Home-Country Drivers of International Investment in Safe and Risky U.S. Bonds

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The views in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of the BIS or the Board of Governors of the Federal Reserve System or any other person associated with the FRS.

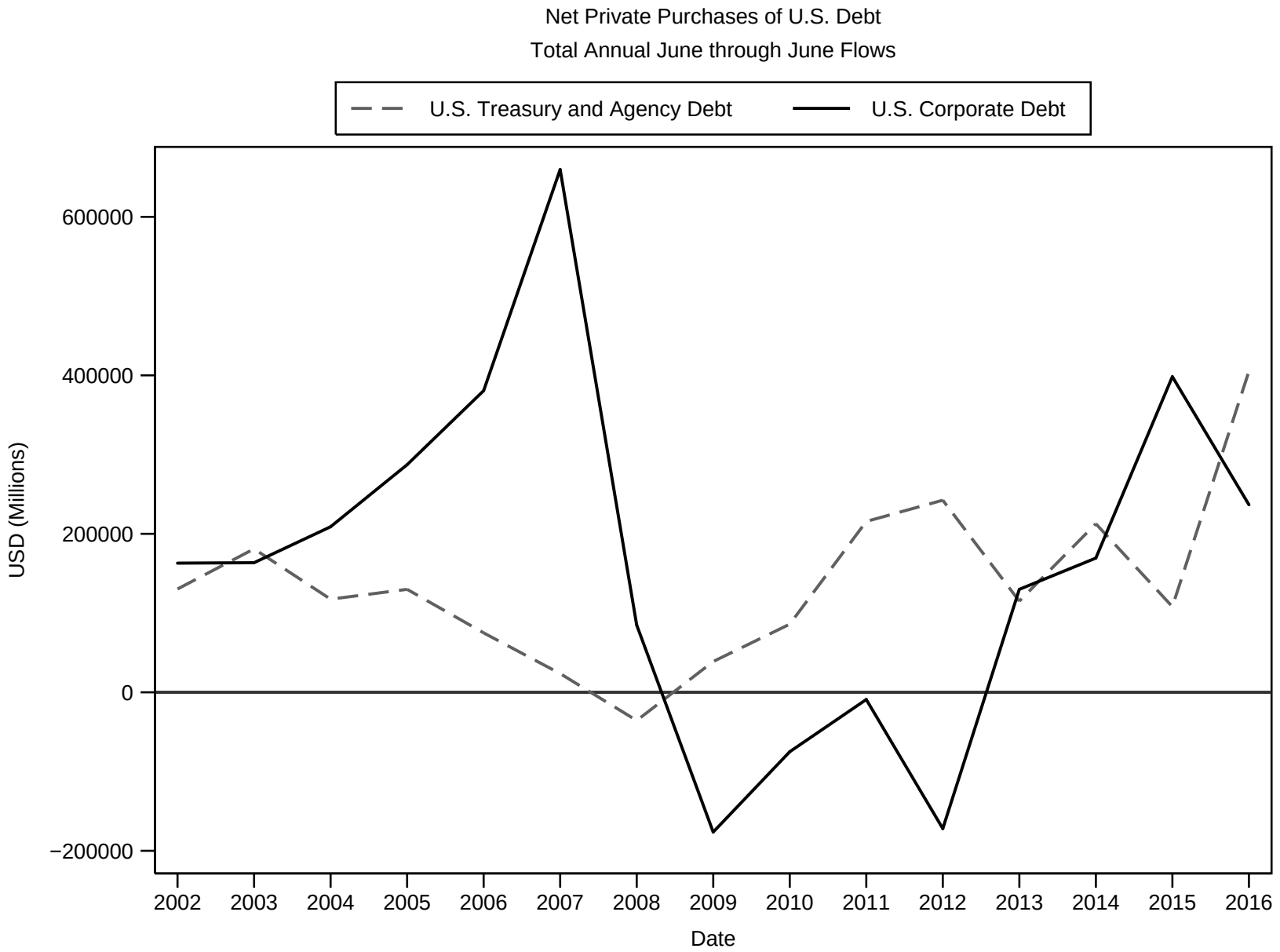
Question and Preview of Results

- How overseas investors invest in various types of U.S. bonds based on their home characteristics
  - Focus: Effects of declining (low) interest rates at home
- Foreign investment in U.S. bonds - narrow focus has advantages:
  - Draw on granular TIC data to accurately characterize shifts in portfolio composition (duration, yield): country holdings of Treasuries, Agencies, corporate bonds 2003-2016
  - Empirical identification: cross-sectional differences in investor-country interest rates, not closely related to U.S. debt market conditions
    - ★ Shifts in foreign holdings not large enough to likely be driving market access or financing conditions for U.S. borrowers
- Evidence of a "search-for-yield"
  - Lower home rate associated with increase in investment in U.S. bonds
  - ... this increased investment is disproportionately allocated to corporate bonds (assume more credit risk)
  - Low home interest rates associated with shifts towards longer duration; effects stronger at low levels of home interest rates

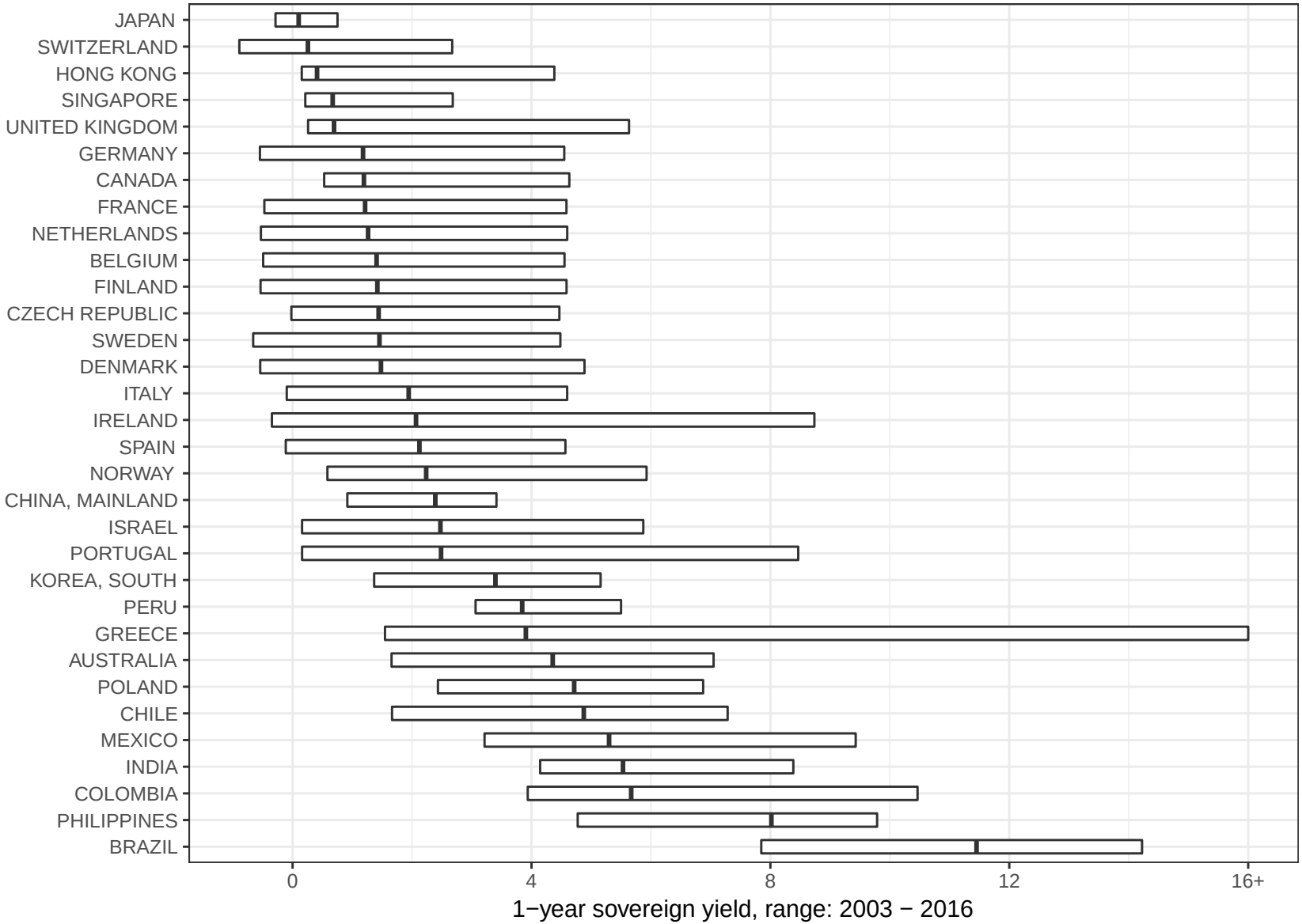
Contribution

- Search-for-yield
  - **Literature:** bank lending or mutual fund flows (Choi, Kronlund (2016); di Maggio , Kacperczyk (2017); Hau, Lai, Domanski, Shin, Shushko (2017), Morais, Peydro, Ruiz (2017); limited on portfolio effects (Ammer, Claessens, Tabova, Wroblewski (2017) focus on U.S. corporate bonds)
  - **Here:** Effects on both capital outflows and investors' foreign portfolio composition: flows into Treasuries, corporate bonds, search-for-duration within Treasuries portfolio
    - ★ Identification: cross-section of countries with variety of movements in interest rates, yet each representing small fraction of investment in U.S.
- Push - pull: source and destination country conditions for capital flows, especially effects of low interest rates and UMP
  - **Literature:** aggregate balance-of-payments data, or narrow set of investors, bank loans (Aramonte, Lee, Stebunovs (2015); Forbes, Warnock (2012), Fratzscher (2012), Broner et al (2013))
  - **Here:** cross-section of countries, granular data for accurate window into international portfolio composition

Foreign purchases of U.S. Bonds (2003-2016)



Sovereign Yields by Country (2003-2016)



Countries' total private investment in U.S. bonds

$$\mathrm{H}_{j,t}/\mathrm{GDP}_{j,t}=\beta_0+\beta_1\mathrm{Sov}_{j,t}+\beta_2\mathrm{U.S\ 3m}_t+\beta_3\mathrm{U.S.\ CDS}_t+c_j+\epsilon_{j,t}$$

	All Bonds		Treasuries	Corporate Bonds
	(1)	(2)	(3)	(4)
Sov	-0.022**	-0.015**	-0.006**	-0.009**
	(0.009)	(0.007)	(0.003)	(0.005)
U.S. 3m		-0.002	-0.006**	0.002
		(0.008)	(0.003)	(0.008)
U.S. CDS		-0.013**	-0.009***	-0.004
		(0.006)	(0.003)	(0.005)
Observations	440	440	440	440
Adj. R-sq	0.93	0.93	0.79	0.93
Country FE	Yes	Yes	Yes	Yes
Country Controls	No	Yes	Yes	Yes

Country j - year t (2003-2016).

Parentheses: robust st.err. Country controls: bond mkt cap; trade, fin link to U.S.

- Sov. rate (Sov): 100bp lower rate leads to increase of 26% in holdings for av. country
  - Effect for all types of U.S. bonds
- Risk perception (U.S. CDS): high risk leads to less investment in U.S. (flight home)
- Robust to (1) excluding custodians, fin. centers; (2) scaling by bond mkt cap

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Treasury share in countries' portfolio of U.S. bonds

$$H^{T}_{i,j,t}/(\sum_i H^{T}_{j,t}+\sum_i H^{C}_{j,t})=\beta_0+\beta_1 \text{Sov}_{j,t}+\beta_2 \text{Duration}_{i,\text{T},t}+\beta_3 \text{Sov}_{j,t}\text{Duration}_{i,\text{T},t}+c_{j,\text{T},t}+\epsilon_{i,j,t}$$

	(1)	(2)
Sov	-0.002	0.001
	(0.003)	(0.003)
Low	-0.008	-0.015
	(0.009)	(0.011)
Low × Sov	0.035**	0.037**
	(0.018)	(0.018)
Duration	-0.004**	-0.004**
	(0.002)	(0.002)
Sov × Duration	0.000	0.000
	(0.000)	(0.000)
Low × Duration	-0.001	-0.001
	(0.001)	(0.001)
Low × Sov × Duration	-0.004**	-0.004**
	(0.002)	(0.002)
Observations	2045	2045
Adj. R-sq	0.68	0.69
Time FE	Yes	Yes
Country-Bin FE	Yes	Yes
Country Controls	No	Yes

- Sovereign rate in low rate environment (Low × Sov): Investors increasingly shift their U.S. bond portfolio towards corporate bonds as home rates reach low levels
- Duration effect (Low × Sov × Duration): shift toward longer duration in Treas. portfolio

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Newly Issued Treasury Bonds and Search for Duration

$$\mathrm{H}_{j,i,t}/\mathrm{Out}_{i,t} = \beta_0 + \beta_1 \mathrm{Sov}_{j,t} + \beta_2 \mathrm{Dur}_{i,t} + \beta_3 \mathrm{Sov}_{j,t}\mathrm{Dur}_{i,t} + c_j + \epsilon_{j,i,t}$$

	(1)	(2)	(3)	(4)
Sov	-0.026***	-0.016*	0.009	-0.001
	(0.009)	(0.009)	(0.010)	(0.011)
Duration		0.021***	0.028***	0.029***
		(0.003)	(0.004)	(0.004)
Sov × Duration			-0.006***	-0.005***
			(0.001)	(0.001)
Observations	10519	10519	10519	10519
Adj. R-sq	0.35	0.35	0.35	0.35
Country FE	Yes	Yes	Yes	Yes
Country Controls	No	No	No	Yes

Country j - bond i - issue year t (2003-2016). Newly issued Treasury bonds only.
Parentheses: robust st.err. Country controls: bond mkt cap; trade, fin link to U.S.

- Preference for longer duration (Duration)
- Search for duration (Sov × Duration): median country share of Treasuries rises 6.5%-10%:
  - with 100bp drop in home rate and a 1 year longer bond duration
- Robust to (1) excluding custodians and fin. centers, (2) using maturity instead of duration

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Conclusion

- How interest rates affect international investment and risk-taking
  - Extent of shift to riskier assets in response to low interest rates at home
- Detailed data on foreign countries' holdings of U.S. bonds to accurately observe portfolio characteristics
- Large variety in movements in countries' home interest rates
  - reduces concern about reverse causality or omitted variables
- Evidence of a "search-for-yield"
  - Lower home rate associated with increase in investment in U.S. bonds
  - ... this increased investment is disproportionately allocated to corporate bonds (assume more credit risk)
  - Low home interest rates engender shifts towards longer duration; effects stronger at low levels of home interest rates
- Policy implications
  - Declining interest rates can lead to shifts towards riskier investments
  - Caveat: we don't know if foreign investors invest more conservatively at home or if they have made risk-increasing elsewhere in their portfolios