International Liquidity and Exchange Rate Dynamics

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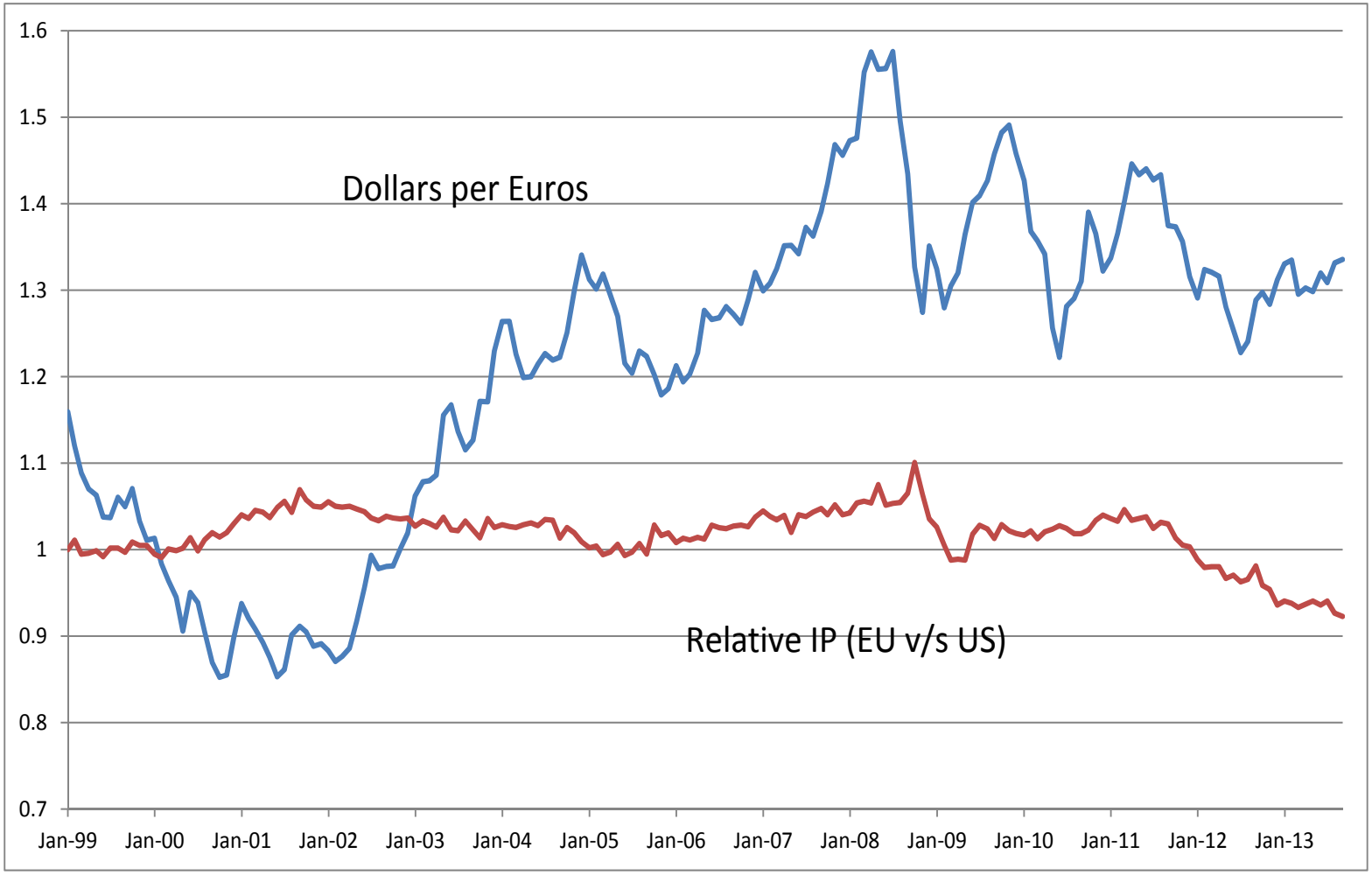
The Holy Grail of International Macro



The Contribution

- Exchange rates (real or nominal) volatile and lack a systematic connection with fundamentals
- Difficult to predict (ok), but also difficult to understand ex-post (more embarrassing)
- Gabaix and Maggiori propose new theoretical framework that can help the quest for understanding exchange rates
- Ambitious and necessary paper

This Discussion

- Summarizing the idea
- GaMa meets BKK
- Remaining challenges

The main idea in general

- Take standard international model, with segmented (country specific) intertemporal markets
- Add a financier that intermediates intertemporal trades
- Intermediation is costly (or risky) hence prices (including exchange rates) adjust to induce financier to take positions which clear intertemporal mkts
- Changes in the intermediation cost (or risk tolerance) lead to change in exchange rates

GM meets BKK: Financial Autarky

- Consider the standard BKK two goods framework
- Let s_t be the state (productivity, other shocks, capital)
- $e(s_t)$ price of foreign consumption, c*, relative to domestic c (real exchange rate)
- Countries save in non contingent bonds denominated in their home good

$$\begin{aligned} b + wl + d &= c + \frac{b'}{R} \\ b^* + w^* l^* + d^* &= c^* + \frac{b'^*}{R^*} \end{aligned}$$

- $\frac{b'}{R}, \frac{b'^*}{R^*}$ home and foreign saving (in different goods)
- No financier $\frac{b'}{R} = 0, \frac{b'^*}{R^*} = 0$: financial autarky
- Prices (including e) adjust so no international intertemporal borrowing/lending
- e determined by fundamentals

GM meets BKK: Financiers

- Financiers intermediate international intertemporal borrowing and lending Q

$$Q = \frac{b}{R} \qquad Q = -\frac{b^*}{eR^*}$$

- Suppose $Q > 0$ i.e. home saves
- Financiers borrow in c, exchange c for c^*, lend c^* to foreign (which in equilibrium must borrow)
- Financier short in c, long in c^*, risky position as e' uncertain
- The bigger Q, the more she needs to be compensated (through expected return on position)

$$Q = \frac{1}{\Gamma} E\Big(\underbrace{R^* \frac{e'}{e} - R}_{\text{Expected Return}} \Big)$$

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- Equilibrium e (and intertemporal exchange) depend on fundamentals plus Γ

Appealing Features

- Connect exchange rate determination to inter-temporal international exchange and risk
- Changes in ability to intermediate (bear risk), disruption in intertemporal markets -> exchange rate
- Modularity as the Γ function can be tacked on any international macro model

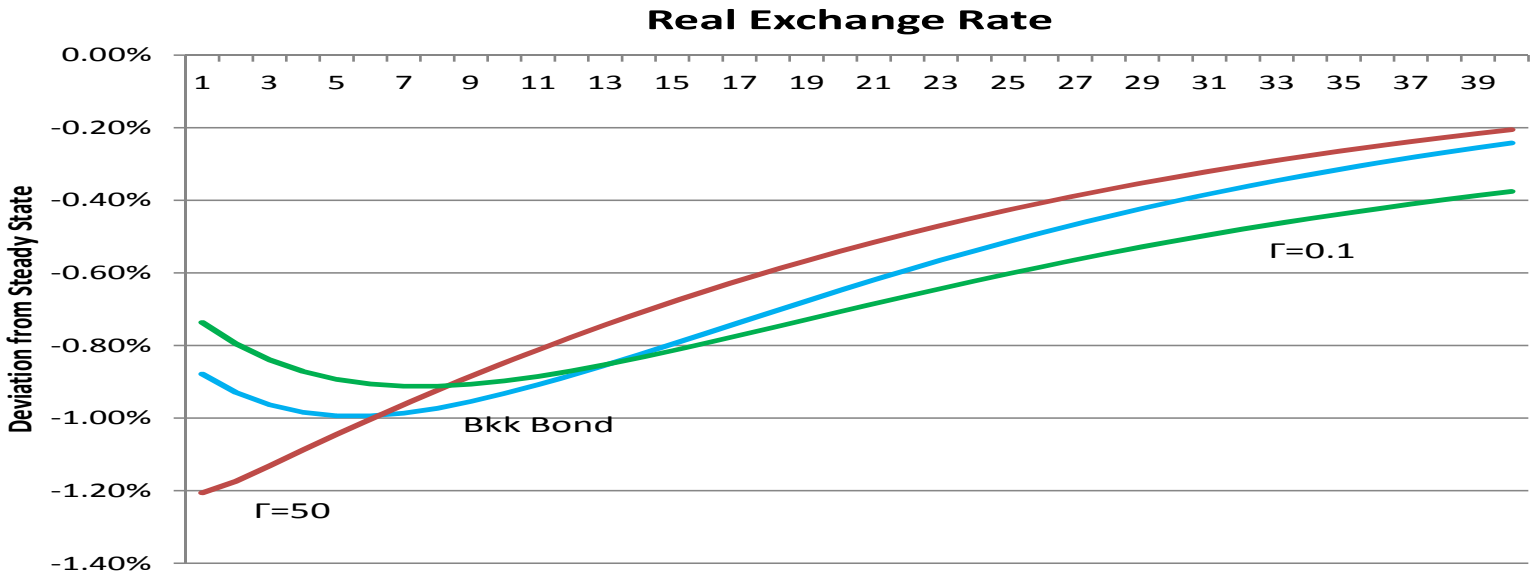
Quantitative assessment

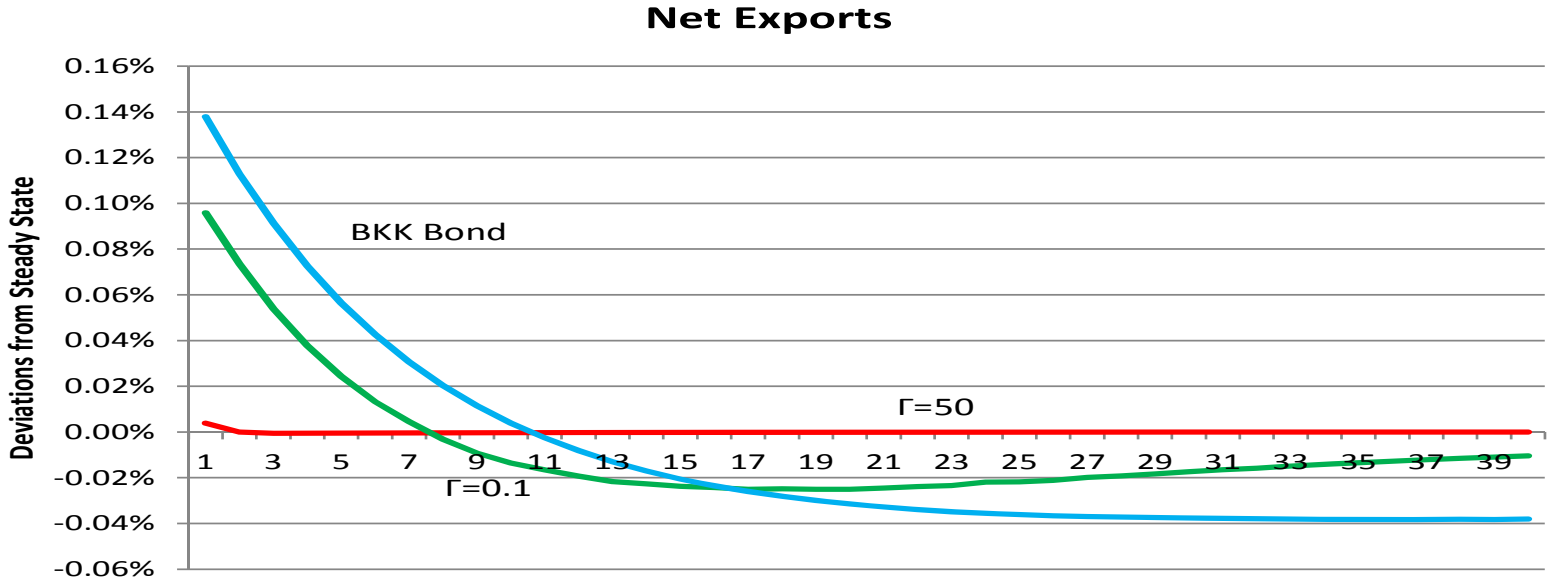
- Insert Gamma function in BKK model (standard parameters)
- Two experiments:
  - Impulse responses to a productivity shock
  - Shocks to financiers

$$Q = \frac{1}{\Gamma} E(\underbrace{R^* \frac{e'}{e} - R - \xi}_{\text{Expected Return}})$$

i.e. when $\xi \uparrow$, financier requires a even higher expected return to intermediate Q

Response of e and Net Exports to productivity shocks





Summary

- With $\Gamma \simeq 0$ Responses in GaMa similar to BKK with Bond
- With $\Gamma \simeq \infty$ responses in GaMa similar to BKK with FA
- Problems:
  - Even in FA exchange rate moves less than in data (Heathcote and Perri, 2000)
  - Exchange rate connected to fundamental $(\text{boom in home country} -> \text{depreciation of } e)$: not in the data

Impact of shocks to financiers

	$\sigma(\xi)$			
	0	0.5%	1%	2%
$\sigma(e)$	2.18	2.48	3.22	4.90
$Corr(e,y)$	0.81	0.68	0.46	0.12
$Corr(e,ir)$	-1	-1	-1	-1

- Shocks to financiers: e more volatile and less connected with output, consistent with data but..
- e still connected to fundamentals (in this case ir =import ratio = imports over production used domestically): not in the data

Remaining Challenges

- In GaMa basic environment e still, counterfactually, connected to fundamentals (not a shortcoming of GaMa per se, but of the environment). Environment with more frictions needed for quantitative evaluations
- The simplicity and tractability of the framework should be used to do more empirical work! More specifically:
  - GaMa suggests a relation (at a macro level) between intertemporal exchange (Q) and expected deviations for UIP $E(R^* \frac{e'}{e} - R)$. Any evidence for this?
  - If shocks to intertemporal intermediation drive exchange rate, which data can help identify these shocks? other intertemporal/financial prices?

Still a challenge!