International Portfolio Frictions

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Background and Disclaimers

- The work presented is based on the cooperation with external researchers under the external research platform launched by EIOPA in 2020.
- The views expressed in this presentation are those of the authors and not necessarily those of the Bank for International Settlements, the European Insurance and Occupational Pensions Authority, and the International Monetary Fund. All errors are our own.

Motivation

- Government bonds have favorable regulatory treatments, but are in scarce supply relative to the size of insurance companies and pension funds (ICPF) in Europe.
- Newly available data shed light on global fixed-income allocation:
  - EIOPA Solvency II regulatory filings for European insurers
  - Enhanced BIS Locational Banking Statistics on banks' securities portfolios
- Broad implications:
  - European capital market deepening and integration
  - Monetary policy transmission and financial stability
  - Multi-sectoral approach to regulatory design

Overview of Results

- The size of the ICPF sector is closely related to the development of domestic corporate bond markets.
- Despite high international diversification, fixed-income portfolios closely mimics characteristics of domestic markets due to new international portfolio frictions
  1. Domestic projection bias
     - Characteristics of domestic markets spillover to the insurers/banks' choice of foreign investments.
  2. Going native bias
     - Foreign insurers/banks operating in local markets exhibit the same biases as domestic insurers/banks.
- Theoretical framework to explain empirical findings featuring key ingredients:
  - Convenience yields on govt bonds (large ICPF relative to the size of the govt bond market)
  - Regulatory and internal risk constraints.
  - Heterogeneity in sovereign credit risk, right-way risk

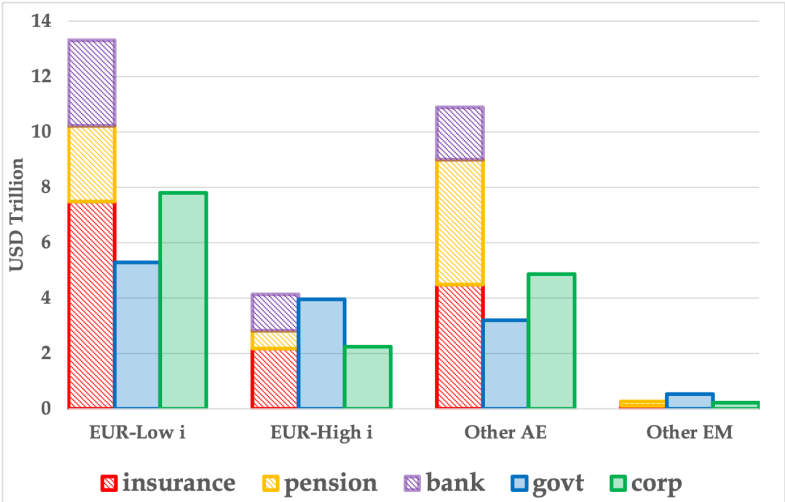
Related Literature

- Importance of the pension sector for capital market development.
  - Scharfstein (2018, AFA Presidential Address).
- Traditional international portfolio frictions: home country bias and home currency bias.
  - Coeurdacier and Gourinchas (2011), Coeurdacier and Rey (2013), and Maggiori et al. (2020).
- Asset allocation decisions of long-term institutional investors/insurers.
  - Becker and Ivashina (2015), Ellul et al. (2015), Greenwood and Vissing-Jørgensen (2018), Koijen et al. (2021), Jansen (2023), Sen and Sharma (2020), Ge and Weisbach (2021), Becker et al. (2022), and Koijen and Yogo (2023b).
- Banks' exposure to sovereign risk.
  - Gennaioli, Martin and Rossi (2013), Acharya, Dreschsler and Schnabl (2014).
- Reaching for yield.
  - Becker and Ivashina (2015), Choi and Kronlund (2018), Lian et al. (2019), and Campbell and Sigalov (2022).
- Supply side frictions in insurance markets.
  - Koijen and Yogo (2015, 2023a), Barbu (2021), Ge (2022), and Sen (2022).

1. Macro Facts: ICPF Sector, Bond Outstanding, Country Risk

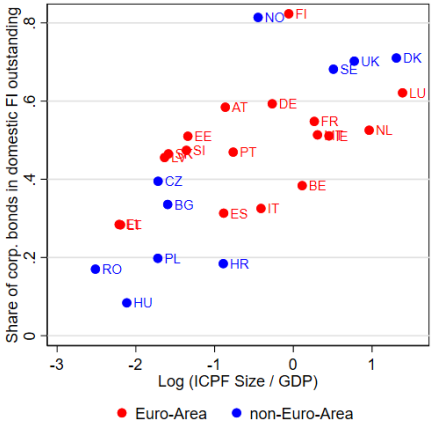
In Search of Government Bonds

Figure 1: Size Comparison for ICPF Total Assets, Banks' Debt Securities Holdings, and Outstanding Government and Corporate bonds in Europe (2019Q4)



ICPF Sector Size and Composition of Fixed Income

Figure 2: ICPF size vs. Relative Supply of Corporate Bonds

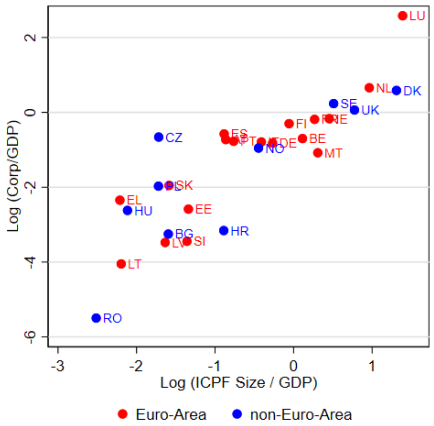


- The size of the ICPF sector is strongly correlated with the share of corporate bonds in domestic fixed income.

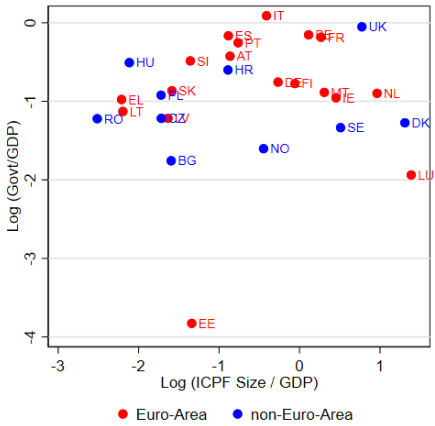
- The outstanding amount of domestic corporate bond is strongly correlated with the ICPF sector size, the outstanding amount of government bonds is not.

Figure 3: ICPF Sector Size vs. Corp/Govt Bonds

(a) Corp vs. ICPF



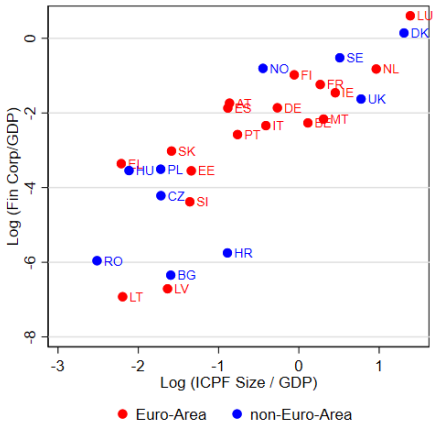
(b) Govt vs. ICPF



- Outstanding amounts for both financial and non-financial corporate bonds are strongly correlated with the ICPF sector size.

Figure 4: ICPF Sector Size vs. Financial / Non-Financial Corporate Bonds

(a) Fin Corp vs. ICPF



(b) Non-Fin Corp vs. ICPF

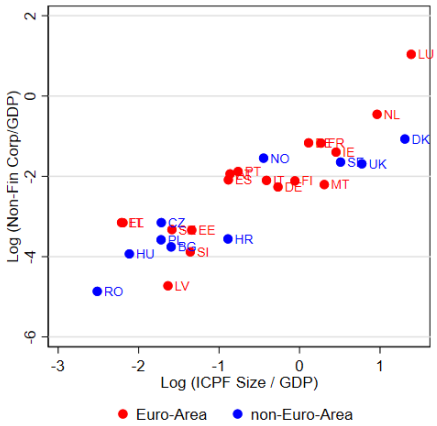


Table 1: Regressions of Composition of Domestic Fixed-Income Securities on Macro Variables

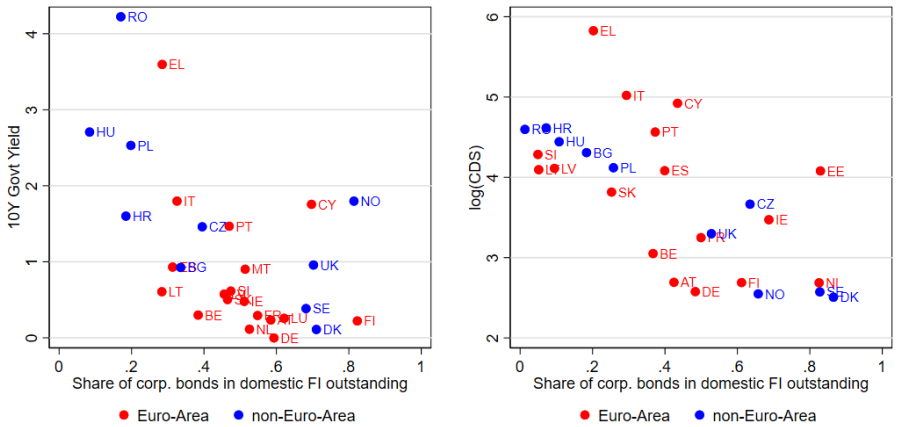
	(1) Ratio Corp/FI	(2) Ratio Corp/FI	(3) Ratio Corp/FI	(4) Ratio Corp/FI
Log(ICPF/GDP)	0.219***	0.103**	0.156**	0.130**
	(0.0290)	(0.0470)	(0.0572)	(0.0562)
Log(Per Capita GDP)		0.138***	0.125**	0.138***
		(0.0380)	(0.0549)	(0.0397)
Log(Bank Securities/GDP)			-0.0110	
			(0.0332)	
Log(Bank Assets/GDP)				0.0110
				(0.0253)
Constant	0.556***	-1.794**	-1.613	-1.834**
	(0.0346)	(0.650)	(0.950)	(0.702)
Observations	28	28	15	16
R-squared	0.588	0.658	0.796	0.796

- The size of the ICPF sector remains strongly correlated with the share of corporate bonds in domestic fixed income after macro controls.

ICPF Sector Size and Country Risk

Figure 5: Interest Rate, Sovereign Risk, Composition of Domestic Fixed-Income

(a) Interest Rate vs. FI Composition (b) Sovereign CDS Spread vs. FI Composition



- Countries with larger shares of corporate bonds in total fixed income tend to have lower interest rates and lower sovereign risk.

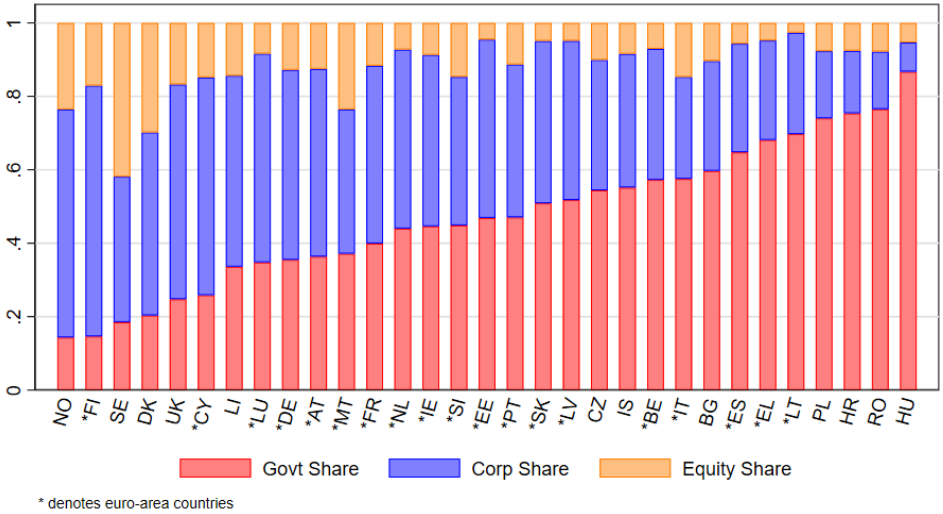
2. Stylized Facts on Global Portfolio Allocations

Data Construction

- EIOPA Solvency II Regulatory Filings
  - Scope: life and composite insurers, solo, exclude unit-linked products.
  - Period: 2016Q4-2021Q1.
  - Countries: 30 EEA countries, and the UK (pre-Brexit).
  - Look-through all CIUs and assign them to the respective asset class/currency/country group.
  - Main asset groups: govt bonds, corp bonds, and equities
- Enhanced BIS Locational Banking Statistics (LBS)
  - 16 reporting countries in Europe.
  - Sectoral breakdown of banks' debt securities portfolios.
  - Counterparty country information on debt securities holdings.
  - Distinguish between domestic banks and foreign banking organizations.

Large Heterogeneity in Portfolio Allocations Across Countries

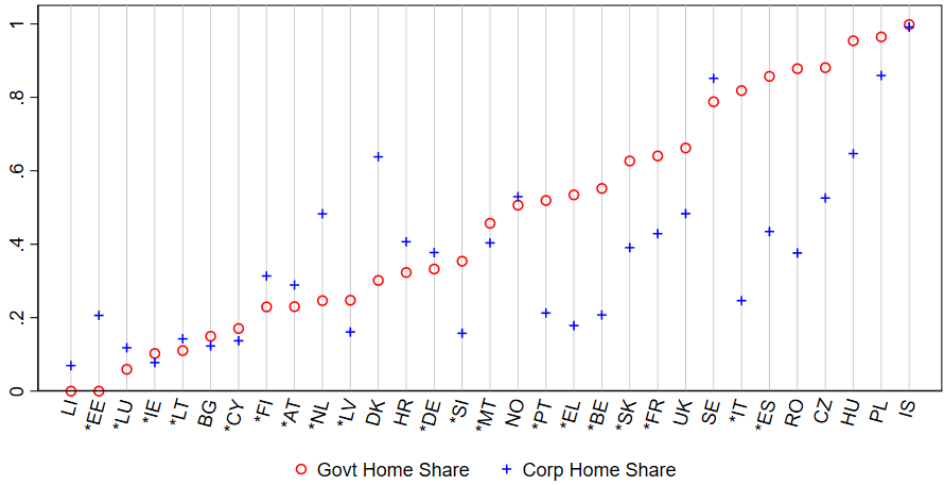
Figure 6: Insurers' average portfolio shares by major asset class



* denotes euro-area countries

Sizable Foreign Investments in Majority of Countries

Figure 7: Insurers' portfolio shares invested in domestic govt and corp bond markets.

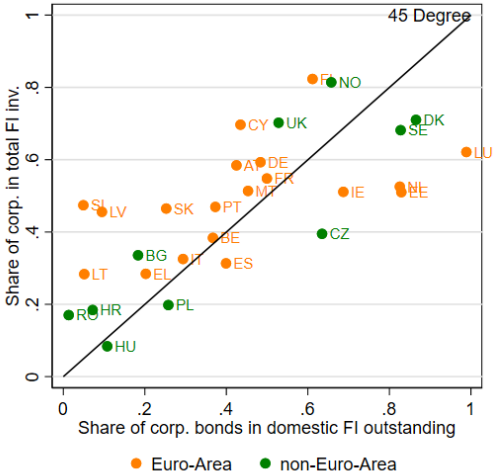


* denotes euro-area countries

Portfolio Allocation Mimics Domestic Characteristics

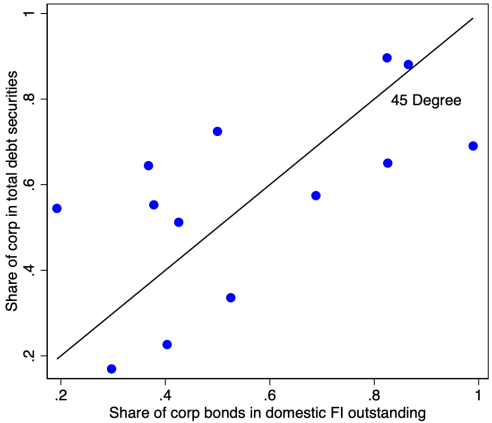
- Key Fact: Overall fixed income allocation for insurers strongly mimics domestic fixed income composition

Figure 8: Portfolio Share vs. Domestic Share of Corp Bonds in Total FI Outstanding



- Overall fixed income allocation for banks also strongly mimics domestic fixed income composition

Figure 9: Banks' Portfolio Share vs. Domestic Share of Corp Bonds in Total FI Outstanding

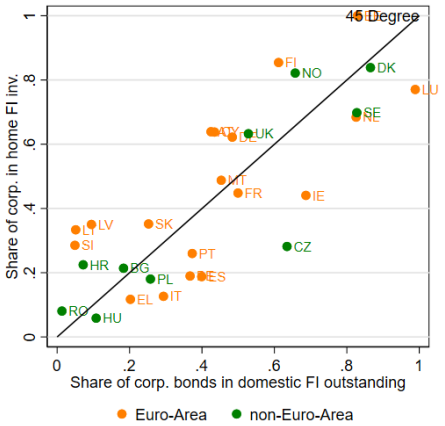


Do Foreign Investments Undo Domestic Biases?

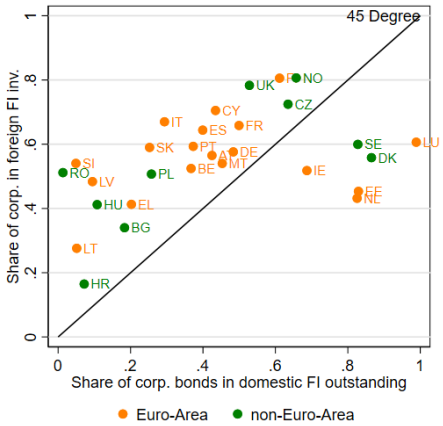
- Domestic Projection Bias: Domestic bias spillovers to foreign investments.

Figure 10: Domestic/Foreign Portfolio Share vs. Domestic Share of Corp Bonds in FI

(a) Domestic portfolio share in C



(b) Foreign portfolio share in C

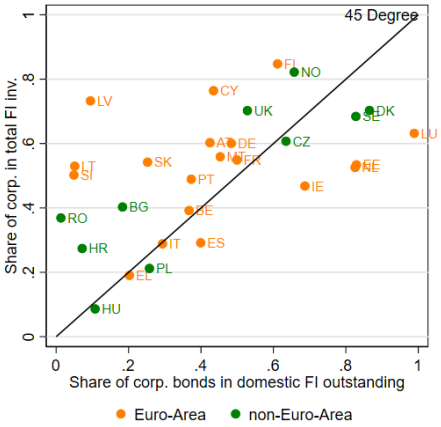


Do Foreign Insurers Undo these Biases?

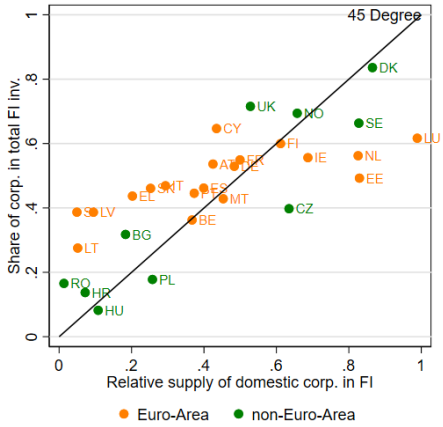
- Going Native Bias: Foreign solos behave like domestic solos in local markets.

Figure 11: Portfolio Share vs. Domestic Supply for Domestic vs. Foreign Insurers

(a) Domestic Solos



(b) Local Subsidiaries of Foreign Groups

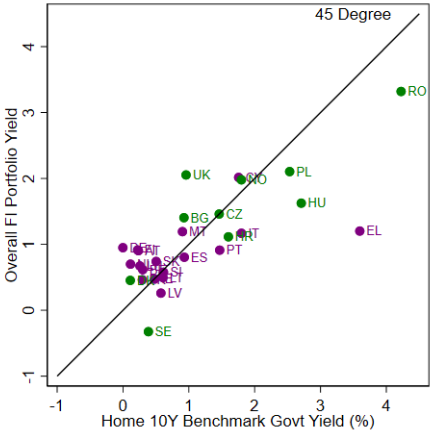


Portfolio Yields/Risk Mimic Domestic Interest Rates

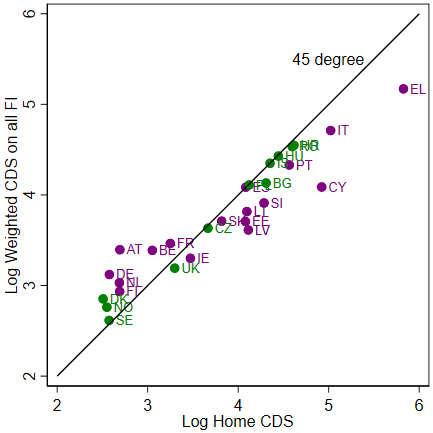
- Key Fact: The yield and risk on the overall fixed-income portfolio mimics the yield/risk in the domestic market.

Figure 12: Portfolio Yields/Risks vs. Domestic Interest Rates

(a) Based on CSDB Yields

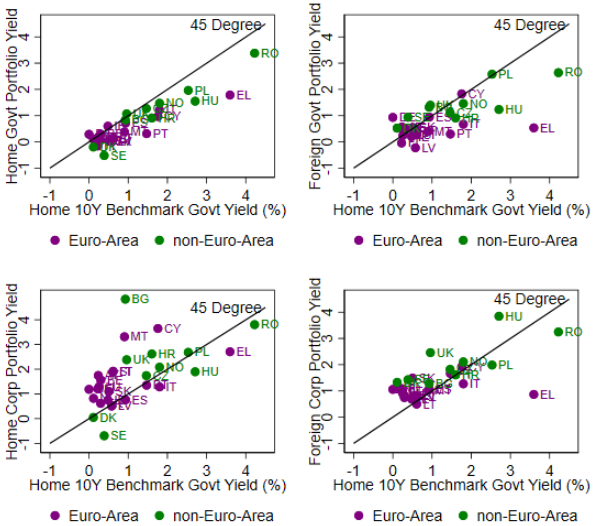


(b) Based on Country Risk (5Y CDS)



- Domestic Projection Bias: Yields on foreign government (upper right) and foreign corporate bonds (bottom right) are positively correlated with domestic interest rate

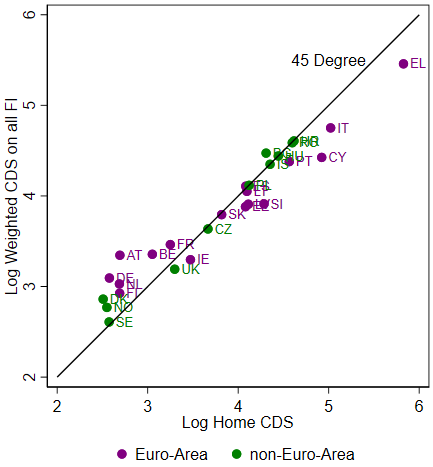
Figure 13: Yields on Domestic and Foreign Bonds vs. Domestic Interest Rate



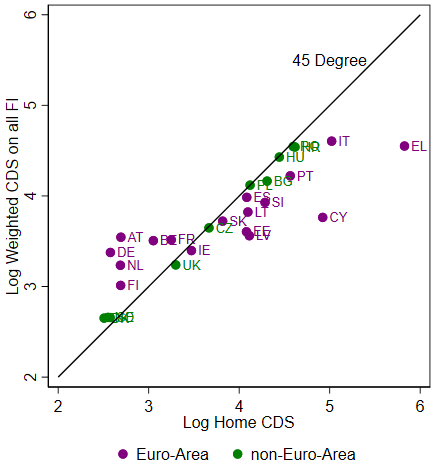
- Going Native Bias: Foreign solos mimic domestic solos in choosing portfolio risk.

Figure 14: Portfolio Sovereign CDS vs. Home Sovereign CDS

(a) Domestic Solos



(b) Local Subsidiaries of Foreign Groups



3. Explaining Global Asset Allocations

Potential Reasons for Portfolio Biases

- Domestic projection bias:
  - Insurers and banks in safe countries may not want to invest in risky countries due to internal risk constraints
  - Insurers in risky countries face "right-way risk" when their sovereign defaults, and if sovereign defaults are correlated
- Going native bias:
  - Local supervision, local product market regulation and potentially financial repression
  - Sluggish adjustment
    - Global insurers typically enter markets by acquiring local insurers. Centralization and integration may be a slow process
    - Legacy effect from Solvency I (Solvency II introduced in 2016)
- We refer to these portfolio frictions as "biases," but the root causes may be either rational or behavioral.

ICPF Size and Demand for Corp Bonds

- Why do countries with larger ICPF sector invest more in corporate bonds?
  - Government bond yields would be strongly negative if the ICPF sector and banks all invested in govt bonds, a negative alpha (convenience yield) on government bonds.
  - Other investors would want to short government bonds, but face short-selling constraints.
  - Banks and insurance companies can create value by reducing the allocation to govt bonds and tilt to close substitutes (corp bonds) that are not too capital intensive.
- Alternative hypothesis: A positive alpha on safe corporate bonds?
  - A larger ICPF sector competes the alpha away, seemingly at odds with our finding that insurers in countries with a larger ICPF sector invest more in corporate bonds.

Endogenous Corporate Bond Supply

- If the supply of safe corp bonds is elastic, we can generate the cross-country fact that countries with a larger ICPF sector have more corp bonds
- The connection between convenience yields and the size of the ICPF sector across countries is ambiguous if supply elasticities are heterogeneous.

4. Broader Implications

1. Financial Market Deepening and Capital Market Integration

- A large ICPF sector promotes the development of the corporate bond market.
- The new international portfolio frictions act as barriers to European capital market integration.
- Spillover effects of a large ICPF sector in a single country on financial market deepening in other countries with very different characteristics remain quite limited.

2. Monetary Policy Transmission and Financial Stability

- Since countries have different exposures to corporate credit risk, monetary policy is transmitted differentially across countries.
- Financial stability implications depend crucially on how additional credit risk is managed. For insurers,
  1. The SCR coverage ratio (= own funds / required capital) can be lower, making insurance companies riskier.
  2. Insurers can maintain more equity (lower leverage), making insurance more capital intensive.
  3. Insurers can adjust the design of insurance products, thereby exposing policyholders to more market risk.
  - We find support for all three channels with varying importance.

3. Multi-Sectoral Approach to Regulatory Design

- Banks and insurers compete for scarce government bond supply. Their portfolios should not be examined in isolation.
- Given different shock transmission mechanisms, which sector is best positioned to take on corporate credit risk?
- However, regulatory landscape remains largely sector-specific and fragmented.
- A multi-sectoral approach to regulatory design has the benefit of taking into account cross-sectoral spillovers in order to safeguard resilience of the whole system.

Conclusion

- Portfolio allocation is predominately driven by characteristics of the domestic financial market due to new portfolio frictions.
  - Domestic projection bias
  - Going native bias
- These portfolio frictions are difficult to overcome and have important policy implications.
- New extensions:
  - How do open-end fixed-income mutual funds interact with fixed-income demand from the ICPF sector and banks?
  - The role of regulated demand for safe assets in the secular decline of interest rates.