PPP and the real exchange rate–real interest rate differential puzzle revisited: evidence from non-stationary panel data

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The relationship between the real exchange rate and the real interest rate differential is often seen as one of the basic elements of policy-makers' 'conventional wisdom'. As such, it suggests that in the long run the real exchange rate will be given by a combination of a constant and the real interest rate differential. It is a relationship derived from two of the main building-blocks that underpin (explicitly or implicitly) much of international macroeconomics. The first is purchasing power parity (PPP), or the hypothesis that there exists a constant long-run equilibrium real exchange rate. The second is uncovered interest parity (UIP), or the hypothesis that the expected change in the exchange rate will be equal to the interest rate differential. Combining these using both the monetary and portfolio balance models, as well as more hybrid constructs, will produce the real exchange rate–real interest rate differential relationship investigated here. Despite the theoretical and intuitive appeal both of the real exchange rate–real interest rate differential relationship and of its underlying components, the empirical evidence for these propositions (either separately or collectively) has at best been mixed. This paper employs new non-stationary panel techniques to investigate the empirical basis both for PPP and for the real exchange rate–real interest rate differential relationship. The results suggest that the answers are very dependent on the sample considered.

The results are obtained using a panel of 17 OECD bilateral real exchange rates against the US dollar, with more than 20 years of quarterly information from the post-Bretton Woods era. Our analysis uses recently developed stationarity and cointegration panel data tests. These help by increasing the span of the data, which raises the power of the tests (or in other words the ability to correctly reject the hypothesis being investigated).

The results show that there is little direct evidence to support PPP, ie the proposition that the real exchange rate is constant, or at least mean-reverting, in the long run. This evidence is obtained by examining the stationarity of the real exchange rate. The failure to find PPP contradicts the evidence from recent applications of non-stationary panel techniques to the real exchange rate. It suggests that, even with the new more powerful techniques, finding PPP may still be heavily sample-dependent.

Our results for the relationship between the real exchange rate and real interest differentials for the same sample also provide a contrast with earlier studies. In particular, the paper finds evidence that there exists a valid, stationary long-run relationship between the two variables. Using panel cointegration techniques it is possible to accept the existence of a long-run stationary relationship between the two. This is particularly obvious for the small open economies within the panel. When the panel consists solely of the G7 economies, however, the evidence for stationarity breaks down. This may explain the failure of most previous studies to uncover a long-run relationship, as these concentrated almost exclusively on G7 economies.