

Economic Policy Uncertainty and Global Portfolio Allocations

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Motivation

- Global mutual funds' total foreign holdings increased from \$13 trillion (1997) to \$75 trillion (2018)
- Any Reallocation of capital by these institutions ⇒
 - availability of foreign capital ↓
 - stability of domestic financial markets ↓
- Our Focus: Does *economic policy uncertainty (EPU)* matter for global institutional flows?
- Our Focus: Do institutional flows transmit *uncertainty shocks* globally?
- Contribution to the growing literature connecting global risk and institutional capital flows
 - destination EPU an important macroeconomic determinant of global fund allocations
- ★ Using granular data on institutional investor's global portfolio holdings
 - improving upon large literature using *aggregated data* on international capital flows

- Thomson Reuters Global Ownership Database
 - institution's **global portfolio holdings** data at quarterly frequency
 - focus on **mutual funds** (Standalone), **hedge funds**, **investment advisors**
- Focus on funds with sufficient international portfolio holdings (50% of holdings)
- **Economic Policy Uncertainty (EPU)** Index from Baker, Bloom, and Davis (2016) for 21 countries as a proxy for policy and economic uncertainty
- Rich sample of
 - over two decades (1999-2021)
 - tracking 18,131 institutions/funds
 - across 77 host-countries
 - investing across 21 destinations
 - Top Host countries: UK (2653) USA (1405) Switzerland (1390)

- Global risk/policy Uncertainty and Cross-border flows
 - Forbes and Wanrock (2012), Broner, Didier, Erce, and Schmukler (2013), Raddatz and Schmukler (2011), Gourio, Siemer, and Verdelhan (2014), Avdjiev, Hardy, Kalemlı-Ozcan, and Servén (2018)
 - Kacperczyk, Nosal, and Wang (2022): granular data similar to ours to document negative relation between global risk and foreign capital flows
 - Chari, Stedman, and Lundblad (2022): global risk (not risk aversion) more important for tail capital flows outcomes for EME
 - Akinci, Ozcan, and Queralto (2022), Morelli, Ottonello, and Perez (2022): spillover from US/Global bank's net worth to EME bonds and flows
 - De Haas and Van Horen (2012): retrenchment in cross-border banking flows
 - Julio and Yook (2013): spike in uncertainty around close elections dampens irreversible FDI flows
- Importance of information, culture, familiarity
 - Maggiori, Neiman, and Schreger (2020): Importance of currency of denomination
 - Kempf, Luo, Schafer, and Tsoutsoura (2022): Political alignment and US institutional flows
 - Pellegrino, Spolaore, and Wacziarg (2022): quantitative importance of policy uncertainty and familiarity

Negative EPU-Flows Relationship

- Do global funds pull-out capital in response to higher destination EPU?
- **Capital Flow** \Rightarrow % change in quarterly fund-destination assets

$$flow_{fct} = \frac{assets_{fct} - (1 + r_{ct}) assets_{fct-1}}{(1 + r_{ct}) assets_{fct-1}}$$

- **Empirical Model:**

$$flow_{fct} = \alpha_{ft} + \mu_c + \beta_1 EPU_{c,t-1} + \beta_2 X_{ct} + \epsilon_{fct}$$

- **Fund \times Time fixed effects (α_{ft})** \Rightarrow compare the same fund's capital flows at a point in time across destinations differentially affected by EPU
 - ★ purge out fund-specific factors affecting **supply of capital** (e.g investor's redemption) or **demand for risky assets** (e.g changes manager's risk aversion)
- **Destination fixed effects (μ_c)** and **Destination time-varying controls (X_{ct}):** such as interest rate spread, equity returns, industrial growth, currency returns

EPU-Flow Relationship and Cross-Section

EPU-Flows Negative Relationship

- $1-\sigma$ \uparrow in destination EPU results in **1.27% higher capital outflows** (as % of fund-destination assets) over next quarter ($\approx 5\%$ annualized)
- **median quarterly flow** into a target investment country of **1.39%**
- **Sorting:** Robust to fund-destination pair fixed effects

	Fund-Destination-Quarter Flows ($t + 1$) %				
	(1)	(2)	(3)	US Funds (4)	Non-US Funds (5)
Destination. EPU	-0.489** (0.213)	-1.276*** (0.232)	-0.909*** (0.277)	-1.582*** (0.411)	-1.129*** (0.279)
Controls	N	Y	Y	Y	Y
Destination FE	Y	Y		Y	Y
Fund-Time FE	Y	Y	Y	Y	Y
Fund-Destination FE			Y		
Adj-R2	0.657	0.657	0.179	0.536	0.677
Obs	574475	574475	675273	137828	436647

EPU and Portfolio Flows: Extensive Margin

- 1- σ Higher EPU \Rightarrow
 - likelihood of exit from the destination \uparrow by 0.30% (relative to 2.6% unconditional exit likelihood)
 - likelihood of entry in to destination \downarrow by 0.13% (relative to 3.8% unconditional entry likelihood)

	Exit _{fct+1} %		Permanent Exit _{fct+1} %	Entry _{fct+1} %	
	(1)	(2)	(3)	(4)	(5)
Destination EPU	0.396*** (0.027)		0.308*** (0.020)	-0.132*** (0.019)	
Rolling Destination EPU		0.219*** (0.033)			-0.132*** (0.023)
	(0.462)	(0.458)	(0.296)	(0.373)	(0.370)
Controls	Y	Y	Y	Y	Y
Fund \times Time FE	Y	Y	Y	Y	Y
Destination FE	Y	Y	Y	Y	Y
Adj R-Sq	0.933	0.933	0.588	0.778	0.778
Obs	803719	803719	807347	821109	821109

Cross-Section of EPU-Flow Relationship

- **Quality of institutions** dampen the adverse impact of EPU on flows ⇒ destinations with better
 - information transparency
 - legal and democratic protection
- **Familiarity and Similarity** characteristics of the destination also increase fund's uncertainty bearing capacity
 - with common language
 - having ethnic similarity
 - with similar legal systems
 - Geo-politically aligned
- These factors shown to be important drivers of the level of capital flows
 - We show that they are important even for explaining uncertainty induced shock
- **Results:** 27 and 26

Home Bias and Flight-to-Safety

Home-Bias in EPU-Flow Sensitivity?

- Do portfolio flows react less negatively to home-uncertainty?
 - Better information regarding home-country
- Yes! but home-bias in Flow-EPU prominent for the US/G7
- ★ Indian fund's capital react equally negatively to rise in Indian or Brazilian EPU

Fund Domicile	Fund-Destination-Quarter Flows ($t + 1$) %			
	All	G7	US	Non-G7
	(1)	(2)	(3)	(4)
Dest. EPU	-1.507*** (0.456)	-1.571*** (0.287)	-2.169*** (0.418)	-1.420*** (0.395)
1 (Dest. = Home)	6.310*** (1.132)	6.335*** (1.049)		1.025 (5.131)
Dest. EPU \times 1 (Dest. = Home)	3.531*** (1.001)	3.658*** (0.799)	3.488*** (0.925)	0.346 (2.610)

Home-Bias or Flight to Safety?

- Home-Bias for EPU sensitivity concentrated within G7 and especially strong for the US
- ★ Is it Home-Bias or Flight-to-Safety?
- Evidence on Flight-to-Safety:
 - Bertaut and DeMarco (2009) documents a spike in net purchases by foreign investors of US treasury securities following Lehman's bankruptcy
 - Flight-to-Safety documented by Longstaff (2004), Beber, Brandt, and Kavajecz (2009), Adrian, Crump, and, Vogt (2019) in various other contexts
- **Test:** How do foreign (Ex-G7) funds react to rise in US or G7 EPU shocks?

Flight-to-Safety (Foreign Funds's Response)

- No portfolio outflows if US/G7 EPU \uparrow even from foreign funds
- Horse Race (Column 3): Dampened effect of EPU on capital outflows within G7 because the destination is G7 and not because it is home to some funds

	Fund-Destination-Quarter Flows ($t + 1$) %		
	Foreign Funds		All Funds
	(1)	(2)	(3)
Dest.EPU	-1.696*** (0.246)	-2.542*** (0.269)	-2.641*** (0.269)
Dest.EPU \times 1 (Dest. = US)	1.934*** (0.438)		
Dest.EPU \times 1 (Dest. = G7)		3.518*** (0.413)	3.262*** (0.403)
Dest.EPU \times 1 (Dest. = Home)			1.719 (2.617)
Dest.EPU \times 1 (Dest. = Home) \times 1 (Dest. = G7)			0.458 (2.748)
Controls	Y	Y	Y
Destination FE	Y	Y	Y
Fund-Time FE	Y	Y	Y
Adj-R2	0.669	0.669	0.657
Obs	522201	522201	574475

Spillover of EPU

- Well-documented **Credit and Banking channel** of international transmission of 2008–2010 financial crises (De Haas and Van Horen (2012), Cetorelli and Goldberg (2011))
- **Do Global Funds Transmit EPU shocks from one country to the other?**
 - ★ through cross-country portfolio holdings
- **Country-Level Test:** Does fund's exposure to EPU shocks in destinations other than c affect its capital allocation decisions in c ?
- **Fund-Level “leave-one-out” EPU Shock:** (for destination c)

$$\text{Fund EPU}_{f/c,t} = \sum_{c' \in \mathcal{C}_f, c' \neq c} \text{weight}_{fc',t} \times \text{EPU}_{c',t}$$

Spillover of EPU: Country-Level Test

- Fund's EPU exposure elsewhere (outside destination c)
 - dampens the capital outflows in destination c
 - exacerbates the outflows in response to rise in EPU in c
- Robust to Fund-Time Fixed effects too.

	Fund-Destination-Quarterly Flows ($t + 1$) %				
	(1)	(2)	(3)	(4)	(5)
Destination EPU	-1.844*** (0.295)	-0.581 (0.493)			-2.062*** (0.296)
Fund EPU (Elsewhere)	-3.860*** (1.003)		-1.401** (0.663)		-5.505*** (1.070)
1 (Fund EPU > 0)		-22.004*** (1.014)		-5.840*** (0.777)	
Dest. EPU \times 1 (Fund EPU > 0)		-2.483*** (0.508)		-1.942*** (0.531)	
Fund EPU \times 1 (Dest = G7)					2.137*** (0.473)
Destination FE	Y	Y			Y
Fund-Time FE	Y	Y			Y
Destination-Time FE			Y	Y	
Fund-Destination FE			Y	Y	
Adj-R2	0.660	0.658	0.206	0.200	0.660
Obs	519245	574475	1404988	1578557	519245

Spillover of EPU: Stock-Level Test

- **Can we trace the EPU spillover effects at the stock-level?**
- **Stock-Level Test:** Explain cross-section of US stock returns using stock owner's exposure to international (outside the US) EPU
- **Step 1:** Compute stock owner's ex-USA EPU exposure

$$\text{Stock-EPU (Ex-USA)}_{st} = \sum_f W_{sft} \times \text{Fund-EPU (ex-USA)}_{ft}$$

w_{sf} : % of stock s owned by fund f

Fund EPU (ex-USA): Fund f 's weighted EPU exposure outside the US

- **Step 2:** Does Stock-EPU (Ex-USA) has ability to explain US stock's excess return?

$$\alpha_{st} = \gamma_s + \delta_t + \beta \cdot \text{Stock-EPU (Ex-USA)}_{st-1} + \phi \cdot X_{it-1} + \varepsilon_{st}$$

Spillover of EPU: At Stock-Level

- $1 - \sigma \uparrow$ in EPU exposure of stock owners $\Rightarrow \alpha \downarrow$ by 3.31%
- Effect stronger in stocks more owned by global funds
- Result robust to Stock fixed effect

	Annualized FF4 Alpha (t) %				
	(1)	(2)	Stock's % Owned by Global Funds		(5)
			Low	High	
	(3)	(4)			
Stock-EPU (t-1)	-5.161*** (0.675)	-5.262*** (0.738)	-2.908** (1.201)	-7.580*** (0.918)	-2.022*** (0.861)
% Stock Owned by Global Funds (t-1)		3.061*** (0.692)			-1.132*** (0.741)
Controls	N	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y
Stock FE	N	N	N	N	Y

Cross-Section of Foreign Capital Exodus

Taper-Tantrum Episode

Capital-Exodus and EPU

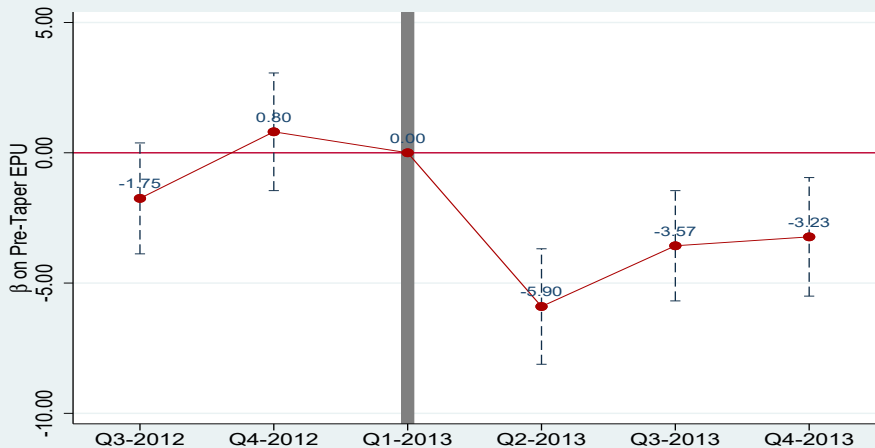
- **Experiment:** Taper Tantrum Episode (May, 2013) when the FED hinted at reversing the QE program (Lopez-Villavicencio and Pourroy (2021))
- Many emerging economies experienced significant capital exodus (Avdjiev and Takáts (2014), Eichengreen and Gupta (2014)), **but not all.**
- **Question:** Can policy uncertainty in these countries explain the cross-section of capital exodus following Taper?
- **Empirical Model:**

$$flows_{fct} = \alpha_{ft} + \sum_{t \in \mathcal{T}} \beta_t (\text{Pre-Taper EPU})_c \times t + Controls_{ct} + \mu_c + \epsilon_{it}$$

- ★ $\beta_t > 0$ for $t \in \text{Post-Taper}$ \Rightarrow greater capital exodus due to Taper Tantrum from countries with higher EPU

EPU Exacerbates Foreign Capital-Exodus

- Higher EPU just prior to Taper Tantrum Shock (May 2013) amplifies capital exodus



- Portfolio-Country Returns: Actual fund-destination returns using stock returns and holding data
- Fund-Destination weights instead of fund-destination flows
- Results robust to controlling for financial uncertainty (VIX)
- Reverse Causality:
 - Control for lagged fund-destination flows \Rightarrow Control for any EPU spikes due to past capital flows
- Non-Linearity
- Alternative definitions of flows

Conclusion

- First paper to examine the role of destination EPU in explaining cross-border Equity Capital Flows using granular flows
- Firmly establish how domestic economic uncertainty dampens foreign as well as domestic equity flows on both intensive and extensive margin
 - controlling for the unobserved factors controlling fund's capital allocation on average (like changes to risk aversion)
- Similarity, familiarity, institutional quality, and informational transparency shape up not only fund's level of investment in the destination but also its uncertainty-bearing capacity
- Significant spillover of economic uncertainty across countries and to the US stocks through the global equity portfolios of the mutual/hedge funds
 - novel non-banking channel of transmission of uncertainty shocks
 - complements recent findings of how global bank's net worth shocks transmit to the EME (Morelli, Ottonello, and Perez (2022)) by providing one more driver of transmission of shocks cross-country
- Domestic uncertainty amplifies adverse liquidity induces capital exodus

Thank You

Appendix

Institutional Quality Transparency

- **Quality of information** available regarding a destination country may help partly resolve the uncertainty.
- **Better legal or democratic protection** might improve fund's uncertainty-bearing capacity
- Determinants shows to be important for credit markets (Fuchs and Gehring (2017), Delis, Hasan, and Ongena (2020)) as well as allocation fo global capital (Fuchs and Gehring (2017), Delis, Hasan, and Ongena (2020))
- Result: Even flow-EPU sensitivity greatly affected by these factors

	Fund-Destination-Quarter Flows % (t+1)					
	Informational Transparency		Legal Strength		Democracy Strength	
	High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)
Dest. EPU	-0.212 (0.741)	-2.392*** (0.352)	0.221 (0.730)	-2.111*** (0.293)	0.032 (0.319)	-4.579*** (0.435)

Cultural Similarity and Geopolitical Alignment

- Funds better able to navigate uncertainty in the destinations
 - with common language
 - having ethnic similarity
 - with similar legal systems
 - Geo-politically aligned

	Fund-Destination-Quarter Flows % (t+1)							
	Common Language		Ethnically Similar		Same Legal Origin		Geo-politically alignment	
	Yes	No	Yes	No	Yes (Common Law)	No (Civil Law)	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dest. EPU	0.429 (0.575)	-3.480*** (0.347)	-0.003 (0.726)	-2.153*** (0.291)	0.811 (0.825)	-3.261*** (0.319)	-0.227 (0.800)	-2.086*** (0.294)
Fund-Time FE	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y
Adj-R2	0.712	0.670	0.747	0.663	0.729	0.676	0.777	0.635
Obs	166450	196724	131818	237573	112226	257936	100133	267072