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Commodity currencies and the real exchange rate

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Abstract

This paper examines whether the real exchange rates of commodity-exporting countries and the real prices of their commodity exports move together over time. Using International Monetary Fund (IMF) data on the world prices of 44 commodities and national commodity export shares, we construct new monthly indices of national commodity export prices for 58 commodity-exporting countries over 1980–2002. Evidence of a long-run relationship between national real exchange rate and real commodity prices is found for about one-third of the commodity-exporting countries. The long-run real exchange rate of these 'commodity currencies' is not constant (as would be implied by purchasing power parity-based models) but is time varying, being dependent on movements in the real price of commodity exports.

JEL classification: F31; F41; O13
Keywords: Real exchange rate; Commodity prices; Developing country; Purchasing power parity

> The neglect to allow for the effect of changes in the terms of trade is, perhaps, the most unsatisfactory characteristic of Prof. Cassel's "Purchasing Power Parity Theory of the Foreign Exchanges". For this not only upsets the validity of his conclusions over the long period, but renders them even more deceptive over the short period... (Keynes, 1930, p. 336).

1. Introduction

Attempts by economists to model long-run movements in real (price-level adjusted) exchange rates have typically proven to be rather unsuccessful. Meese and Rogoff (1983)

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demonstrated that a variety of linear structural exchange rate models failed to forecast more accurately than a naïve random walk model for both real and nominal exchange rates, and their key finding has not been overturned in the succeeding three decades. If the real exchange rate follows a random walk, then innovations to the real exchange rate persist and the time series can fluctuate without bound. This result is contrary to the theory of purchasing power parity (PPP), which states that there is a constant equilibrium level to which exchange rates converge, such that foreign currencies should possess the same purchasing power. Accordingly, PPP has proven to be a weak model of the long-run real exchange rate, and recent work has emphasized the time-varying nature of the long-run real exchange rate.

There is a large empirical literature on the determinants of the long-run real exchange rate, which has emphasized sectoral productivity differentials, government spending, cumulated current account imbalances, and interest rate differentials as important drivers of long-run deviations from purchasing power parity (see Froot and Rogoff, 1995; Rogoff, 1996 for recent surveys). This literature has mainly concentrated on understanding the sources of real exchange rate fluctuations in developed countries, and the fruits of this research have been mixed, with many studies failing to find a statistical link between real exchange rates and the above explanators.

In contrast to the preponderance of developed country studies of the behavior of real exchange rates, evidence on the behavior of developing country real exchange rates has been scarce. Those studies which have examined the determinants of developing country real exchange rates have largely focused on Latin America, and have emphasized the role of movements in the terms of trade in driving real exchange rate movements (see Díaz-Alejandro, 1982; Edwards, 1989). There is also an extensive literature for some developed countries which links exogenous movements in the terms of trade and changes in their real exchange rates, particularly for commodity exporters Canada and Australia (see, among others, Amano and van Norden, 1995; Gruen and Wilkinson, 1994).

Rogoff (1996) summarizes the multitude of potential explanators offered by researchers in their attempts to resolve the PPP puzzle, which concerns the finding of many researchers that the speed of mean reversion of real exchange rates is too slow to be consistent with PPP. Chief among these explanators has been the recognition that real factors have a role in the determination of real exchange rates, through such channels as the Balassa–Samuelson effect; real interest rate differentials; and portfolio balance models (where higher net foreign assets drive an appreciation of the exchange rate). In the context of commodity-exporting countries, almost all of which are also developing countries, the real factor of primary interest in the determination of the real exchange rate is the terms of trade.

Indeed, because primary commodities dominate the exports of developing countries, fluctuations in world commodity prices have the potential to explain a large share of movements in their terms of trade. While terms of trade fluctuations have been considered a key determinant of real exchange rates (De Gregorio and Wolf, 1994; Chinn and Johnston, 1996; Montiel, 1997), it is surprising that there has been no comprehensive empirical work done to assess the mechanisms through which changes in real commodity