U.S. real exchange rate fluctuations and relative price fluctuations ☆

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Abstract

Traditional theory attributes fluctuations in real exchange rates to changes in the relative price of nontraded goods. This paper studies the relation between the United States' bilateral real exchange rate and the associated bilateral relative price of nontraded goods for five of its most important trade relationships. We find that this relation depends crucially on the choice of price series used to measure relative prices and on the choice of trade partner. The relation is stronger when we measure relative prices using producer prices rather than consumer prices. The relation is stronger the more important is the trade relationship between the United States and a trade partner. Even in cases where there is a strong relation between the real exchange rate and the relative price of nontraded goods, however, a large fraction of real exchange rate fluctuations is due to deviations from the law of one price for traded goods.
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1. Introduction

Traditional real exchange rate theory dichotomizes all goods as being either traded or nontraded. Traded goods can be internationally exchanged at negligible cost, and therefore, because of arbitrage, their prices obey the law of one price. Nontraded goods cannot be exchanged in this manner, so their prices are determined by purely domestic factors. This implies that aggregate real exchange rate movements are driven entirely by cross-country movements in the relative prices of nontraded to traded goods within countries (see, for example, Cassel, 1918; Pigou, 1923).

The first graph in Fig. 1 illustrates the relation between the bilateral real exchange rate for Germany and the United States with a bilateral relative price of nontraded goods. In the graph, $rer_{\text{ger,us}}$ is the logarithm of the real exchange rate between Germany and the United States, and $rer^{\text{N}}_{\text{ger,us}}$ is the logarithm of the relative price measure. The construction of the variables in the graph is discussed in detail in what follows. What is important at this point is to realize that these variables have been constructed so that, if the traditional theory works well, and if we are using appropriate data to measure relative prices, the two variables should be the same or approximately the same. The first graph in Fig. 1 shows no discernible relation at all between the two series. Researchers such as Chari et al. (2002) use graphs like it to justify an approach that totally abandons the traditional theory and instead focuses on deviations from the law of one price attributable to fluctuations in money supplies across countries when nominal prices are sticky. The second graph in Fig. 1, which illustrates the same relation between bilateral variables, in this case for Canada and the United States, indicates that totally abandoning the traditional theory may be premature. Although the traditional theory does not account for all of the fluctuations in the bilateral real exchange rate, there is clearly a significant relation between $rer_{\text{can,us}}$ and $rer^{\text{N}}_{\text{can,us}}$, suggesting that the traditional theory should be modified rather than totally abandoned.

This paper addresses the question: when does the relation between the bilateral real exchange rate and the associated bilateral relative price of nontraded to traded goods look
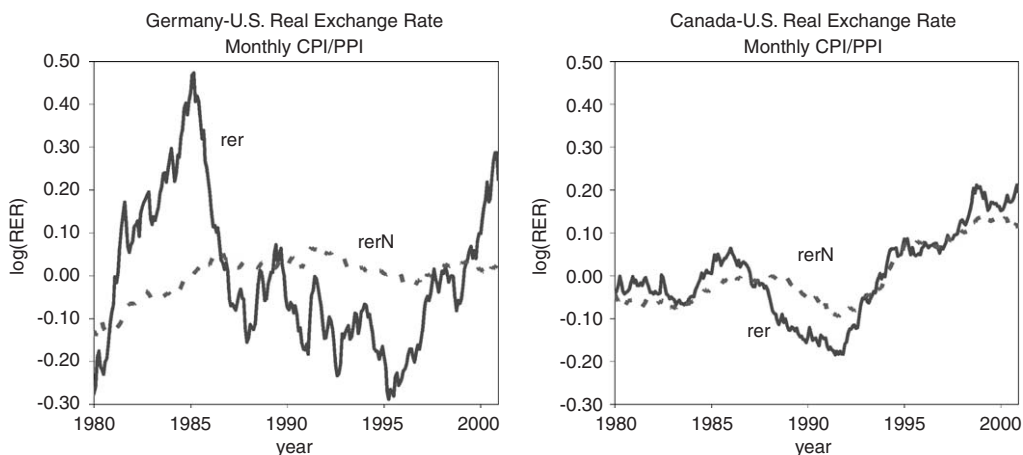

Fig. 1. U.S. bilateral real exchange rates and relative prices of nontraded goods.