel data, the test statistic is shown to be asymptotically normal as per the Lindeberg-Feller central limit theorem. This greatly facilitates the calculation of critical values with respect to the test's time series counterpart.

Monte Carlo experiments show that the test has good size and power even when the time and individual dimensions are small. Moreover, the test performs relatively well in the presence of serial correlation in the errors, especially when the time dimension is large. These results should allow the test to be used widely in finance and economics applications. Finally, the test is illustrated in practice, in a brief study of the euro's effect on trade. We find that there appears to be a break in the relation between trade and its determinants in 1998 Q1.