

Portfolio Choice with Near-Rational Agents

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Two Parts to the Paper

- An explanation for home bias in equity portfolios.
- An explanation for excess volatility in exchange rates (Backus-Smith puzzle).

I'll discuss each separately.

Q1: Why Are Equity Portfolios Home Biased?

Many answers proposed:

- Equity and human capital returns are negatively correlated. (Heathcote and Perri (07))
- Hedge sticky -price risks (Engel and Matsumoto (06))
- Coordination motives (Cole, Mailath, Postlwaite (01) and DeMarzo, Kaniel and Kremer (04))
- More information about home assets (Van Nieuwerburgh and Veldkamp (07), Portes, Rey and Oh (01)), combined with ambiguity aversion (Epstein and Miao (03), Uppal and Wang (03))
- Behavioral biases

Ambiguity Aversion vs. Risk Aversion

- Ambiguity aversion (robust control of Hansen-Sargent) is modeled with max-min preferences.
- For each action, an evil agent chooses the worst possible outcome, within a feasible set.
- If home assets are less risky, this shrinks the feasible choice set of the evil agent → better expected outcomes.
- Robustness enhances risk aversion by lowering the mean when variance is high.

Why Does Ambiguity Aversion Generate Home Bias?

- It only generates home bias when home assets are good hedges for home real exchange rate risk.
- But we don't need ambiguity to generate home bias in this case, except in this particular model.
- This model (log preferences) make home price risk irrelevant for portfolio decisions. That is no longer true with any deviation from log preferences.
- Ambiguity amplifies this effect because the more risky foreign portfolio also has a perceived lower return.

Do Home Assets Hedge Home Price Risk?

- This paper:
 - Yes, $\text{corr}(er, \Delta RER) > 0$.
- Previous work:
 - Inflation-indexed bonds do. Equities are bad inflation hedges (Adler and Dumas '83)
 - Home asset positions cannot be rationalized by hedging motives (Massa and Simonov '06).
 - Once you introduce home and foreign bonds, or currency forwards, optimal equity home bias falls to near zero. (van Wincoop and Warnock '06).

Facts Related to Home Bias

- Local Bias (Coval and Moskowitz '01)
- Industry bias (Massa and Simonov '06)
- Concentrated portfolios of foreign investment across countries (Portes and Rey '03) and within a foreign market (Kang and Stultz '97).
- Listing in U.S. reduces portfolio bias (Ahearne, Grier & Warnock '04)
- Home investor out-performance (Hau '01, Ivkovic & Weisbenner '05)

Suggestion: Explore whether ambiguity can address related facts.

Q2: Why Are Exchange Rates So Volatile?

- Backus & Smith: a country's price index is $p_i = \theta_i c_i^{-\alpha}$.
- With complete markets, the exchange rate is the ratio of the price levels

$$e_{ij} = \frac{p_j}{p_i} = \frac{\theta_j}{\theta_i} \left(\frac{c_j}{c_i} \right)^{-\alpha}$$

- Since the θ 's are constant welfare weights

$$\text{corr}(\ln(e_{ij}), \ln(c_i/c_j)) = -1$$

This conditional fails in the data.

- In Brandt, Cochrane and Santa-Clara (06), sdf's are

$$m_t = \beta (g_t)^{-\alpha} \quad \text{where } g_t = \frac{c_{t+1}}{c_t}$$

$\text{corr}(\ln(m), \ln(m^*))$ is close to one $\text{corr}(\ln(g_t), \ln(g_t^*))$ is not.

Related Explanations for Exchange Rate Volatility

- Colacito and Croce
 - Epstein Zin preferences creates a multiplier on sdf,
 $\beta (g_t)^{-\alpha} \gamma_t$.
 - Long run risk makes that multiplier persistent and correlated across countries.
 - Sdf's (and thus asset prices) are highly correlated, even though consumption is not.
- This paper: Evil agent's actions create a multiplier on sdf. That multiplier shock is correlated across countries. Perfect correlation of RER and consumption growth is rejected.
- It's not clear from the results that this shock has the right properties. What are the correlation and volatility in the estimated model?

Questions About the Theory

- Can a rational agent earn arbitrage profits by exploiting differences between home and foreign distorted beliefs?
- What are the distortions of the underlying shocks necessary to reconcile home bias? Consumption is a choice variable. Evil agent cannot literally distort that.

Conclusions: Where does this paper get us?

- Robustness generates exchange rate volatility because agents' estimates of the "evil agent's" actions are always moving their stochastic discount factor around.
- Similar to habits, ambiguity aversion, and incomplete markets models. Does this work? Don't know.
- Home bias arises because home assets are better hedges for home price risk.
- Similar to existing models but robustness amplifies this effect.