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Testing purchasing power parity hypothesis for transition economies

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Abstract

This study tests the PPP hypothesis for transition economies by using a panel approach. The results show that PPP holds for transition economies suggesting a half-life convergence of about one year. This study also compares the convergence rates for 'less open' and 'more open' transition countries. It is found that 'more open' transition economies converge faster than 'less open' transition economies.

Notes

[1] EBRD, 2003.

[2] Also see Quah (1994).

[3] Note that the results we get from this exercise would neither be meaningful nor powerful since the period in question is 12 unbalanced years.

[4] Levin and Lin (1993) indicated from simulation exercises that the problem of limited power in unit root tests is severe for small samples: 'For example, if 50 observations are generated by a stationary univariate model with first-order autocorrelation of 0.9, the augmented Dickey–Fuller (Dickey and Fuller, 1981) test procedure (allowing for intercept and time trend, and using a 5 percent confidence level) rejects the unit root hypothesis in only 8 percent of the replications.'

[5] If a deterministic element like an intercept and/or a time trend is present in the data but not included in the model, the unit root test will be inconsistent (Levin and Lin, 1992).

[6] As most of the univariate tests for transition countries suggested, an augmented Dickey–Fuller (ADF) test is conducted for one lag ($k = 1$).

[7] The Im, Pesaran and Shin test procedure estimates each equation separately by OLS as in univariate tests, and test statistics are obtained by taking the averages of ADF t-statistics for each equation. In addition, Im, Pesaran and Shin perform the LM test, which is based on the standardized cross section average of the individual LM statistics in their 1997 study. Their simulations indicate better performance of the t-test and LM test over the Levin and Lin test in small samples, where the t-test performs better than the LM test. Therefore, we only report t-statistics for the IPS test procedure.

[8] Nickell (1981) suggests the following formula for adjustment. $= (A_T B_T)/C_T$, where, $A_T = -(1+\rho)/(T-1)$, $B_T = 1-(1/T)(1-\rho^T)/(1-\rho)$, and $C_T = 1 - 2\rho(1-B_T)/[(1-\rho)(T-1)]$.

[9] Karlsson and Löthgren (1999) found in a simulation study for $T = 10$ and $N = 10$, two LL tests move in different directions, but for $T = 10$ and $N > 25$, the second Levin and Lin test (LL2) has the correct size and is the most powerful test. Based on their results, we can focus on the LL2 test results when testing for unit root for the full sample ($T = 12$, $N = 21$). See Maddala and Wu (1999) for arguments on the shortcomings of Levin and Lin tests, and Im, Pesaran and Shin tests and comparison of these two tests with the Fisher test. Also see Banerjee (1999) for an overview and discussions of these tests. Also see

Im, Pesaran and Shin (1997) for power comparison of Levin and Lin tests with t and LM tests for different N and T and with serially correlated errors.

[10] Note that some studies argue that rejection of unit root by a single country is enough to reject the unit root for the whole panel. Although time series for this study is too short to further discuss the unit root statistics for each country, we conducted a panel test on countries for which we do not reject a unit root, and obtained similar results to those above.

[11] Wu (1996) found the speed at which real exchange rates restore to equilibrium taking approximately two and a half years for one-time deviation from parity to be reduced by a half while supporting the long-run PPP for eighteen counties during the post-Bretton Woods period. Frankel and Rose (1996) found this speed to take approximately four years for a panel of 150 countries for a longer and unbalanced period (from 1948 to 1992).

[12] Score definitions are detailed under EBRD, annual transition reports, Section II.

[13] Note that report adds another level of score described with a plus and minus signs to all categories. Plus and minus signs are treated by adding 0.3 and subtracting 0.3 from the full value. Therefore the highest score for an element would be 4.3, totalling to 12.9 for three elements.

[14] Notice that Bulgaria with a score of 10.9 is at the margin. Also note that it is an acceding country set to join the EU in 2007. With curiosity we repeated our test placing Bulgaria in the ‘more open’ sample, and the results did not change significantly.

[15] The data for openness factor starts in 1995. Therefore, we truncated and estimated the data accordingly. For comparison, we also estimated the original model using the truncated data. These results are presented in the last section of Table 1.

[16] Note that the third section of Table1 presents the same exercise we report in the first and second sections of Table 1. The only difference is the time span. We reported the results from 1995 to 2003 to have a consistent comparison with our results in this section.

Related Research Data

A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test
Source: Oxford Bulletin of Economics and Statistics
Exploiting cross-section variation for unit root inference in dynamic data
Source: Economics Letters
A panel project on purchasing power parity: Mean reversion within and between countries
Source: Journal of International Economics
Testing the purchasing power parity: evidence from the new EU countries
Source: Applied Economics Letters
Purchasing power parity and unit root tests using panel data
Source: Journal of International Money and Finance
Purchasing Power Parity in the Long Run
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