Real Exchange Rates and Primary Commodity Prices

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The Paper

- A long-standing puzzle
  - RERs are volatile, persistent, unrelated to fundamentals
- This paper
  - Shocks to PCPs can account for large fraction of RER variation
  - Holds for developed countries, not just for "commodity" currencies
  - Relationship robust, works out of sample
  - Calibration of simple model matches key RER moments
- Proposed mechanism
  - PCPs affect RER via pass-through from inputs to final goods prices

Discussion Outline

- Review paper
  - Context
  - Empirics
  - Theory

- Ask two main questions
  - test theory mechanism in the data
  - quantitative performance of (extended) model

Exchange Rate Disconnect

$$RER_t := \frac{S_t P_t^*}{P_t} \qquad \text{in logs: } rer_t = s_t + p_t^* - p_t$$

RER puzzles:

1. $\approx$ random walk process, very persistent
2. very volatile, 10x more than macro fundamentals, mostly driven by E_t
3. not robustly correlated with fundamentals

Context

Classic arguments

1. Volatility driven by monetary/financial shocks + nominal rigidities
   - financial shocks should die out in long-run, $\neq$ high *RER* persistence
   - additional frictions in s_t pass-through:
     - trade barriers
     - home bias
     - pricing to market

2. Persistence driven by real shocks
   - real shocks hardly volatile enough to explain short-term fluctuations

   - this paper: PCPs are volatile *and* persistent real shocks!

Empirical Result

Estimate

$$rer_t^{US,j} = \eta' \mathbf{pcp}_t^{US} + u_t$$

	1960–2014	1960–1972	1973–1985	1986–1998	1999–2014
(a) 10 commodities, 4-year differences					
United Kingdom	0.48	0.90	0.90	0.81	0.60
Germany	0.63	0.95	0.87	0.83	0.75
Japan	0.57	0.92	0.84	0.92	0.82
(b) 4 commodities (best fit), 4-year differences					
United Kingdom	0.33	0.72	0.82	0.63	0.58
Germany	0.56	0.84	0.87	0.81	0.74
Japan	0.48	0.88	0.76	0.86	0.80

- Works well out of sample
- Robust to parametric bootstrap test of orthogonality

Theory

CPI decomposition

- Typically, on final goods $p_t = (1-\alpha)p_t^T + \alpha p_t^N$
- Write RER as

$$rer_t = \overbrace{s_t + p_t^{T*} - p_t^T}^{\text{Tradable component}} + \overbrace{\alpha^*(p_t^{N*} - p_t^{T*}) - \alpha(p_t^N - p_t^T)}^{\text{Relative T-N Price}}$$

Here

- CPI decomposition on **inputs**: $p_t = (1-\gamma)p_t^{PC} + \gamma p_t^{OI}$
- PCPs satisfy LOP: $s_t + p_t^{PC*} = p_t^{PC}$
- Write RER as:

$$rer_t = \overbrace{\gamma^*(p_t^{OI*} - p_t^{PC*}) - \gamma(p_t^{OI} - p_t^{PC})}^{\text{Relative PC-OI Price}}$$

Rearrange

$$rer_t = \gamma^* s_t + (\gamma - \gamma^*)p_t^{PC} + \gamma^* p_t^{OI*} - \gamma p_t^{OI}$$

$\Rightarrow$ test for unobserved factor, common to p_t^{PC} and rer_t

Model Testable Implications

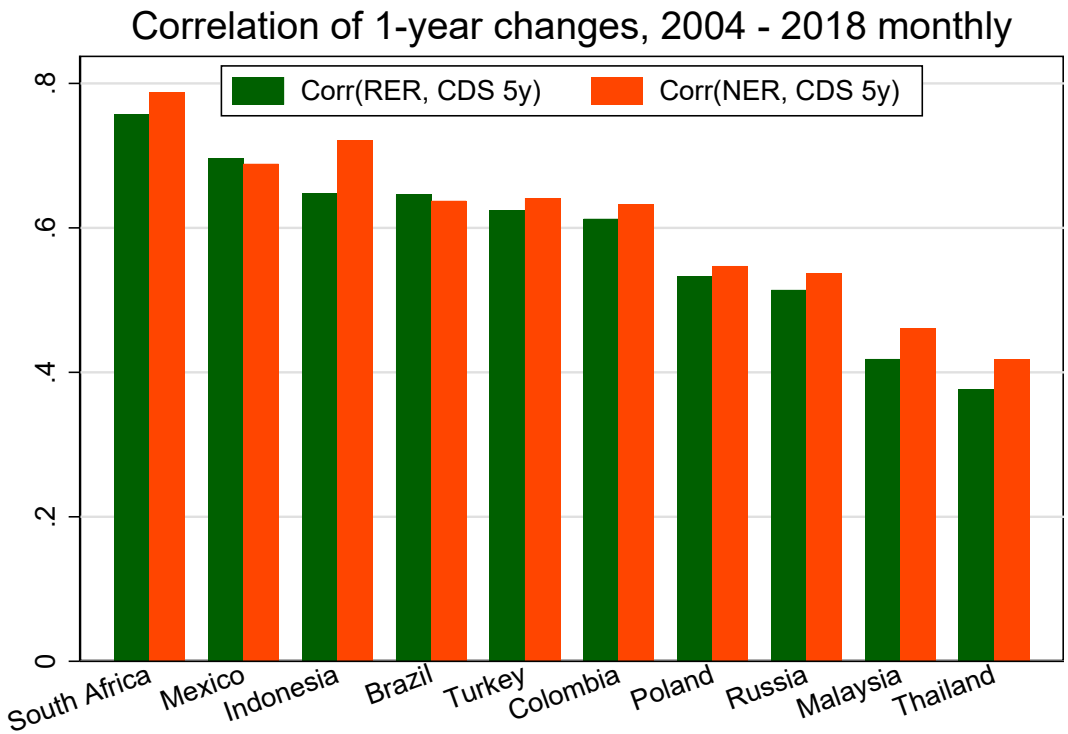
- Empirical result: rer_t and p_t^{PC} are correlated...
- Theory: ...via pass-through input prices $\rightarrow$ CPI
  - **real common factors = shocks to commodity endowments & TFP**
  - $rer_t = s_t + p_t^* - p_t$
- Calibration shows theory can work quantitatively
  - replicates moments of RER
  - without large movements in quantities

Q Can we test theory implications further?

- model is real and static, mechanism goes through CPI
- producer prices, commodity-heavy price categories
- how far could full dynamic model go in explaining remaining menu of puzzles?

Financial Shocks

- Itskhoki and Mukhin (2019)
  - financial (UIP) shocks $\rightarrow$ s_t more volatile than macro variables
  - no direct effect on product/labour markets
  - muted pass-through to CPI & output $\rightarrow$ "disconnect"
- A quick experiment: Credit Default Swaps



Q What are the common factors driving PCPs and RER? Real or financial?

Conclusion

- Great paper: clear question, solid result, provocative conclusion

- Two main comments
  - test implications of the theory
  - quantitative performance in extended model