

HOW ROBUST ARE ESTIMATED EQUILIBRIUM EXCHANGE RATES? A PANEL BEER APPROACH

Agnès Bénassy-Quéré, Sophie Béreau & Valérie Mignon

NON-TECHNICAL SUMMARY

Estimating equilibrium exchange rates encounters a series of methodological difficulties. First, a concept of equilibrium exchange rate needs to be selected. On the one hand, the purchasing power parity (PPP) approach, although relevant in the very long run, does not provide any insight of exchange-rate adjustments that would be consistent with world imbalances being unraveled. On the other hand, the medium-run, fundamental equilibrium exchange-rate approach (FEER) of Williamson (1983), may excessively focus on current-account adjustment, underestimating the plasticity of the international monetary system and the existence of alternative adjustment variables. In-between, the behavioral equilibrium exchange-rate approach (BEER) introduced by Faruqee (1995) and Clark and MacDonald (1998) provides a cointegration-based view of equilibrium exchange rates where the impact of external imbalances on exchange rates is estimated directly rather than indirectly in the FEER approach, by inverting the trade-balance equation.

The second question is that of the currencies under scrutiny and the relevant estimation technique. The literature is roughly split in two strands. On the one hand, a number of papers provide individual estimates for emerging or developing countries, mostly based on reduced-form equations, excluding developed economies from the analysis (see e.g. Edwards, 1994). On the other hand, papers investigating exchange rate misalignments in developed economies generally focus on G3 or at most G7 countries. This divide of the literature appears increasingly

at odds with the implication of emerging countries in the financing of the US current-account deficit. For this reason, real exchange rate misalignments should not be investigated regardless of large emerging countries. The Group of Twenty (G20), which includes both the largest industrial and emerging economies, may then appear as one relevant grouping when investigating real exchange rate misalignments.

However, including recently open countries in the analysis raises the issue of possible structural breaks, due to the opening-up of financial and goods markets. This is a strong argument in favor of the use of (potential non-stationary) panel econometrics. Indeed, nonstationary panel procedures help by increasing the span of the data — which is generally small when studying exchange rates series — and so raising the power of unit root and cointegration tests. As a matter of fact, panel data analysis has been increasingly used to investigate real exchange rate dynamics, mostly to test the PPP hypothesis. In this paper, we investigate the robustness of the BEER approach to equilibrium exchange rates in a panel cointegration framework, when both industrial and emerging economies are included in the analysis. A special attention is paid to the Balassa-Samuelson effect embodied in the unobservable relative productivity of the tradable and non-tradable sectors. Since the measurement of relative productivity in the tradable versus non-tradable sectors is itself problematic, various proxies are proposed here, based on relative price indices, GDP per capita or the relative productivity per person employed. This allows us to study the impact of the measure retained for relative productivity on real exchange rates misalignments.

Our aim is to assess the robustness of estimated equilibrium exchange rates in a multi-country framework. The robustness is studied in four directions, successively. First, we investigate the impact of using alternative proxies for relative productivity. Second, we analyze the impact of estimating the equilibrium equation on one single panel covering G20 countries, or separately for G7 and non-G7 countries. Third, we measure the influence of the choice of the numeraire on the derivation of bilateral equilibrium rates. Finally, we study the temporal robustness of the estimations by dropping one or two years from the estimation period. Our main conclusion is that BEER estimations are quite robust to these successive tests, although at one point of time misalignments can differ by several percentage points depending on the methodology. The choice of the productivity proxy is the most sensible one, followed by the country sample. In contrast, the choice of the numeraire and the time sample have a relatively limited impact on estimated misalignments.

J.E.L. Classification: F31; C23

Keywords : equilibrium exchange rates, BEER, productivity, panel cointegration