



The real exchange rate: an alternative approach to the PPP puzzle

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Abstract

We use a reduced form model to empirically examine the relative importance of nominal (relative money supply and current account) and real variables (terms of trade and industry productivity) in determining the bilateral real exchange rate between New Zealand and Australia. Our results show that real variables have a long-term impact on the real exchange rate, while shocks to monetary variables have only a short-term effect. Our results from time series support the Balassa–Samuelson effect. We also show that New Zealand and Australia bilateral real exchange rate with Japan as a base country shares a common stochastic trend, which can be interpreted in terms of optimum currency area.

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1. Introduction

The concept of purchasing power parity (PPP) is derived directly from international trade theory's law of one price. This law states in bilateral trade there will be one price (excepting for tariffs, transportation costs and non-tariff barriers),

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$P_i = eP_f$. The domestic price of commodity i , P_i equals the foreign price P_f converted to the domestic currency through the use of the exchange rate, e . Conversely, the exchange rate between bilateral trading countries reflects the barter terms of trade. In addition, the relative factor proportions as well as relative factor prices are supposed to converge.

Deviations from the long-run PPP can be of a short-term nature or of long-run duration. Monetary theory advocates argue that monetary variables are the major determinants of the exchange rate. The long-term neutrality of money would result in a decay over the long run of any monetary shocks on the exchange rate, even if prices were sticky downward (Rogoff, 1996). However, Froot and Rogoff (1995) have shown that monetary shocks could have a long-run effect through their impact on the balance of payments on the current account. Relative differences in the rate of technological change can result in an imbalance in the relative factor proportions and factor prices, and deviations from PPP. Balassa (1964) and Samuelson (1964) show that such shocks may have the effect of raising the price level in the smaller country. Technological change in the tradable goods sector that would increase the capital–labor ratio, given world prices for the exports, would raise wages in that sector. Assuming full employment, the non-tradable goods sector would face cost push pressures on prices in the developing country. Such pressures would be minimal in the more developed countries because of the relatively higher productivity of the non-tradable sector. The deviations from PPP would thus be long lasting because of this Balassa–Samuelson effect. A corollary is that fast growing countries would tend to see their exchange rate appreciate relative to their trading partners, assuming that technological change is spurred more often in the tradable goods sector as the result of intense international competitiveness (Rogoff, 1996).

The majority of empirical studies have not been able to reject the null hypothesis of the existence of a unit root in bilateral exchange rate series. That means they are not able to prove convergence toward PPP in the long run due to the existence of real variables that cause permanent deviations from PPP, i.e., the Balassa–Samuelson effect (Rogoff (1996), Murray and Papell (2002)). Murray and Papell contend the point estimate results are consistent with anything from models with nominal rigidities to models where PPP does not hold and the confidence intervals of half-lives of PPP deviations are too wide to place any credence in the point estimates.

The persistence of the long-run disturbances makes the PPP approach incomplete as it fails to capture the effects of major changes in economic policies. In an economic reform program, new policies are introduced and implemented sequentially and real prices are supposed to adjust to new equilibrium values. However, it would be difficult to use the PPP approach to forecast what the new equilibrium values would be, or how long it would take to converge to the new equilibria, if indeed there is ever any convergence. This is of particular importance to countries where the likelihood of changes in the fundamentals is particularly high because of the implementation of significant economic reform measures.

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