



# The importance of nontradable goods' prices in cyclical real exchange rate fluctuations

Ariel Burstein<sup>a</sup>, Martin Eichenbaum<sup>b,c,\*</sup>, Sergio Rebelo<sup>b,d</sup>

<sup>a</sup> *UCLA, United States*

<sup>b</sup> *Northwestern University, NBER, United States*

<sup>c</sup> *Federal Reserve of Chicago, United States*

<sup>d</sup> *CEPR, United States*

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## Abstract

Changes in the price of nontradable goods relative to tradable goods account for roughly 50 percent of the cyclical movements in real exchange rates.

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## 1. Introduction

A classic question in international macroeconomics is whether fluctuations in the real exchange rate ( $RER^{CPI}$ ) constructed using the consumer price index (CPI) are primarily associated with movements in the relative price of tradable goods across countries or with fluctuations in the relative price of nontradable to tradable goods. Engel (1999) and Chari et al. (2002) conclude that fluctuations in the real exchange rates of developed economies are almost exclusively driven by changes in the relative price of tradable goods across countries. Their evidence suggests it is not important to distinguish between tradable and nontradable goods to understand cyclical real exchange rate fluctuations.

We argue that fluctuations in the relative price of nontradable to tradable goods are an important source of  $RER^{CPI}$  movements. We use an approach proposed by Engel (1999) and decompose the variance of  $RER^{CPI}$  into the variance of the relative price of tradable goods across countries, the variance in the relative price of nontradable to tradable goods, and a covariance

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\* Corresponding author. Tel.: +1 847 491 8232.

E-mail address: [eich@northwestern.edu](mailto:eich@northwestern.edu) (M. Eichenbaum).

term. To implement this decomposition we must take a stand on how to measure prices of tradable goods. A standard approach in the literature is to use retail prices. Unfortunately, retail prices are heavily contaminated by the cost of nontradable distribution services such as retailing, wholesaling, and transportation (see Burstein et al., 2003). One approach to dealing with the distribution cost issue is to measure tradable goods' prices using the producer price index (PPI). However, a problem with the PPI is that it generally excludes import prices (IMF, 2004) and, for roughly one third of OECD countries, it also excludes export prices (Maitland-Smith, 2000). For this reason, we focus on the prices of pure-traded goods at the dock, i.e. the price of goods that are actually traded exclusive of distribution costs.<sup>1</sup> We measure the relative prices of pure-traded goods across countries using a weighted average of import and export price indices. We use quarterly data for 11 OECD countries for the period 1971–2002. We find that, for the median country, variations in the price of nontradable goods relative to the price of pure-traded goods account for over half the movements in  $RER^{cpi}$ .<sup>2</sup>

This finding depends critically on our measure of the price of tradable goods. To substantiate this statement we use US data to decompose the variance of  $RER^{cpi}$  using two alternative measures of the price of tradable goods: the retail price of tradable goods and a weighted average of import and export prices. The first price measure implies that the relative price of nontradable to tradable goods accounts for virtually none of the variance of  $RER^{cpi}$ . In sharp contrast, the second price measure implies that the relative price of nontradable to tradable goods accounts for at least 55 percent of the variance of  $RER^{cpi}$ . Using the retail price of tradable goods leads one to overstate the fraction of cyclical  $RER^{cpi}$  fluctuations that are due to changes in the price of pure-traded goods across countries.

Viewed overall, our results suggest that a successful theory of real exchange rate fluctuations must incorporate changes across countries in the relative price of nontradable goods to pure-traded goods. At the same time, our results are consistent with the view that there are significant fluctuations in the relative price of pure-traded goods across countries. These fluctuations could reflect a variety of factors such as sticky prices and endogenous changes in real markups. In addition, different countries import and export different baskets of goods. Therefore, changes in the relative price of these goods lead to changes in the relative price of traded baskets and in the measured real exchange rate. Assessing the plausibility of these alternative hypotheses is an important objective of ongoing research.

The remainder of this paper is organized as follows. Section 2 describes the method that we use to decompose  $RER^{cpi}$  movements. We report our empirical results in Section 3. Section 4 concludes.

## 2. Decomposing real exchange rate fluctuations

We define the CPI-based real exchange rate as

$$RER_t^{cpi} = \frac{P_t}{S_t P_t^*}. \quad (2.1)$$

<sup>1</sup> In addition to including distribution costs, CPI-based retail prices differ from import and export prices because the former includes “local goods”. These are goods that are produced solely for the domestic market and are not traded.

<sup>2</sup> Betts and Kehoe (in press) argue that movements in nontraded goods' prices are important in explaining real exchange rate fluctuations. Their analysis is based on real exchange rates constructed using gross output deflators. These deflators are available only at an annual frequency, and they do not include the price of imported final goods.

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