

Research on Exchange Rates and International Prices

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Engel 1999: Accounting for US RER changes

Measure the proportion of US RER movements accounted by movements in relative prices of non-traded goods

- Five different indices for measuring prices of nontraded goods
- Contrary to the theory we studied in the last two classes, movements in the relative prices of nontraded goods appear to account for almost none of the movement in the US RER
- A puzzle?

Price Index: A Parametrized Version

We follow the approach of Engel 1999

Let P_t^T : Price index of tradables, P_t^N : price index of nontradables.

Assume Cobb-Douglas price-indexes:

$$P_t = \left(P_t^T\right)^{1-\alpha} \left(P_t^N\right)^\alpha \quad \text{and} \quad P_t^* = \left(P_t^{T*}\right)^{1-\beta} \left(P_t^{N*}\right)^\beta$$

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Let $p_t = \log P_t$, $p_t^T = \log P_t^T$, $p_t^N = \log P_t^N$. The price indexes become

$$p_t = (1 - \alpha) p_t^T + \alpha p_t^N \quad \text{and} \quad p_t^* = (1 - \beta) p_t^{T*} + \beta p_t^{N*}$$

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- Let $\tilde{e}_t = \log e_t$, $\tilde{E}_t = \log E_t$. The real exchange rate has as

$$\tilde{e}_t = \tilde{E}_t + p_t^* - p_t$$

$$\tilde{e}_t = \tilde{E}_t + p_t^{T*} - p_t^T + \underbrace{\beta \left(p_t^{N*} - p_t^{T*} \right) - \alpha \left(p_t^N - p_t^T \right)}_{\text{non-traded goods component}}$$

Goal

How much of the exchange rate movements can be explained by the nontraded goods component

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Look at five measures of nontraded-goods prices

- CPI for tradables and nontradables
- OECD output prices for traded- and nontraded-goods
- Personal consumption deflators
- Producer Price Index (PPI) vs Consumer Price Index (CPI)

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Contribution vs previous literature:

- Uses data for tradables, nontradables in order to compare the contribution of nontraded to traded goods
- Conclusion: nontraded-goods account for very little of movement in real exchange rates. Movements mostly explained by violations of the law of one price for tradeables.
- Engel's results are largely confirmed & extended to a sample of 50 countries by Betts and Kehoe 2006

Betts and Kehoe 2006

Figure: Contribution of Real Exchange Rate of Non-Tradeable to overall Real Exchange Rate

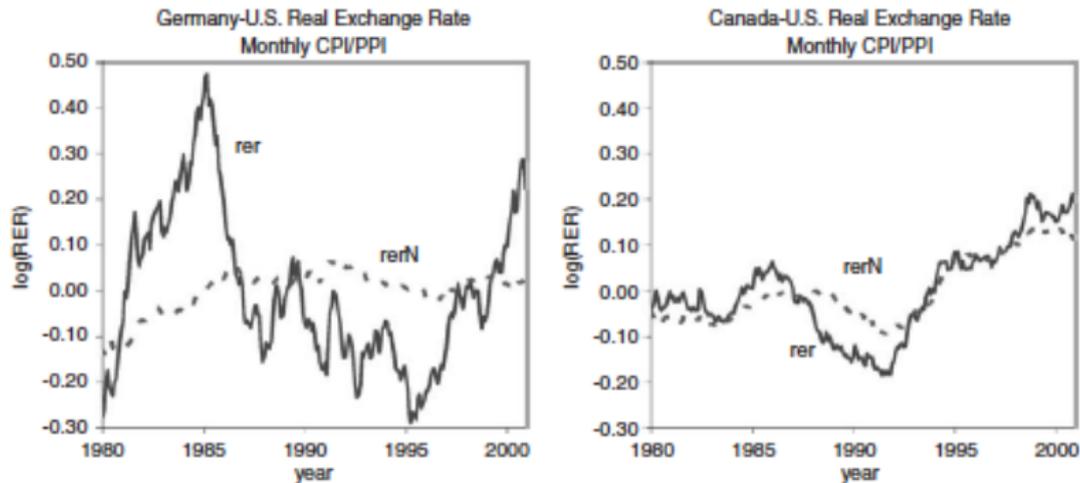


Fig. 1. U.S. bilateral real exchange rates and relative prices of nontraded goods.

Betts and Kehoe 2006

Figure: Contribution of Real Exchange Rate of Non-Tradeable to overall Real Exchange Rate, various trade-weighted statistics

Comparison of series trade weighted average. Annual data

	<i>GO Deflators</i>	<i>PPI-CPI</i>	<i>Components of CPI</i>	<i>Components of PCD</i>
Levels				
$\text{corr}(\text{rer}, \text{rer}^N)$	0.44	0.73	0.23	0.27
$\text{std}(\text{rer}^N)/\text{std}(\text{rer})$	0.36	0.48	0.45	0.36
$\text{vardec}(\text{rer}, \text{rer}^N)$	0.21	0.33	0.22	0.15
Detrended levels				
$\text{corr}(\text{rer}, \text{rer}^N)$	0.68	0.77	0.00	0.23
$\text{std}(\text{rer}^N)/\text{std}(\text{rer})$	0.32	0.32	0.22	0.15
$\text{vardec}(\text{rer}, \text{rer}^N)$	0.18	0.20	0.08	0.03
1 year changes				
$\text{corr}(\text{rer}, \text{rer}^N)$	0.47	0.63	0.02	0.14
$\text{std}(\text{rer}^N)/\text{std}(\text{rer})$	0.27	0.33	0.19	0.13
$\text{msedec}(\text{rer}, \text{rer}^N)$	0.11	0.19	0.06	0.04

Non Tradeables or Tradeables?

⇒ If non-tradeables cannot explain all the change in the real exchange, then what?

- A puzzle for the main theory we described
- Tradeables are the ones generating most of the change.
- One of its assumption has to fail: law of one price for tradeables?
- New research has looked into traded goods at a more disaggregated level to understand this relationship: sectors, firms, scanner data!