Real exchange rate fluctuations and the relative importance of nontradables

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ABSTRACT

The real exchange rate is one of the most important price variables in macroeconomics as changes in it have implications for both external competitiveness as well as internal sectoral resource allocation. This paper decomposes real exchange rate volatility into its two components for a panel of 51 economies over the period 1990–2010 and specifically estimates the relative importance of internal prices in real exchange rate fluctuations. Unlike other studies, this paper goes a step further and examines the role of a set of economic fundamentals in explaining the relative contribution of the non-traded component in real exchange rate fluctuations.

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1. Introduction

The real exchange rate is one of the most important price variables in macroeconomics as changes in it have implications for both external competitiveness as well as internal sectoral resource allocation. Accordingly, a great deal of attention has been paid to the causes of real exchange rate volatility. Broadly, there are four sets of literature in this area. The first focuses on linking real exchange rate volatility to the exchange rate regime and, in particular, the rise in volatility as a country shifts from fixed to flexible regimes – so-called "Mussa puzzle" (Stockman, 1983; Mussa, 1986). The second set of literature employs Vector Auto Regression (VAR) methods and variance decomposition techniques to estimate the relative contributions of real and nominal shocks to real exchange rate fluctuations (for example, see Clarida and Gali, 1994; Enders and Lee, 1997; Lastrapes, 1992; Rogers, 1999). The third

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deals with the fundamental determinants of the long-run equilibrium real exchange rate (such as productivity, government spending, net foreign asset position, etc.) (for instance, see MacDonald, 2000; Ricci et al., 2008). A closely related literature attempts to determine the drivers of long-run deviations from Purchasing Power Parity (PPP) and focuses on the reasons behind the well-known "PPP puzzle" (Froot and Rogoff, 1995; Rogoff, 1996 offer authoritative surveys). This literature also recognizes the time-varying nature of the long-run real exchange rate which could evolve over time based on a set of economic and financial fundamentals.

The fourth set of literature tries to decompose real exchange rate volatility into its two sub-components – external prices (deviation from PPP) and internal prices (relative price of tradables and nontradables). Our paper fits squarely in and extends upon the fourth strand of the literature while drawing partly on the third. Engel (1999) is a pioneering study with regard to the fourth set of literature. He suggested that about 90 percent of the fluctuations in the US bilateral real exchange rates vis-à-vis other OECD economies (Canada, France, Germany, Italy, Japan) during the period 1962–1995 was driven by changes in the traded goods component. In a comprehensive study of 1225 country pairs over the period 1989–2005, Betts and Kehoe (2008) find that real exchange rate fluctuations tend to co-move much more strongly with the relative price of tradables to nontradables when there are more intensive trade relationships. In contrast, a study by Burstein et al. (2006) finds that about 50 percent of movements in the real exchange rates of the US vis-à-vis selected OECD economies over the period 1980–2001 can be explained by changes in the relative price of tradables and nontradables, while the rest occurs due to changes in competitiveness (relative price of tradables). They argue that the reason for the earlier Engel findings has been due to the use of unsuitable proxies for the price of tradables. Other studies have examined this issue for selected Asian economies (Ouyang and Rajan, 2011; Parsley, 2007), India (Yanamandra, 2011), the United Kingdom (Groen and Lombardelli, 2004), and Turkey (Ciplak, 2007). However, having undertaken the decomposition, none of the papers have taken the next step to examine the main forces behind the relative movements of each of these two components, a gap this paper will try and fill.

The paper is organized as follows. The next section examines whether bilateral real exchange rate fluctuations are predominantly due to movements in the relative prices of non-traded goods for a panel of 51 economies over the period 1990–2010. Sections 3 and 4 undertake empirical analyses of the economic determinants of the relative significance of the non-traded component of bilateral real exchange rates and real effective exchange rates, respectively. The final section concludes.

2. Drivers of real exchange rate volatility

2.1. Basic framework

Real exchange rate fluctuations can be decomposed into two sets of relative prices, viz. the relative price of traded goods between economies (so-called price competitiveness) and relative price of tradables and nontradables within each country. The (log) aggregate price index can be expressed as a weighted-average of the price of tradables (T) and nontradables (N):

$$p_t = (1-\alpha)p_t^T + \alpha p_t^N, \text{ for the domestic country} \tag{1}$$

and,

$$p_t^* = (1-\beta)p_t^{T*} + \beta p_t^{N*}, \text{ for the foreign country}. \tag{2}$$

Then the real exchange rate, $q_t = e_t + p_t^* - p_t$, can be written as the sum of the relative price of traded goods between economies (a) and the relative price of non-traded to traded goods within each economy (b).

$$q_t = \left(e_t + p_t^{T*} - p_t^T\right) + \beta\left(p_t^{N*} - p_t^{T*}\right) - \alpha\left(p_t^N - p_t^T\right) = \underbrace{e_t + p_t^{T*} - p_t^T}_{(a)} + \underbrace{\left(p_t^* - p_t^{T*}\right) - \left(p_t - p_t^T\right)}_{(b)}$$

$$\tag{3}$$