IFC-ECB-Bank of Spain Conference: "External statistics in a fragmented and uncertain world"

12-13 February 2024

The geography of capital allocation in the euro area[1]

Roland Beck and Martin Schmitz,
European Central Bank;

Antonio Coppola,
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Stanford University Graduate School of Business,

Matteo Maggiori,
Stanford University Graduate School of Business, NBER, and
CEPR,

Jesse Schreger,
Columbia Business School, NBER, and CEPR

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[1]   This contribution was prepared for the conference. The views expressed are those of the authors and do not necessarily reflect the views of the European Central Bank, the Bank of Spain, the BIS, the IFC or the other central banks and institutions represented at the event.

The Geography of Capital Allocation in the Euro Area*

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External Statistics Conference, Madrid
12 February 2024

Outline of the presentation

Excess Growth in EA Gross Positions largely due to IRE, LUX and NLD

Gross Assets and Liabilities by GDP, Relative to Developed Countries' Average

— Euro Area (EA)   — EA Excluding LUX, IRL, NLD
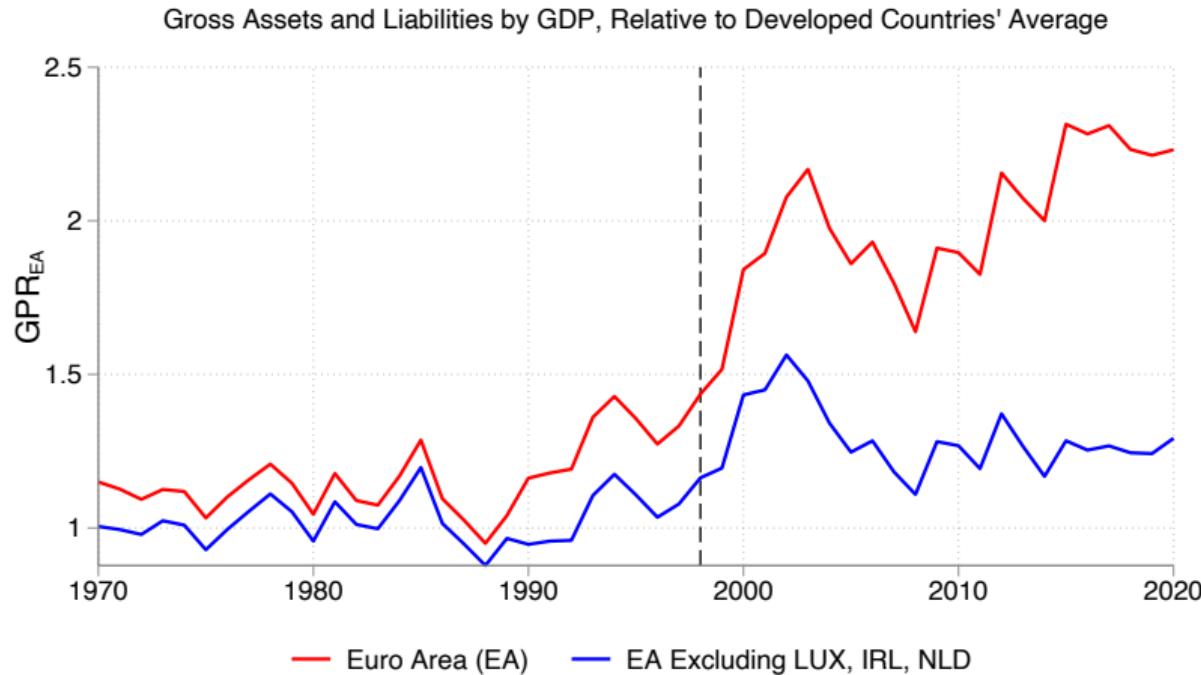
$$GP_{EA} = \frac{\sum_{i \in \mathbf{EA}} (A_i + L_i)}{\sum_{i \in \mathbf{EA}} GDP_i} \quad \rightarrow \quad GPR_{EA} = \frac{GP_{EA}}{\sum_{i \in \mathbf{DM}} GP_i \frac{GDP_i}{\sum_{i'} GDP_{i'}}}$$

DM = {USA, JPN, GBR, CHE, AUS, NZL, KOR, NOR, CAN}   Back

The Dual Role of OOFCs

- **IRE, LUX and NLD**: "Onshore offshore financial centers" (OOFCs)

  - Onshore markets within euro area, but with parallels to offshore financial centers

- Two major roles of OOFCs in euro area financial intermediation

  1. Hubs for euro area **investment fund** industry

     - LUX and IRL funds manage 40% of cross-border equity and bond holdings of euro area

     - LUX and IRL fund assets €7.5tn, compared to €2tn for Germany, €240bn for Italy

     - Opaque ownership: 43% of LUX, IRL fund shares have unknown owners in int'l statistics

  2. **Securities issuance** by affiliates of foreign companies

     - Account for a third of intra-euro area cross-border corporate bond holdings

- Looking through these dual roles of OOFCs crucial to understand euro area cross-border investment patterns and financial integration

Related Literature

- **Nationality-Based Statistics:** Avdjiev, McCauley, Shin (2016); Bertaut, Bressler, Curcuru (2019); Damgaard, Elkjaer, Johannesen (2019); Coppola, Maggiori, Neiman, Schreger (2021)

- **Fiscal and Monetary Unions:** Farhi, Werning (2016, 2017); Kehoe, Pastorino (2017); Farhi, Tirole (2018); Fornaro (2022); Ando, Dell'Ariccia, Gourinchas, Lorenzoni, Peralta, Roch (2023)

- **Tax Havens, Firm Capital Structure:** Hines, Rice (1994); Desai, Foley, Hines (2005); Huizinga, Laeven, Nicodeme (2008); Zucman (2013, 15); Hanlon, Maydew, Thornock (2015); Fuertes, Serena (2016); Alstadsater, Johannesen, Zucman (2019); Bilicka (2019); Guvenen, Mataloni, Rassier, Ruhl (2019); Aminadav, Papaioannou (2020); Altshuler, Boller, Suarez-Serrato (2023)

- **European Financial Integration:** Kindleberger (1973); Eichengreen (1993); Lane (2006); Coeurdacier, Martin (2009); Kalemli-Ozcan, Papaioannou, Peydro (2010); Coeurdacier, Rey (2013); Hale, Obstfeld (2016); Gopinath, Kalemli-Ozcan, Karabarbounis, Villegas-Sanchez (2017); Lane, Milesi-Ferretti (2018); Koijen, Richmond, Yogo (2018); Hoffman, Kremer, Zaharia (2019)

- **Cross-Border Investment and Euro Area Portfolios:** Lane, Milesi-Ferretti (2001); Portes, Rey (2005); Forbes (2010); Lane, Shambaugh (2010); Benetrix, Lane, Shambaugh (2015); Koijen, Yogo (2019); Coletta and Santioni (2019); Monti and Felettigh (2008); Vivar, Lambert, Wedow, Giuzio (2020); Carvalho, Schmitz (2021); Boermans (2022); Boermans, Cooper, Sercu, Vanpee (2022); Jiang, Richmond, Zhang (2020); Maggiori, Neiman, Schreger (2020); Darmouni, Papoutsi (2022); Liu, Redding, Yogo (2022); Faia, Salomao, Veghazy (2022); Fang, Hardy, Lewis (2022); Pacheco (2022); Pellegrino, Spolaore, Wacziarg (2022)

Outline of the presentation

Methodology: Unwinding Holdings Intermediated Through OOFCs

- ▶ Throughout, we rely on multiple data sources:

  - ▶ **ECB SHS**: Each EA country's security holdings, including of fund shares in LUX and IRL
  - ▶ **Morningstar, Refinitiv**: Each fund's complete holdings of securities worldwide

- ▶ Merging them allows us to look through entire intermediation chain


Aggregation

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- ▶ Merging them allows us to look through entire intermediation chain

Match 86% of holdings of LUX and IRL fund shares (residual allocated according to matched)   Match 96% of OOFC issuances

Aggregation

RoW and Euro Area Investors: An Organizing Framework

**Observed EA Portfolio** = (1) *Direct Portfolio* of EA Investors + (2) *Indirect Portfolio* of EA Investors + (3) *Indirect Portfolio* of RoW Investors

RoW and Euro Area Investors: Different Destinations via LUX, IRL Funds

Observed EA Portfolio = (1) Direct Portfolio of EA Investors + (2) Indirect Portfolio of EA Investors + (3) Indirect Portfolio of RoW Investors

(A) Luxembourg — (B) Ireland — (C) Germany

EUR Trillions

Rest of the World (RoW) Investors

Rest of Euro Area (REA) Investors

Domestic Investors
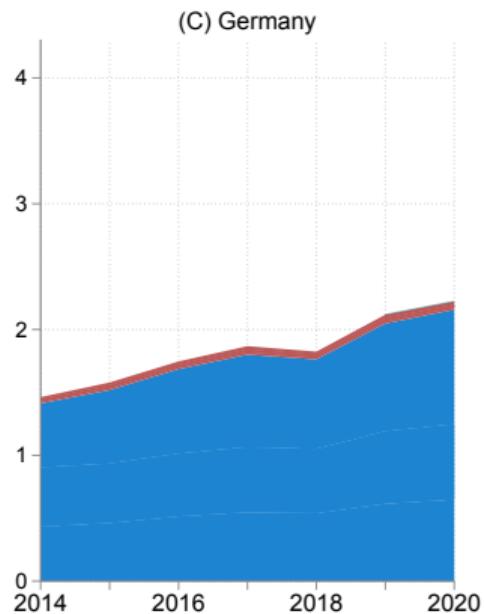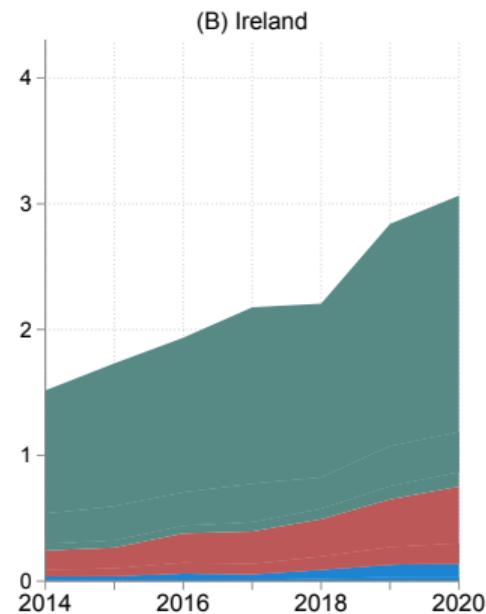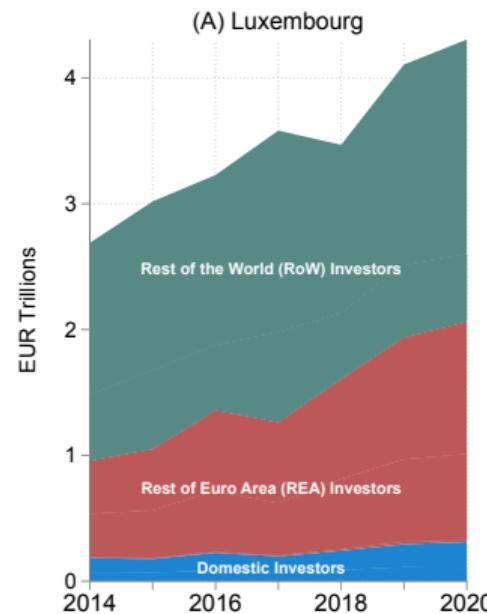
Investors: Domestic (DOM)   Rest of Euro Area (REA)   Rest of World (RoW)

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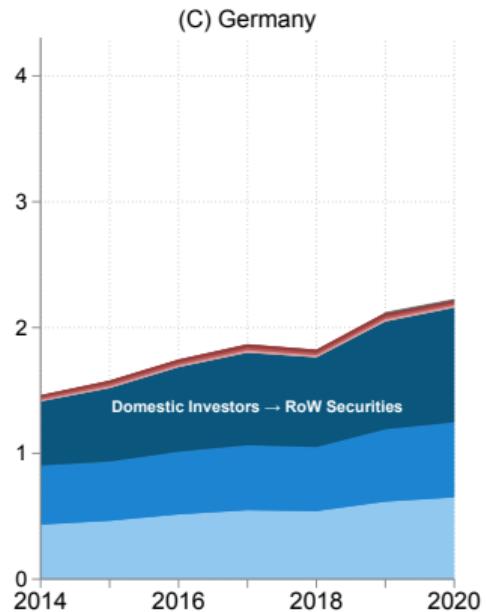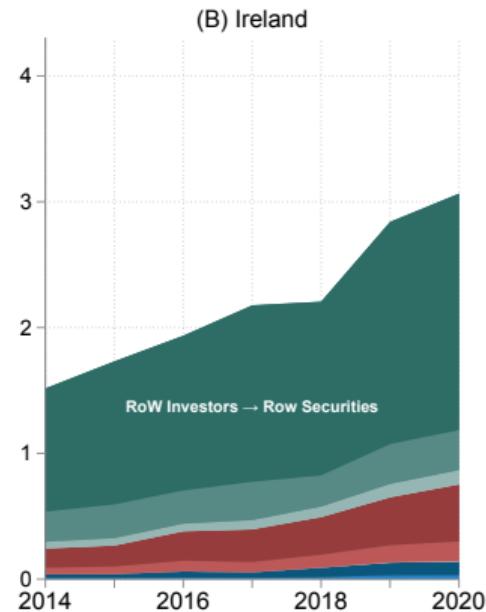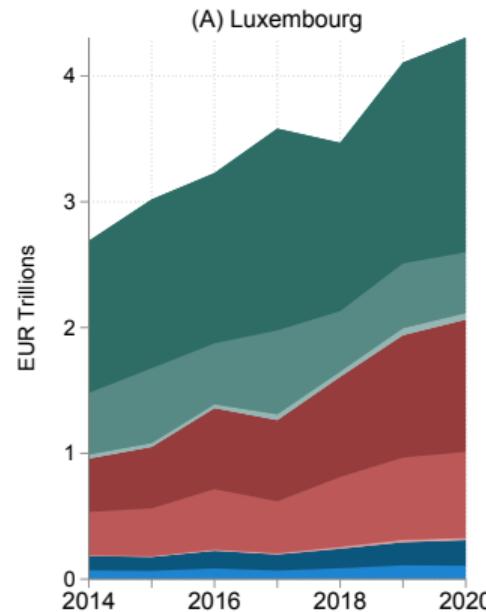
Investors:	Domestic (DOM)			Rest of Euro Area (REA)			Rest of World (RoW)		
Destinations:	DOM	REA	RoW	DOM	REA	RoW	DOM	REA	RoW

Outline of the presentation

Restatements Essential for Assessing Exposures: Italian Portfolio Holdings

Destination	Official (CPIS)	Restated Statistics (EUR Billions)			Δ
		Nationality Adj.	Funds Adj.	Both	
A. Euro Area Countries					
France	140	142	184	192	+38%
Germany	57	62	85	98	+71%
Greece	3	3	5	5	+98%
B. Non-EA					
China	1	4	7	22	+1,545%
Japan	12	14	28	32	+167%
Russia	1	3	5	7	+518%
United States	127	137	247	279	+120%
C. OOFCs					
Ireland	150	146	48	35	-77%
Luxembourg	644	645	153	60	-91%
Netherlands	55	28	76	45	-18%

HB in OOFCs

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HB in OOFCs

Restated Data shows larger Euro Area Portfolio Investment in China

Outline of the presentation

Revisiting Home Bias in the Euro Area
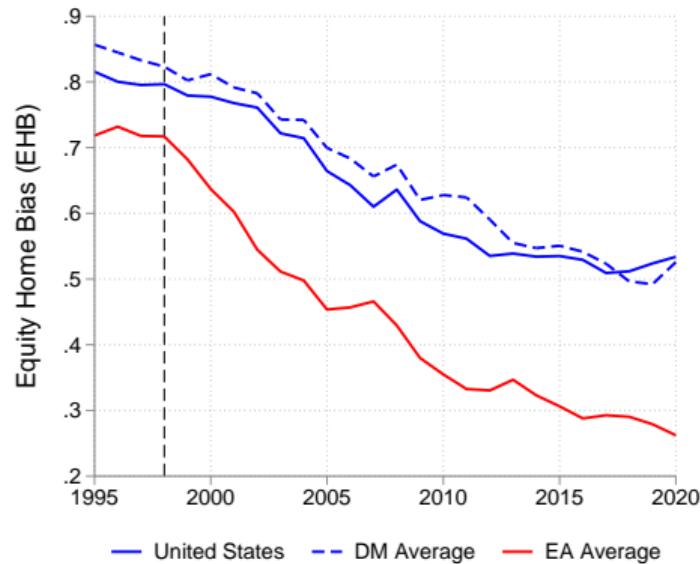
(a) Equity Home Bias
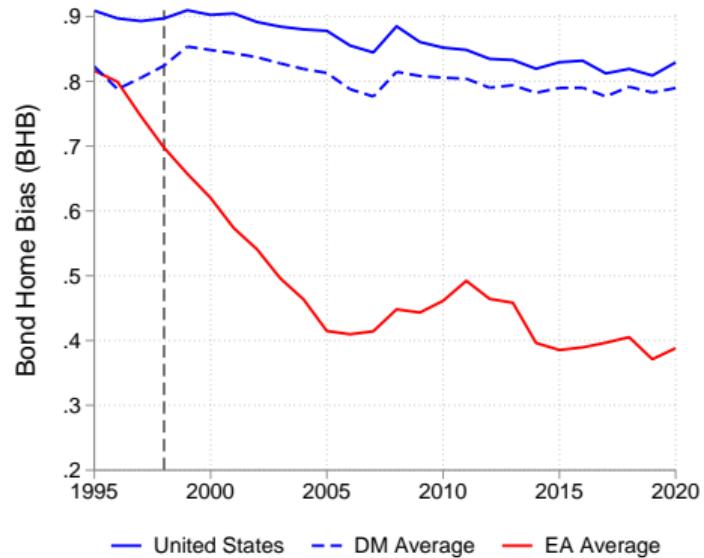
(b) Bond Home Bias

$$\text{Home Bias}_j = 1 - \frac{\text{Share of Foreign Securities in Country } j \text{ Portfolio}}{\text{Share of Foreign Securities in World Market Portfolio}}$$

Revisiting Equity Home Bias in the Euro Area

▶ Literature had to estimate indirect portfolio via investment funds (portfolio #2)

▶ Standard method assumes LUX, IRL fund shares = claims on foreign equity. Two biases:

    1. Fund holdings actually include domestic equity (small)

    2. Fund holdings actually include claims on bonds, cash, and non-securities (big)

▶ Additionally, equity holdings of Luxembourg and Ireland biased by RoW investments (portfolio #3)

▶ Historical time series: assume *constant fraction* of non-domestic equity for each fund share

Adjustments Reveal No Specialness of Euro Area Equity Home Bias Trend

Figure showing Equity Home Bias (EHB) from 1995 to 2020 with lines for United States, EA Average: Benchmark, EA Average: Remove RoW Holdings, and EA Average: Fully Adjusted. Annotations indicate "Correcting Portfolio 2" and "Removing Portfolio 3".

Legend:
- United States
- EA Average: Remove RoW Holdings
- EA Average: Benchmark
- EA Average: Fully Adjusted
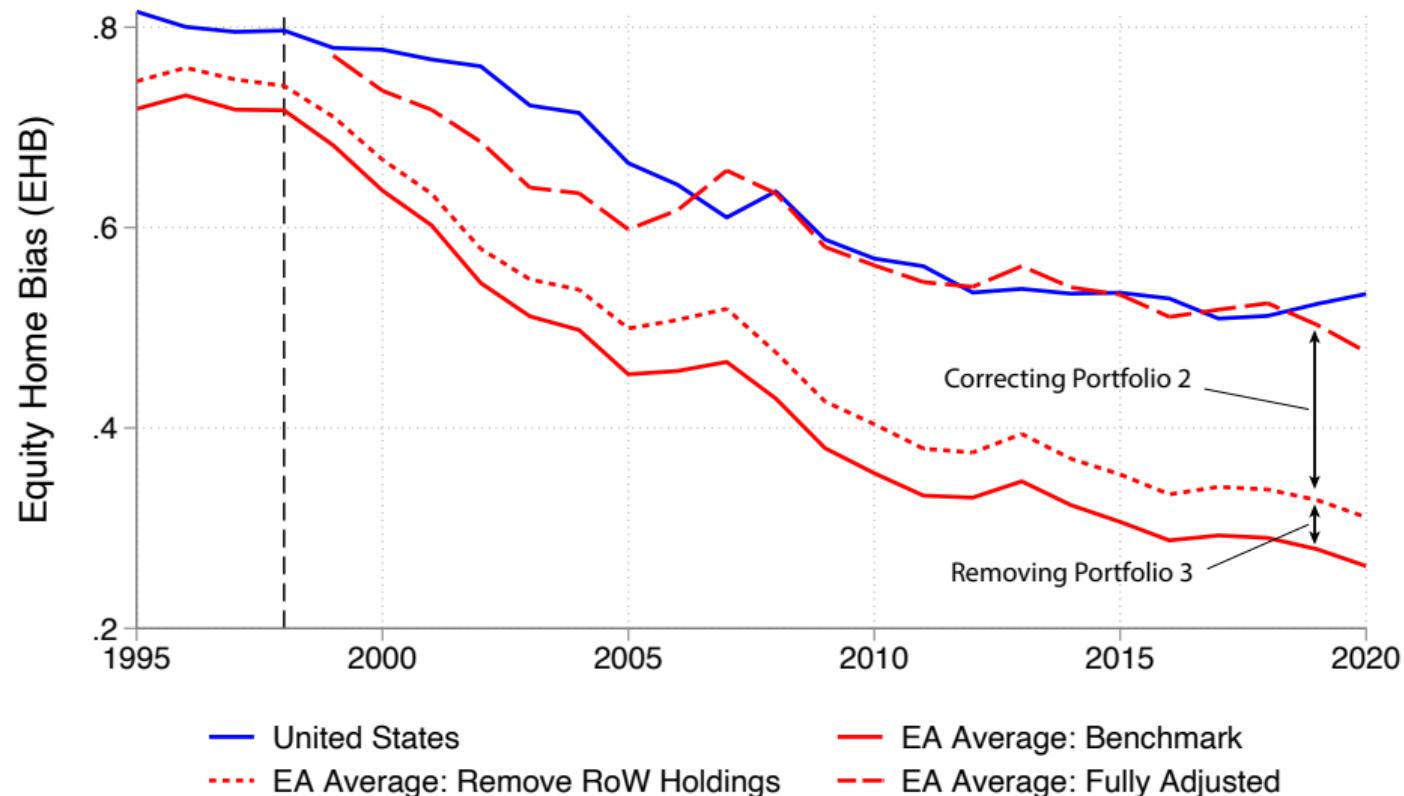
Revisiting Bond Home Bias in the Euro Area

▶ Literature ignored indirect portfolio (portfolio #2)

▶ Implications of omitted fund share holdings. Two biases:

   1. Fund holdings actually include domestic bonds (small)
   2. Fund holdings actually include foreign bonds (also small)

▶ Additionally, holdings of Luxembourg and Ireland biased by RoW investments (portfolio #3)

After Adjustment, Euro Area Bond Home Bias Still Special
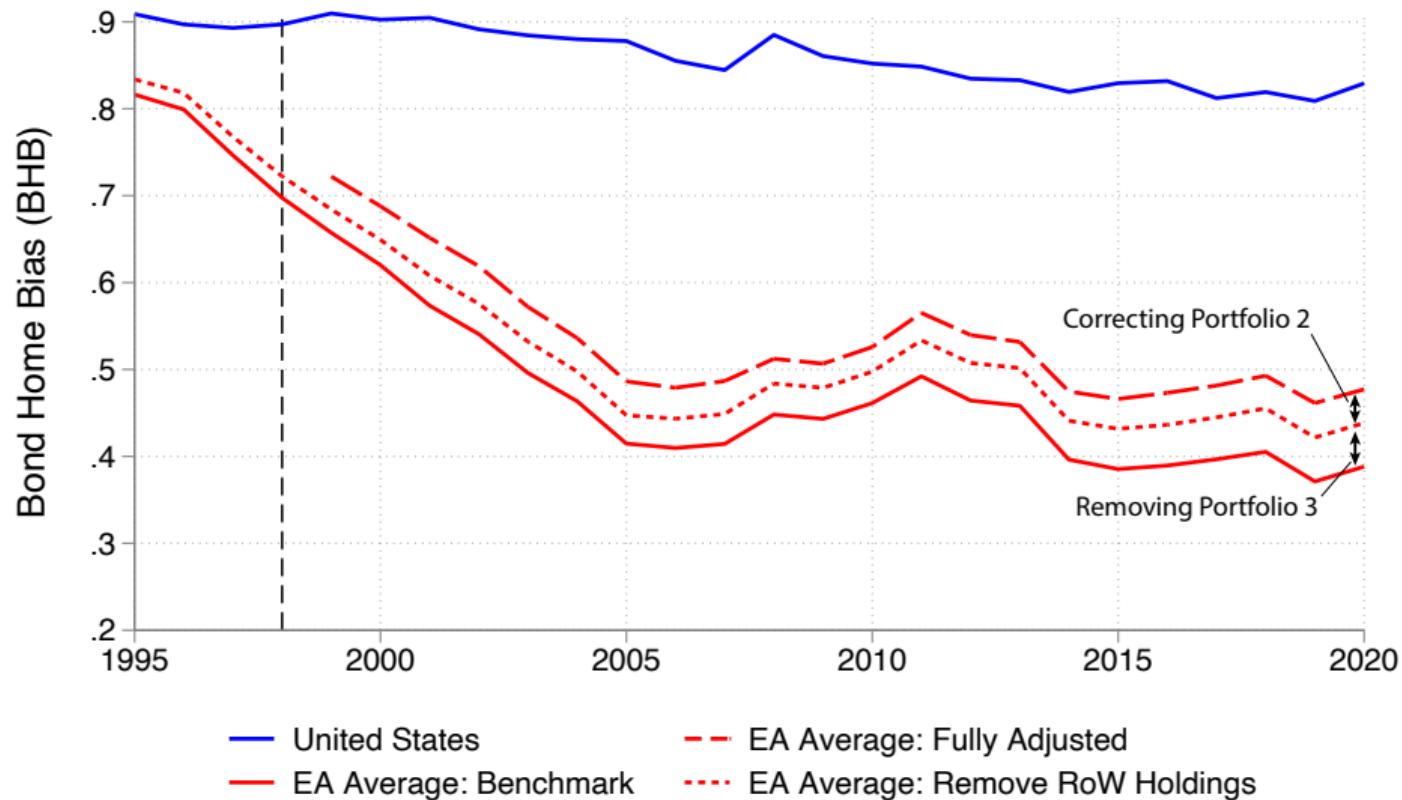
Outline of the presentation

RoW Investors in Luxembourg and Ireland

- Well-known discrepancy:
  - Globally declared holdings in LUX and IRL fund shares far below LUX and IRL declared liabilities
  - Difference > €3 trillion

- *Missing wealth* may be accounted for by hidden assets in Switzerland and in other financial centres (Zucman, 2013)

- We use new administrative data from Luxembourg and Ireland on the geography of *immediate* fund ownership

  - Data provided by Central Bank of Ireland and Luxembourg regulator (CSSF)

  - CSSF data additionally interacts geography of Luxembourg fund owners and of investments

- Revealed preference approach to investigate *ultimate* ownership

Administrative Data Reveals Crucial Role of UK in OOFC Fund Ownership


Fund Share Liabilities: Immediate Counterparty Basis
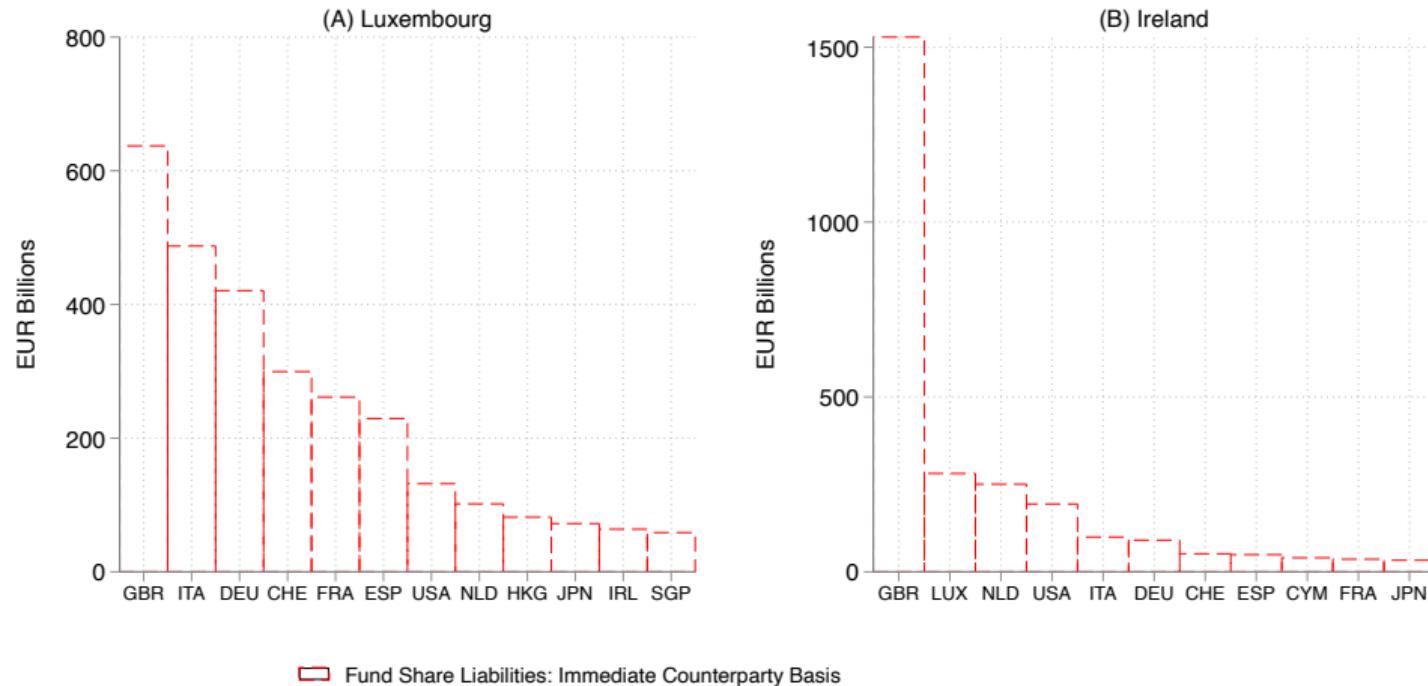
▶ Key new question: who is the UK investing on behalf of?

Administrative Data Reveals Crucial Role of UK in OOFC Fund Ownership

(A) Luxembourg

(B) Ireland

Fund Share Liabilities: Immediate Counterparty Basis   CPIS Equity Assets
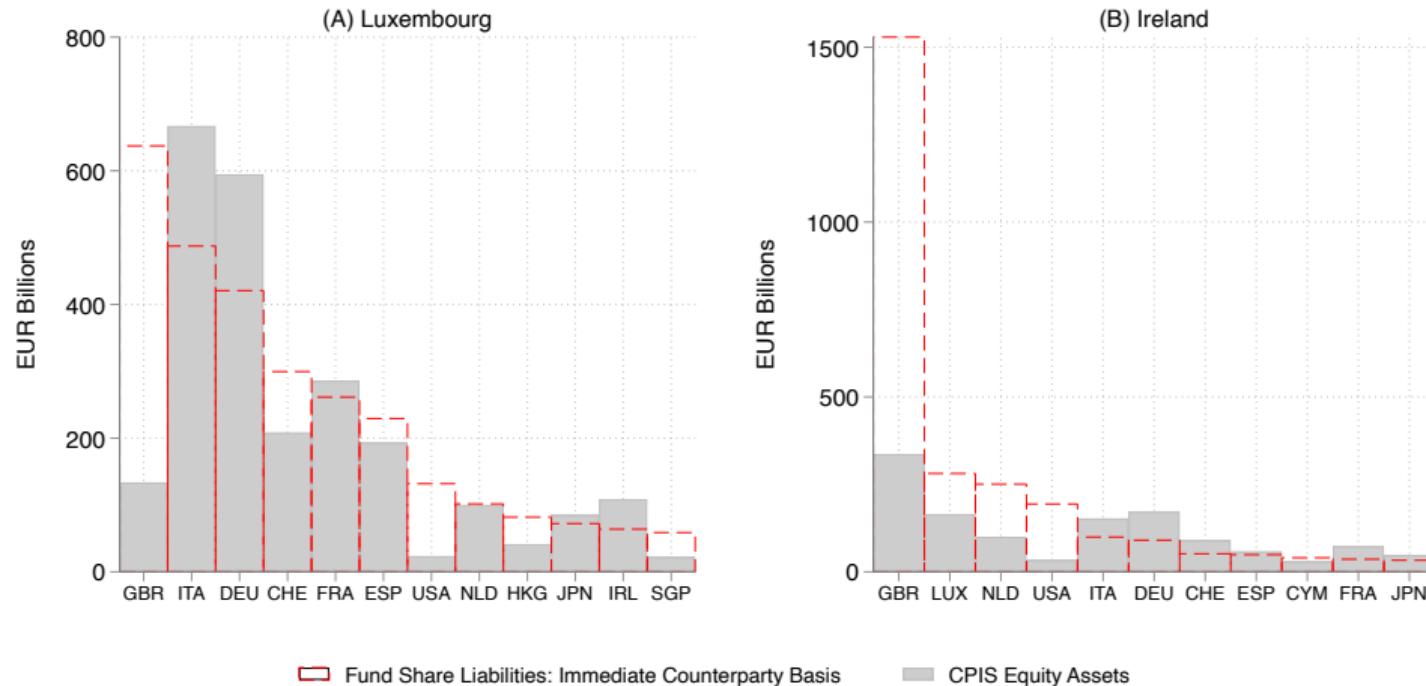
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What Each Immediate Counterpart Region Holds via Luxembourg Funds
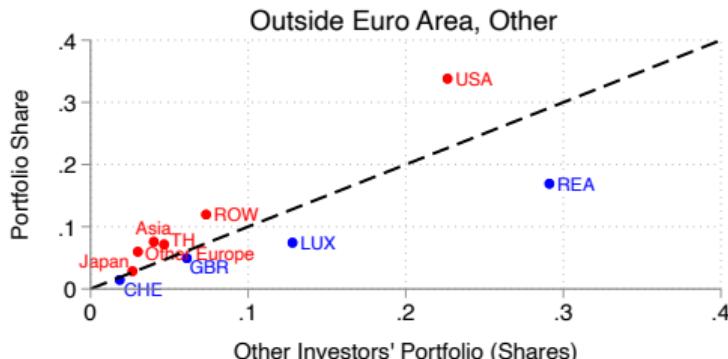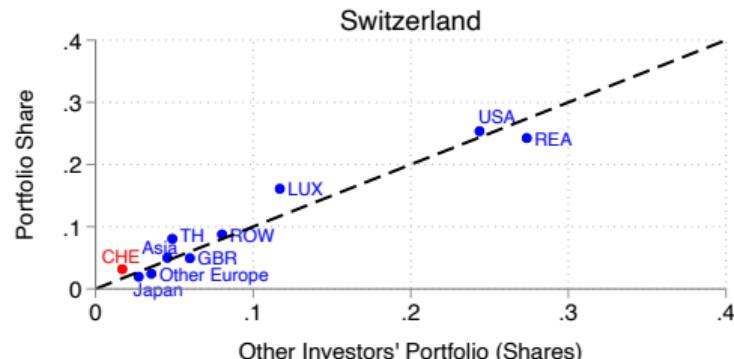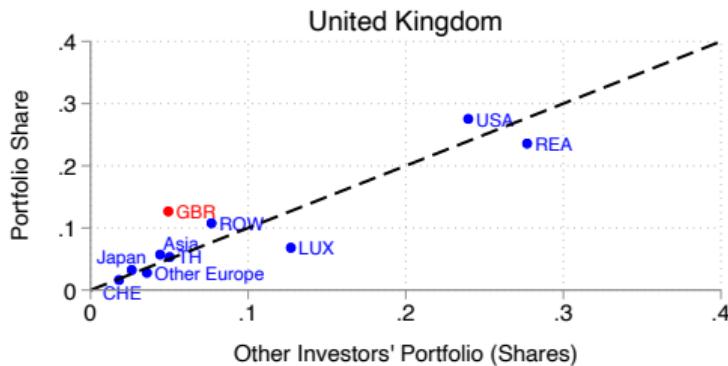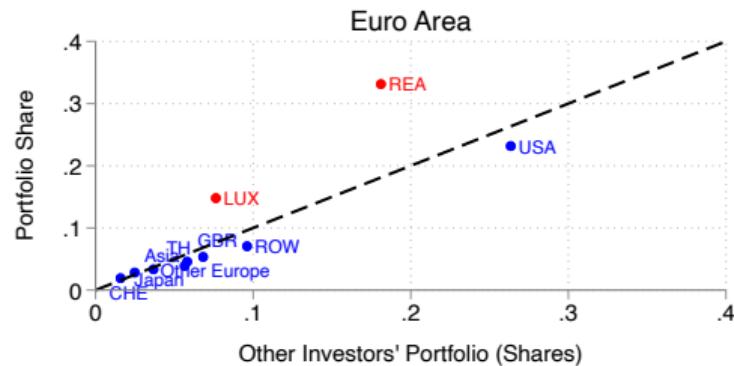
Ownership of Luxembourg Funds: Transition From Switzerland to UK

Share Held, By Immediate Counterparty

Legend: GBR, CHE, REA, LUX, Asia, ROE, USA, TH, ROW, Japan
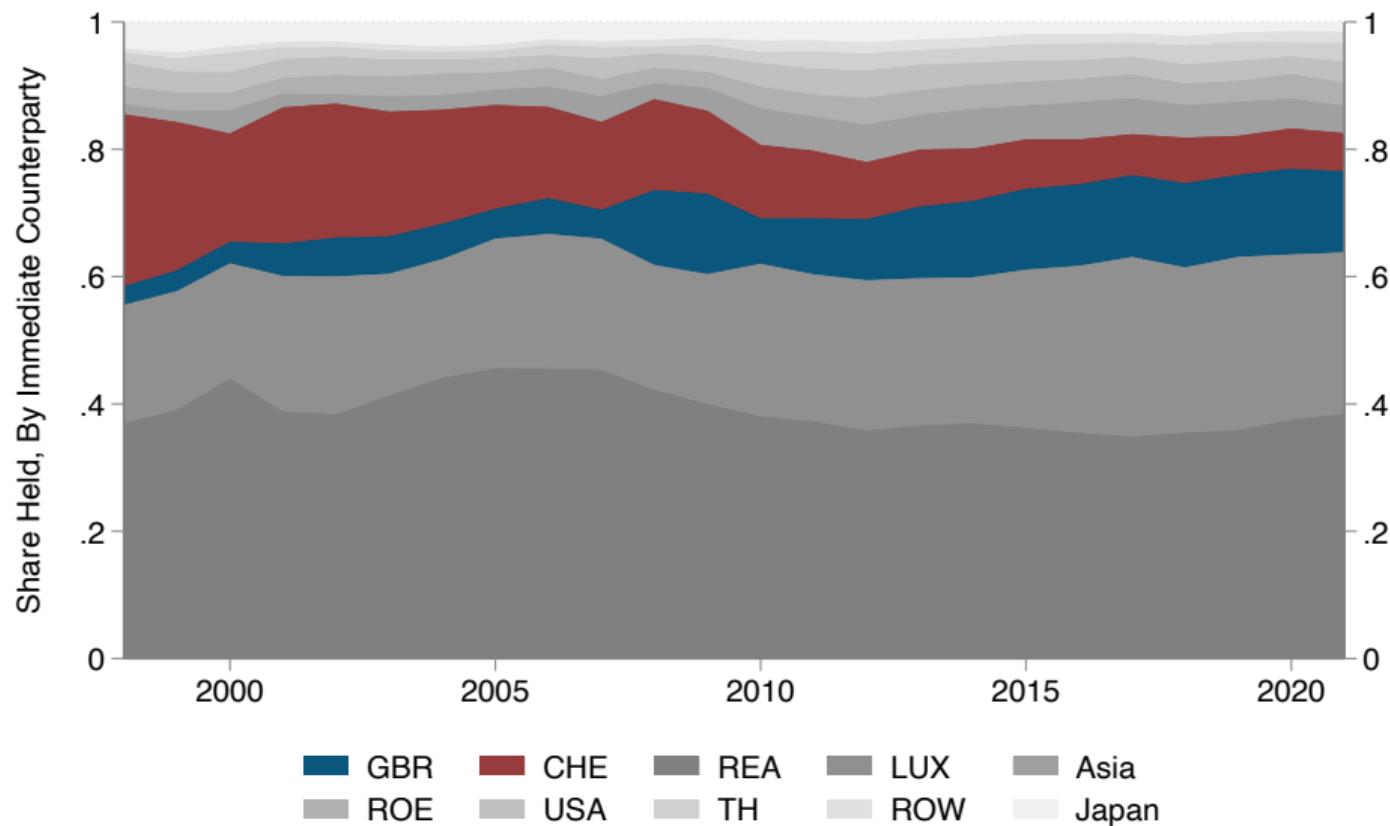
RoW Investors in Luxembourg and Ireland

- Largest non-EA immediate counterparty for IRL and LUX is now the UK

- UK-intermediated funds overweight UK and RoW assets

- Very likely that UK-intermediated funds reflect underlying investments by UK and RoW (in particular non-EA) investors

Much More in the Paper

- ▶ Allocative Effects

- ▶ North-South Allocations

- ▶ Portfolio Allocations Through Micro-Data (ICAPM)

Outline of the presentation

Conclusion

- A new view of capital allocation in the Euro Area

    - Large role of **onshore offshore financial centers**: Luxembourg, Ireland, Netherlands

    - Resolve intermediation chains through OOFCs using new data and methods

- New estimates allow for proper assessment of Euro Area countries' exposures

- Enhanced measurement of extent of euro area financial integration

- Role of currency in bond markets vs. equity home bias

- New evidence on ownership of LUX and IRL funds: pivotal role of the UK

Extra Slides

# The Role of European Financial Centers in Capital Allocation

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The Role of European Financial Centers in Capital Allocation

BMW Finance NV
Netherlands

Investment Fund
Luxembourg

BMW AG
Germany

ITA
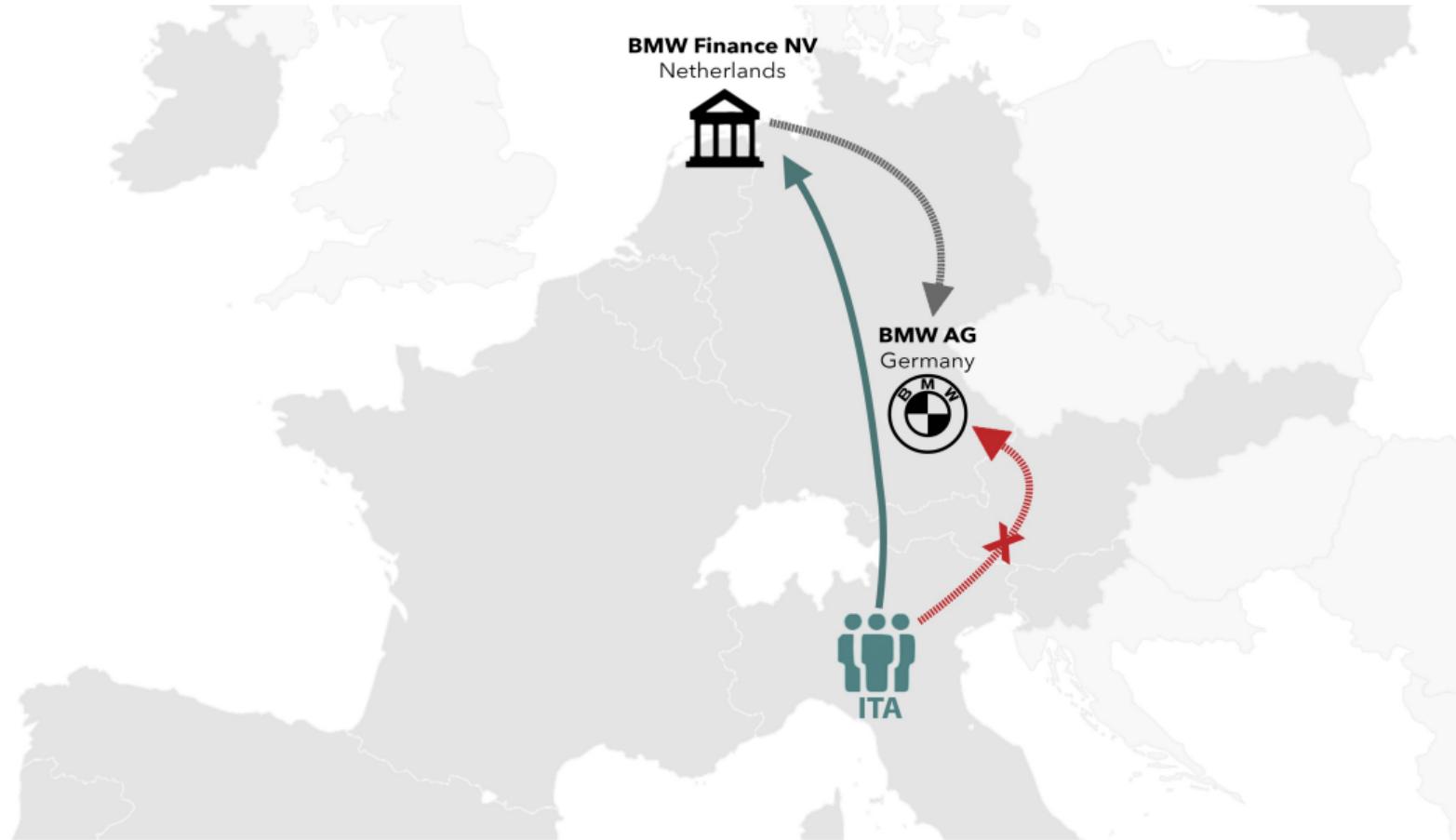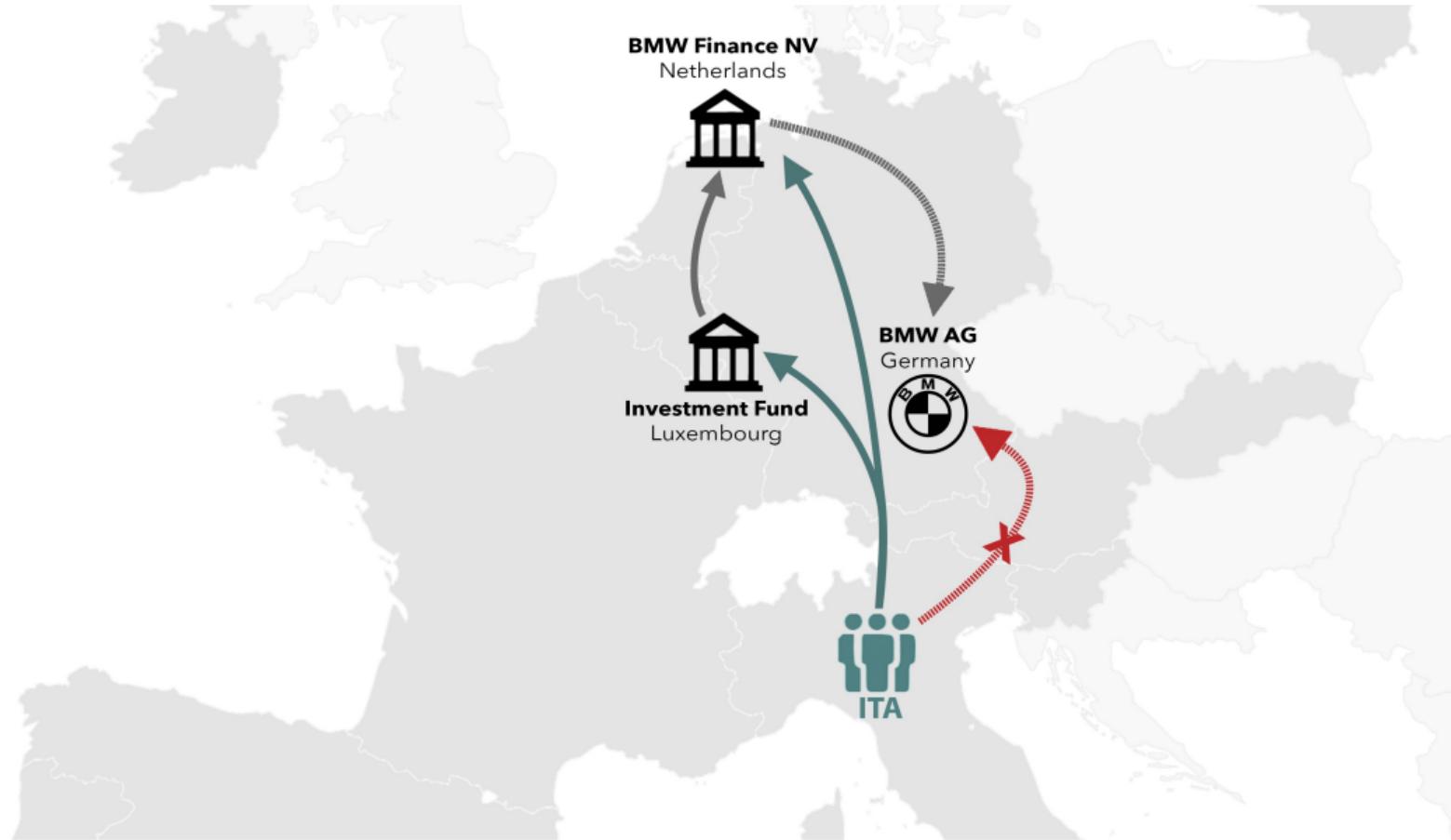
The Role of European Financial Centers in Capital Allocation
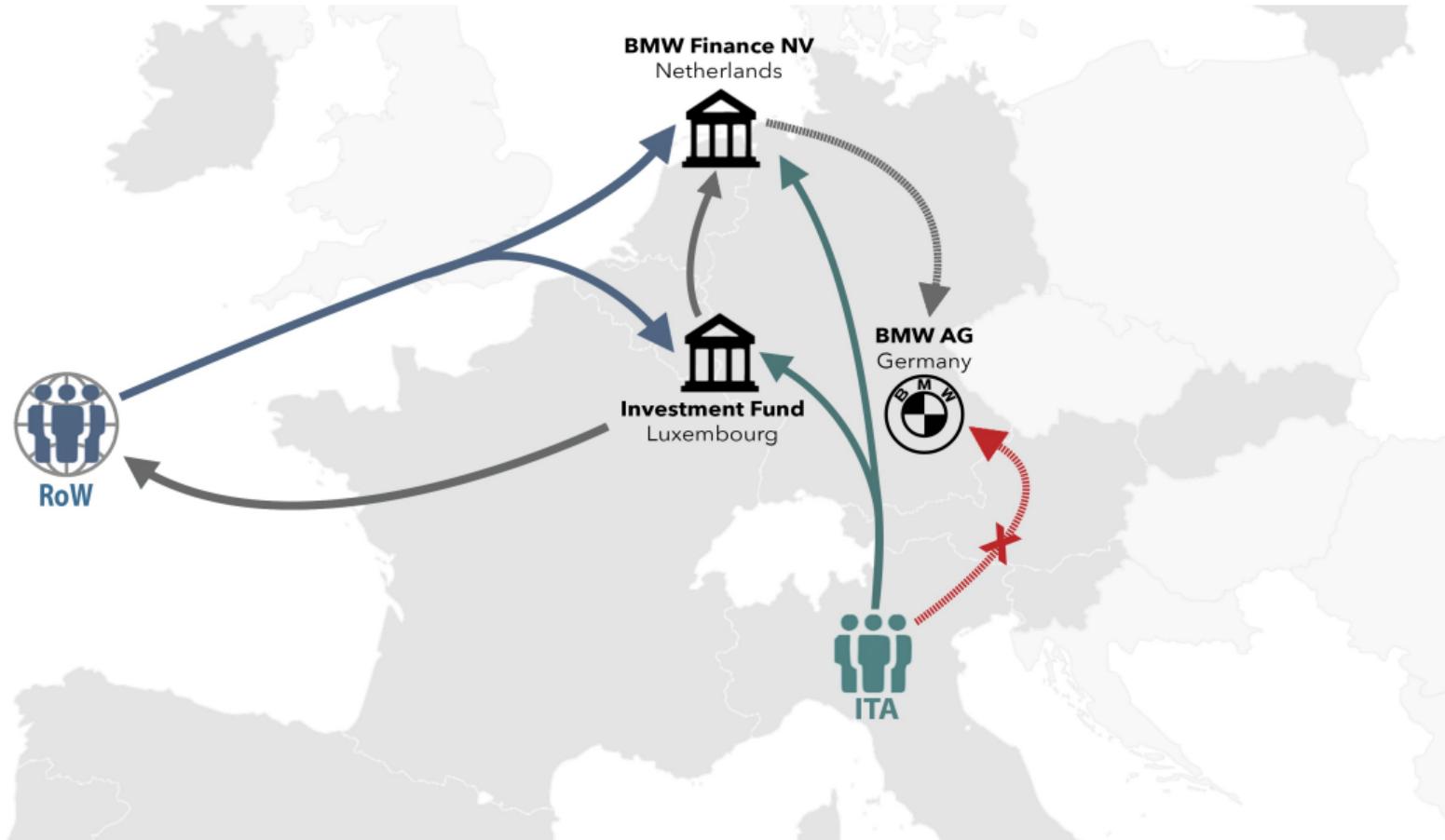
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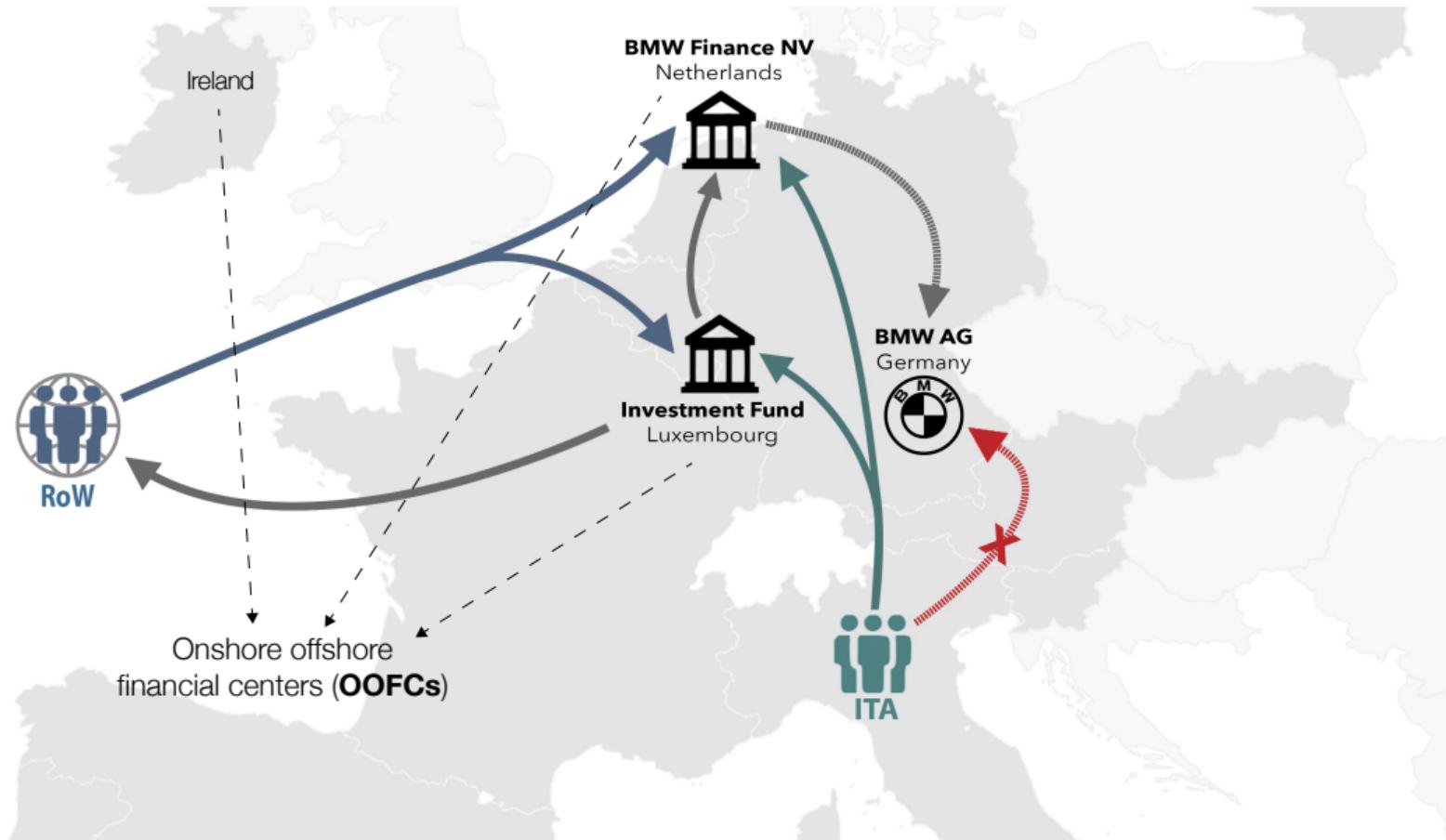
Using Within-Firm Variation to Establish Impact on Allocations _{Back}

With $\theta_{k,i,t}$ the *domestically held share* of firm k's bonds issued via subsidiaries in country i:

$$\theta_{k,i,t} = \exp\{\alpha_t + \gamma_k + X_{k,i,t}\,\beta\} + \varepsilon_{k,i,t}$$

	Domestically Held Share ($\theta_{k.i.t}$)	
	(1)	**(2)**
OOFC Dummy[†]	−.48***	−.33***
	(.04)	(.06)
Firm FE	N	Y
Year FE	Y	Y
Nationality FE	Y	Y
Identifying Observations	12,930	11,827
R^2	.22	.84

[†] *PPML estimator, marginal effect $e^{\hat{\beta}} - 1$ shown*

North-South Heterogeneity in Within-Firm Allocative Effects
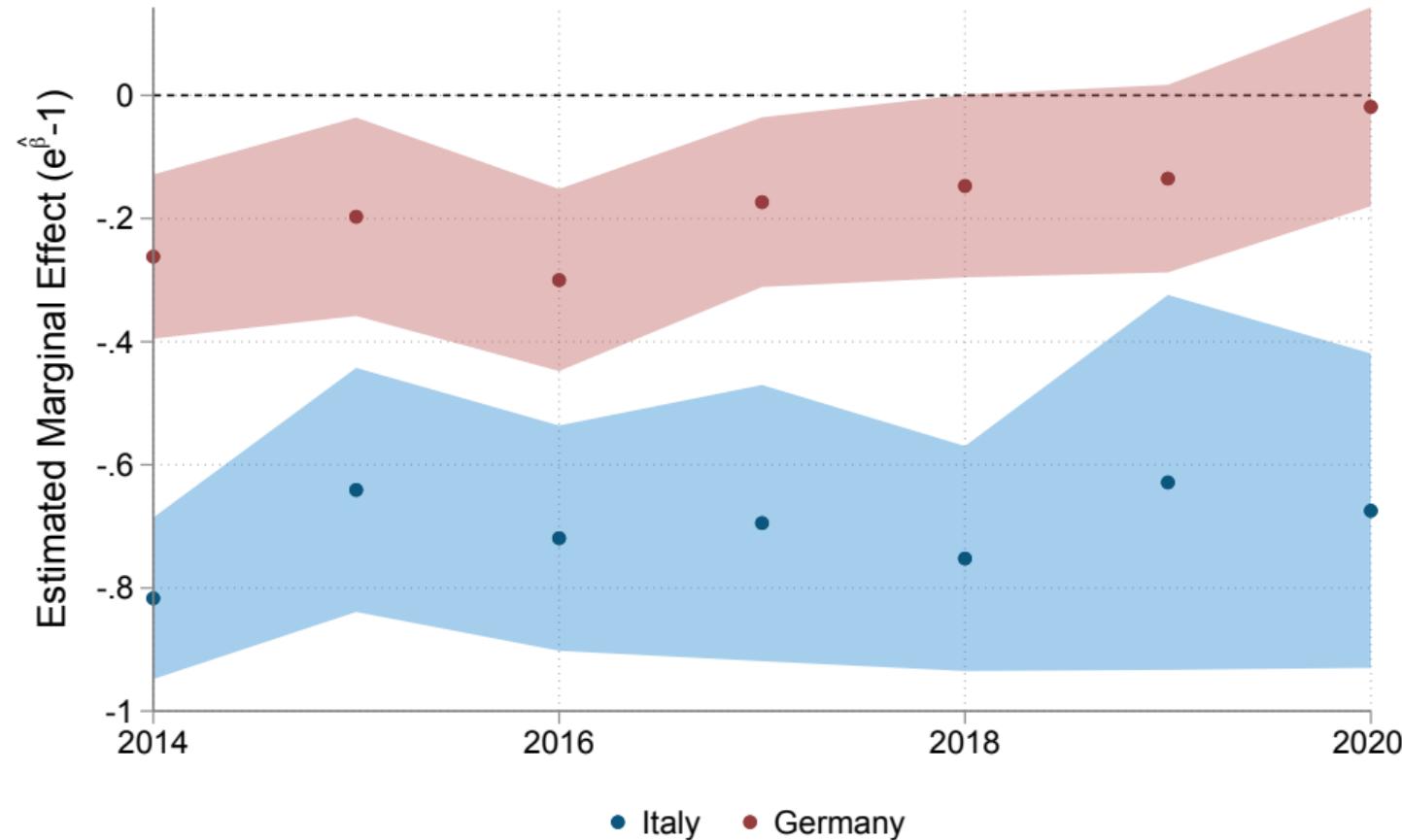
Home Bias in Each EA Country's Holdings Through LUX and IRL Funds
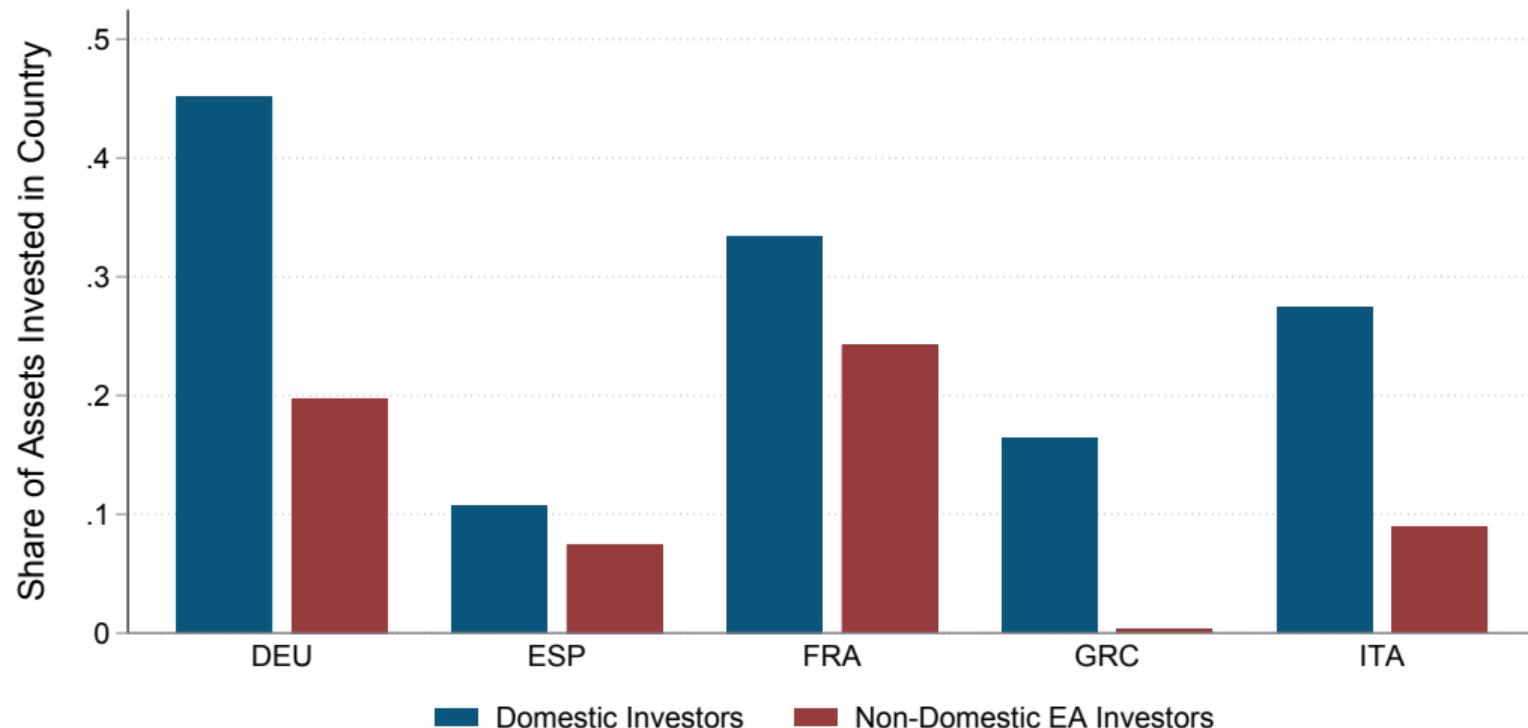
Large Home Currency Bias in Holdings Through LUX and IRL Funds

Currency Composition of Bond Holdings: EA vs. RoW Investors

(A) Ireland Funds

(B) Luxembourg Funds

EA Holdings   RoW Holdings

Back
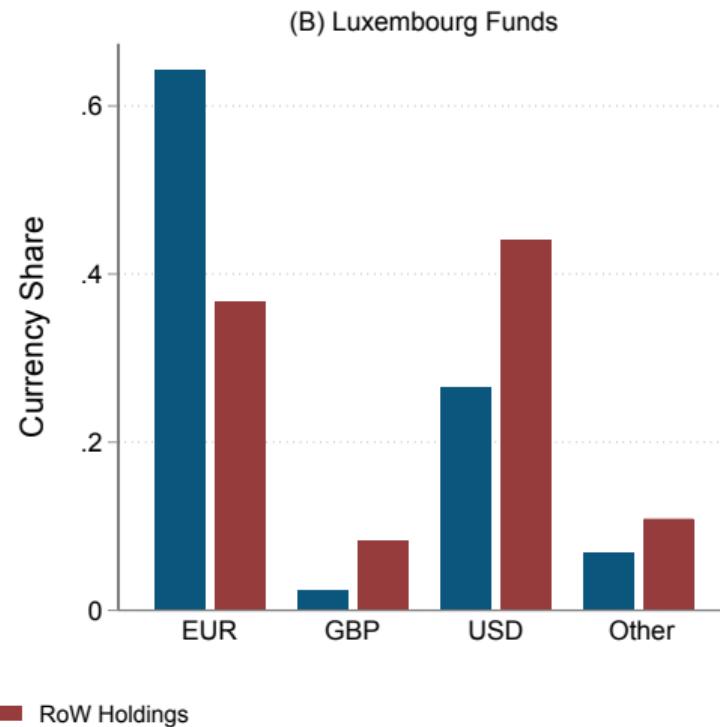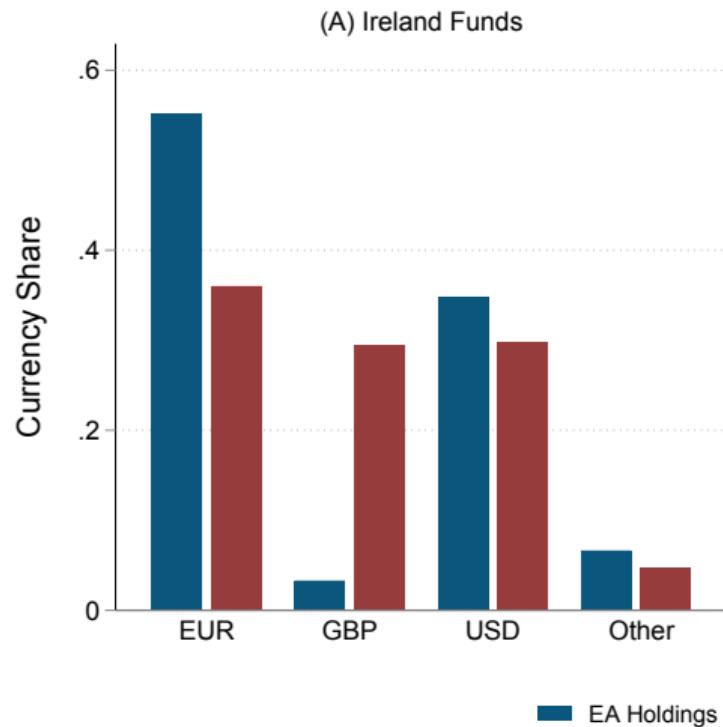
Residency-Based vs. Nationality-Based Statistics

- What is meant by Residency and Nationality?

- Cases where Nationality $\succ$ Residency:
  - Issue in OOFCs through foreign shell company (BMW Finance NV)
  - Tax inversions to Ireland (Medtronic)

- Cases where Nationality $\overset{?}{\succ\!\prec}$ Residency :
  - Issue through foreign operating subsidiary (T-Mobile US)

- Use algorithm of Coppola et al. (2021): map universe of securities from issuer (Residency) to ultimate parent (Nationality) using multiple commercial data sources

Issuer	Residency	Parent	Nationality	Value (€B)
BMW Finance NV	NLD	BMW AG	DEU	48
Petrobras Global Finance BV	NLD	Petroleo Brasileiro SA	BRA	36

Back

Restated Data shows larger Euro Area Portfolio Investment in China