Phantom FDI

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Contents

Phantom FDI

- Many FDI datasets (OECD, Eurostat, IMF's (BOP/IIP), UNCTAD) include the ability to separately identify FDI related to special purpose entities (SPEs).
  - SPEs primarily channel funds but have little impact on "real" economic activity.
- However, theses datasets still present some phantom (or conduit) FDI
  - offshore financial centers (OFCs)
  - profit-shifting activities might occur through other MNE activities (e.g., intangible fixed assets) instead of through non-OFCs

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Contributions

- The paper introduces a well-established theoretical approach (structural gravity) to identify and measure "Phantom FDI."
  1. Outward FDI of U.S.
  2. Identify inward phantom FDI of a very large set of non-U.S. countries.
  3. Valuate phantom FDI for multiple measures of FDI: numbers of affiliates, revenues, and investments in total assets, fixed assets, tangible fixed assets, and intangible fixed assets using USITC's MREID dataset
- Previous estimates suggest that between 30%-40% of American MNE's revenue is phantom FDI.
  - Our theoretically-consistent estimates indicate are more conservative (23%).

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    1. Use ORBIS data to validate
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    1. Probabilistic model (Markov chain) to track down rela FDI
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Structural Gravity

1. Trade

$$TRADE_{ij} = \frac{Y_i E_j}{Y^W} \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma} \varepsilon_{ij}^T$$

2. FDI

$$FDI_{ij} = \frac{\beta \phi^2 \eta_i^2}{1 - \beta + \beta \delta_{j,M}} \omega_{ijt} \frac{E_i}{P_i} \frac{Y_j}{M_i} \varepsilon_{ij}^F$$

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Measuring U.S. Bilateral Outward Phantom FDI

1. USA's outward FDI

$$FDI_{USA,j} = \exp(\beta_0 + \beta_1 \ln GDP_j + \beta_2 \omega_{USA,j}) \times \varepsilon_j \quad (1)$$

2. "Phantom FDI" for US outward FDI

$$FDI^{Phantom}_{USA,j} \equiv FDI_{USA,j} - \widehat{FDI}_{USA,j} \quad (2)$$

3. "Phantom FDI ratio"

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Structural Gravity Using All Country-Pairs

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Production-Function Approach

1. USA's MNEs revenues abroad

$$R^{imp}_{USA,j} = \gamma K_j^{\alpha} L_j^{1-\alpha} \tag{6}$$

2. "Phantom FDI"

$$R^{Phantom}_{USA,j} \equiv R^{act}_{USA,j} - R^{imp}_{USA,j} \tag{7}$$

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GRAVITY PORTAL

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MREID key dimensions

1. Time span: 12 years
2. Bilateral
3. Countries: 185
4. Sectors: 25
5. Domestic data for all variables
6. FDI variables
    1. Extensive margin: (number of affiliates)
    2. Revenue
    3. Employees
    4. Investment: Assets (fixed and total)
7. FDI types
    1. Total
    2. Greenfield
    3. Mergers and Acquisitions

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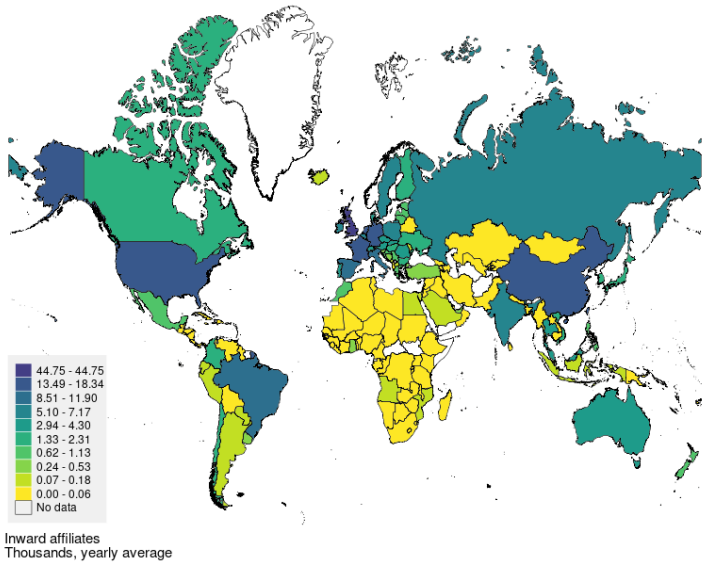
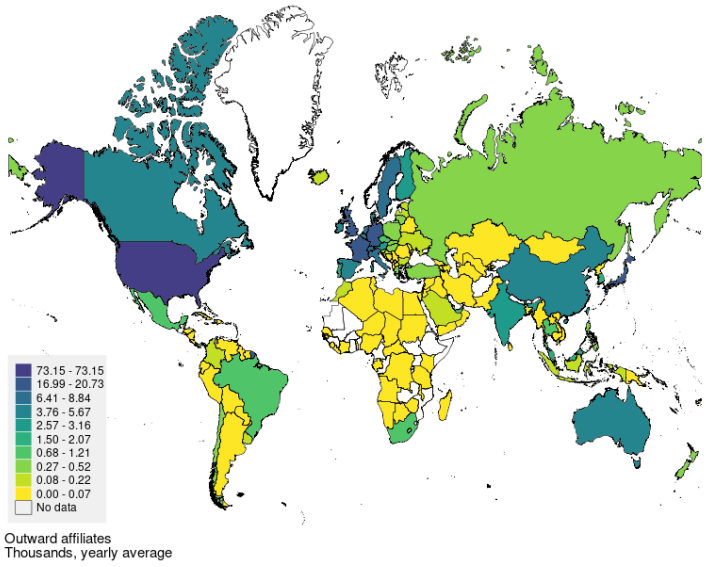
(a) Inward affiliates



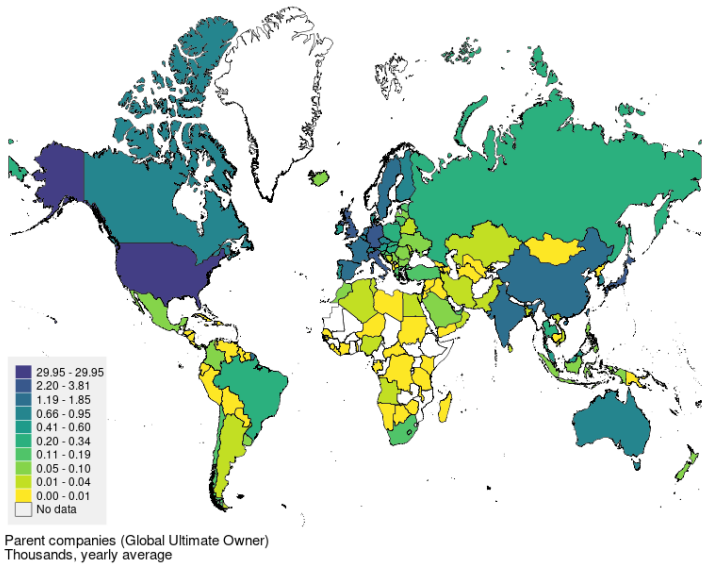
Inward affiliates
Thousands, yearly average

(b) Outward affiliates



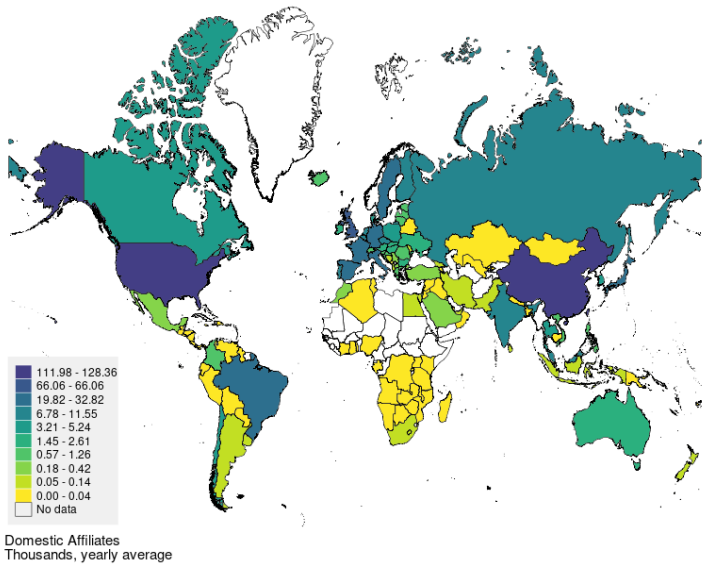
Outward affiliates
Thousands, yearly average

(c) Parent firm (GUO)



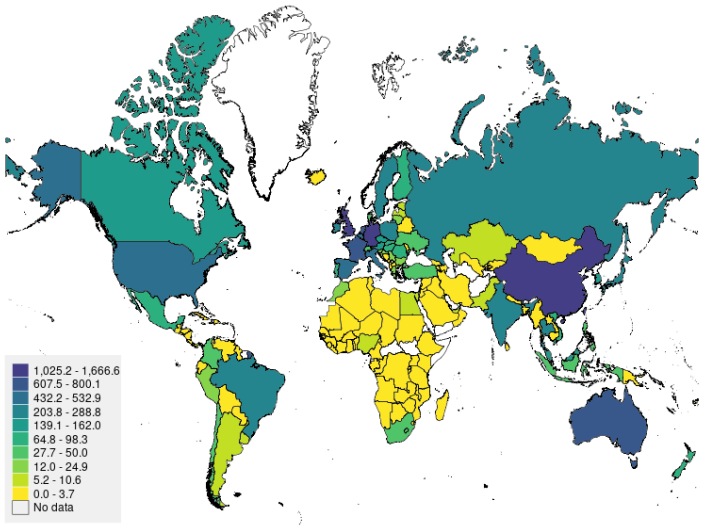
Parent companies (Global Ultimate Owner)
Thousands, yearly average

(d) Domestic Affiliates



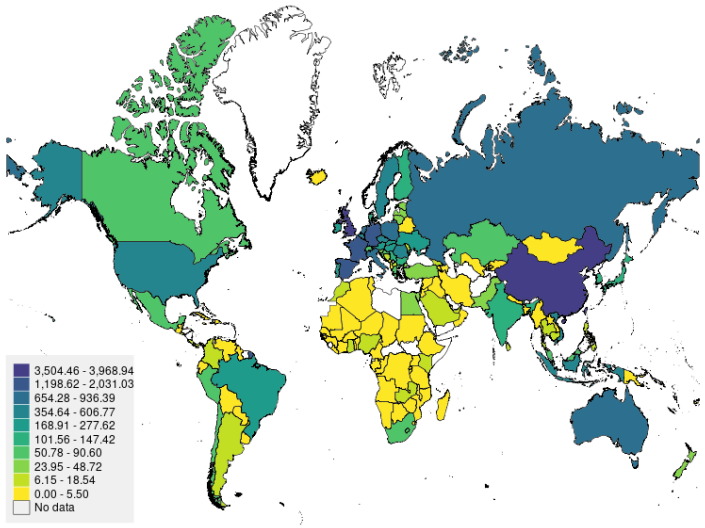
Domestic Affiliates
Thousands, yearly average

(a) Revenue in foreign countries



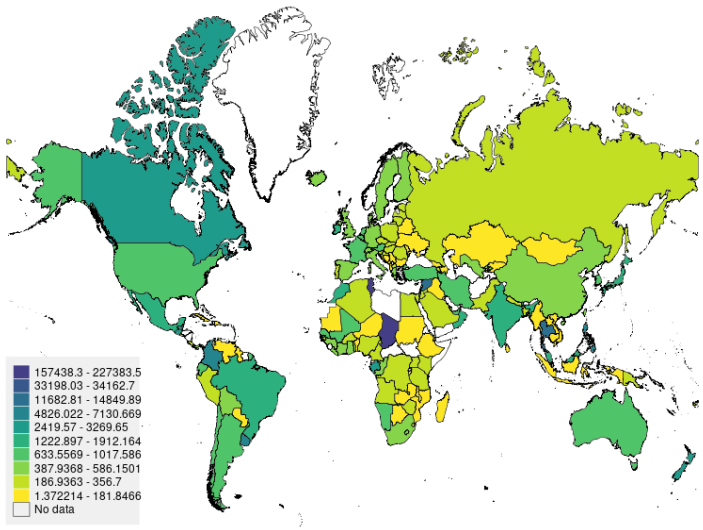
Foreign Revenue
Billion USD, yearly average

(b) Employees in foreign countries



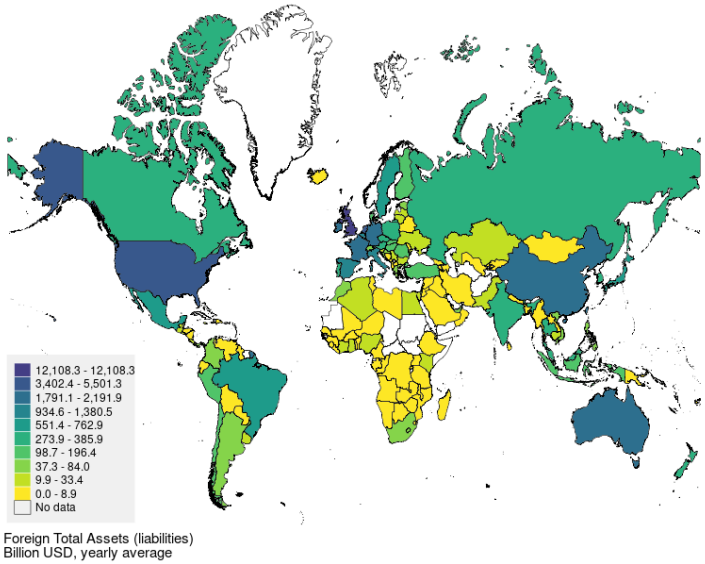
Foreign Employees
Thousands, yearly average

(c) Rev/emp in foreign countries

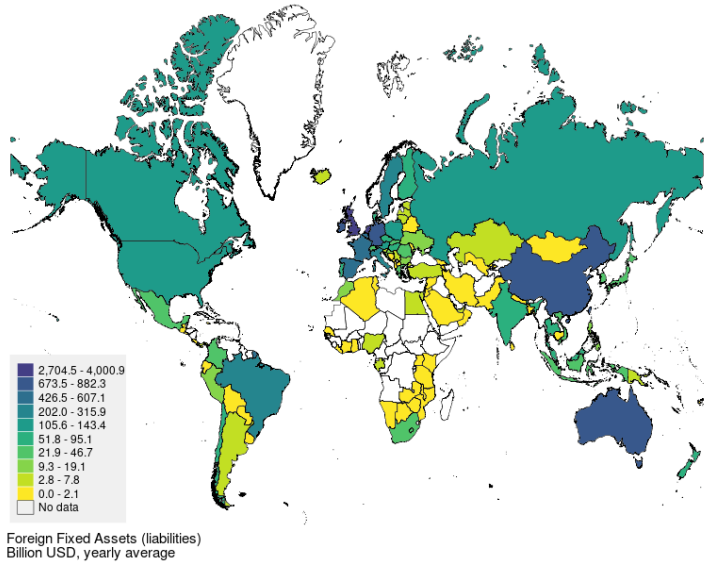


Revenue per employee working in Foreing (host) countries
Thousands, yearly average

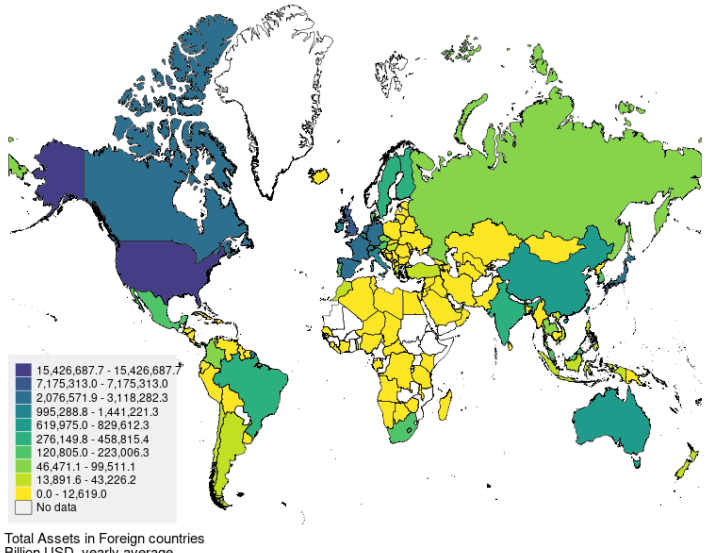
(a) Foreign Total Assets (liabilities)



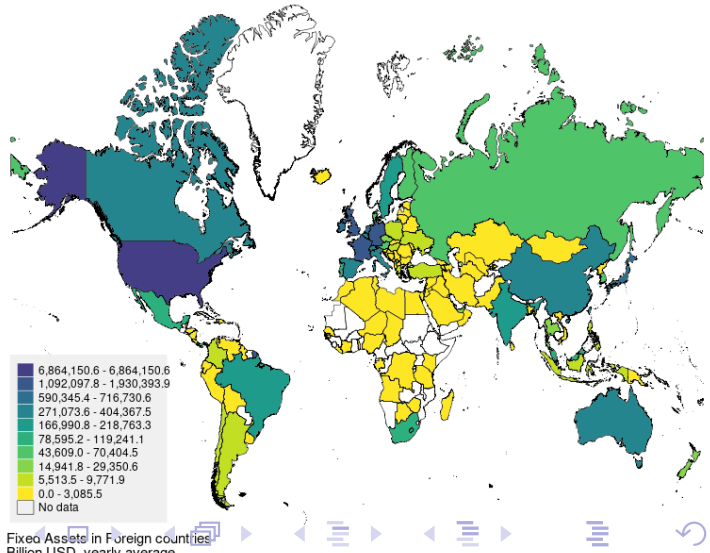
(b) Foreign Fixed Assets (liabilities)



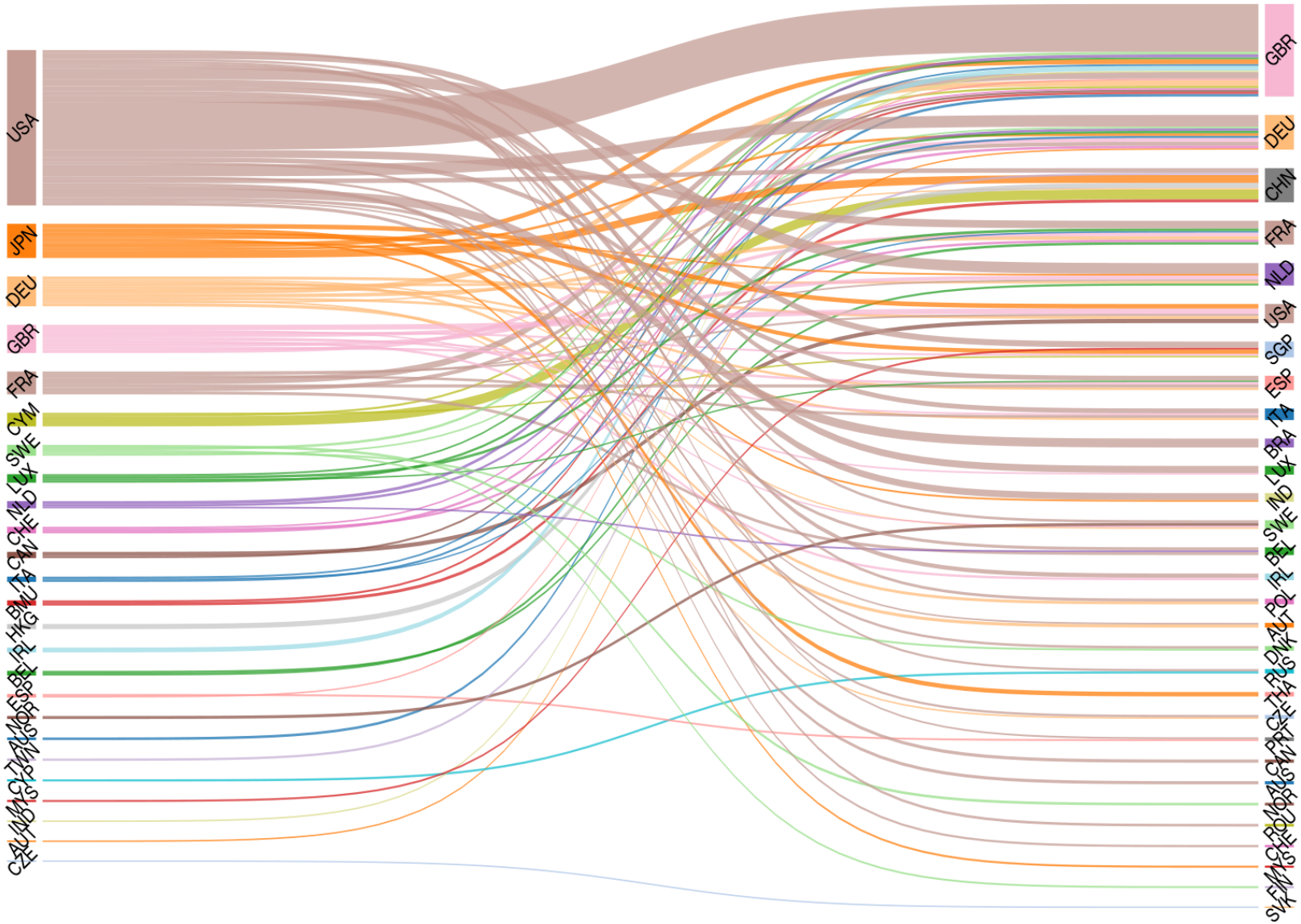
(c) Total Assets in Foreign Countries



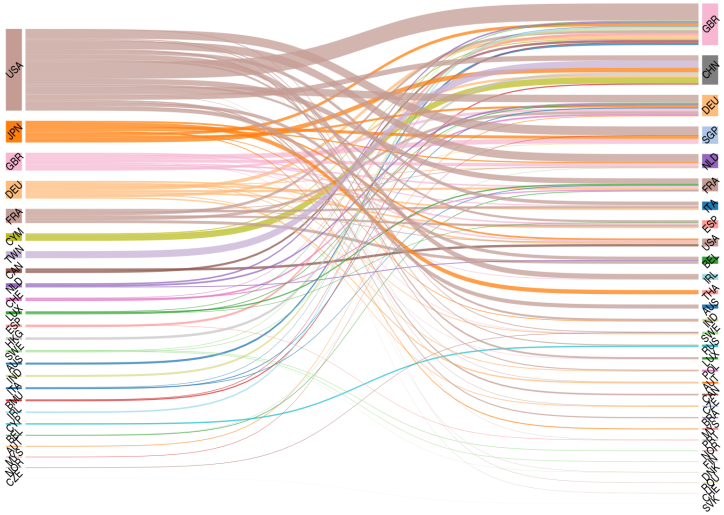
(d) Fix. Assets in Foreign Countries



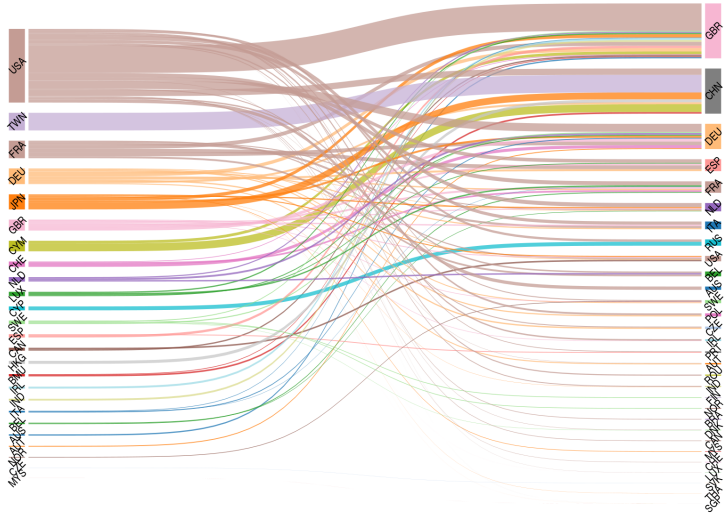
Foreign investment flows (affiliates)



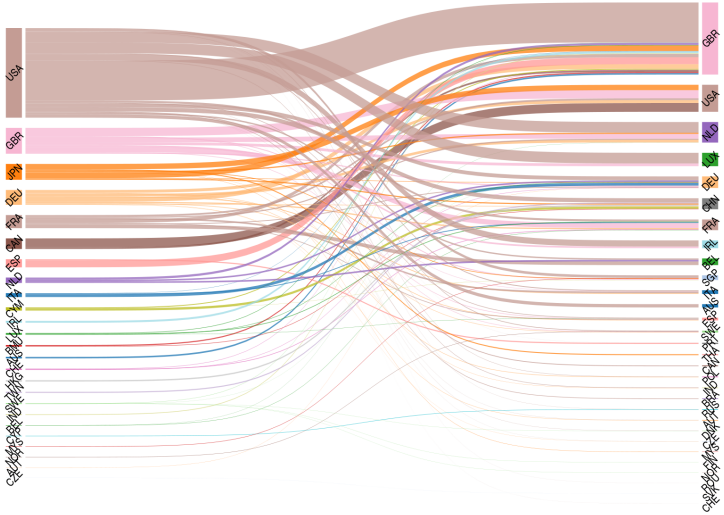
(a) Revenue



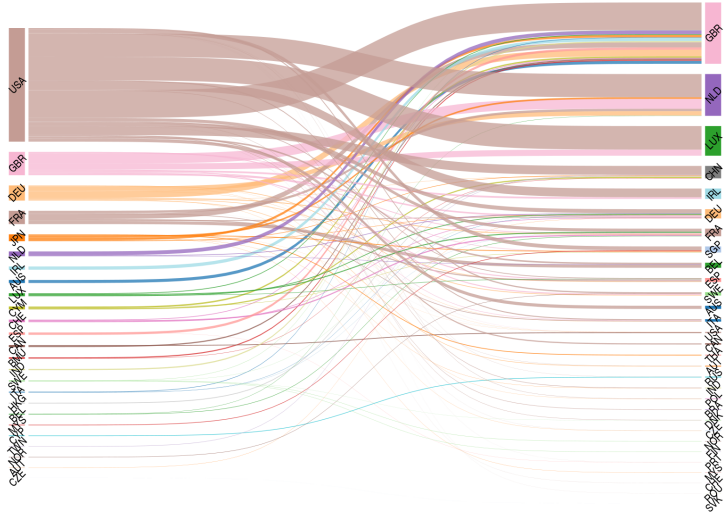
(b) Employees



(c) Total assets



(d) Fixed assets



Annual Outward FDI of U.S. MNEs in MREID

Year	Affiliates	Revenue	Employees	Total Assets	Fixed Assets
2010	50,689	515	682,641	4,069	728
2011	54,127	1,945	3,248,606	7,854	2,614
2012	57,667	3,151	4,572,539	10,313	3,996
2013	61,485	3,408	4,991,396	13,103	4,689
2014	65,787	3,569	5,343,777	13,695	4,881
2015	70,308	3,450	5,998,080	14,143	6,371
2016	74,924	3,624	6,339,269	16,326	7,905
2017	79,878	4,467	6,785,568	19,900	9,415
2018	85,075	5,016	7,192,457	27,228	15,591
2019	90,033	4,965	7,190,422	21,810	10,497
2020	93,377	4,768	7,139,845	23,636	11,390
2021	94,421	2,022	2,966,898	13,041	4,290

Note: Revenues, Total Assets and Fixed Assets in Billions of dollars.

Figure: Affiliates

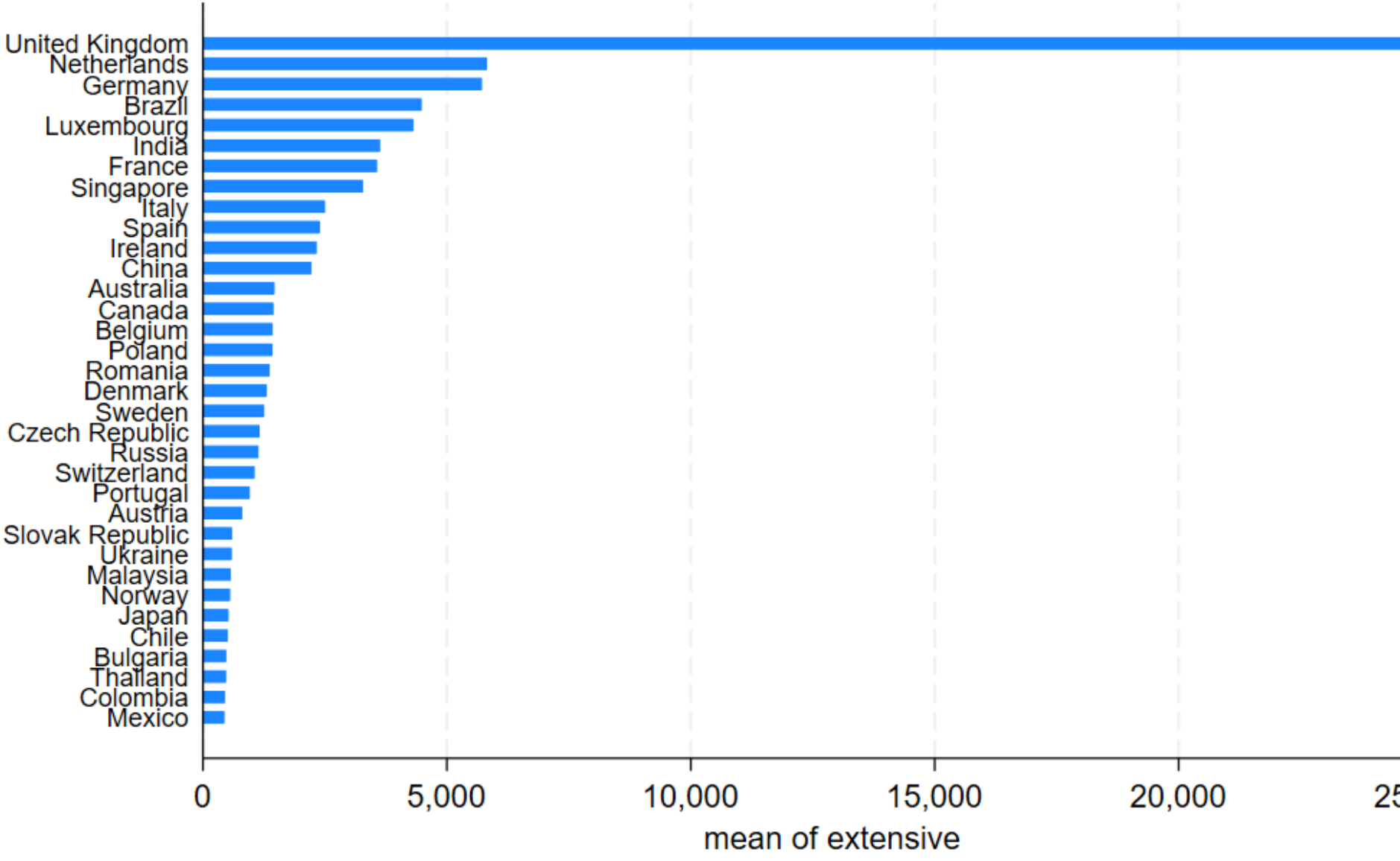


Figure: Revenues

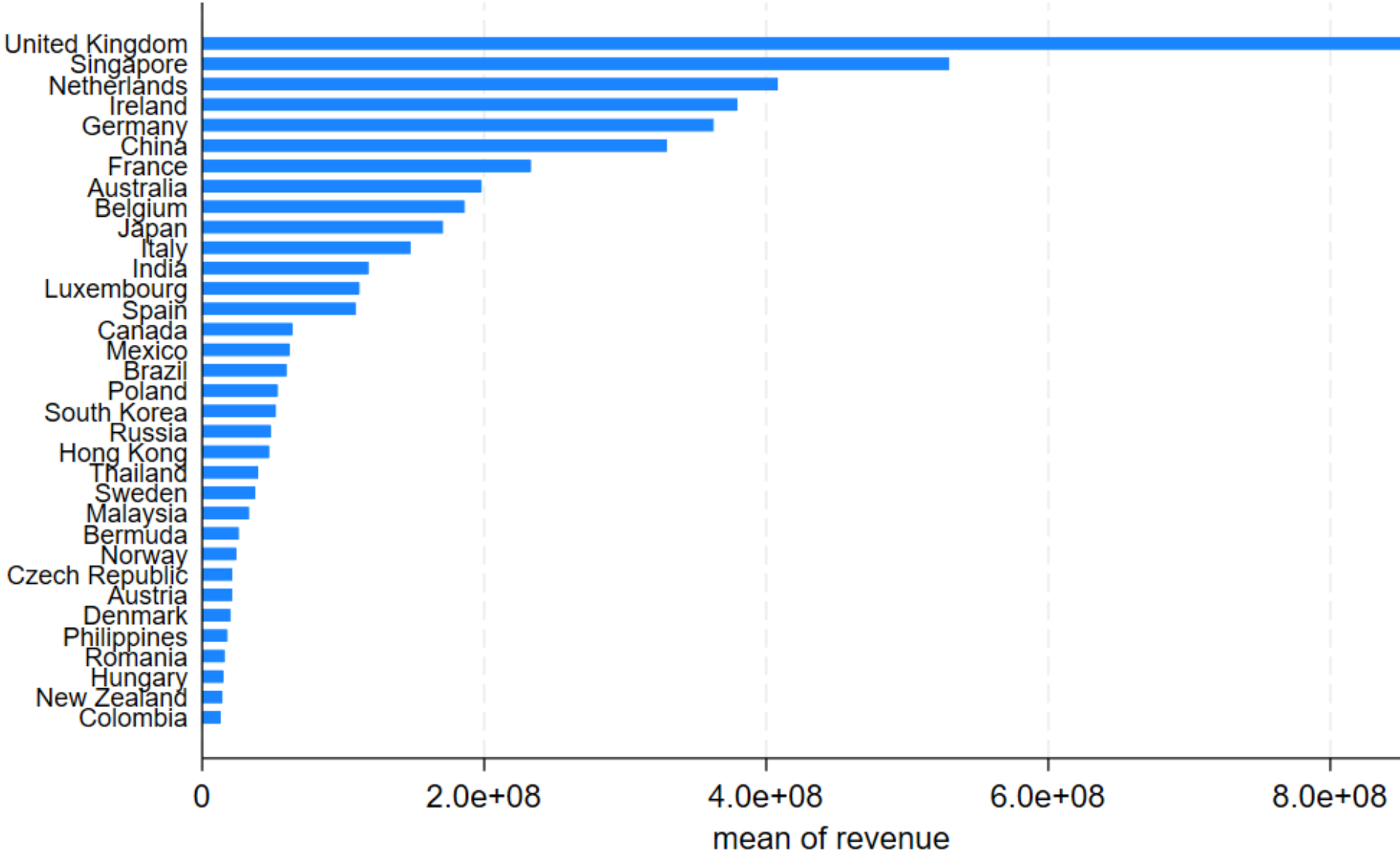


Figure: Total Assets

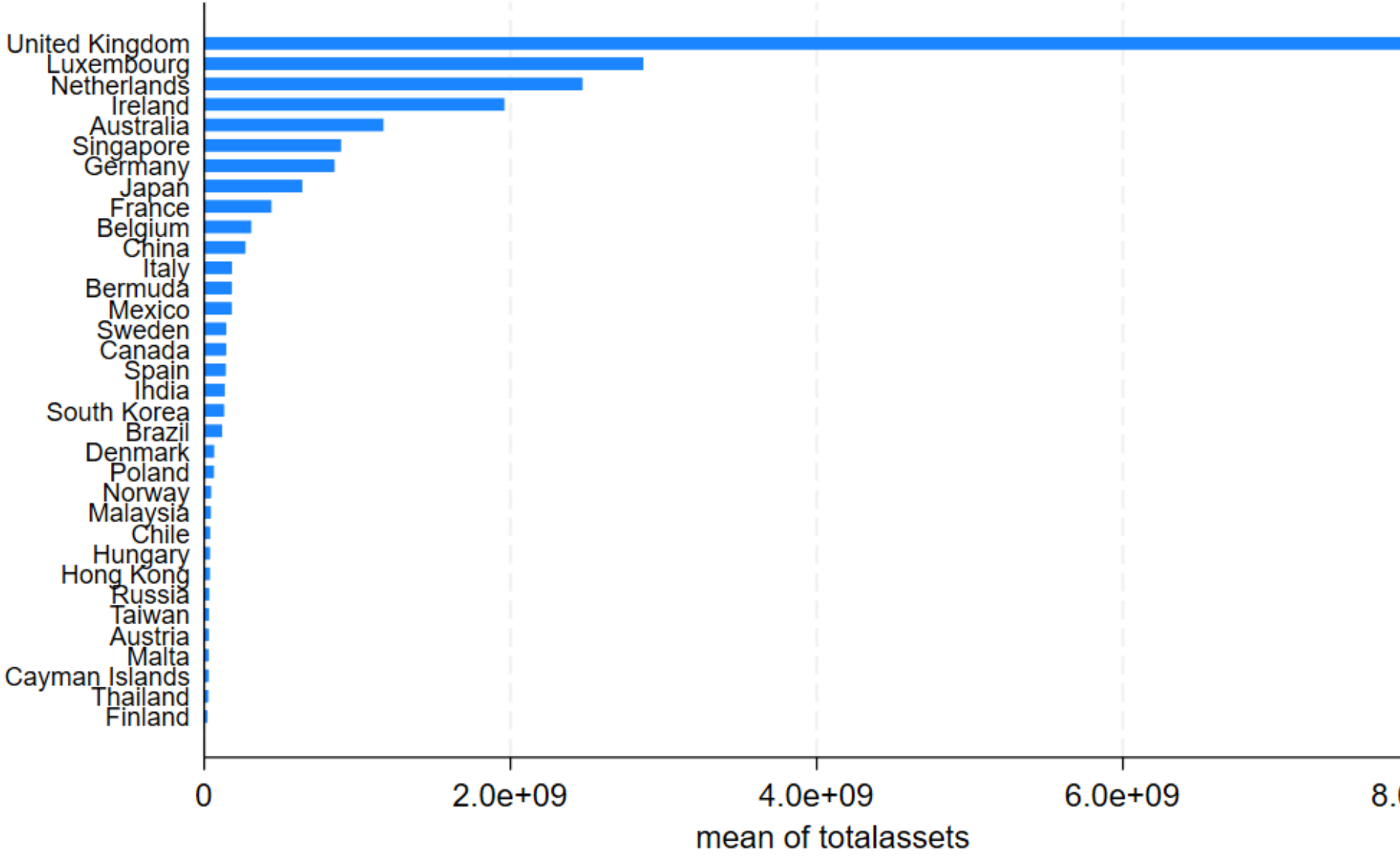


Figure: Fixed Assets

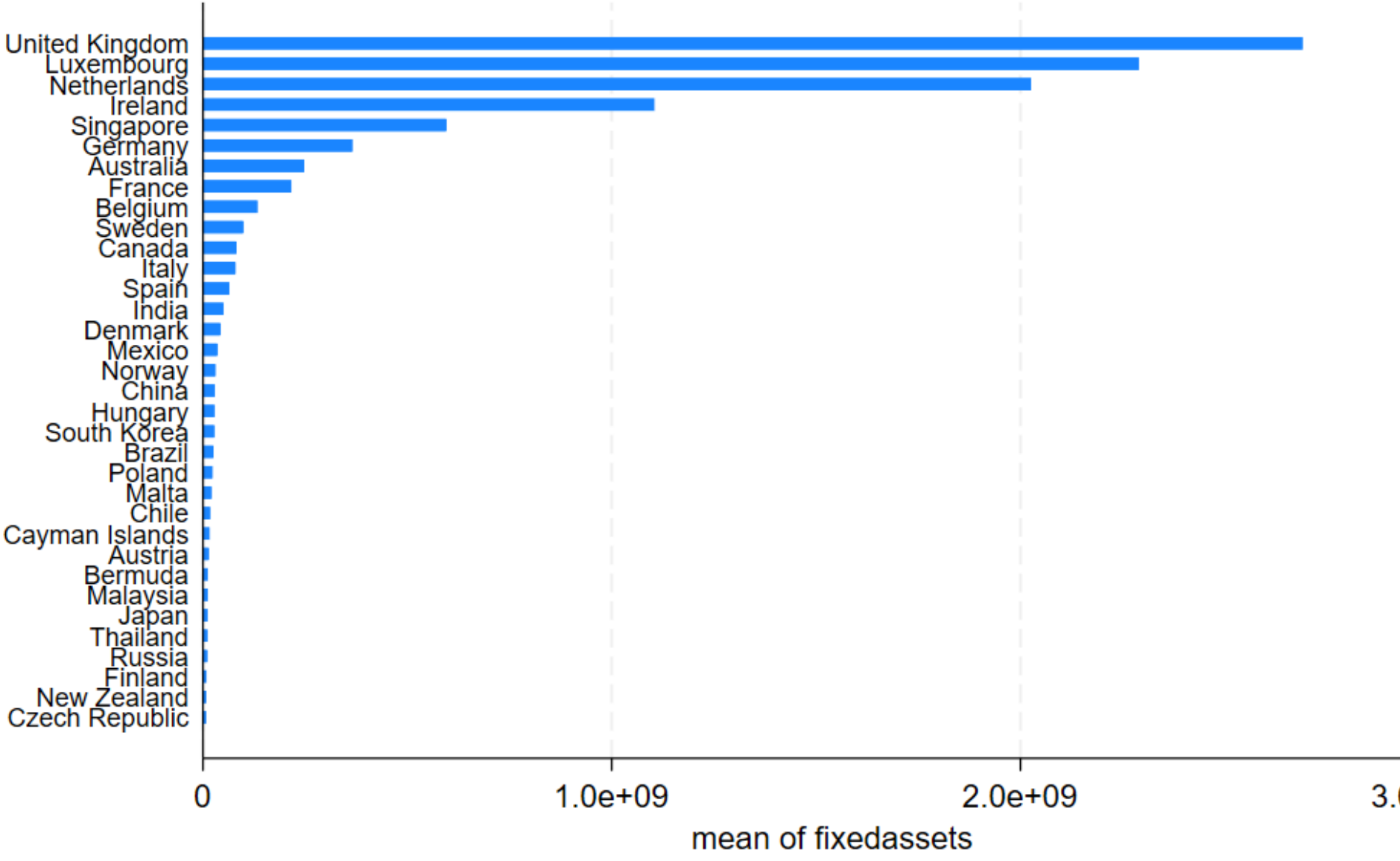


Figure: Tangible

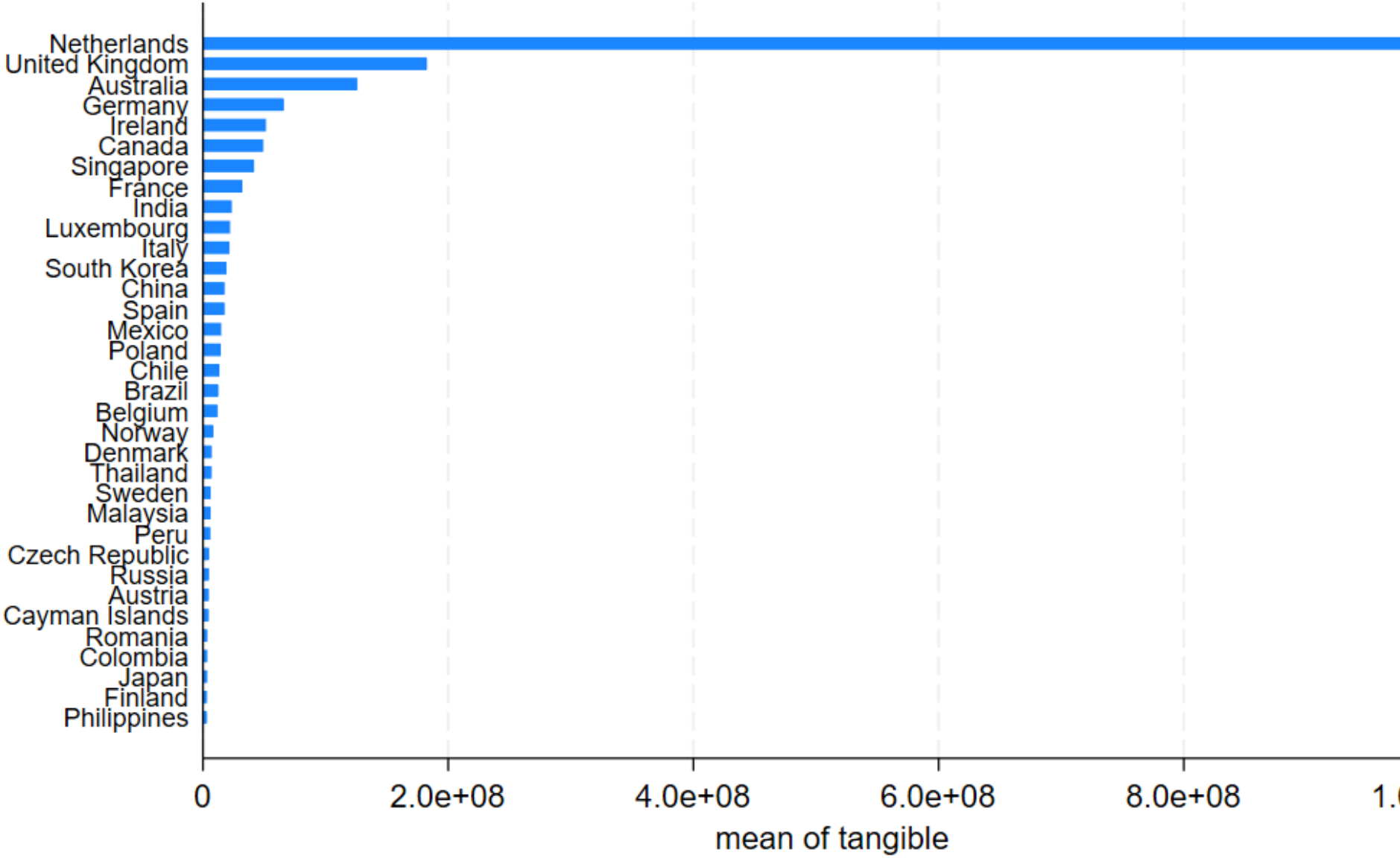
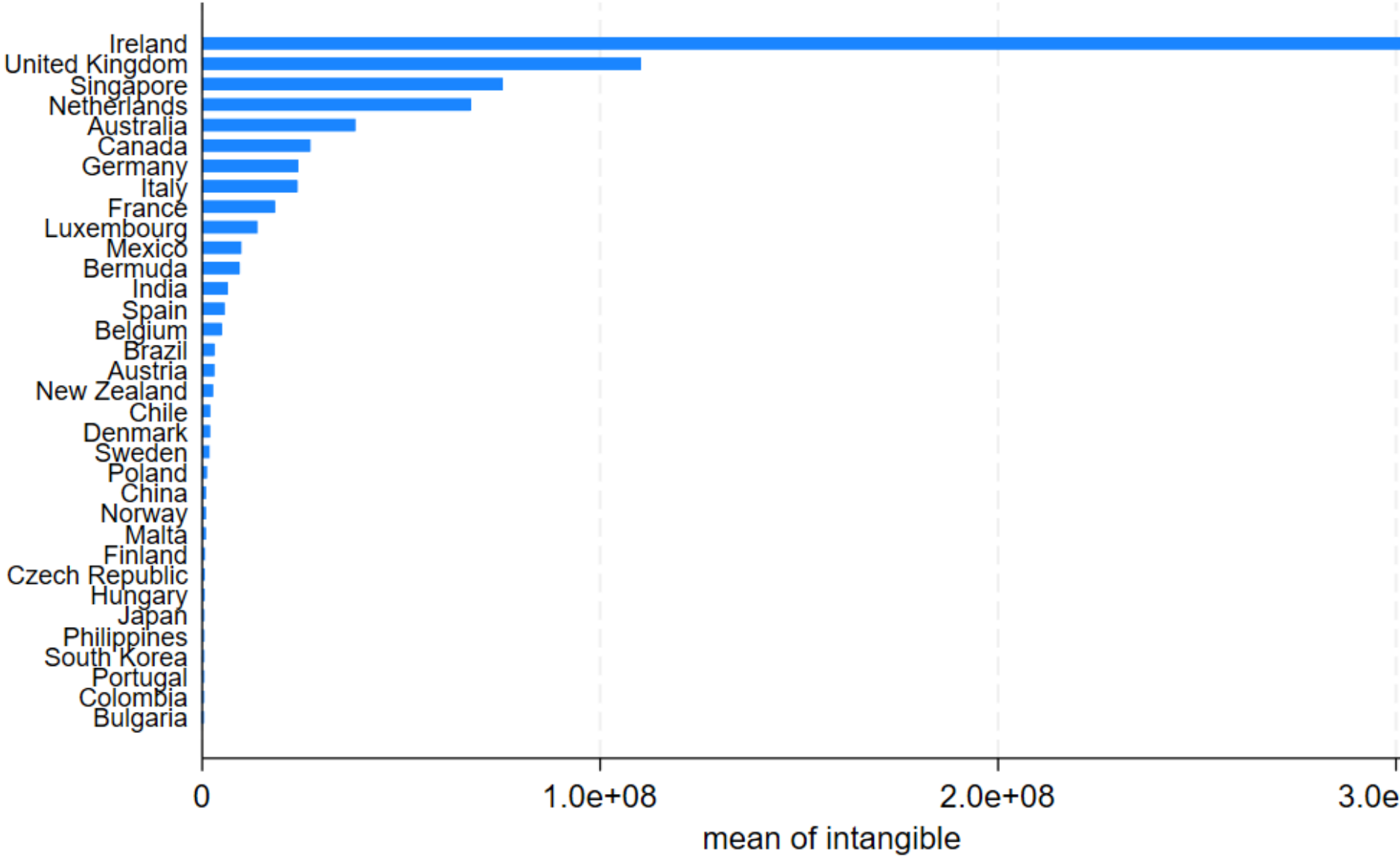


Figure: Intangible



Outward FDI of U.S. MNEs by Top Destinations and Sectors

Country	NAICS	Affiliates	Revenue	Employees	Total Assets	Fixed Assets
UK	52	1,497	85	78,209	3,363	174
UK	55	2,239	78	105,788	1,913	854
Luxembourg	55	2,576	36	4,647	1,591	1,334
Netherlands	55	2,029	89	71,602	1,262	1,117
China	52	78	14	29,330	536	494
Japan	52	50	54	13,382	458	2
Ireland	52	385	14	14,962	326	64
UK	56	2,384	67	712,368	302	178
Ireland	55	243	19	14,044	266	206
Germany	55	621	32	92,393	214	128

Notes: Revenues, Total Assets and Fixed Assets in Billions of dollars. All variables averaged over time.

NAICS sectors 55: Management of Companies and Enterprises.

NAICS sectors 52: Finance and Insurance.

Foreign investment flows per country and sector (affiliates)

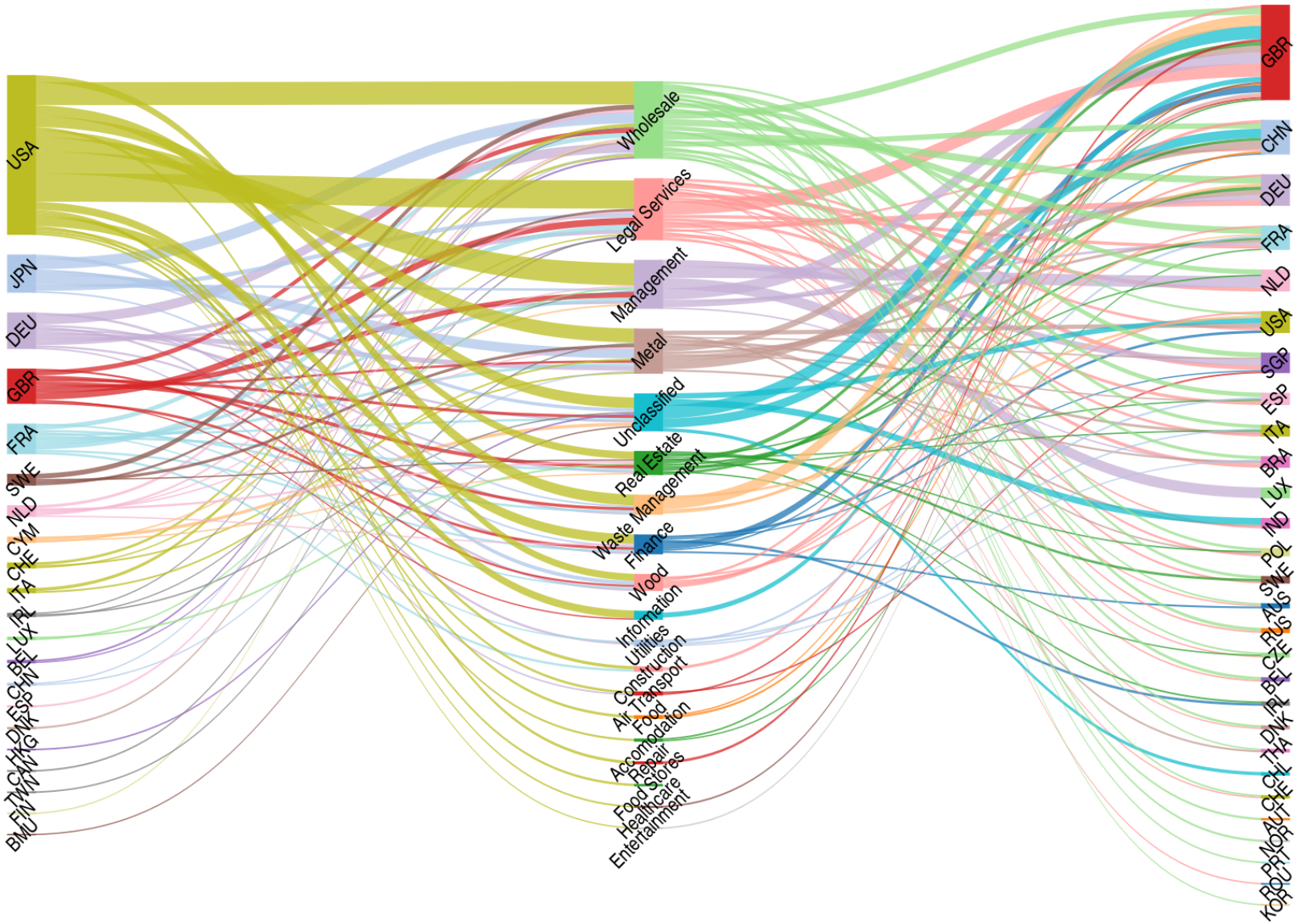


Figure: Revenue

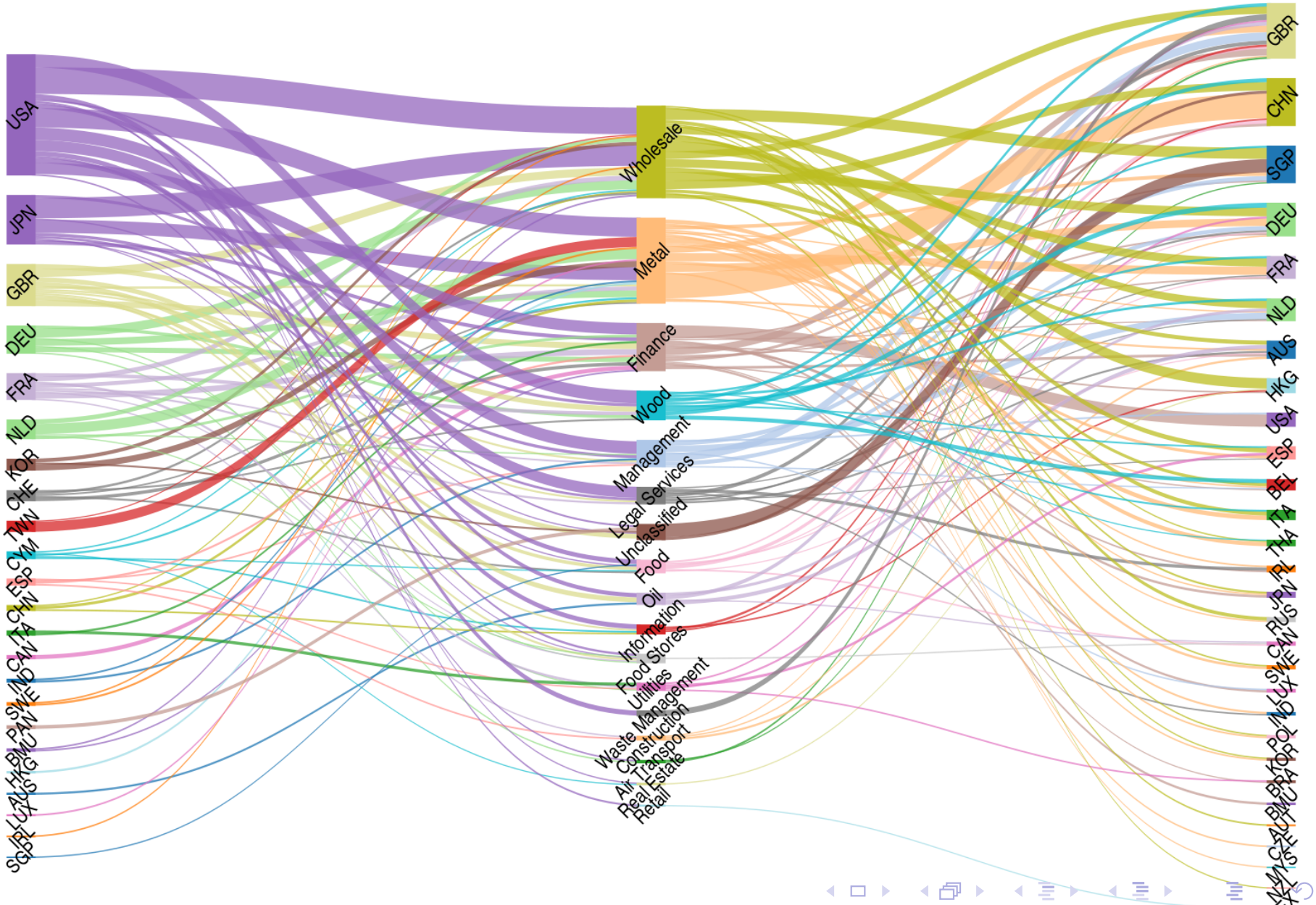


Figure: Total assets

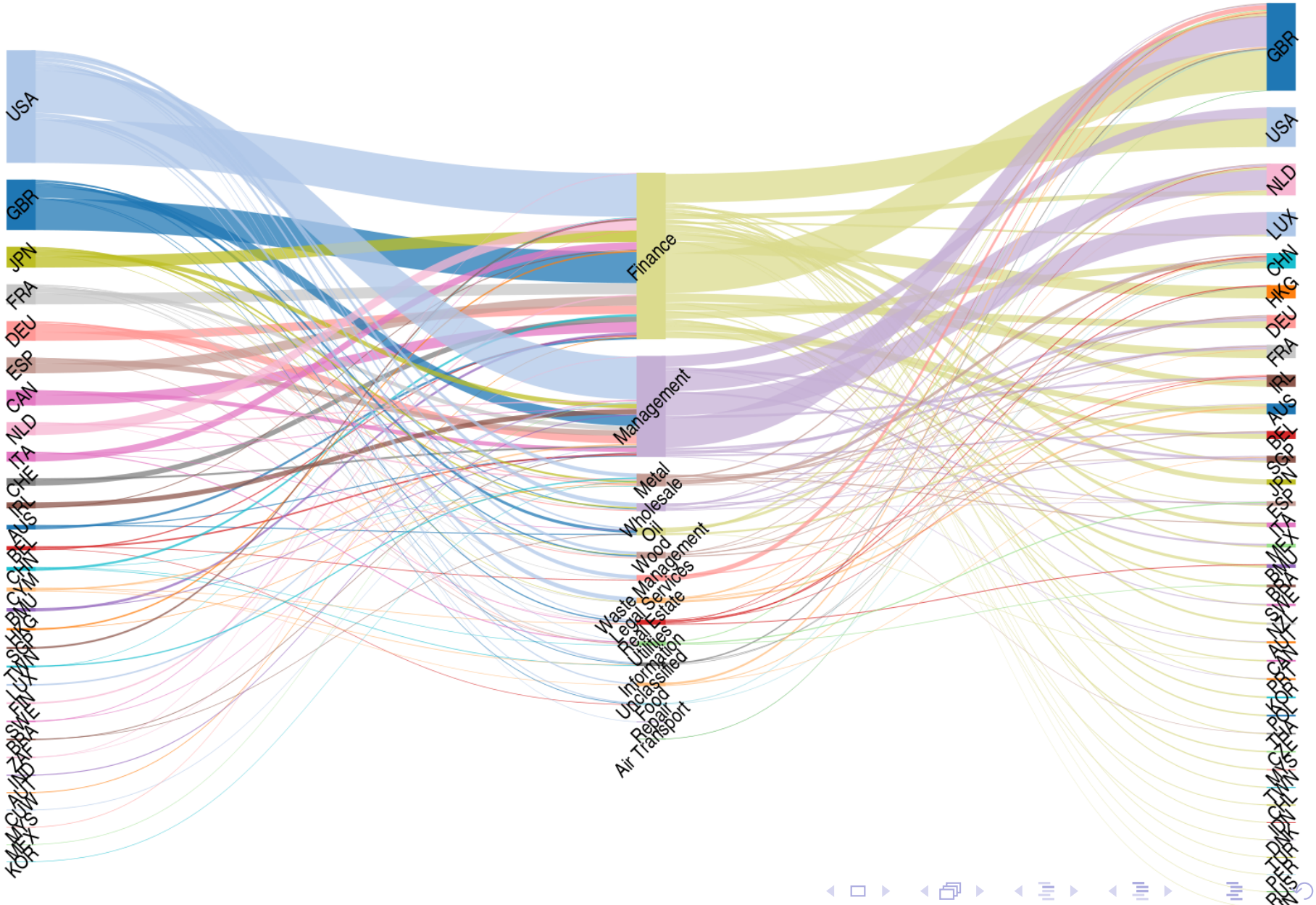
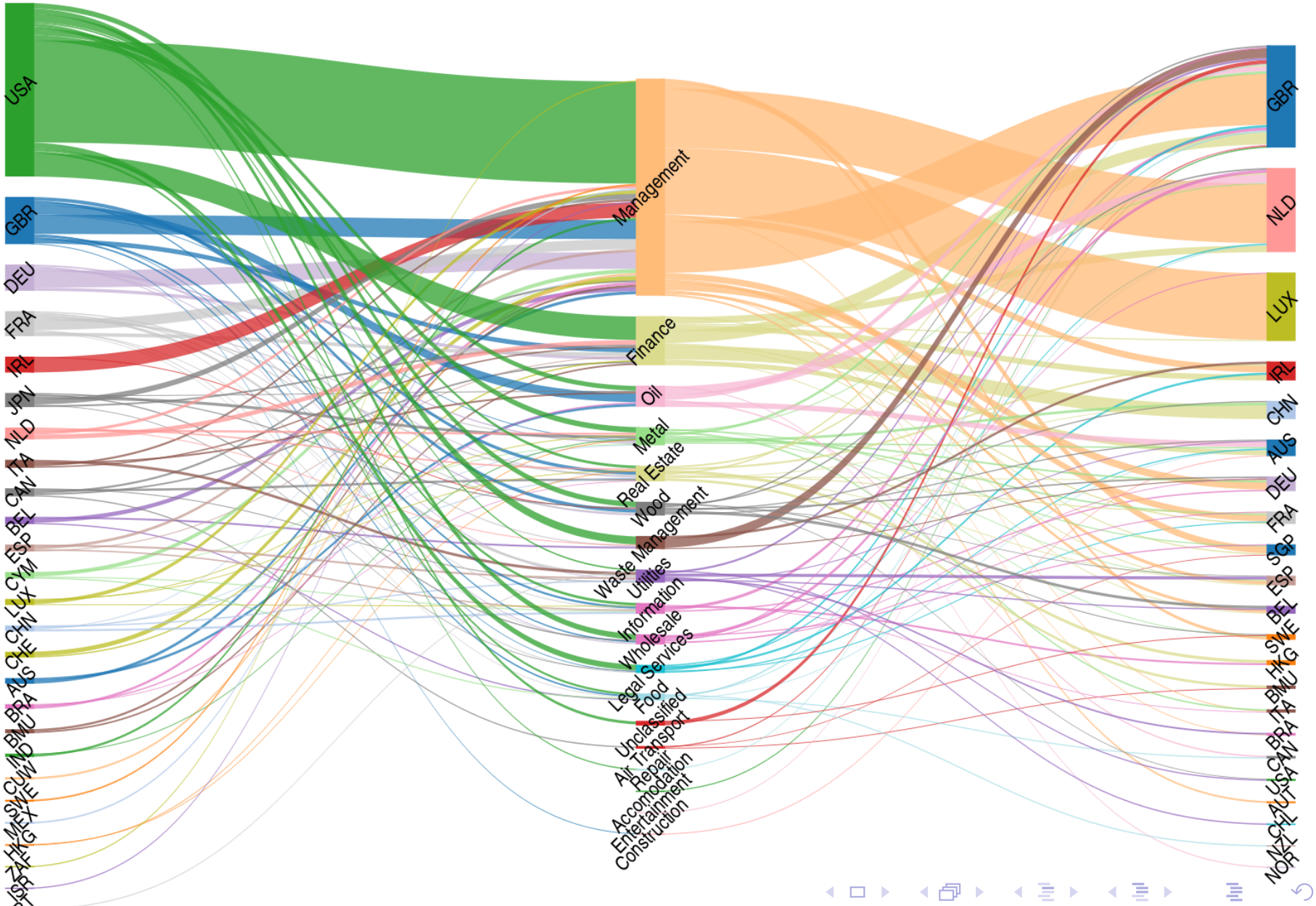


Figure: Fixed assets



Gravity-Equation Coefficient Estimates (U.S. Bilateral Outward FDI)

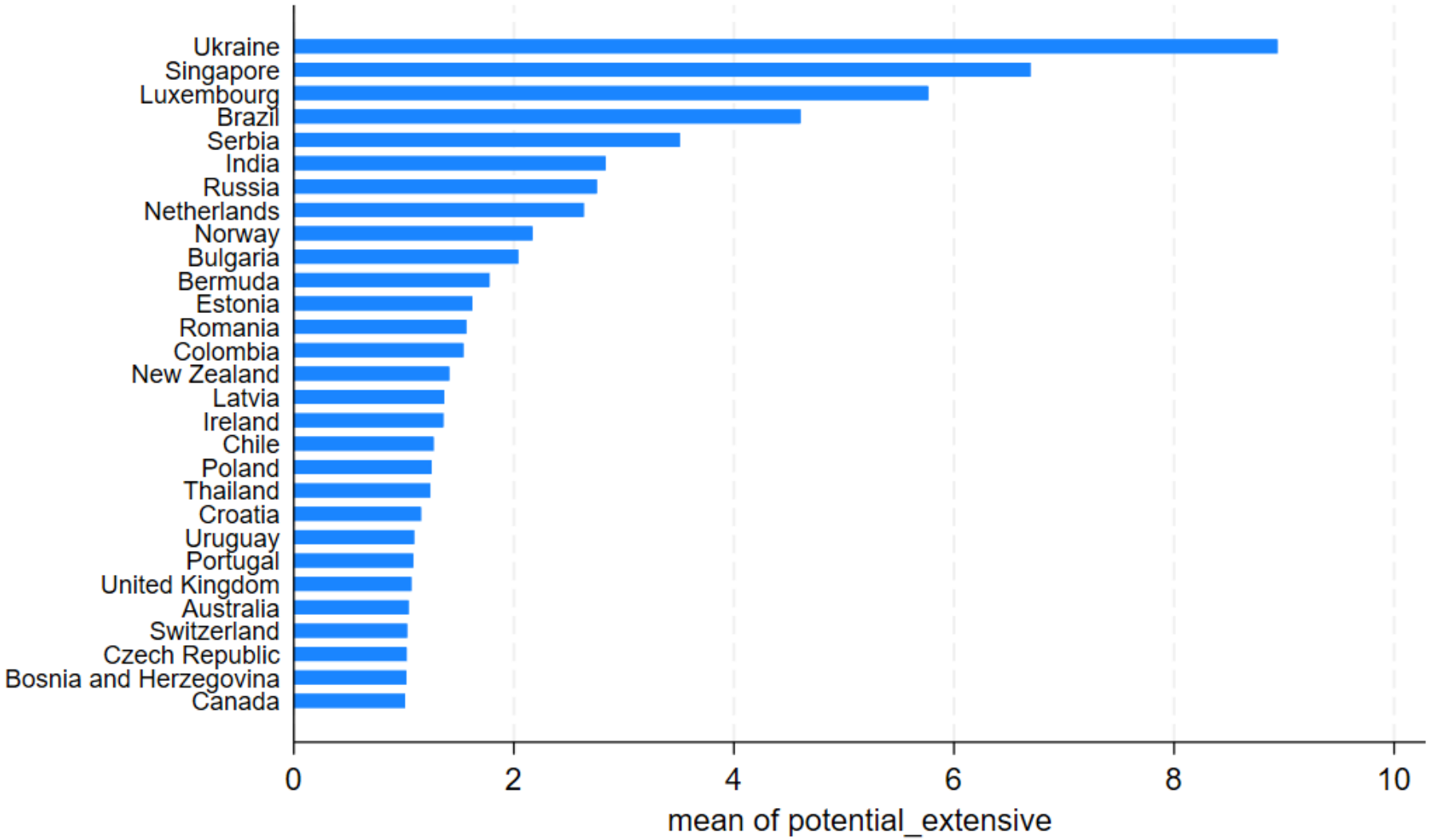
	(1) Affiliates	(2) Revenues	(3) Total assets	(4) Fixed assets	(5) Tangible fixed	(6) Intangible fixed
lnGDP (destination)	0.7057***	0.7360***	0.4822***	0.2185	0.4754***	0.4717**
	(0.09)	(0.10)	(0.17)	(0.21)	(0.18)	(0.22)
lnDistance	0.0019	0.6906	-0.1522	0.0456	-0.1732	-0.0281
	(0.47)	(0.62)	(0.54)	(0.87)	(0.45)	(0.78)
Island	0.0418	0.1285	1.3039**	-0.2371	0.8254	-0.1861
	(0.31)	(0.54)	(0.59)	(0.84)	(0.52)	(0.98)
Landlocked	0.6787	-0.3597	1.0477	0.9494	-1.7743	-0.5926
	(0.43)	(0.63)	(0.88)	(0.92)	(1.11)	(0.83)
Common Legal Origin	1.0951***	0.6388	0.8742	2.1177**	0.2886	-0.2981
	(0.40)	(0.73)	(0.97)	(1.01)	(0.68)	(1.22)
Common Language	0.3062	0.0647	-0.1205	-0.0551	-1.2690	1.8468*
	(0.34)	(0.49)	(0.92)	(0.99)	(0.95)	(0.96)
WTO member	0.7498	0.0087	-0.3465	-0.0137	0.0896	-2.2579**
	(0.86)	(0.88)	(1.01)	(0.95)	(1.04)	(1.11)
EU member	1.6983***	1.8268***	2.5764***	4.1878***	2.8493***	4.5283***
	(0.32)	(0.34)	(0.50)	(0.81)	(0.62)	(0.81)
FTA	0.4875	1.4415*	1.7662**	3.2050**	2.5970***	2.9064***
	(0.75)	(0.81)	(0.74)	(1.25)	(0.72)	(1.04)
BIT	-0.3432	-1.1001***	-2.8495***	-3.7125***	-2.3713**	-3.0056***
	(0.33)	(0.42)	(0.71)	(0.77)	(1.00)	(0.69)
Observations	111	111	111	111	111	111
R^2	0.808	0.737	0.729	0.638	0.554	0.619

Robust US outward FDI, year 2019

PPML, Robust standard errors in parenthesis, clustered by country pair

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

USA's FDI ratios ($FDI^{Ratio} > 1$)



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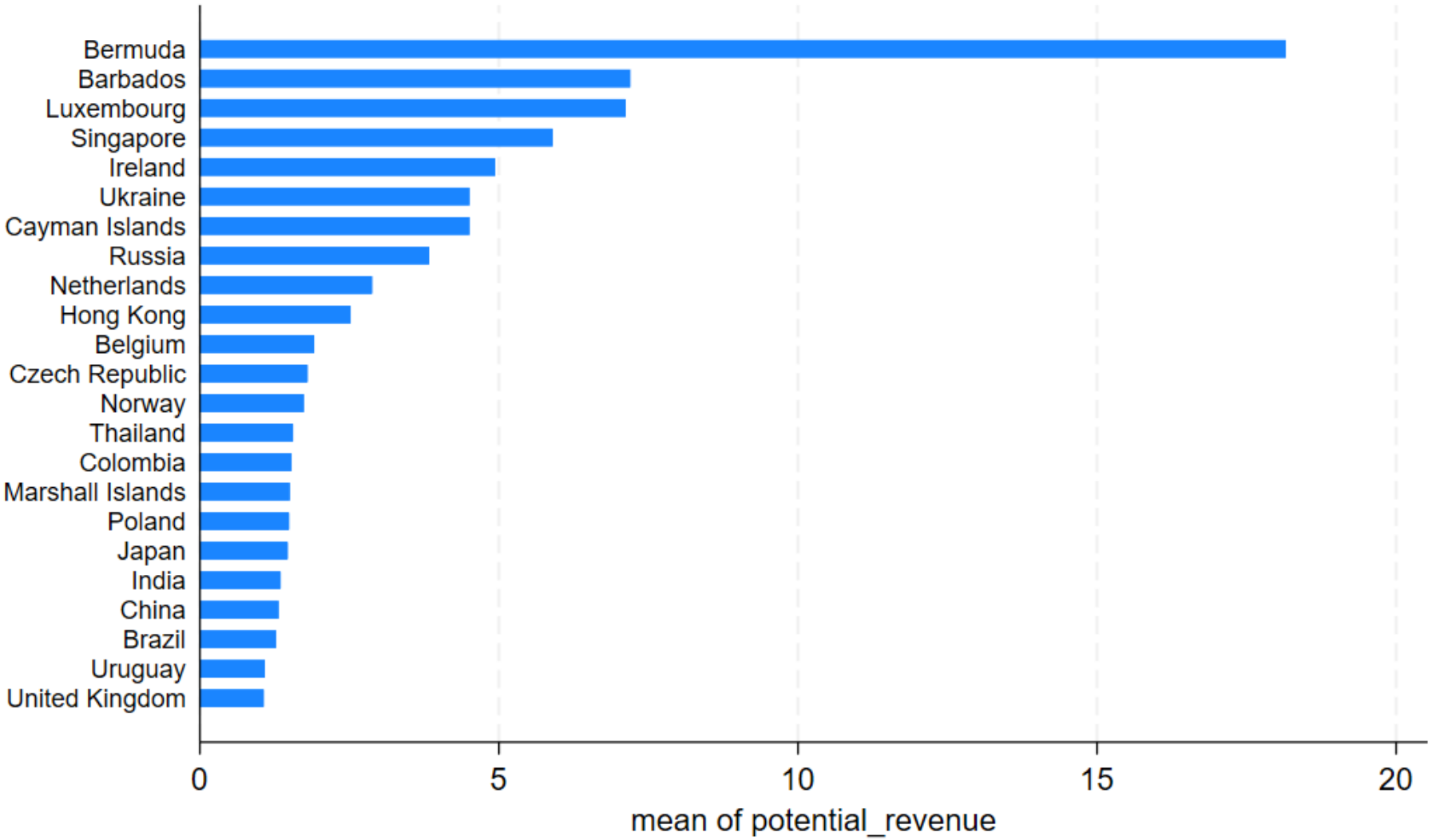

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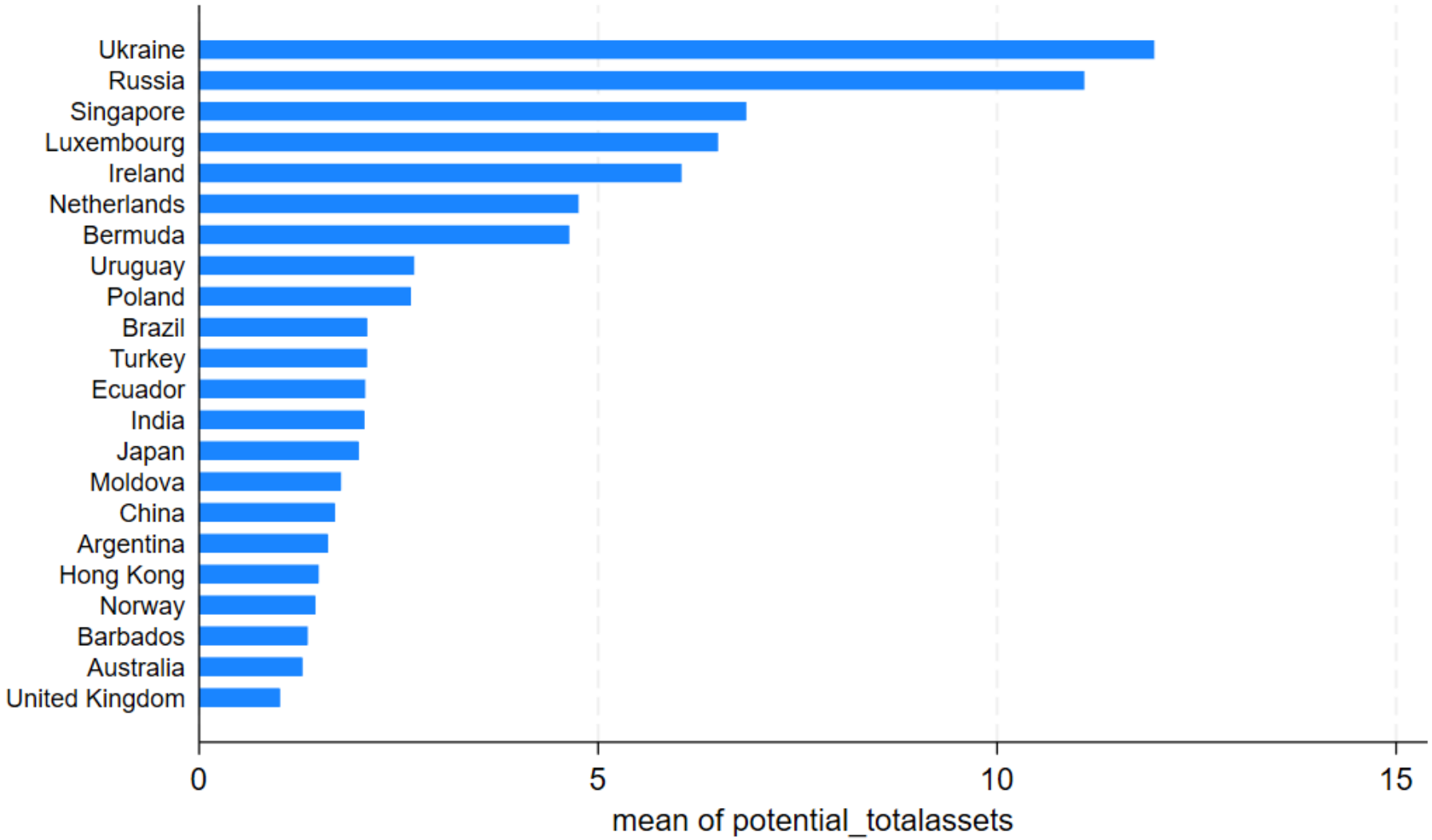

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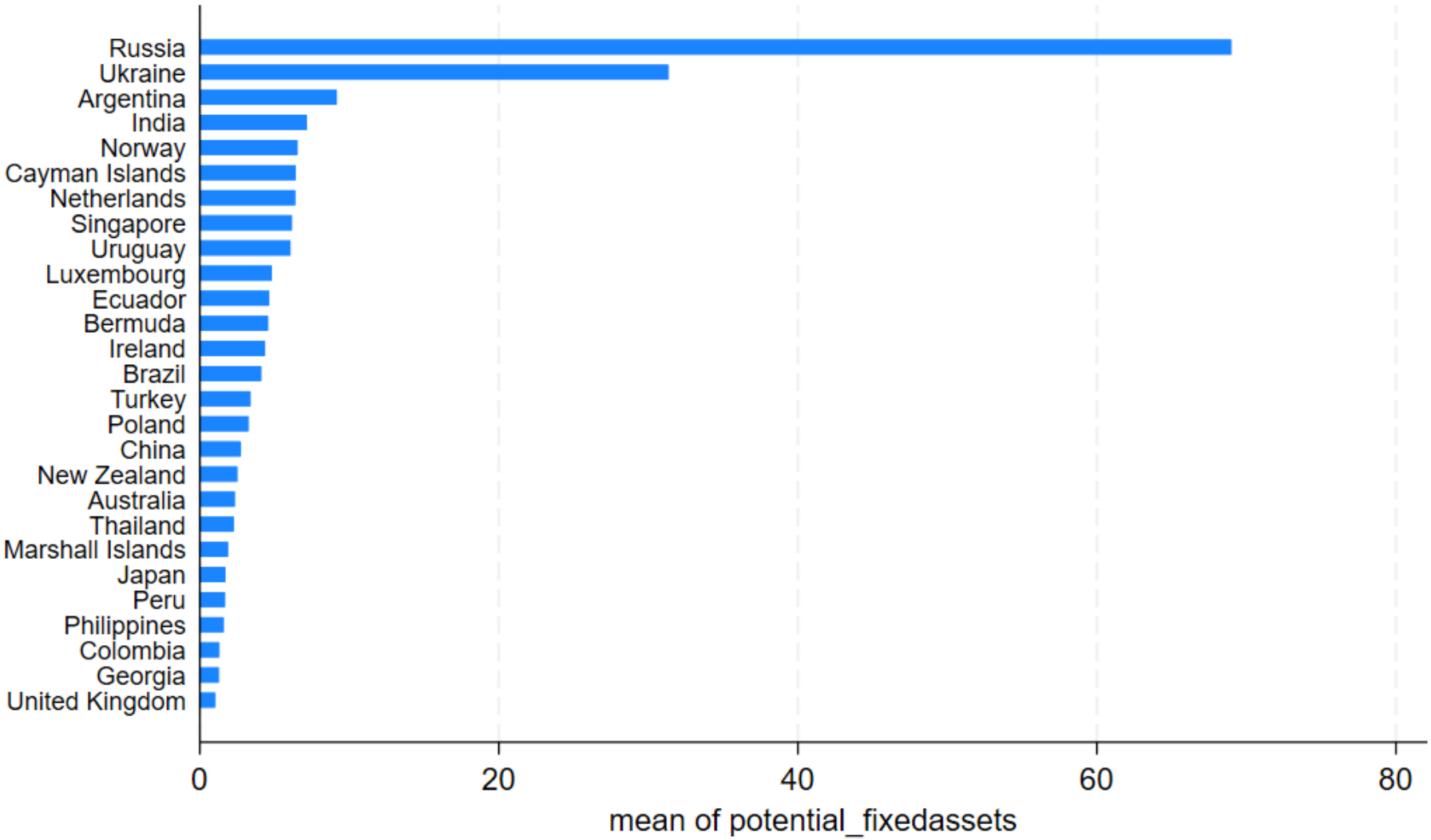

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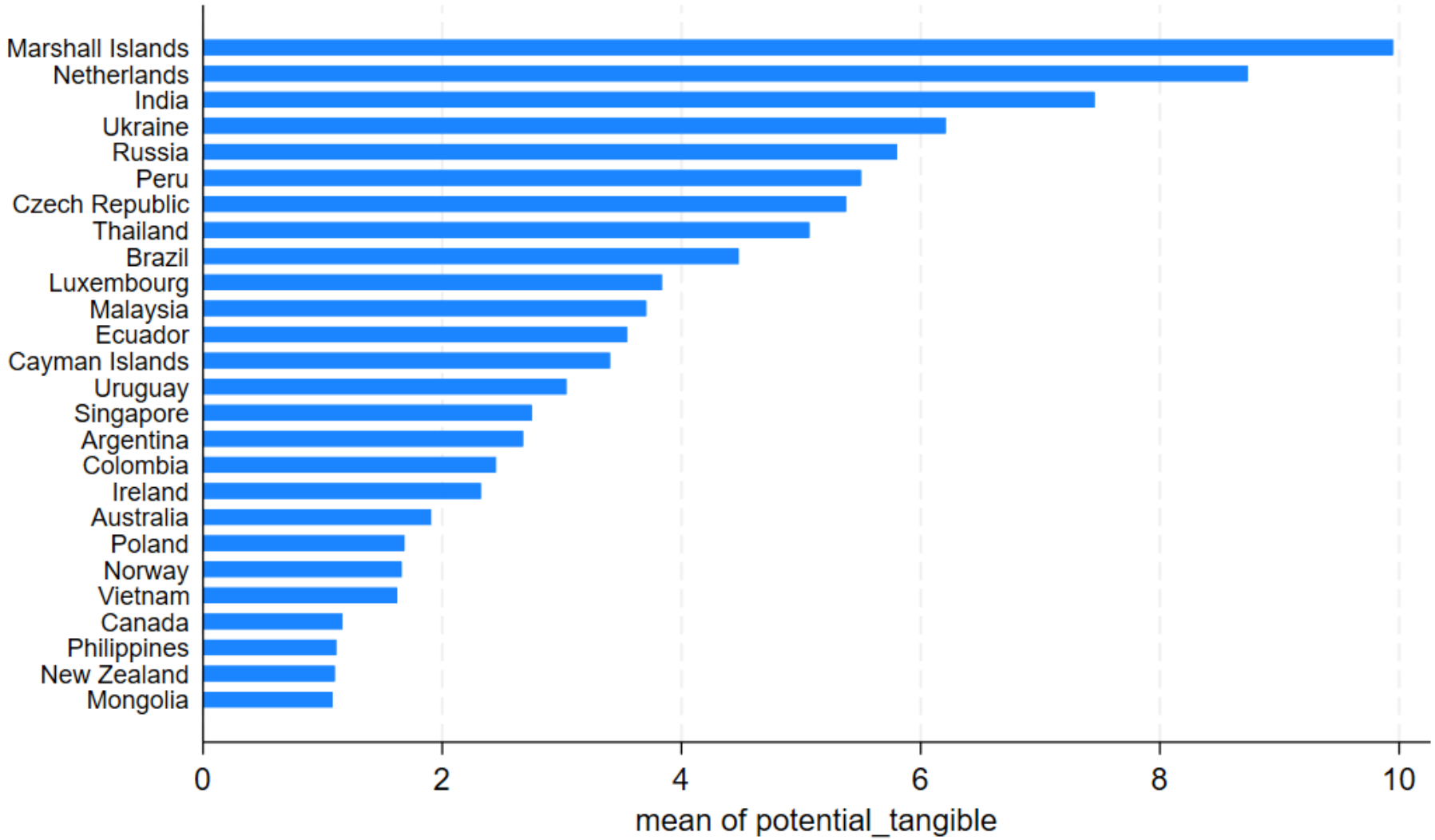

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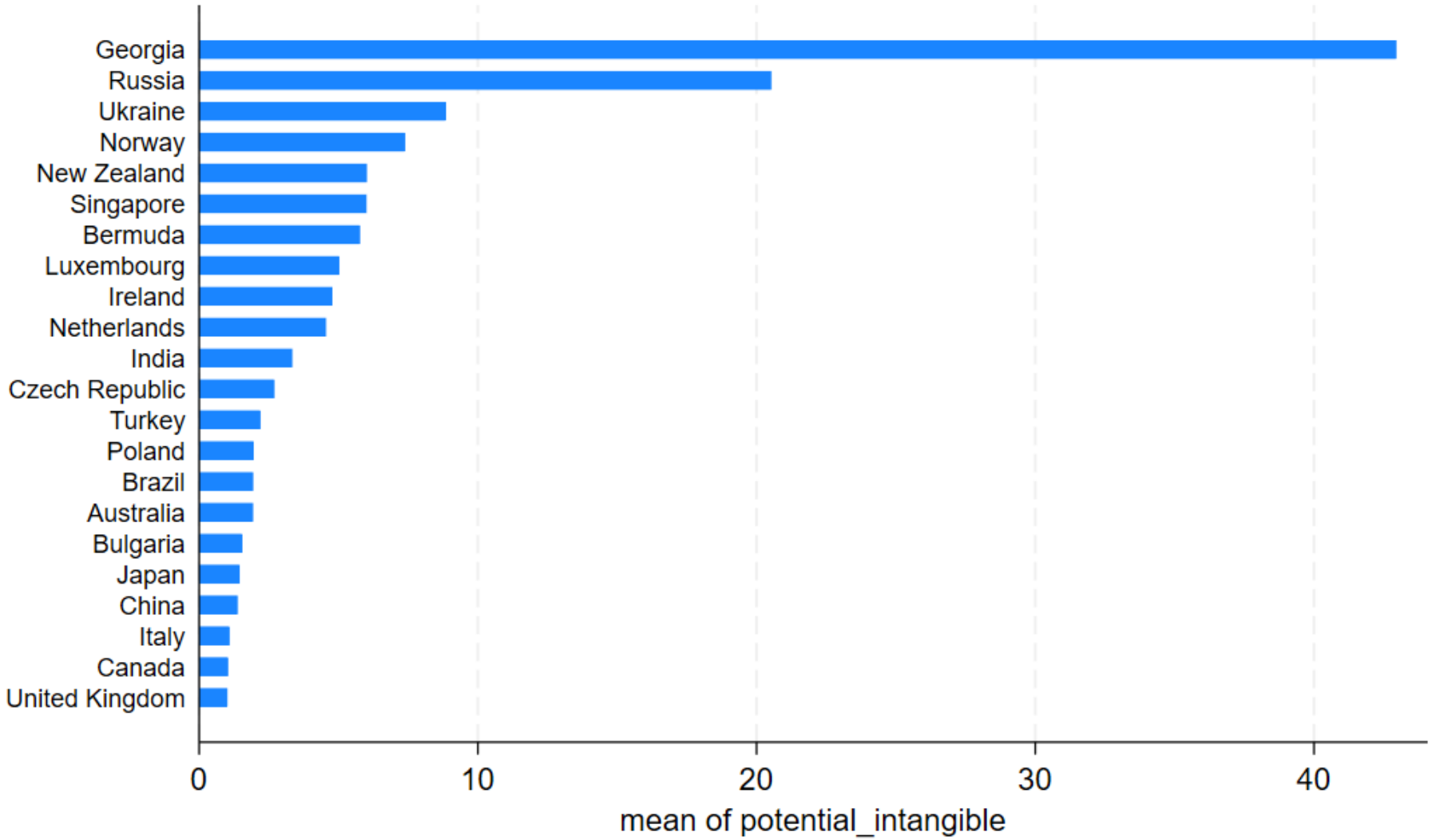
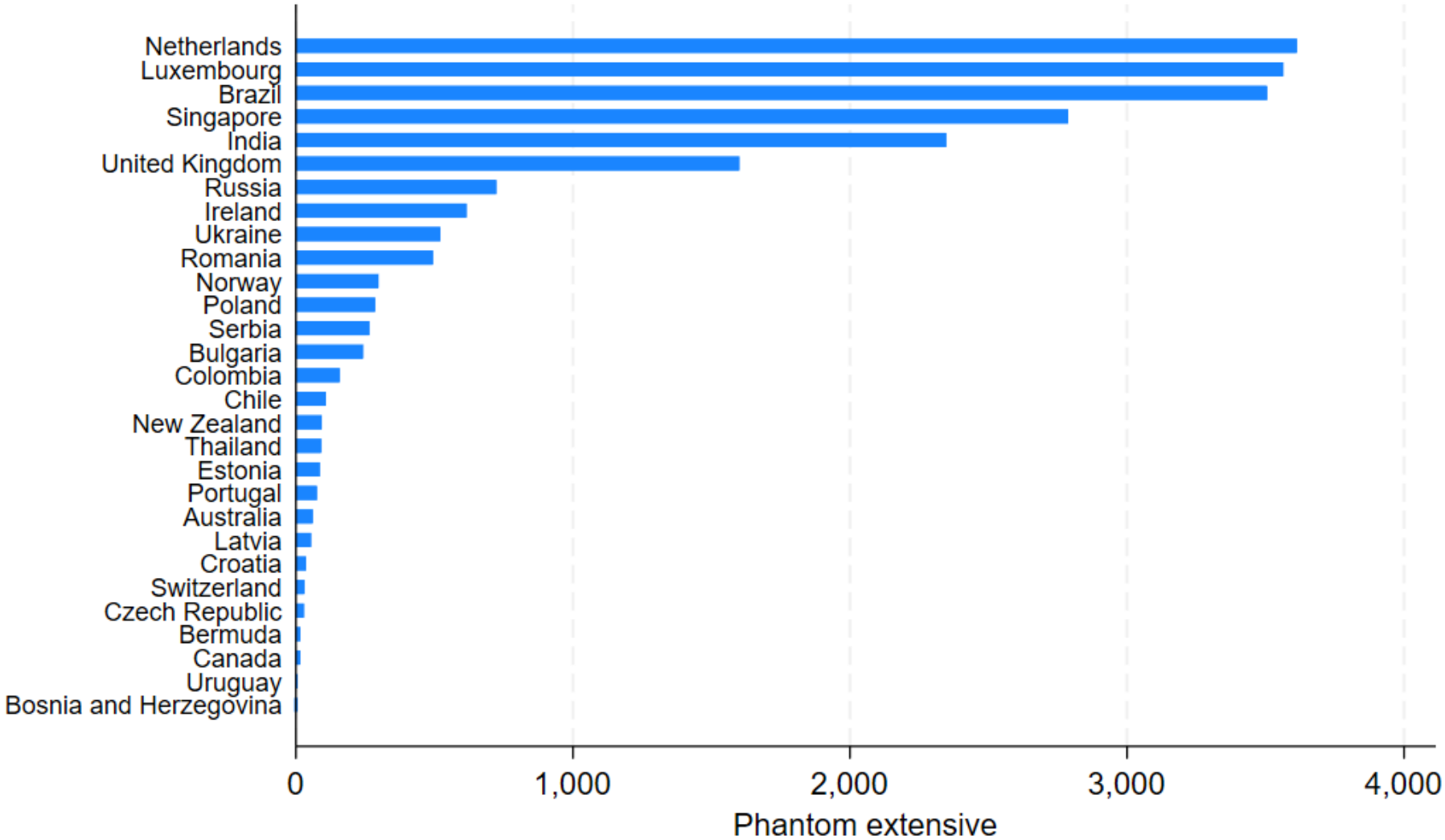


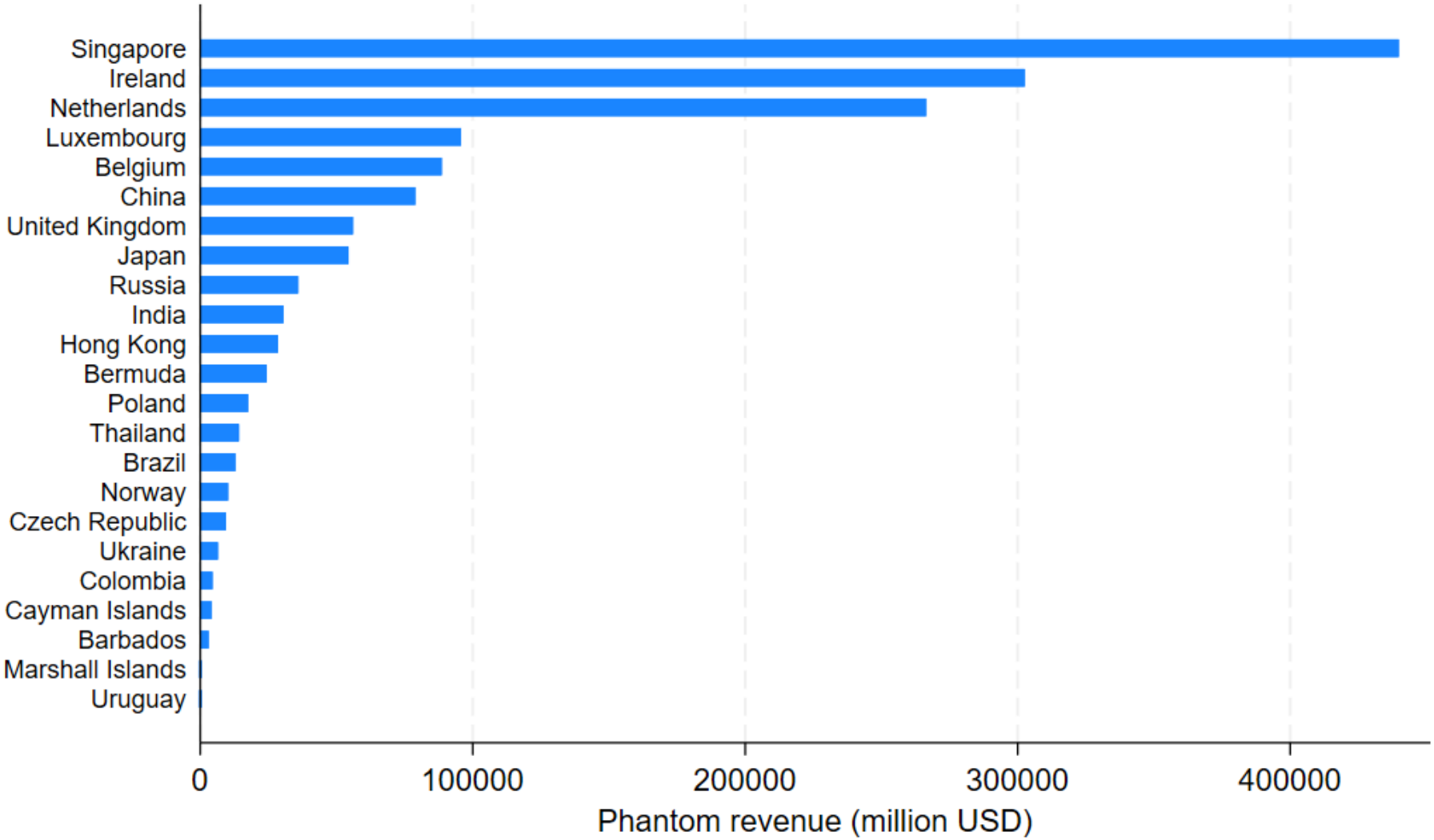
FDI phantom ratios: Findings

- Gravity potentials identify correctly tax havens for:
  - Revenues: Bermuda, Cayman Islands, Barbados, Luxembourg, Singapore, Marshall Islands
- Gravity potentials in number of affiliates, total assets, fixed assets seem to be driven partly by geo-strategical risks (e.g., Ukraine in 2019)
- Tangible Assets show a mix of geo-strategy, tax havens and countries with friendly holdings laws (Netherlands)
- Intangible assets:
  - Countries with political risk (Russia, Georgia), tax-friendly (Ireland), and tax havens (Bermuda).

USA's Phantom FDI



USA's Phantom FDI



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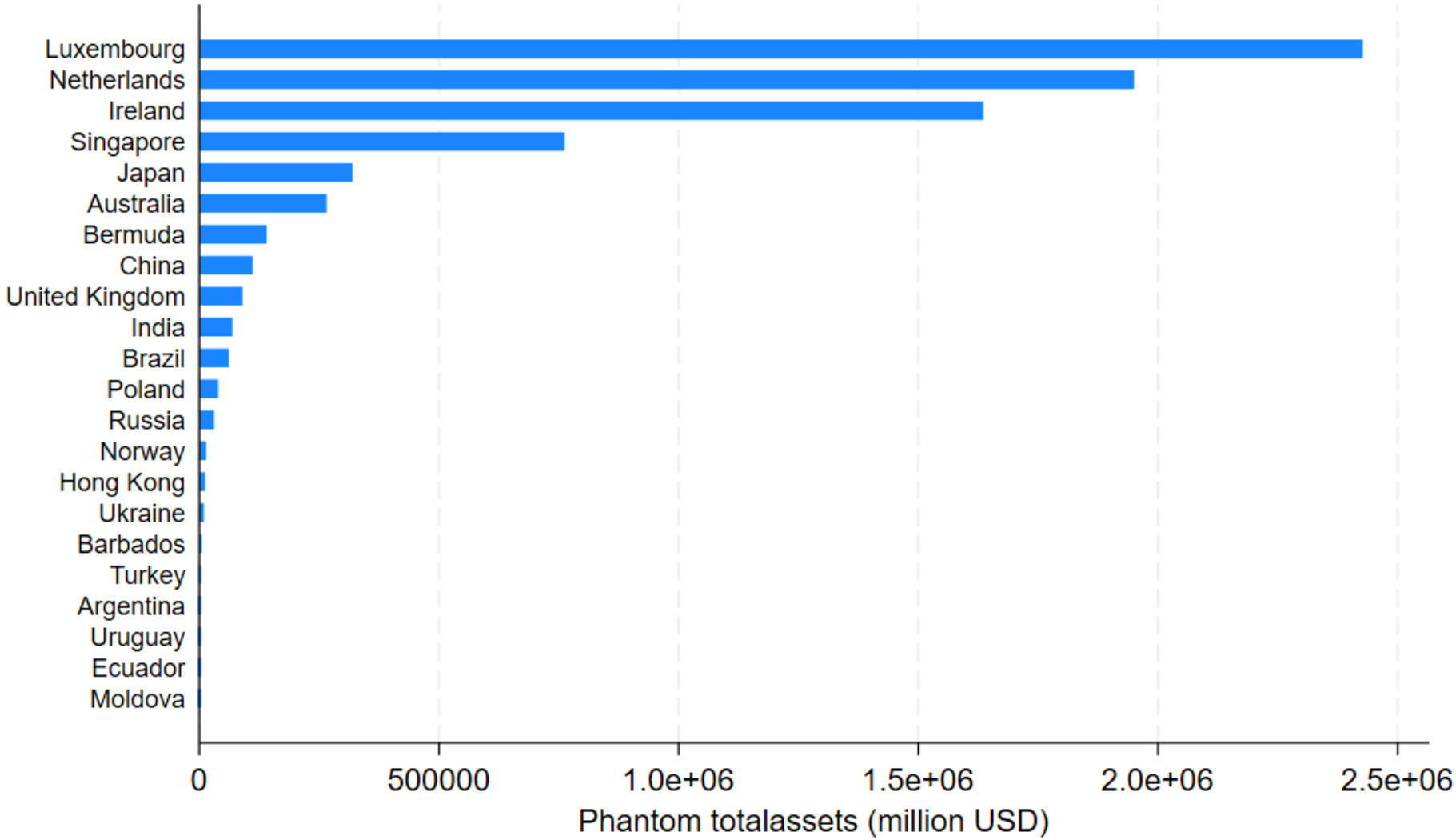
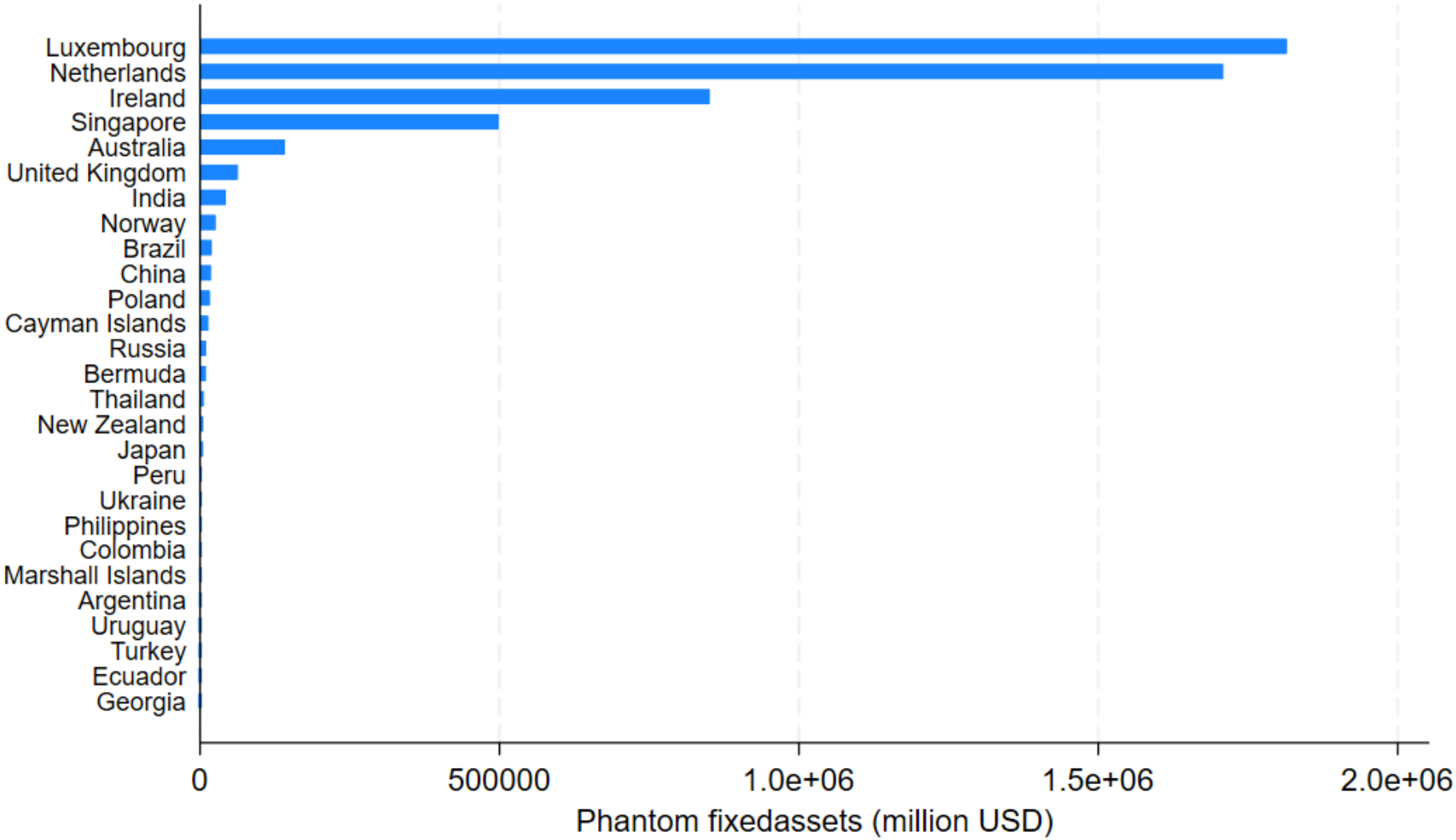
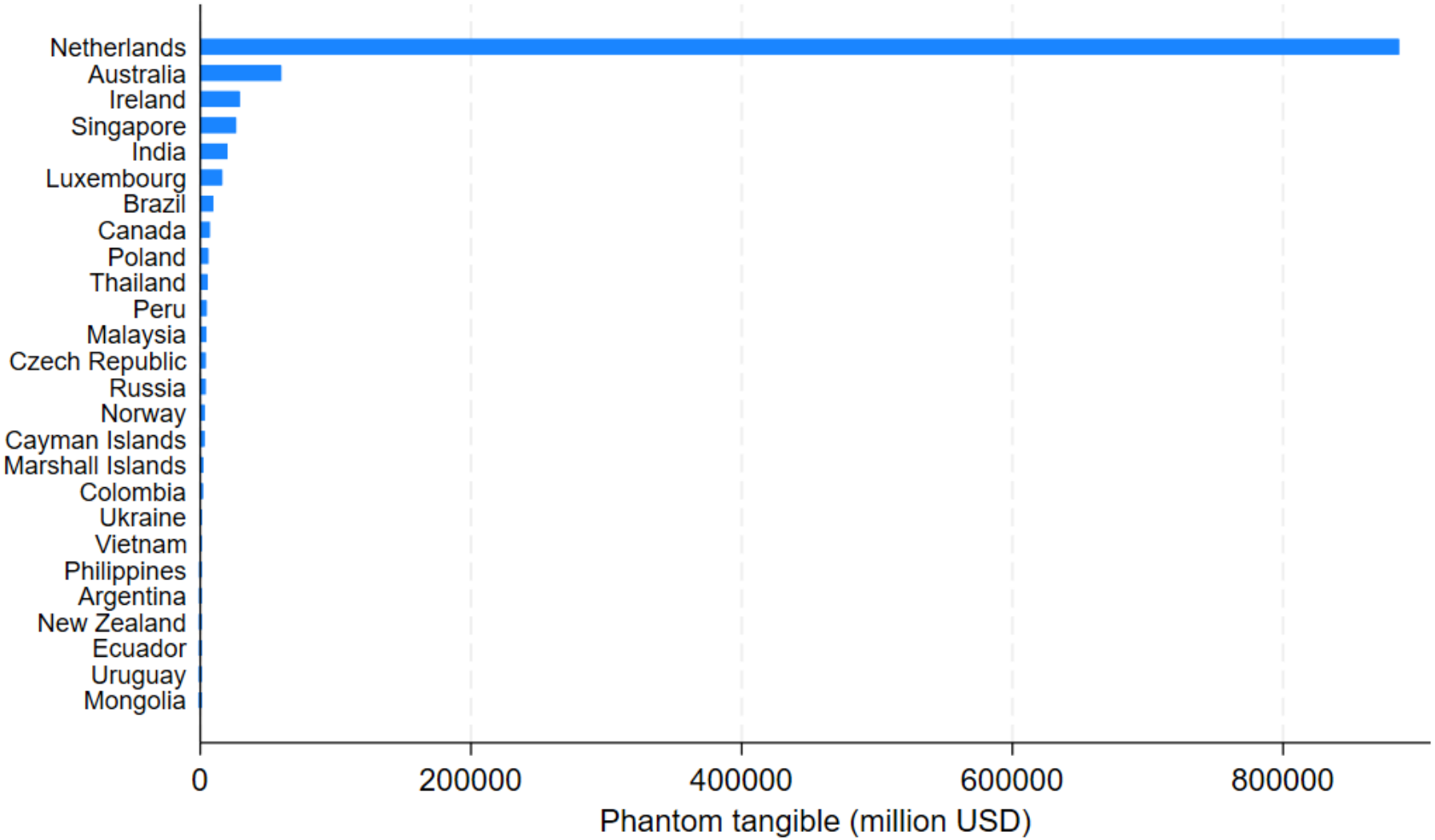


USA's Phantom FDI



USA's Phantom FDI



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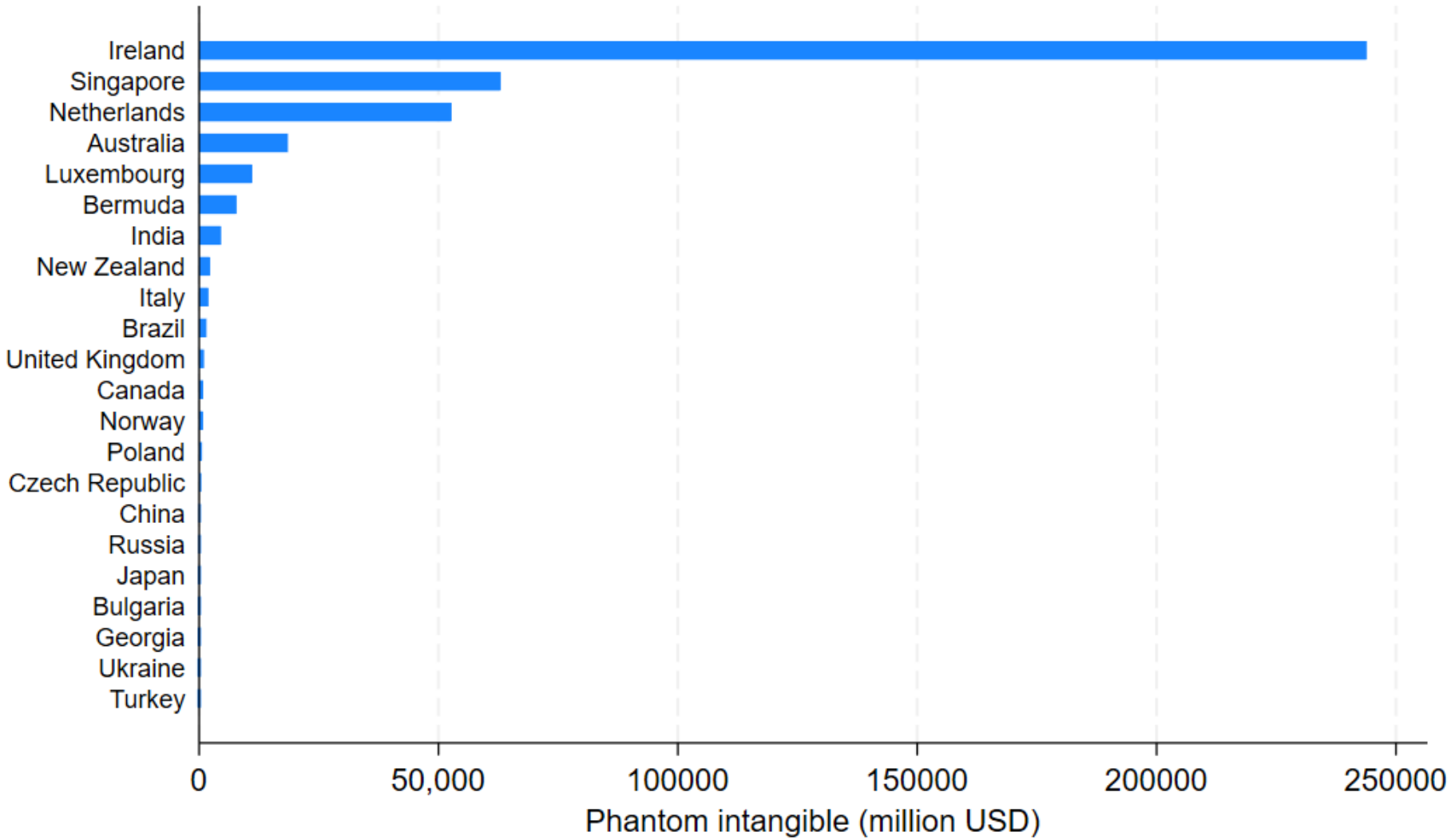


Quantification (USA)

	Affiliates	Revenue	Total Assets	Fixed Assets	Tangible	Intangible
Total FDI	89,901	4,964,481	21,801,645	10,493,457	1,837,439	769,051
Phantom FDI	21,728	1,585,292	7,938,508	5,259,637	1,098,088	411,937
Phantom FDI/Total FDI	0.242	0.319	0.364	0.501	0.597	0.535

Notes: Affiliates: number of foreign affiliates. Rest of variables in million USD

Gravity-Equation Coefficient Estimates (All Country-Pairs)

	(1) Affiliates	(2) Revenues	(3) Total assets	(4) Fixed assets	(5) Tangible fixed	(6) Intangible fixed
lnDistance	-0.5761***	-0.4003***	-0.3754***	-0.4862***	-0.3703***	-0.3063*
	(0.05)	(0.05)	(0.10)	(0.09)	(0.08)	(0.16)
Common Legal Origin	0.3707**	0.2911	0.3936*	-0.0850	-0.4595	1.2459***
	(0.17)	(0.20)	(0.23)	(0.25)	(0.31)	(0.33)
Contiguity	0.5557***	0.2581	0.4727*	0.0964	0.6769***	-0.0637
	(0.11)	(0.17)	(0.27)	(0.27)	(0.24)	(0.34)
Colony	0.4113***	0.5161***	0.2472	0.1018	1.3021***	-0.4863
	(0.15)	(0.20)	(0.22)	(0.25)	(0.27)	(0.37)
FTA	-0.1139	0.0573	-0.0608	-0.4031*	0.0830	-0.2357
	(0.13)	(0.14)	(0.18)	(0.21)	(0.16)	(0.34)
BIT	0.0035	-0.2467	-0.2502	-0.0572	-0.0187	0.2454
	(0.15)	(0.18)	(0.22)	(0.17)	(0.16)	(0.31)
Observations	3225	3225	3225	3135	3135	3077
R^2	0.888	0.825	0.838	0.883	0.824	0.781

PPML, Robust standard errors in (), clustered by country pair

Cross section, year 2019. Origin and destination country fixed effects included

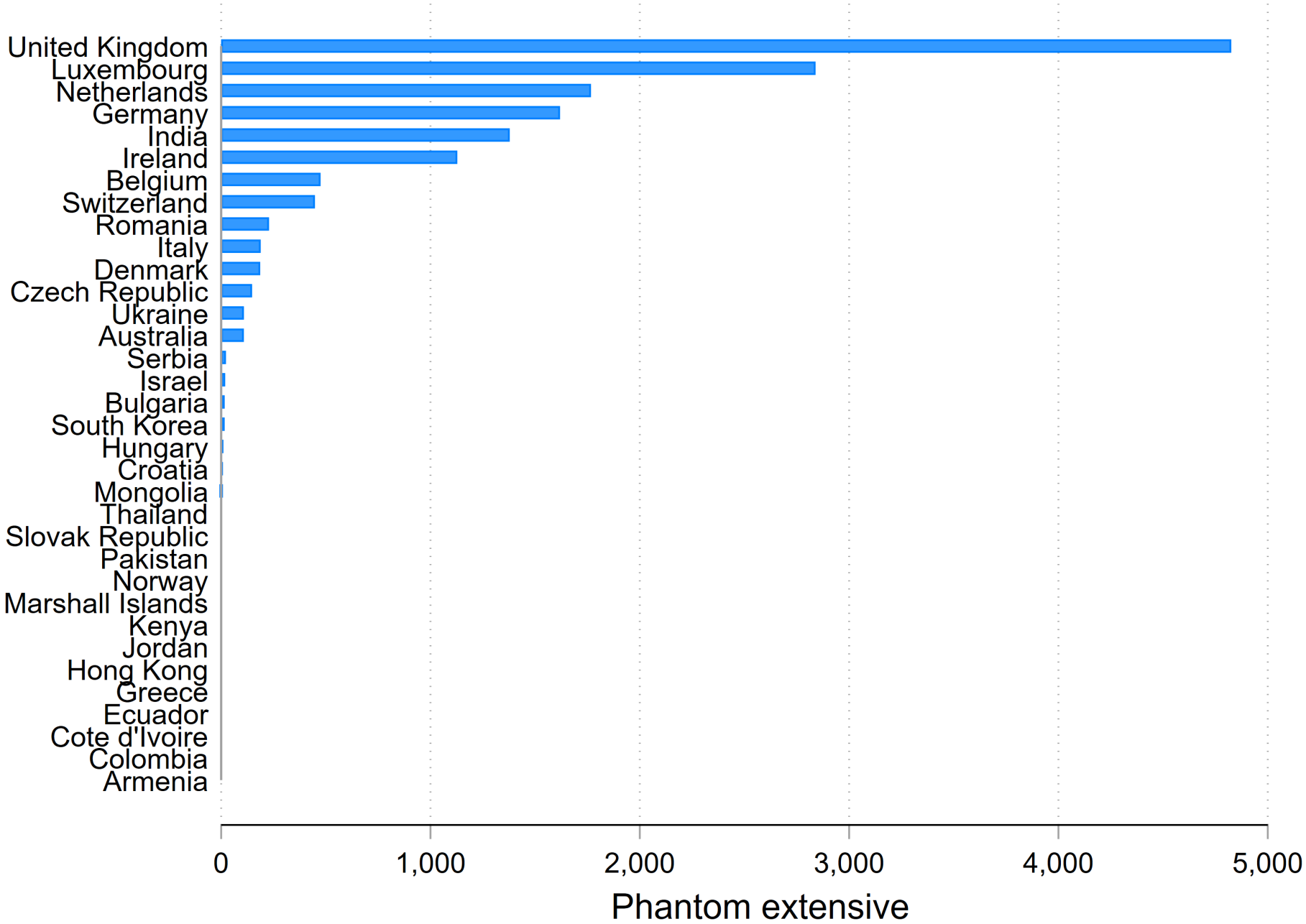
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Quantification (USA, Structural gravity using all countries)

	Affiliates	Revenue	Total Assets	Fixed Assets	Tangible	Intangible
Total FDI	89,901	4,964,481	21,801,645	10,493,457	1,837,439	769,051
Phantom FDI	15,542	1,159,094	5,553,177	1,931,544	380,683	245,789
Phantom FDI/Total FDI	0.178	0.233	0.254	0.184	0.207	0.320

Notes: Affiliates: number of foreign affiliates. Rest of variables in million USD

USA's Phantom FDI (USA, Structural gravity using all countries)



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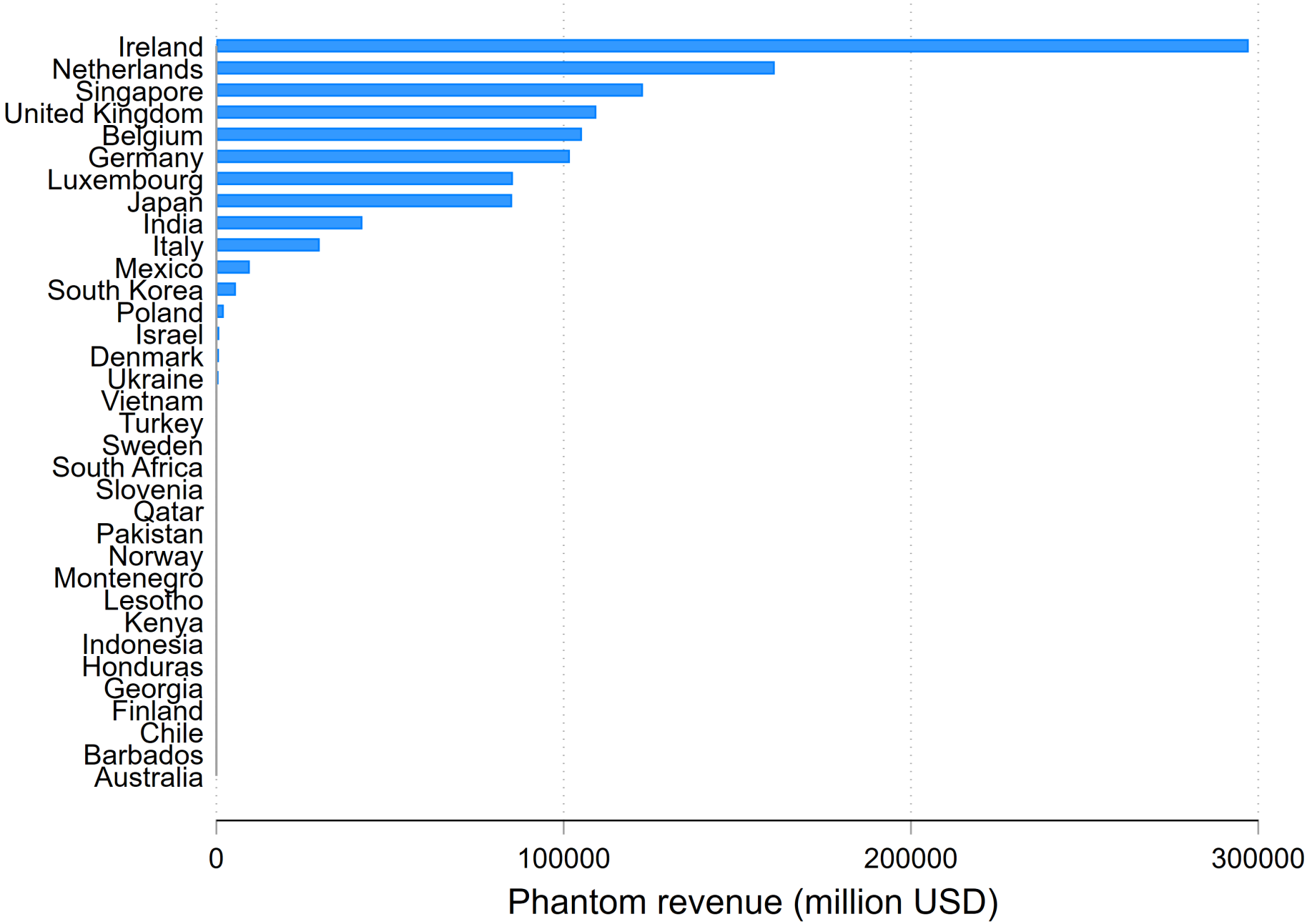

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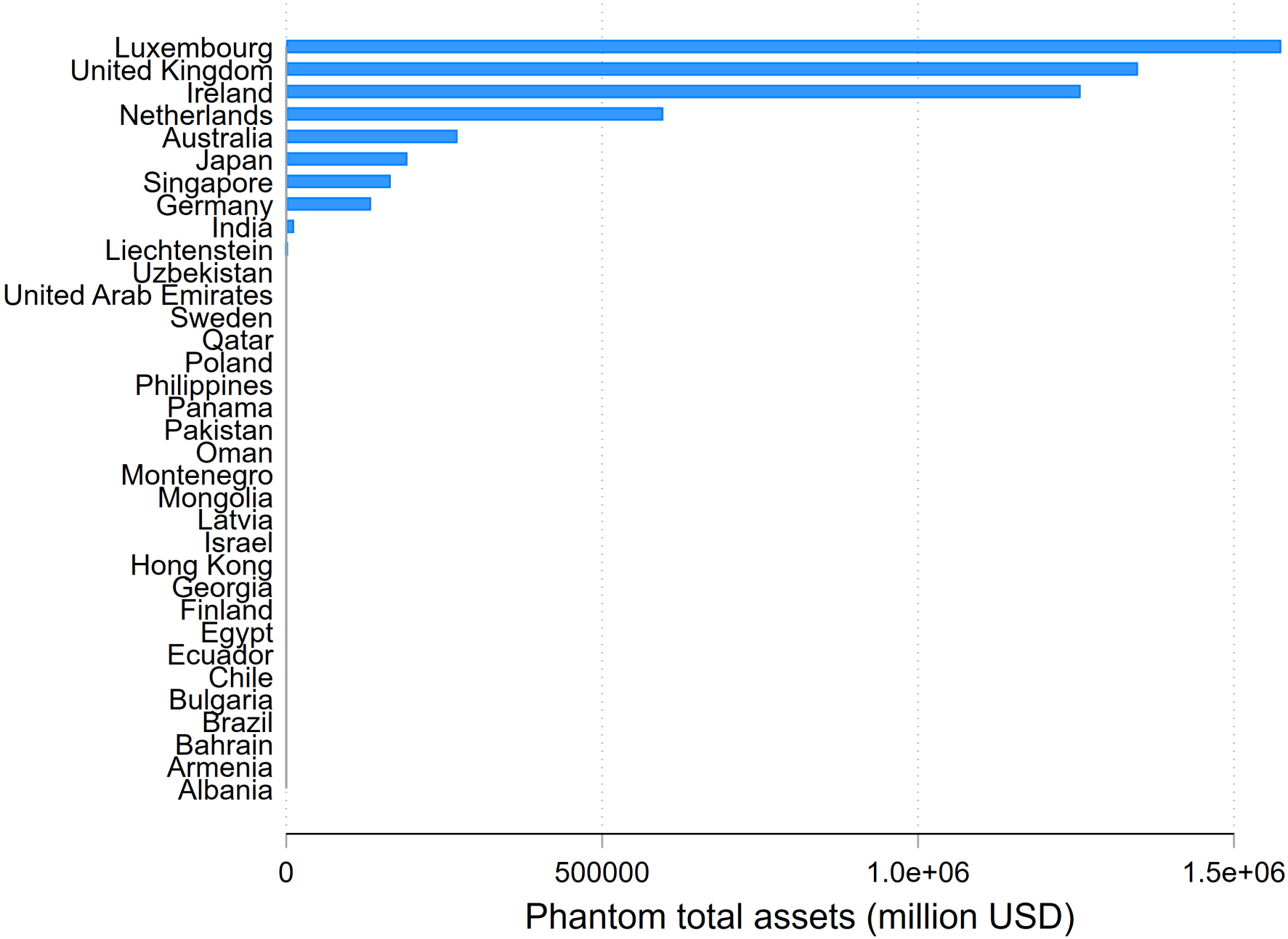

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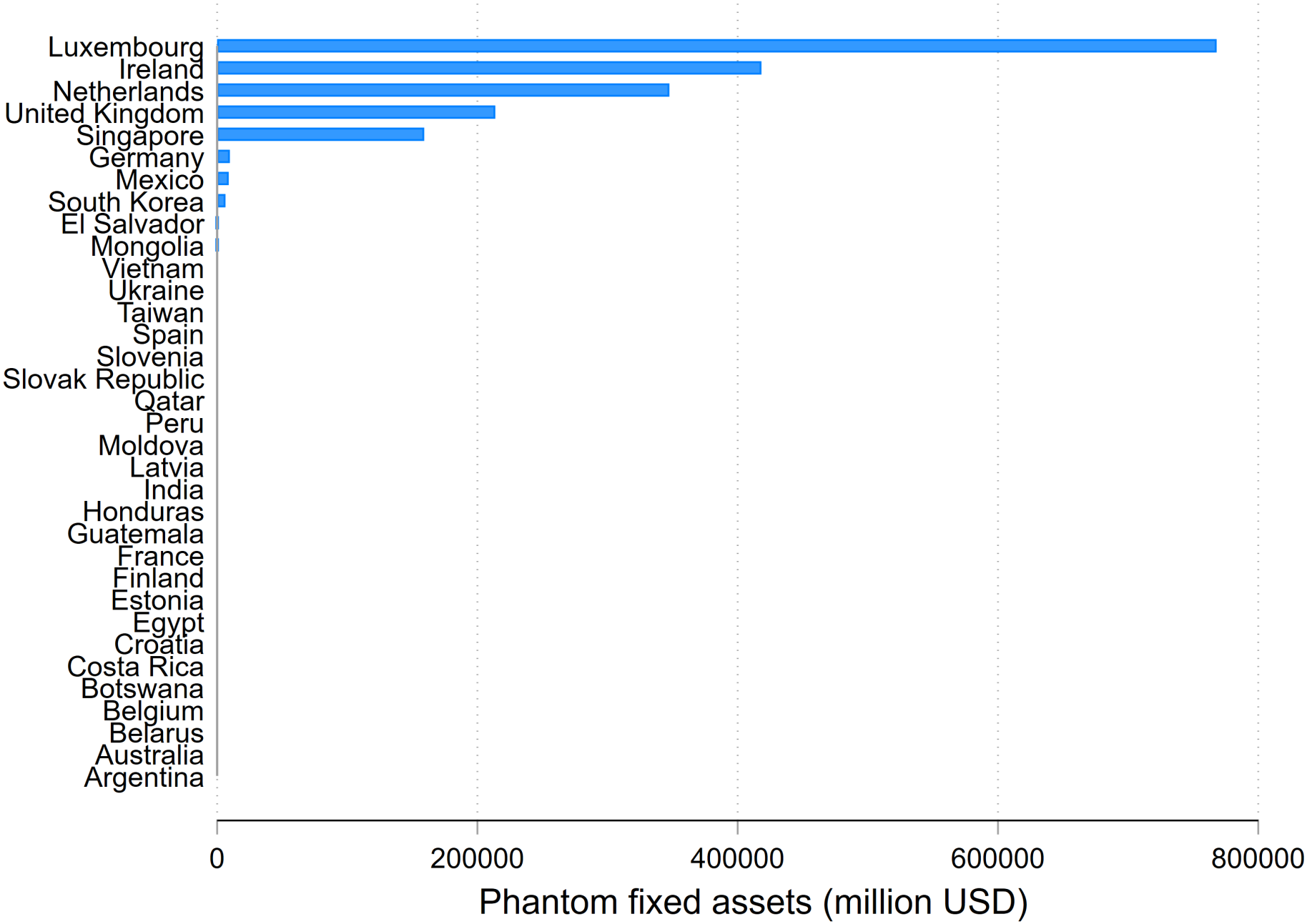

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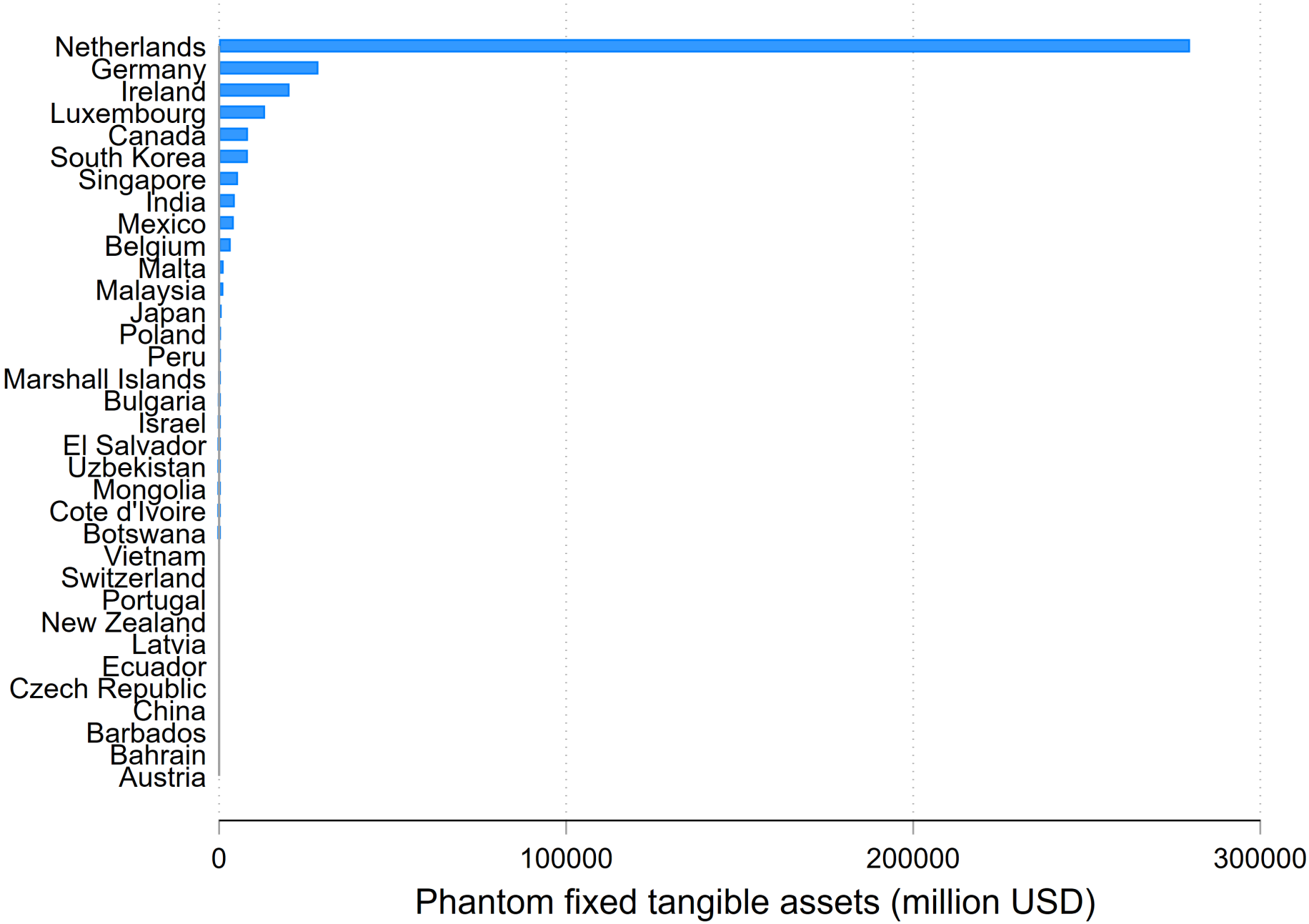

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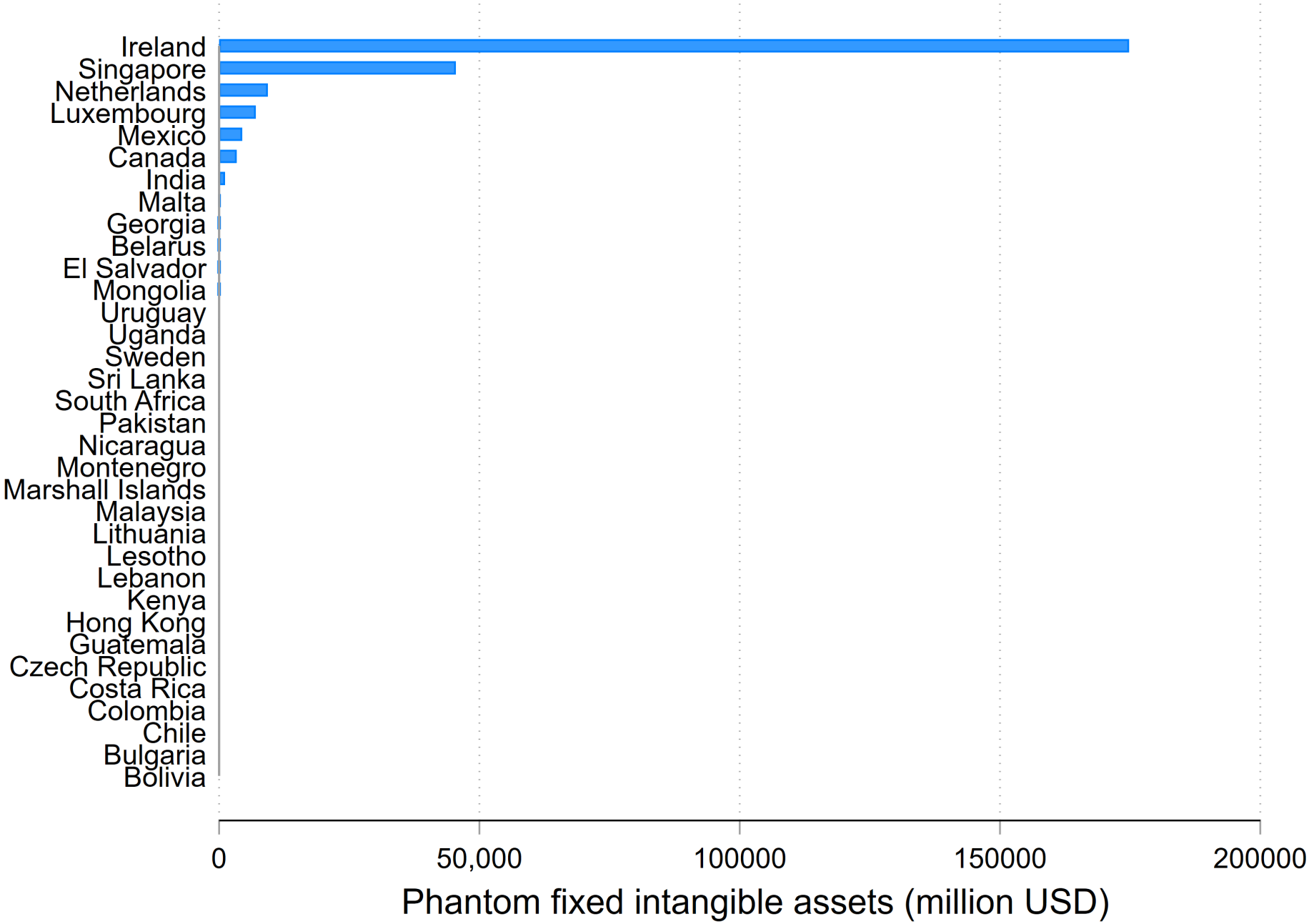
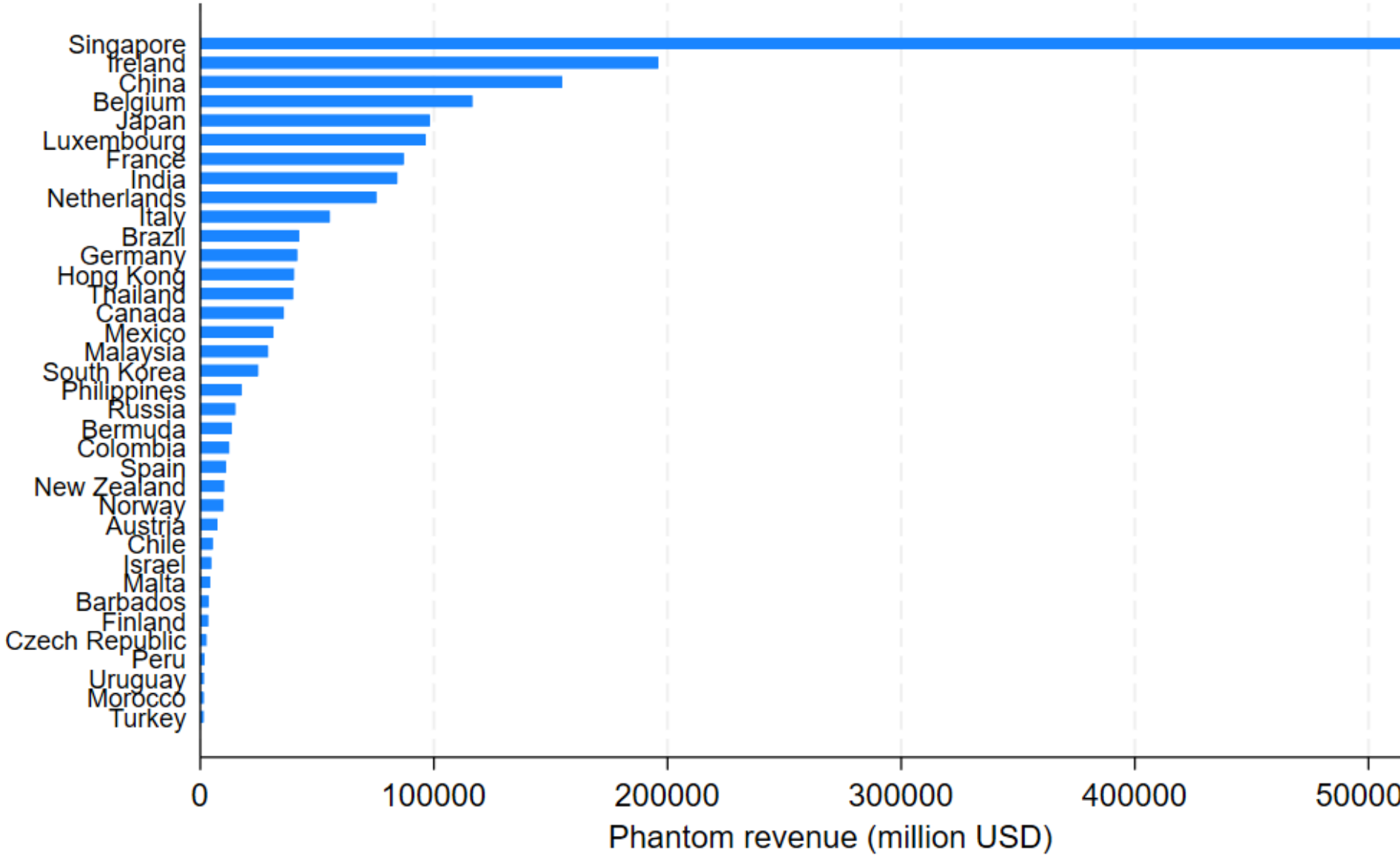


USA's Phantom Revenues (Production-Function Approach)



USA: Gravity-Equation vs. Production-Function Approaches

	Structural Gravity	One-Country Gravity	Production Function
Total FDI	4,964,481	4,964,481	4,964,481
Phantom FDI	1,159,094	1,585,292	1,906,369
Phantom FDI Fraction	0.233	0.319	0.384

Million USD

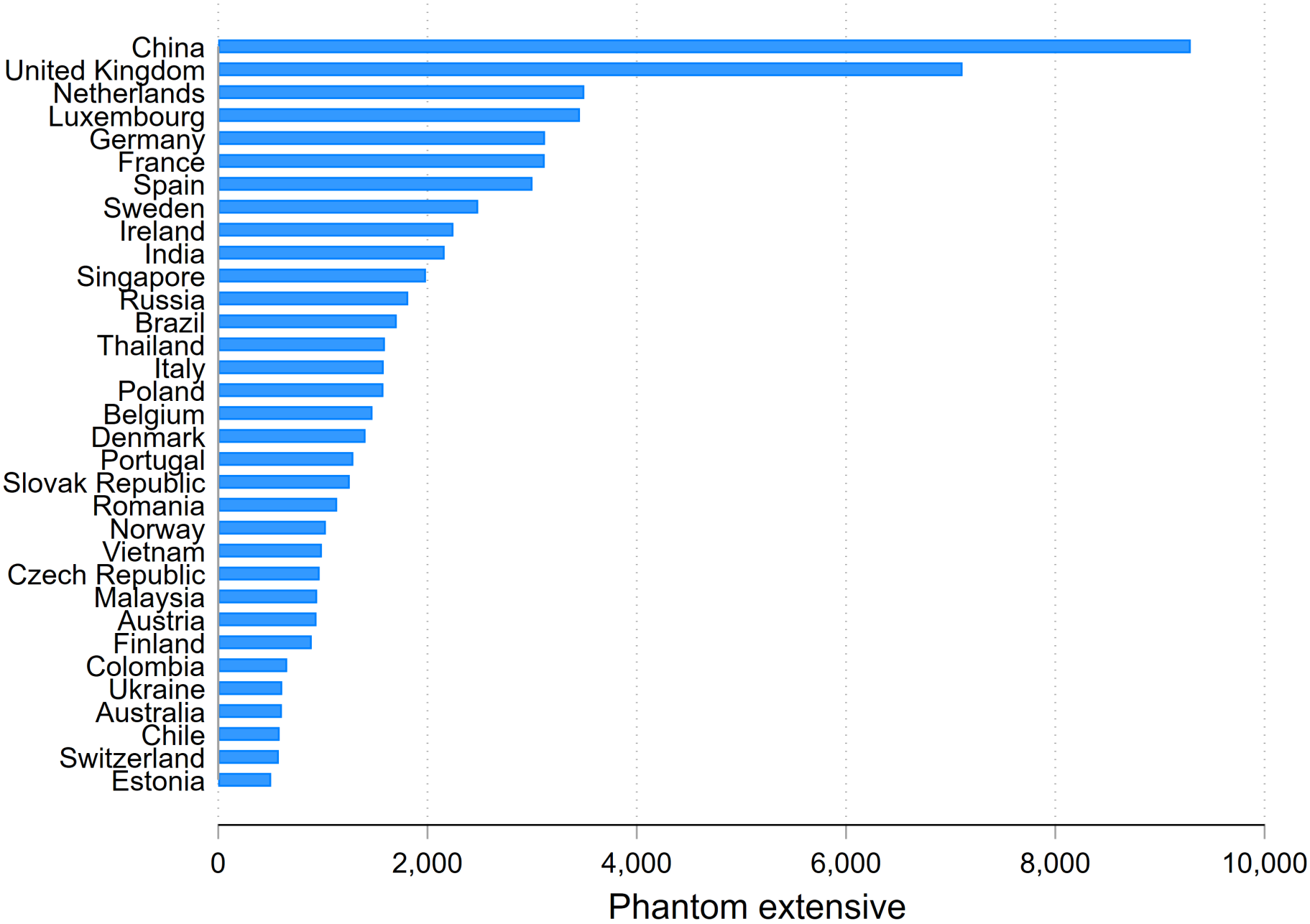
Quantification (Inward Multilateral FDI for Non-U.S. Countries)

$$FDI_j^{Phantom} \equiv \sum_{i=1, i \neq j}^{N} \left(FDI_{ij} - \widehat{FDI_{ij}} \right)$$

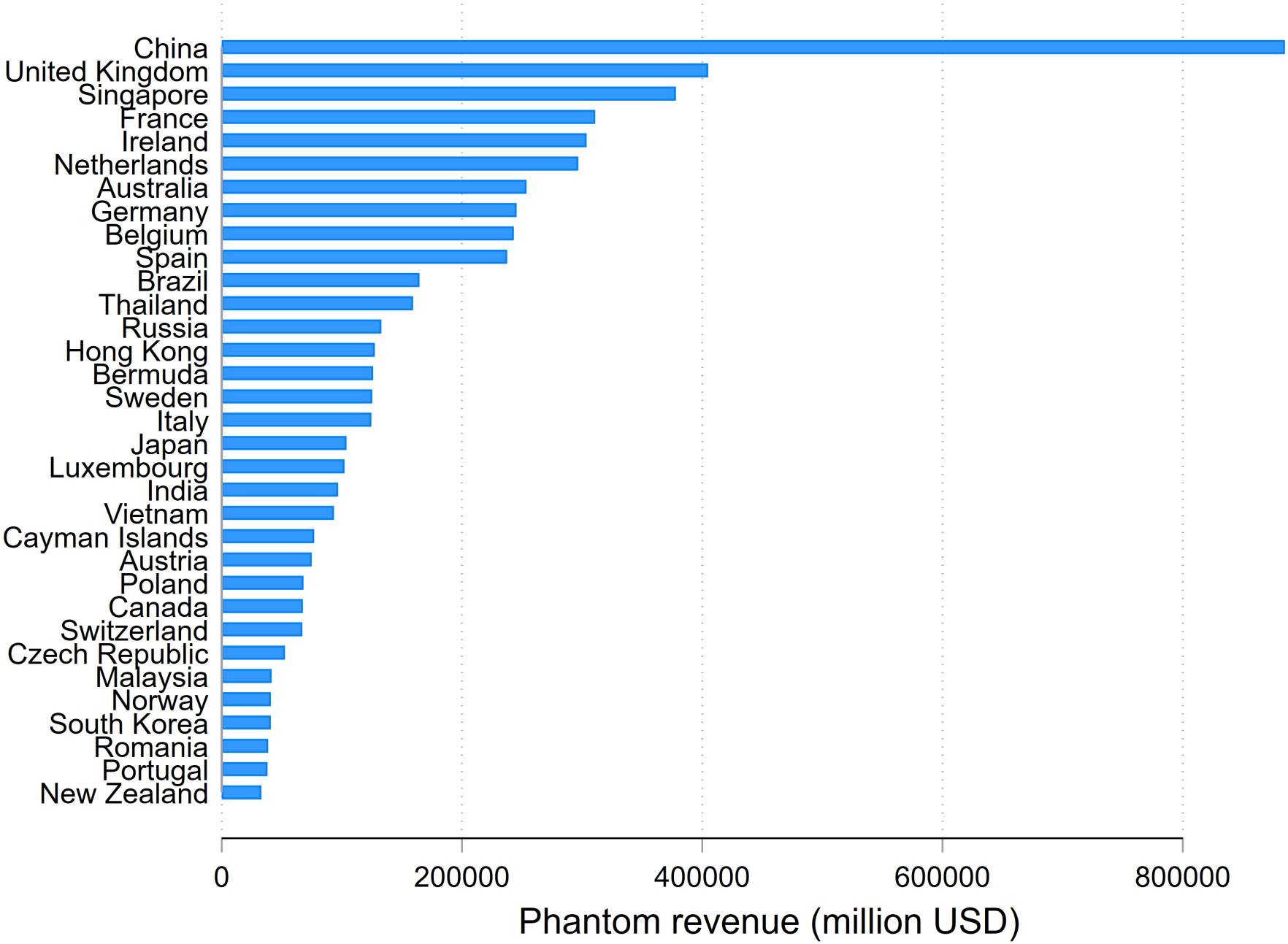
	Affiliates	Revenue	Total Assets	Fixed Assets	Tangible	Intangible
Total FDI	331,642	19,700,000	68,600,000	27,300,000	6,008,717	2,074,382
Phantom FDI	75,730	6,367,864	23,900,000	7,810,626	2,159,687	935,735
Phantom FDI/Total FDI	0.228	0.323	0.349	0.285	0.359	0.451

Notes: Affiliates: number of foreign affiliates. Rest of variables in million USD

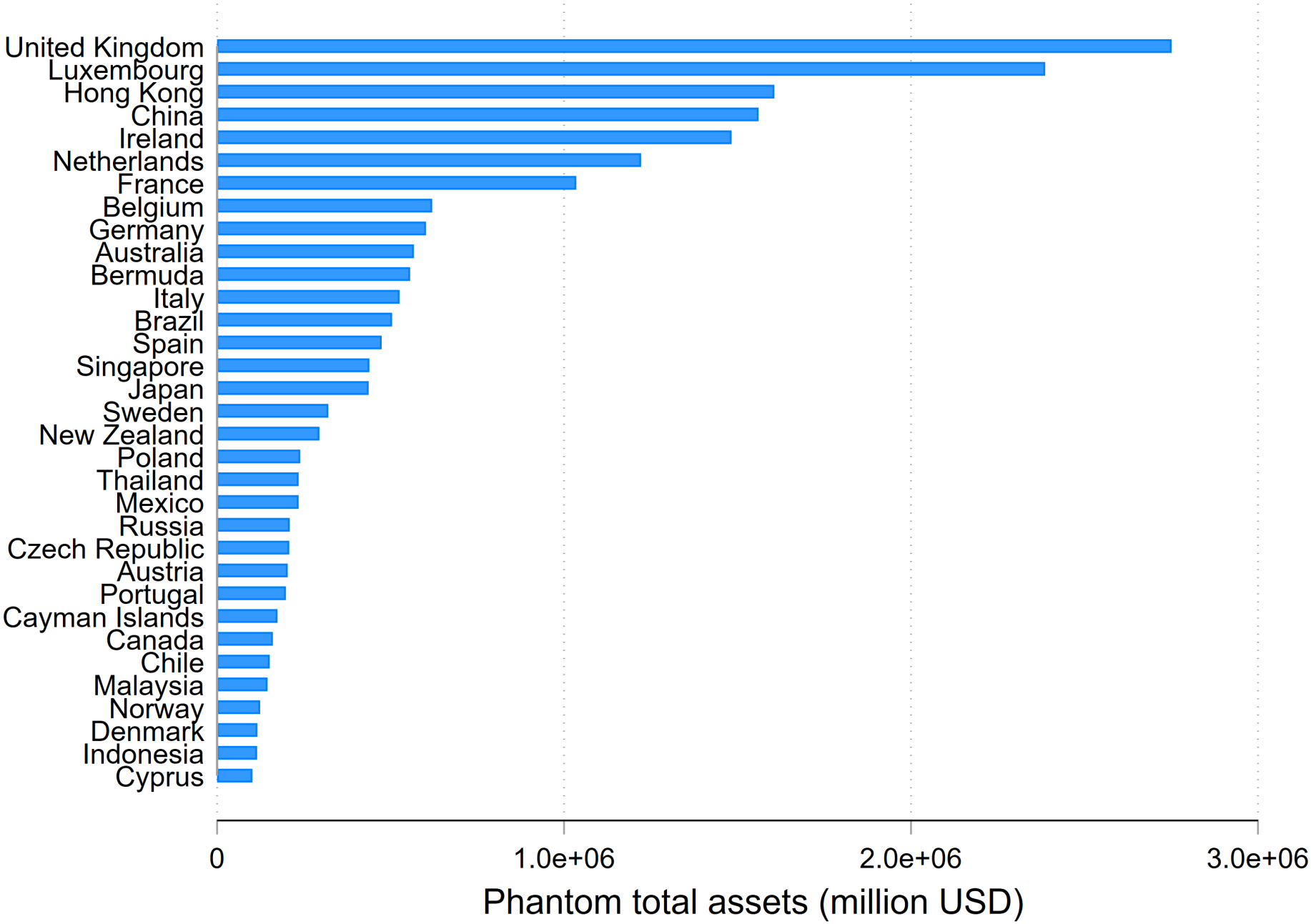
Inward Multilateral Phantom FDI for Non-U.S. Countries



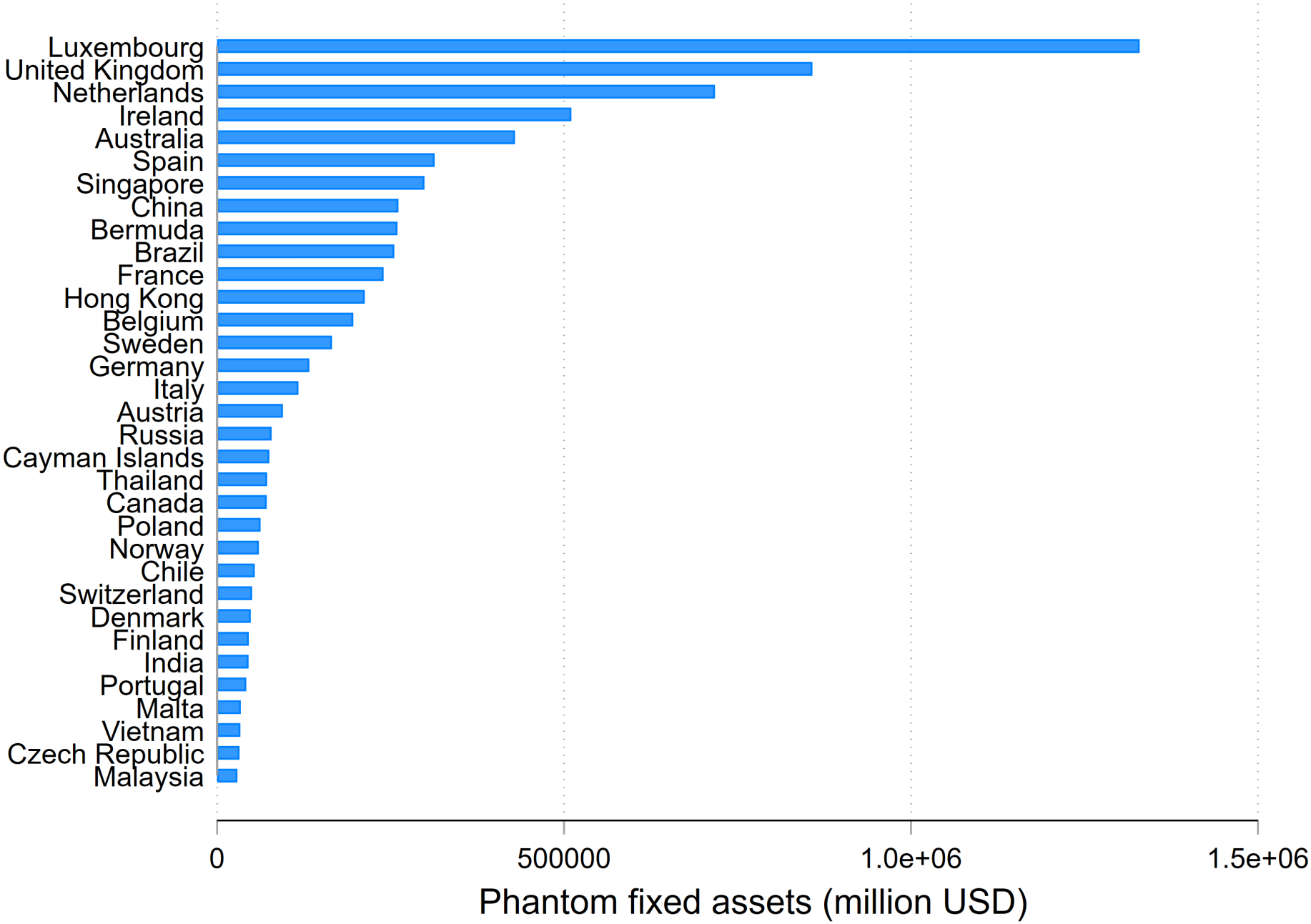
Inward Multilateral Phantom FDI for Non-U.S. Countries



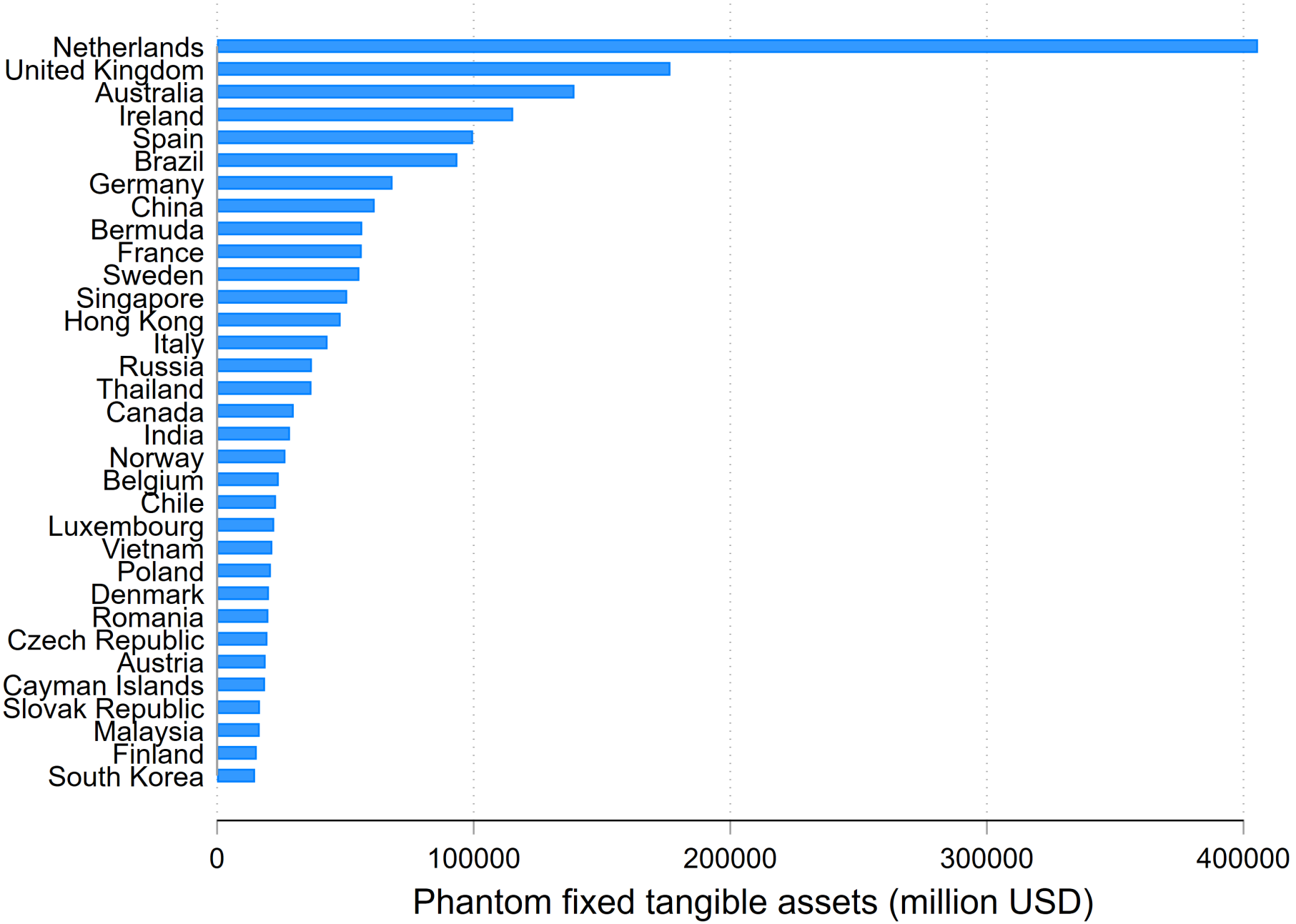
Inward Multilateral Phantom FDI for Non-U.S. Countries



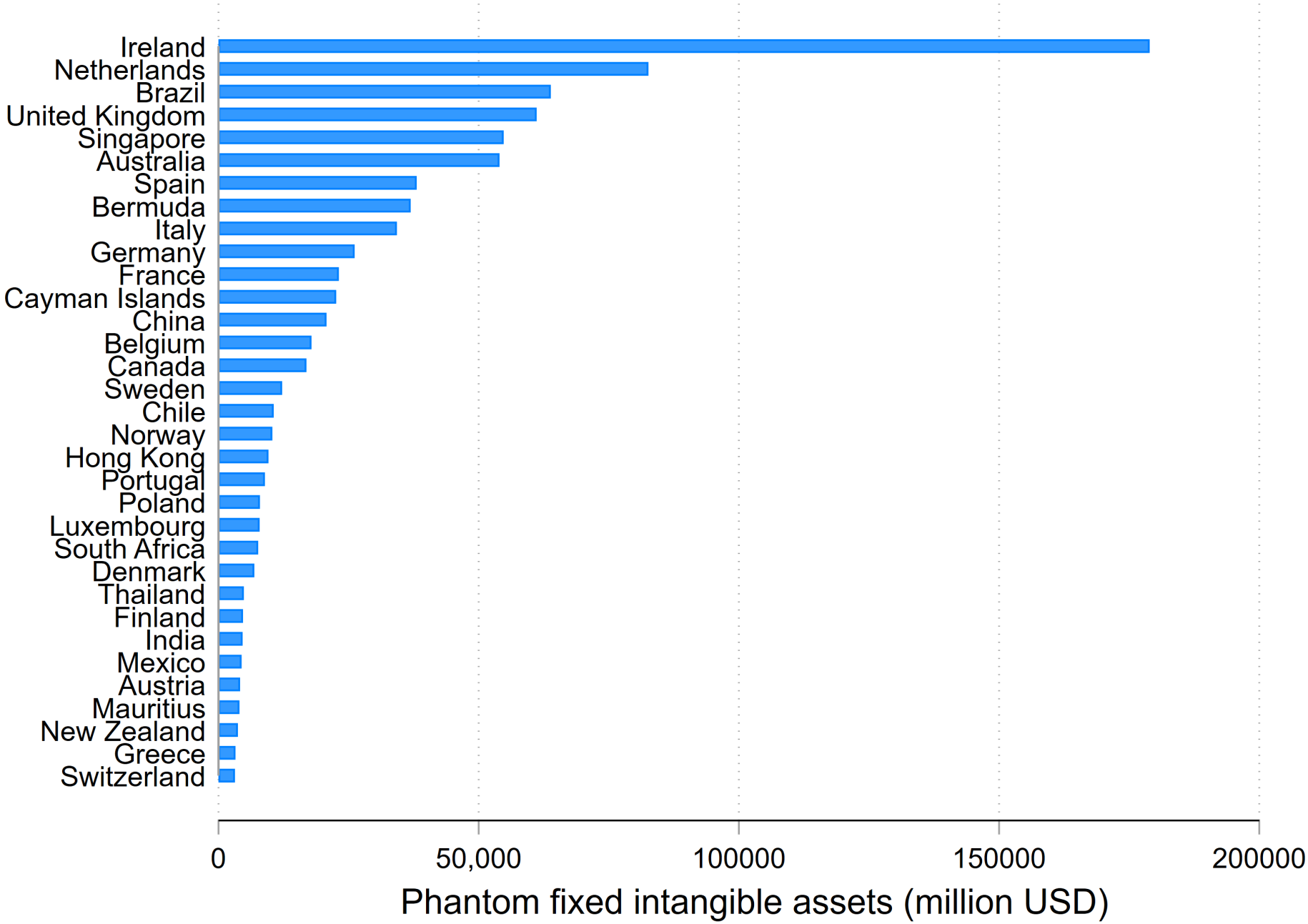
Inward Multilateral Phantom FDI for Non-U.S. Countries



Inward Multilateral Phantom FDI for Non-U.S. Countries



Inward Multilateral Phantom FDI for Non-U.S. Countries



Conclusions

Methods to evaluate Phantom FDI

1. This paper contributes to the literature on foreign direct investment (FDI) by applying the gravity equation to identify and quantify the presence of phantom FDI
    1. the gravity-equation approach identifies several key tax havens
    2. the analysis reveals that geo-strategic risks, as present in countries like Ukraine, play a significant role in shaping FDI flows related to numbers of affiliates.
2. The gravity-equation framework – founded upon well-established theoretical foundations – is useful and flexible in identifying phantom FDI flows.
    1. Wide variety of FDI activities (not just revenues)
    2. estimates are more conservative – and perhaps more realistic

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