Discussion of Gabaix and Maggiori, "International Liquidity and Exchange Rate Dynamics"

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Introduction

- Very interesting paper on very important topic
- Standard open economy model: UIP (and LOP)
- UIP (and LOP) rejected by the data
- This paper: Break UIP with segmented markets + friction in intermediation
- Simple model can deliver on several exchange rates facts
- Novel implications about usefulness of policy instruments

Outline

- Review of the Model
- 3 Points:
  - Bring risk at center stage
  - Who Bears Currency Risk? Data vs. Model
  - Time Horizon of UIP Deviations with Entry
- Policy Implications
  - Foreign exchange rate interventions vs. interest rate rule

REVIEW OF THE MODEL

- No Uncertainty

Frictionless Model

US Households can buy dollar and Yen bonds:

$$\max U(C_1) + \beta U(C_2)$$

subject to

$$C_t = G(C_{N,t}, C_{H,t}, C_{F,t})$$

$$C_{N,0}+p_{H,0}C_{H,0}+p_{F,0}C_{F,0}+B_1 + B_1^* e_0 \leq Y_{N,0}+p_{H,0}Y_{H,0}+p_{F,0}Y_{F,0}$$

$$C_{N,1}+p_{H,1}C_{H,1}+p_{F,1}C_{F,1} \leq Y_{N,1}+p_{H,1}Y_{H,1}+p_{F,1}Y_{F,1}+RB_1 + R^* B_1^* e_1$$

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- No-arbitrage condition $\Rightarrow$ Interest rate parity

$$R = \frac{e_1 R^*}{e_0}$$

Segmented Market/Limited Participation

US Households can buy dollar bonds only:

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- Without intermediation: $B_1 = 0$

Role of Intermediaries

- Measure I of intermediaries help overcome segmentation
- Can buy dollar and yen bonds, b_1, b_1^*
  - Market clearing

$$B_1 + Ib_1 = 0$$

$$B_1^* + Ib_1^* = 0$$

- Intermediaries are born in each period with no capital:

$$b_1 + e_0 b_1^* = 0 \Rightarrow b_1^* = -b_1/e_0$$

$$V_1 = Rb_1 + R^* e_1 b_1^* = \left(R - R^* \frac{e_1}{e_0} \right) b_1$$

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If $V_1 < 0$ intermediary's owner receives negative dividend

Friction in Intermediation

$$V_1 = \max_{b_1} \frac{1}{R}\left(R - R^* \frac{e_1}{e_0}\right) b_1$$

subject to enforcement constraint:

$$\underbrace{\frac{V_1}{e_0}}_{\text{Profits in Yen}} \geq \underbrace{\left|\frac{b_1}{e_0}\right|}_{\text{Total Claims in Yen}} \times \underbrace{\Gamma\left|\frac{b_1}{e_0}\right|}_{\text{Fraction can be diverted}} = \Gamma\left(\frac{b_1}{e_0}\right)^2$$

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Comments:

- Non-linearity is key to have wedge in UIP to depend on b_1
- Why intermediary profits evaluated with US discount factor and value of deviation in yen?

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The constraint holds with equality at the optimum so

$$b_1 = \frac{1}{\Gamma R}\left(R - R^* \frac{e_1}{e_0}\right) e_0$$

Friction in Intermediation

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Using market clearing

$$-\frac{B_1}{I} = \frac{1}{\Gamma R}\left(R - R^* \frac{e_1}{e_0}\right) e_0$$

Friction in Intermediation

$$V_1 = \max_{b_1} \frac{1}{R}\left(R - R^* \frac{e_1}{e_0}\right) b_1$$

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Wedge in (Uncovered) interest rate parity:

$$R = \frac{e_1 R^*}{e_0} - \frac{B_1 \Gamma R}{I e_0}$$

Deviation from UIP proportional to size of bonds issued

Bring Risk at Center Stage

- In model, limited enforcement is crucial and *not* risk
  - Basic insight works in deterministic environment
- Data: UIP does not hold but covered parity does
- Model: UIP does not hold, covered parity?
  - *Not* in the deterministic version
  - With shocks? Not clear to me how to think about it
    - Different than Alvarez, Atkeson, and Kehoe (2007)
- Push for specific role of risk bearing
  - Alternative interpretation: Intermediary is risk averse
  - Microfoundations needed, but more appealing story to me

Who Bears Currency Risk? Data vs. Model

- Data:
  - China hold 3.3 trillion of U.S. securities (41 of Chinese GDP) and 1.3 trillion of U.S. treasury
  - China bear all of the exchange rate risk on these treasuries
- Model:
  - Owner of intermediary, some U.S. investment bank(?) bears all of this risk.
- How interpret model in light of data?

Time Horizon of UIP Deviations with Entry

- Recall:

$$R = \frac{e_1 R^*}{e_0} - \frac{B_1 \Gamma R}{I e_0}$$

- When bonds traded increase so do profits
- Profits should engender entry that erode wedges
- Should we interpret model as relevant only for short run deviations for UIP? 1 quarter, 1 year?
- Entry is costly and it takes time to enter:
  - $|B_t|$ small, I_t is small
  - $|B_t|$ increases (trade flows, portfolio flows, ...)
  - In the short-run large wedge in UIP
  - Eventually I_t increases and so wedge goes down

POLICY IMPLICATIONS

- Foreign exchange rate interventions vs. interest rate rule
- New source of inefficiencies

Mundellian Analysis

- When prices are sticky flexible exchange rates can ensure proper adjustment of relative prices
- How to manage the exchange rate?
- If UIP holds: $R = R^* e_1/e_0$
  - Given R^*, setting R monetary authority controls e_0/e_1
  - Foreign exchange rate interventions have no effect
- This model:
  - Given R^*, setting R monetary authority ...
  - Foreign exchange rate interventions have effect
    - Modify the position taken by intermediary, b_1

How to Think About Optimal Policy?

Good framework to think about positive analysis of interventions, harder to think about optimal policy:

- Market segmentation + intermediation friction generate inefficiencies
- If monetary authority can absorb currency position (risk) then policy will likely try to overcome intermediation friction
- Fixed exchange rates, currency union vs. floating?
  - Not clear how it will affect market segmentation

Conclusion

- Very interesting and important paper
- Suggestions:
  - Bring risk at center stage
  - Spell out more micro-foundations for intermediation frictions (and supporting evidence)