What do financial markets say about the exchange rate?

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Background

Classic Exchange Rate Puzzles

Forward premium puzzle (Fama, 1984)

- Interest rate differentials do not predict subsequent changes in exchange rates $\Rightarrow$ large deviations from UIP
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Volatility Puzzle (Brandt, Cochrane and Santa-Clara, 2006)

- Stochastic discount factors must be almost perfectly correlated across countries in order to match the relatively low exchange rate volatility

Big Picture

An implication of international complete markets is the **Asset Market View:**

$$\Delta s_{t+1} = m^{\star}_{t+1} - m_{t+1} \tag{1}$$

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Hard to reconcile with the data:

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$$\underbrace{\mathbb{V}\left(\Delta s_{t+1}\right)}_{\text{Small}} = \underbrace{\mathbb{V}\left(m_{t+1}\right) + \mathbb{V}\left(m^{\star}_{t+1}\right)}_{\text{Both Large}} - 2\mathbb{C}\left(m_{t+1}, m^{\star}_{t+1}\right)$$

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2. Cyclicality Puzzle (Backus-Smith):

$$\text{Corr}\left(\Delta s_{t+1}, m^{\star}_{t+1} - m_{t+1}\right) = 1$$

   Exchange rates aren't correlated with relative macro conditions

This Paper

Two approaches to fit the data:

1. Exotic preferences
   - Long-run risk: persistent components of consumption growth are highly correlated across countries, i.e. Colacito, Croce, Gavazzoni and Ready (2018)
   - Habit preferences: Stathopoulous (2017) and Heyerdahl-Larsen (2014)
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2. Incomplete markets
   - Market incompleteness introduces a wedge, x_t, in Equation 1:

$$\Delta s_{t+1} = m^{\star}_{t+1} - m_{t+1} + x_t \tag{2}$$

   - Other notable papers: Sandulescu, Trojani and Vedolin (2021); Lustig and Verdelhan (2019); Backus, Foresi and Telmer (2001)

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- Key takeaway: financial markets are not informative about exchange rates. Why?
  - Any market structure where asset returns are informative about exchange rates $\Rightarrow$ counterfactual predictions
  - Some market structures do not impose counterfactual predictions, but in these settings asset returns are not informative about exchange rates

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- Two key empirical findings:
  - "Global shocks" do not explain variation in exchange rates
  - Exchange rates are not correlated with asset returns

Comment # 1

Quantifying the Impact of Global Shocks

Structure of asset returns:

$$\tilde{\boldsymbol{r}}_{t+1} = \boldsymbol{P}\boldsymbol{\epsilon}_{t+1} + \boldsymbol{P}^{G}\boldsymbol{\epsilon}^{G}_{t+1} \tag{3}$$

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Suppose you found two porfolios, $r_{i,t} \in H$ and $r_{k,t} \in F$ such that

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In practice: portfolio returns load on both local and global shocks

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Table 2: Maximally correlated shocks across asset markets

	AU	CA	DE	JP	NO	NZ	SE	CH	UK
Rank 1	75.27	89.82	83.07	75.01	79.47	64.31	78.33	82.95	85.87
Rank 2	65.0	85.06	74.17	64.43	63.49	53.95	65.72	62.62	78.7
Rank 3	61.16	83.44	66.7	58.71	57.14	41.73	59.57	60.41	73.55
Rank 4	57.04	78.79	64.9	51.31	45.86	35.98	55.55	56.12	68.02
Rank 5	51.01	76.82	52.8	46.81	41.74	31.44	49.63	52.32	65.85
Rank 6	41.67	70.79	44.19	46.62	33.59	25.33	38.94	46.83	62.21
Rank 7	34.19	62.84	42.3	41.94	26.88	22.99	38.2	41.16	55.83
Rank 8	31.57	56.2	36.66	39.57	25.8	14.58	33.82	35.18	51.39
N	419	395	419	419	406	419	414	419	419

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One way to test the importance of global shocks:

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Key issue: portfolios reflect both global and local shocks

- noise from local shocks may drive down the correlation between depreciation rates and global shocks

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An alternative test from Verdelhan (2018):

- Project exchange rates on assets that proxy for global sources of risk:
  - HML Carry Trade
  - Conditional HML (HML *x* interest rate differentials)
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- Finds a large role for global shocks

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Exchange Rate Reconnect – Another Global Shock Nuance

Data: asset returns 1988 - 2022

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Exchange rate reconnect: increase in the predictive power of global investors' risk-bearing capacity on exchange rates:

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Are asset markets differentially related to exchange rates pre- and post-GFC?

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Exotic Preferences

- Complete market models with long-run risk or habits impose substantial structure on exchange rates, but do not generate counterfactual predictions
  - Colacito, Croce, Gavazzoni and Ready (2018); Stathopoulos (2017) and Heyerdahl-Larsen (2014)

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- How do the authors think about these models?

Comments for the Authors

1. Propositions 4 and 5 are not explicitly stated outside of the appendix.

Conclusion

Great paper!

- Core contribution: tests of the relationship between exchange rates, international SDFs and market structure
  - Evidence in favor of intermediated markets
- Much I did not have time to cover!

For the next draft or future papers:

- Additional tests for global versus local shocks
- Additional discussion for what is and is not consistent with exotic preferences