

# INVESTOR EXPERIENCES AND INTERNATIONAL CAPITAL FLOWS

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Discussion by

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## THE PAPER IN A NUTSHELL

- Proposes a **theory** to explain three features of international capital flows
  - *Home bias*
  - *Fickleness* (foreign capital flows out when economic conditions worsen)
  - *Retrenchment* (locals reduce their foreign holdings when economic conditions worsen)
- Theory builds on information frictions. Two key ingredients
  - Imperfect information over fundamentals
  - *Experience-based learning*
- Empirical evidence consistent with theory

# THIS DISCUSSION

Three main points of this discussion

- 1 Role of EBL
- 2 Heterogeneity in prior beliefs vs. heterogeneity in market participation?
- 3 Some remarks on empirical analysis

## A SIMPLER VERSION OF THE MODEL

- Consider same model, but each generation lives two periods (young/old)
- Optimal portfolio choice (country A) in linear equilibrium

$$\begin{aligned}x_{j,t}^A &= \frac{\mathbb{E}_t^A[y_{j,t+1} + p_{j,t+1}] - Rp_{j,t}}{\gamma \text{Var}_t^A[y_{j,t+1} + p_{j,t+1}]} \\ &= \frac{\alpha_j(1-R)}{\gamma(1+\beta_j)^2 \text{Var}_t^A[y_{j,t+1}]} + \left[ \frac{(1+\beta_j)\mathbb{E}_t^A[y_{j,t+1}] - R\beta_j y_{j,t}}{\gamma(1+\beta_j)^2 \text{Var}_t^A[y_{j,t+1}]} \right]\end{aligned}$$

- Market clearing

$$x_{j,t}^A + x_{j,t}^B = 1$$

- Young have prior  $\mathcal{N}(\theta, (\tau_j^A)^2)$ , observe  $y_{j,t}$  and update via **Bayes rule**

$$\mathbb{E}_t^A[y_{j,t+1}] = \frac{\sigma^2}{(\tau_j^A)^2 + \sigma^2} \theta + \frac{(\tau_j^A)^2}{(\tau_j^A)^2 + \sigma^2} y_{j,t} = w_j^A \theta + (1 - w_j^A) y_{j,t}$$

$$\text{Var}_t^A[y_{j,t+1}] = (\tau_j^A)^2 \left( 1 - \frac{(\tau_j^A)^2}{(\tau_j^A)^2 + \sigma^2} \right) + \sigma^2 = (\sigma_j^A)^2$$

## PORTFOLIO HOLDINGS

Portfolio holdings in equilibrium (in country A) become

$$x_{A,t}^A = \frac{\alpha_A(1-R) + (1+\beta_A)w_A^A\theta}{\gamma(1+\beta_A)^2(\sigma_A^A)^2} + \left[ \frac{(1+\beta_A)(1-w_A^A) - R\beta_A}{\gamma(1+\beta_A)^2(\sigma_A^A)^2} \right] y_{A,t}$$
$$x_{A,t}^B = \frac{\alpha_A(1-R) + (1+\beta_A)w_A^B\theta}{\gamma(1+\beta_A)^2(\sigma_A^B)^2} + \left[ \frac{(1+\beta_A)(1-w_A^B) - R\beta_A}{\gamma(1+\beta_A)^2(\sigma_A^B)^2} \right] y_{A,t}$$

**Assumption:** domestic more precise priors than foreigners ( $\tau_j^j < \tau_j^k$ ). Then

- $w_j^j > w_j^k$  (domestic place more weight on prior)
- $\sigma_j^j < \sigma_j^k$  (domestic less uncertain about domestic fundamental)

Implications:

- 1 **Home bias:** On average  $x_{j,t}^j > x_{k,t}^j$
- 2 **Capital flows:** After a positive income shock at home foreigners revise more their belief than domestic agents  $\rightarrow$  bid up the price  $\rightarrow$  portfolio share of foreigners increase

## REMARKS

- Very nice insight!
  - Point on home bias present in earlier papers (Gehrig, 1993; Brennan and Cao, 1997; ...)
  - Point on cyclicity less understood in the literature, in my view main contribution
- What assumptions are needed to get there?
  - Two key assumptions: **imperfect information** and **more precise priors for domestic agents**
  - Why is EBL needed? Is it because, with infinite history of data, agents perfectly learn the fundamental? Sustain different priors in equilibrium?
  - Non-Bayesian elements (Eq. (5)-(6)) do not seem necessary
- Suggestions
  - Clarify this aspect in the paper
  - Start with two-period lived generations to deliver main point?
  - Is retrenchment really a prediction about  $\partial x_{k,t}^j / \partial y_{j,t}$ ?

## HETEROGENEITY IN MARKET PARTICIPATION

- Suppose agents in country A live 3 periods and invest in their middle age
- *Today's posterior is tomorrow's prior* → With symmetric priors, we have
  - $w_A^A > w_A^B$  and  $\sigma_A^A < \sigma_A^B$  (As if domestic better informed about country A)
  - $w_B^A > w_B^B$  and  $\sigma_B^A < \sigma_B^B$  (As if **foreigners** better informed about country B)
- Corollary 4.1: *“If both countries have the same prior belief, after a recession in country H, there is an outflow of domestic funds and an inflow of foreign funds if and only if country H has a larger fraction of young market participants”*
- Does it mean that Ecuador in recession should experience inflow of foreign capital and outflows of domestic capital?

## EMPIRICAL ANALYSIS

- MPV look at model's prediction for capital flows. Eg: in my example with asymmetric prior

$$x_{A,t}^A - x_{B,t}^A = \alpha + \beta y_{A,t} + \gamma y_{F,t},$$

with  $\beta < 0$  and  $\gamma < 0$ .

- Can we think of a more direct test of the theory?
  - Eg: foreigners make systematic losses relative to domestic when purchasing domestic assets
  - What would be the ideal experiment you would run? Informative to explain even if you do not run it
- Some specific remarks
  - De-trend variables in home bias regressions?
  - Multicollinearity (five lags of very persistent variables)

## CONCLUSION

Nice paper! Three main suggestions

- Clarify role of EBL vs. imperfect information
- Clarify whether heterogeneity in market participation with symmetric priors have counterfactual implications on capital flows
- What would be an ideal experiment to test the theory?