Capital flows, financial development, and credit resilience

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II Workshop on Financial Markets, Shocks, and Macroeconomic Policies
Central Bank of Chile

12th August 2025

We thank José Ignacio Calderón and Tomás Berríos for their outstanding research assistance. The opinions expressed here are those of the authors and do not necessarily represent the opinion of the Central Bank of Chile or any of its Board Members.

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Introduction

- **Capital flows are volatile** and pose significant risks to financial stability
- **Several policies in place** for prevention and damage control
  - Foreign reserves, capital flow management (CFM), FX interventions
  - Less prevalent in countries with high financial market development (***FMDEV***)
  - High ***FMDEV*** associated with mitigation of foreign shocks (Montañez-Enríquez et al., 2024)
    In contrast with amplification of domestic shocks
- **We ask** if ***FMDEV*** can foster external stabilisation in the following ways:
  1. Can it reduce the likelihood of experiencing extreme swings in capital flows?
  2. When these events materialise, does it make banking credit more resilient?
- **We find** evidence for 33 advanced and 26 emerging economies
  1. We define relevant ***FMDEV*** dimensions
  2. Relationship between ***FMDEV*** and probability of extreme swings ⇒ **Prevention**
  3. ... and to the impact of swings on bank credit ⇒ **Resilience**

Literature Review

- **International capital flows**
  - **Sudden stops and sudden starts**
    - Calvo (1998), Calvo et al. (2004), Calvo et al. (2008), and Calvo et al. (2012); Faucette et al. (2005), Cowan and Gregorio (2007), Cowan et al. (2008), and Rothenberg and Warnock (2011);
  - **Gross inflows/outflows**
    - Milesi-Ferretti and Tille (2011), Forbes and Warnock (2012a, 2012b, 2021), Broner et al. (2013), Calderón and Kubota (2013), Cifuentes and Jara (2014), and Adler et al. (2016) and many others
  - **Role of FMDEV** ⇒ Different perspectives than previous literature and its relation to offsetting capital flows.
- **Credit cycles from inflow surges**
  - Hernández and Landerretche (2002), Mendoza and Terrones (2012), Calderón and Kubota (2012), Lane and McQuade (2014), Caballero (2016), and Igan and Tan (2017)...
  - **Credit during inflow stops** ⇒ We ask whether FMDEV delivers resilience.
- **Broadly, financial market development and international finance**
  - Local-currency bond markets (Park and Shin, 2025)

Financial market development: Concepts % Measurement

- **Theoretical characteristics of developed financial markets**:
  - (A) State contingent assets (Mendoza et al., 2009; Caballero et al., 2008)
  - (B) Fewer market imperfections (information, transaction costs...) (Cœurdacier and Rey, 2012)
  - (C) Deep FX markets & low FX mismatch (Basu et al., 2020)
- **Measurement in previous papers**
  - Bank or total credit to GDP: Non-state-contingent
    - However, relevant input to output growth
  - Stock market capitalisation/GDP (partial)
  - Correlation between foreign assets and liabilities (endogeneity)
- **Measurement in this paper**
  - (A) Financial market depth index (from IMF): stocks+bonds
  - (B) Institutional Investors' (II) assets/GDP, and their (from GFDD)
  - (B) II share in financial assets, proxied by II/(II+Banks) (from GFDD)
  - (C) Share of foreign debt issued in domestic currency (from Bénétrix et al., 2019)

Financial account (FA) data

- **Sample**: 33 advanced and 26 emerging economies List
  - Period: 1978q2-2019q4.
  - Source: IFS, complemented with Forbes and Warnock (2021) data

- **Definitions**:

$$\text{Net inflows} = \underbrace{\text{Inflows}}_{(+)} + \underbrace{\text{Outflows}}_{(-)}$$

↑**Liabs.** Non-residents enter

↑**Assets** Residents leave

$$\underbrace{\text{Net inflows}}_{\text{Bonanza (+) Net Stop (−)}} = \underbrace{\text{Inflows}}_{\text{Surge (+) Stop (−)}} + \underbrace{\text{Outflows}}_{\text{Retrench. (+) Flight (−)}}$$

- We focus on non-reserve flows (closer definition to private flows)

Identification of extreme events in capital flows

- Methodology based on Calvo et al. (2004)
  - Considers time and country-varying scale of flows
- Let k_{it} be the 4-quarter accumulated capital flows.
  - Let $\Delta k_{it} = k_{it} - k_{it-4}$
  - Let z_{it} be Δk standardised by the 5-year average and standard deviation
- A **wave** occurs if $|z_{it}| > 1$, for one or more contiguous periods
- An **extreme event**, if $|z_{it}| > 2$ in at least one period

▸ Frequencies (over time) ▸ Frequencies ▸ Correlations

Determinants of extreme capital flow events I

- **Push variables** (*PUSH*):
  - *VIX*
  - G4 shadow rate (Krippner, 2016) (***SSR***)
  - G7 real output growth (OCDE) (Δy^*)
  - Self-out share of countries in the region experiencing the same event (***CONTAGION***)
- **Pull variables** (*PULL*):
  - Annual real output growth (IFS) (Δy_i)
  - Monetary policy interest rates (IFS, BIS) (r_i)
  - Change in terms of trade (IFS) (ΔTOT_i)
  - Bank credit/GDP (BIS, IFS) ($BANKCREDIT_i/GDP_i$)
- **External policy framework (*de jure*)** (*XSTAB*)
  - Exchange rate arrangements (Ilzetzki et al., 2019) (***ERA***)
  - Capital outflow/inflow restrictions (Fernández et al., 2016) (***KAO***, ***KAI***)
    - Alternatively, *de facto* variables: foreign reserves, other foreign assets, and foreign liabilities to GDP (Lane and Milesi-Ferretti, 2018) ($IR^*/GDP, A^*/GDP, L^*/GDP$)

Determinants of extreme capital flow events II

- **Specification**:

$$\Pr(e_{it} = 1) = \Lambda\left(\alpha_0 PUSH_{t-1} + \alpha_1 PULL_{i,t-1} + \alpha_2 FMDEV_{i,t-4} + \alpha_3 XSTAB_{i,t-4} + \right. \\ \left. + \alpha_4 FMDEV_{i,t-4} \times XSTAB_{i,t-4}\right) + \varepsilon_{it} \quad (1)$$

  - Event ($e = 1$); indicates significant extreme capital flows events
  - Λ is a cloglog function, as these events have low frequency (~ 0.1)
  - *FMDEV* is a measure of financial market development.
  - Standard errors are clustered at the country level

- **Baseline**
  - Exclude safe havens (Germany, Japan, Switzerland, U.K. and U.S.) (Habib et al., 2020; Avdjiev et al., 2025)
  - Events on non-reserve capital flows
  - *De jure* *XSTAB* variables

Benchmark results: Margins

Financial market depth associated to lower likelihood of net stops through retrenchment

	(1)	(2)	(3)	(4)		(5)		(6)	(7)	
	Net Stop	Stop	Flight	Net Stop	Stop	Net Stop	Flight	Retrench.	Retrench.	Stop
	$\downarrow NL^*$	$\downarrow L^*$	$\uparrow A^*$	$\downarrow NL^*$	$\downarrow L^*$	$\downarrow NL^*$	$\uparrow A^*$	$\downarrow A^*$	$\downarrow A^*$	$\downarrow L^*$
VIX_{t-1}	0.059**	0.047*	−0.046	0.106		0.132		0.062**	0.005	
SSR_{t-1}	0.017**	0.010*	0.025***	0.013		0.034		0.013**	0.016	
Δy^*_{t-1}	−0.008	0.008	0.004	−0.001		−0.039		−0.006	0.001	
$r_{i,t-1}$	0.002	0.001	−0.001	0.016**		−0.001		−0.001	−0.010	
$\Delta TOT_{i,t-1}$	0.005	−0.008	0.010*	0.010		0.027**		−0.005	−0.009	
$\Delta y_{i,t-1}$	−0.005	−0.006*	0.002	−0.009		0.002		−0.006*	−0.008	
$(BANKCREDIT/GDP)_{i,t-4}$	0.001***	0.000	0.000	0.001		0.002*		0.000*	0.000	
$FMDEPTH_{i,t-4}$	−0.083*	−0.016	0.031	−0.271		−0.276		0.106***	0.397*	
$ERA_{i,t-4}$	−0.018	−0.014	0.015	−0.015		0.016		−0.034	−0.274**	
$KAO_{i,t-4}$	−0.015	−0.030	0.020	0.049		−0.023		−0.049	0.200	
$KAI_{i,t-4}$	0.065	0.020	−0.059	0.254		0.095		0.108	−0.219	
$CONTAGION_{i,t-1}$	0.002**	0.003***	0.002***	0.002		0.000		0.002**	0.001	
Obs.	3555	3555	3555	412		400		3555	412	
AUROC	0.754	0.792	0.736	0.813		0.713		0.709	0.809	

Marginal effects from the estimation of eq. (1) using baseline strategy: events on non-reserve capital flows, sample excluding safe havens and using *de jure* variables of external stabilisation.
Standard errors in parentheses. $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Alternative Results: Margins

FM Depth is the most associated factor. IIs associated a retrenchment during stops.

	Safe havens excluded								All countries							
	Non-reserve				All flows				Non-reserve				All flows			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Net Stop	$-^{*}$	o	o	o	$-^{*}$	o	o	o	$-^{*}$	o	o	o	$-^{*}$	$-^{*}$	o	o
Stop	o	o	o	o	o	o	o	o	o	o	$+^{*}$	o	o	o	$+^{*}$	o
Flight	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Retrenchment	$+^{***}$	o	o	o	o	o	o	o	$+^{***}$	o	o	o	o	o	o	o
Net Stop | Stop	o	o	o	o	$-^{**}$	o	o	o	o	o	o	$+^{*}$	$-^{**}$	o	o	o
Retrenchment | Stop	$+^{*}$	$+^{***}$	$+^{*}$	$-^{*}$	$+^{*}$	o	o	o	$+^{*}$	$+^{***}$	$+^{*}$	o	$+^{*}$	o	o	o

Column letters a-d indicate an ***FMDEV*** measurement: (a) ***FMDEPTH***, (b) ***II/GDP***, (c) ***II/(II + BANK)***, (d) FX Risk (L^{*}_{DC}/L^{*}).
Marginal effects from the estimation of eq. (1) departing from the baseline strategy (which is the first column): safe havens excluded/included or non-reserve/total capital flows.
Significance: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Interaction coefficients

	Safe havens excluded								All countries							
	Non-reserve				All flows				Non-reserve				All flows			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
								Net Stop								
$FMDEV_{i,t-4} \times ERA_{i,t-4}$	o	o	$+^{*}$	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAO_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAI_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
								Stop								
$FMDEV_{i,t-4} \times ERA_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAO_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAI_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
								Retrenchment								
$FMDEV_{i,t-4} \times ERA_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAO_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAI_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
								Net Stop | Stop								
$FMDEV_{i,t-4} \times ERA_{i,t-4}$	o	$-^{*}$	o	o	o	$-^{*}$	o	o	o	o	o	$+^{**}$	o	$-^{*}$	o	o
$FMDEV_{i,t-4} \times KAO_{i,t-4}$	o	o	o	o	$+^{*}$	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAI_{i,t-4}$	o	$+^{*}$	o	$+^{*}$	$-^{*}$	$+^{*}$	o	o	o	$+^{*}$	o	o	o	$+^{*}$	o	o
								Retrenchment | Stop								
$FMDEV_{i,t-4} \times ERA_{i,t-4}$	o	$+^{*}$	o	o	o	o	o	o	o	o	o	$+^{*}$	o	o	o	$+^{**}$
$FMDEV_{i,t-4} \times KAO_{i,t-4}$	o	o	o	o	$-^{*}$	o	o	o	o	o	o	o	o	o	o	o
$FMDEV_{i,t-4} \times KAI_{i,t-4}$	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o

Column letters a-d indicate an ***FMDEV*** measurement: (a) ***FMDEPTH***, (b) ***II/GDP***, (c) ***II/(II + BANK)***, (d) FX Risk (L^{*}_{DC}/L^{*}).
Coefficients of the interaction of financial market development measurements with the corresponding *de jure* measure of external stabilisation policy, using eq. (1)
Significance: $^{*}p < 0.05$,** $p < 0.01$,*** $p < 0.001$.

Conclusions

- **Financial market depth is strongly associated to:**
  - Lower probability of net stops, and higher for retrenchment | stop
  - Holds when including safe havens and/or *IR** flows
  - Robust to use of *de facto* variables ▸ *De facto* margins
- ***I*I*s*' size is associated to higher likelihood of retrenchment | stop**
  - Not when including *IR** flows
  - Role in cross-border diversification by the private sector
  - Few significant interactions between *XSTAB* and *FMDEV*
- **FX Risk is not associated to any event of extreme capital flows**
  - However, it will matter for the resilience of bank credit

Credit resilience: Data & Methods I

- Now we assess the resilience of banking credit under different levels of ***FMDEV***
- **Data for bank credit**
  - From BIS, complemented with data from IFS for some emerging markets
  - Corresponds to banking credit to the non-financial private sector, deflated by CPI
- **We use local projections** as in Jordà and Taylor (2016) relying on an inverse probability weighting scheme (IPW).
- We estimate the average treatment effect (ATE, with symbol Λ) over horizons $h \in \{-K, \cdots, 0, \cdots, H\}$ after the start of an event ($\Delta e_{it} = 1$).

$$\Lambda^h = \mathbb{E}\left\{\left(\ell_{i,t+h} - \ell_{i,t-1}\middle|X_{it}\right)\left[\frac{1\{\Delta e_{it}=1\}}{p\left(X_{it},\psi\right)} - \frac{1\{\Delta e_{it}=0\}}{1-p\left(X_{it},\psi\right)}\right]\right\} \text{ for all } h > 0, \qquad (2)$$

Credit resilience: Data & Methods II

- **Propensity scores** $p\left(X_{it}, \hat{\psi}\right)$ are estimated using eq. (1) with some changes:
  - Includes *PUSH* and *PULL* variables in changes, and lag their levels.
  - Includes *XSTAB* variables. *FMDEV* variable included in the outcome model later

- **Outcome model**: $$\ell_{i,t+h} - \ell_{i,t-1} = \Lambda^h \Delta e_{it} + \beta^h X_{it} + \alpha_i^h + \delta_t^h + u_{it}^h \tag{3}$$

  where X includes 2 lags of $\Delta\ell$, *PULL* and *XSTAB* variables as in eq. (1), the banking-sector Z-score (GFDD) and twoway fixed effects.

- **Heterogeneity in** *FMDEV* is included as follow.

$$\ell_{i,t+h} - \ell_{i,t-1} = \Lambda_0^h \Delta e_{it} + \Lambda_1^h f_{it} \Delta e_{it} + \lambda^h f_{it} + \beta^h X_{it} + \alpha_i^h + \delta_t^h + u_{it}^h \tag{4}$$

  where $f_{it} = \mathbf{1}$ if $FMDEV_{i,t-4} > FMDEV_{p75}$

- *ATE* efficient estimator (Lunceford and Davidian, 2004)

Benchmark Results

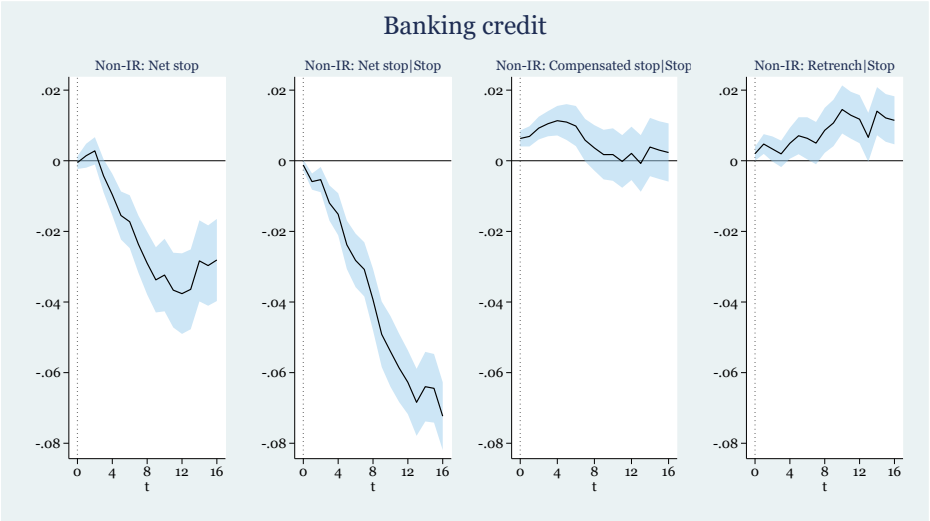

Figure 1: Impact of an extreme event in non-reserve capital flows on real banking credit to the private non-financial sector. The sample excludes safe havens. The area indicates a confidence interval at 5% significance using standard errors of the efficient *ATE* estimator.

Benchmark Results: Heterogeneous impact of net stops

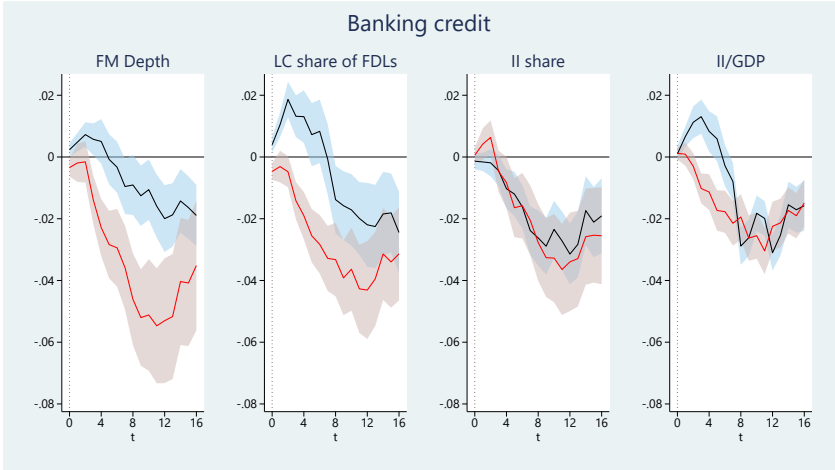

Figure 2: Impact of an extreme event in non-reserve capital flows on real banking credit to the private non-financial sector, according to the level of financial market development. This is proxied by four measures: the financial market depth index (FM Depth), the share of foreign debt liabilities in local currency (LC share of FDL), the share of the institutional investors' assets over the financial system assets (II share), and the ratio of institutional investors' assets over GDP (II/GDP). Blue lines indicates the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval using standard errors of the efficient ***ATE*** estimator. The sample excludes safe havens.

Conclusions

- Bank credit is significantly impacted by net stops, especially net stop | stop
  1. Impact: 3% - 4% from baseline after 12 quarters (5% - 6% if conditional on stops)
  2. Credit increases around 1% in averted net stops or simultaneous stop & retrench
  3. Results are robust to inclusion of safe havens and/or IR^*

  ▸ Incl. safe havens ▸ Incl. IR^*

- Under net stops, economies with less developed financial markets show less resilient banking credit
  1. More developed economies register an initial increase before turning negative.
  2. This holds for FM Depth, IIs size and FX risk.
  3. Results are robust for FM Depth to inclusion of safe havens and/or IR^*.
  4. Results are less robust for II size or FX risk, to the inclusion of safe havens

  ▸ Incl. safe havens ▸ Incl. IR^*

Final remarks

- **Financial market depth is strongly associated with**:
  - Lower probability of net stops
  - Higher probability of retrenchments (particularly conditional on stops),
  - More resilient banking credit when net stops materialise.
- **This highlights the following aspects**:
  - Complete markets are ideal for external stability and resilient domestic bank credit
  - Imperfections (informational, transaction costs, etc.) relevant for retrenchment
  - Low FX risks not associated to prevention, but with resilience
- **Future work**
  - Distinguish mechanisms of bank credit resilience:
    - Stabilisation of asset prices or financial income (credit demand side)
    - Diversified bank funding, stable costs or lower exposure (credit supply side)
  - Data on total credit
    - Role of non-banks
    - Data from BIS on total credit, excl. cross-border credit

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Country sample

Return

Emerging-market economies	Advanced economies	
Argentina (1978q2-2022q4)	Australia (1978q2-2022q4)	Slovakia (1993q1-2022q4)
Bangladesh (1978q2-2022q4)	Austria (1978q2-2022q4)	Spain (1978q2-2022q4)
Bolivia (1988q1-2022q4)	Belgium (2002q1-2022q4)	Sweden (1978q2-2022q4)
Brazil (1978q2-2022q4)	Canada (1978q2-2022q4)	Switzerland (1999q1-2022q4)
Chile (1991q1-2022q4)	Croatia (1993q1-2022q4)	Taiwan (1981q1-2022q4)
China (1998q1-2022q4)	Czech Republic (1993q1-2022q4)	United Kingdom (1978q2-2022q4)
Colombia (1991q1-2022q4)	Denmark (1978q2-2022q4)	United States (1978q2-2022q4)
Costa Rica (1999q1-2022q4)	Estonia (1992q1-2022q4)	
Guatemala (1978q2-2022q4)	Finland (1978q2-2022q4)	
Hungary (1989q4-2022q4)	France (1978q2-2022q4)	
India (1978q2-2022q4)	Germany (1978q2-2022q4)	
Indonesia (1981q1-2022q4)	Greece (1999q1-2022q4)	
Malaysia (1999q1-2022q4)	Hong Kong (1998q4-2022q4)	
Mexico (1979q1-2022q4)	Iceland (1978q2-2022q4)	
Panama (1998q1-2022q3)	Ireland (1981q1-2022q4)	
Peru (1991q1-2022q4)	Israel (1978q2-2022q4)	
Philippines (1978q2-2022q4)	Italy (1978q2-2022q4)	
Poland (1984q1-2022q4)	Japan (1978q2-2022q4)	
Romania (1991q1-2022q4)	Korea (1978q2-2022q4)	
Russia (1994q1-2022q4)	Latvia (1993q1-2022q4)	
Slovenia (1992q1-2022q4)	Lithuania (1993q1-2022q4)	
South Africa (1985q1-2022q4)	Netherlands (1978q2-2022q4)	
Sri Lanka (1978q2-2021q1)	New Zealand (1980q1-2022q4)	
Thailand (1978q2-2022q4)	Norway (1978q2-2022q4)	
Türkiye (1984q1-2022q4)	Portugal (1978q2-2022q3)	
Venezuela (1994q1-2019q1)	Singapore (1995q1-2022q4)	

Classification as in World Economic Outlook 2023.

Events frequency

Return

	Advanced	Emerging	Total
Net stop	0.107	0.097	0.103
Bonanza	0.114	0.110	0.112
Stop	0.118	0.093	0.108
Surge	0.122	0.133	0.127
Retrenchment	0.116	0.107	0.112
Flight	0.124	0.130	0.126
Net stop|Stop	0.327	0.561	0.412
Flight|Stop	0.012	0.088	0.039
Retrench|Stop	0.659	0.361	0.551

The frequency corresponds to the share of observations where the country in the group under considerations was in the mentioned event, among those observations registering a stop in inflows. The samples considers data from 1978q2 until 2022q4. The classification of countries is shown in appendix 7.

Event correlations

Return

	Net stop	Bonanza	Stop	Surge	Retrench	Flight
All countries						
Bonanza	−0.121***	1				
Stop	0.381***	−0.055***	1			
Surge	−0.084***	0.350***	−0.132***	1		
Retrench	0.031	0.105***	0.449***	−0.104***	1	
Flight	0.099***	−0.012	−0.088***	0.377***	−0.137***	1
Advanced economies						
Bonanza	−0.127***	1				
Stop	0.292***	−0.039	1			
Surge	−0.069***	0.284***	−0.137***	1		
Retrench	0.038	0.124***	0.587***	−0.109***	1	
Flight	0.083***	−0.006	−0.125***	0.476***	−0.139***	1
Emerging economies						
Bonanza	−0.115***	1				
Stop	0.503***	−0.077***	1			
Surge	−0.102***	0.428***	−0.126***	1		
Retrench	0.022	0.080***	0.265***	−0.098***	1	
Flight	0.120***	−0.019	−0.040	0.264***	−0.134***	1

Correlation between the variables registering the occurrence of the given event. The sample considers data from 1978q2 until 2022q4, including the sample of emerging market economies in appendix 7.
Sidak-adjusted significance level: $^{*}p < 0.05$,** $p < 0.01$,*** $p < 0.001$.

Identified events I

Return

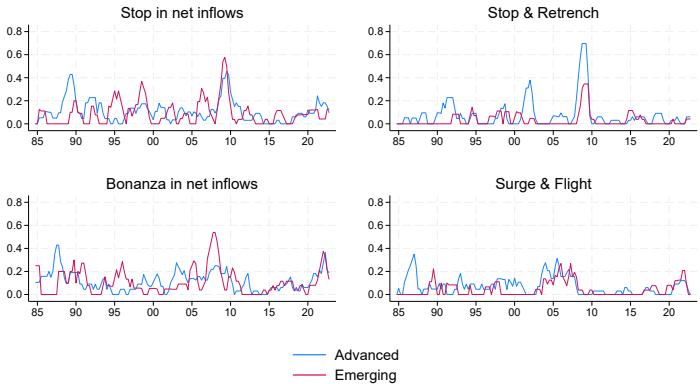

Figure 3: Share of countries in the sample that experience a given event in net non-reserve capital flows, or simultaneous compensating events in gross non-reserve capital flows. By country classification as shown in appendix 7.

Identified events II

Return

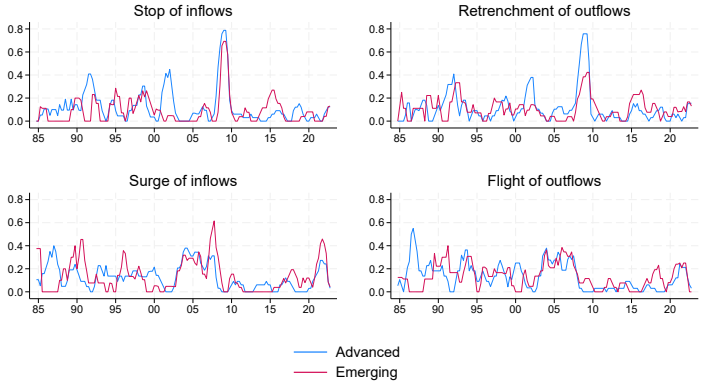

Figure 4: Share of countries in the sample that experience a given event in gross non-reserve capital flows. By country classification as shown in appendix 7.

Marginal effects of *FMDEV* variables

***De facto* measurement** Return

	Safe havens excluded								**All countries**							
	Non-reserve				All flows				Non-reserve				All flows			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Net Stop	$-^{*}$	o	o	$+^{*}$	$-^{*}$	o	o	o	$-^{**}$	o	o	o	$-^{*}$	o	o	o
Stop	o	o	o	$+^{*}$	o	o	o	$+^{*}$	o	o	o	$+^{**}$	o	o	o	$+^{**}$
Flight	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Net Stop|Stop	o	$-^{***}$	o	o	$-^{***}$	o	o	o	o	$-^{***}$	o	o	$-^{***}$	o	o	o
Net Stop|Flight	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	$-^{**}$
Retrenchment	$+^{*}$	o	o	o	o	o	o	$+^{***}$	$+^{*}$	o	o	o	o	o	o	$+^{***}$
Retrenchment|Stop	o	o	o	o	o	o	$-^{*}$	o	o	$+^{***}$	o	o	o	o	$-^{*}$	$+^{*}$

Notes: a: ***FMDEPTH***, b: ***II/GDP***, c: $II/(II + BANK)$, d: FX Risk (L^{*}_{DC}/L^{*}).
Significance: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Coefficients of *FMDEV* and *XSTAB* variables

***De facto* measurement** Return

	Safe havens excluded								All countries							
	Non-reserve				All flows				Non-reserve				All flows			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Net Stop																
$FMDEV_{i,t-4} \times (IR/GDP)_{i,t-4}$	0	0	0	0	0	0	0	$+^{*}$	$-^{*}$	0	$-^{*}$	0	0	0	0	0
$FMDEV_{i,t-4} \times (A^{*}/GDP)_{i,t-4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
$FMDEV_{i,t-4} \times (L^{*}/GDP)_{i,t-4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stop																
$FMDEV_{i,t-4} \times (IR/GDP)_{i,t-4}$	0	0	0	0	$-^{**}$	0	0	0	0	0	$-^{*}$	$-^{*}$	0	0	$-^{*}$	0
$FMDEV_{i,t-4} \times (A^{*}/GDP)_{i,t-4}$	0	0	0	$+^{*}$	0	0	0	$+^{*}$	0	0	$+^{*}$	0	0	0	$+^{*}$	0
$FMDEV_{i,t-4} \times (L^{*}/GDP)_{i,t-4}$	0	0	0	$-^{*}$	0	0	0	$-^{*}$	0	0	0	0	0	0	0	0
Net Stop | Stop																
$FMDEV_{i,t-4} \times (IR/GDP)_{i,t-4}$	0	$-^{*}$	$-^{*}$	0	0	$-^{*}$	0	0	0	0	0	0	0	0	0	0
$FMDEV_{i,t-4} \times (A^{*}/GDP)_{i,t-4}$	0	0	0	0	0	$+^{*}$	0	0	0	0	0	0	0	0	0	0
$FMDEV_{i,t-4} \times (L^{*}/GDP)_{i,t-4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retrenchment																
$FMDEV_{i,t-4} \times (IR/GDP)_{i,t-4}$	0	0	0	0	$-^{***}$	$-^{**}$	$-^{**}$	0	0	0	0	0	$-^{***}$	$-^{*}$	$-^{**}$	$+^{*}$
$FMDEV_{i,t-4} \times (A^{*}/GDP)_{i,t-4}$	0	0	0	$+^{*}$	0	0	0	$+^{**}$	0	0	0	$+^{*}$	$-^{*}$	0	0	$+^{**}$
$FMDEV_{i,t-4} \times (L^{*}/GDP)_{i,t-4}$	0	0	0	$-^{*}$	0	0	0	$-^{**}$	0	0	0	0	0	0	0	0
Retrenchment | Stop																
$FMDEV_{i,t-4} \times (IR/GDP)_{i,t-4}$	0	0	0	0	$-^{***}$	$-^{*}$	$-^{**}$	0	0	0	0	0	0	$-^{*}$	$-^{**}$	0
$FMDEV_{i,t-4} \times (A^{*}/GDP)_{i,t-4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$+^{*}$
$FMDEV_{i,t-4} \times (L^{*}/GDP)_{i,t-4}$	0	0	0	0	0	0	0	0	$-^{**}$	0	0	0	0	0	0	0

Notes: a: ***FMDEPTH***, b: II/GDP, c: $II/(II + BANK)$ & d: FX Risk (L^{*}_{DC}/L^{*})
Significance: $^{*}p < 0.05$,$^{**}p < 0.01$,$^{***}p < 0.001$.

Benchmark Results

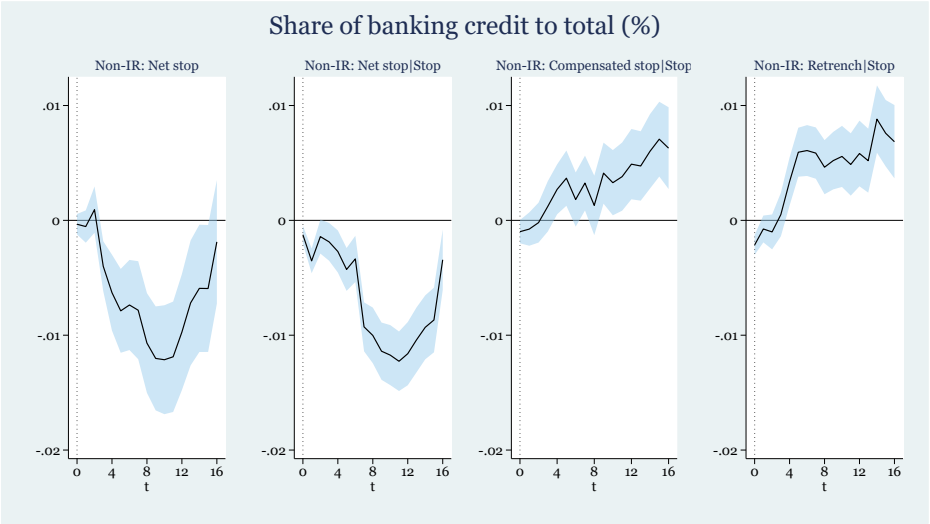

Figure 5: Impact of an extreme event in non-reserve capital flows on the share of banking credit of the total credit to the non-financial private sector. The sample excludes safe havens. The area indicates a confidence interval at 5% significance using standard errors of the efficient ***ATE*** estimator.

Benchmark Results: Heterogeneous impact of net stops

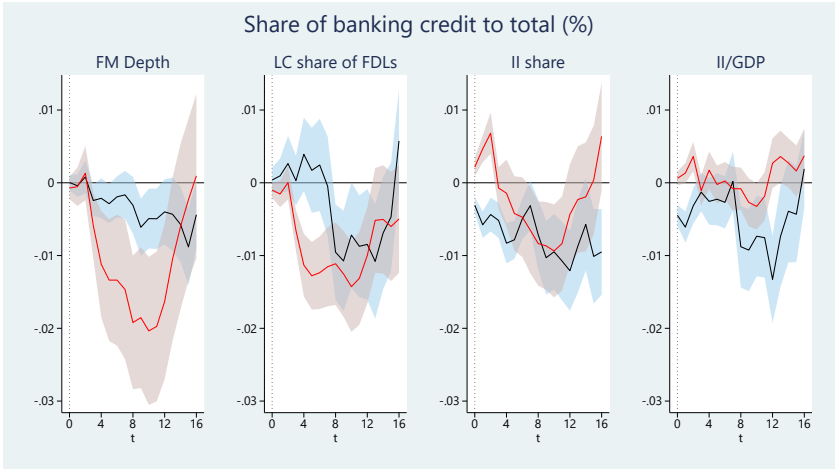

Figure 6: Impact of an extreme event in non-reserve capital flows on the share of banking credit of the total credit to the non-financial private sector, according to the level of financial market development. This is proxied by four measures: the financial market depth index (FM Depth), the share of foreign debt liabilities in local currency (LC share of FDL), the share of the institutional investors' assets over the financial system assets (II share), and the ratio of institutional investors' assets over GDP (II/GDP). Blue lines indicate the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval using standard errors of the efficient ***ATE*** estimator. The sample

Alternative Results: Including Safe Havens I

Return

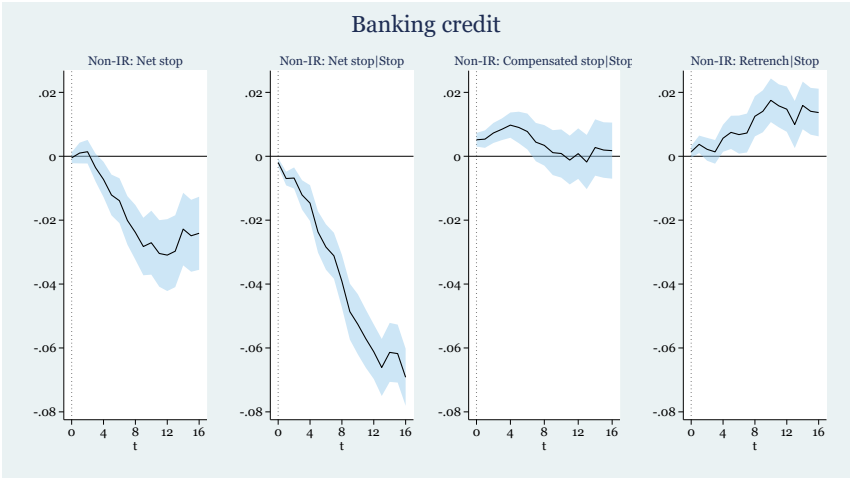

Figure 7: Impact of an extreme event in non-reserve capital flows on real banking credit to the private non-financial sector. The sample include safe havens.

Alternative Results: Including Safe Havens II

Return

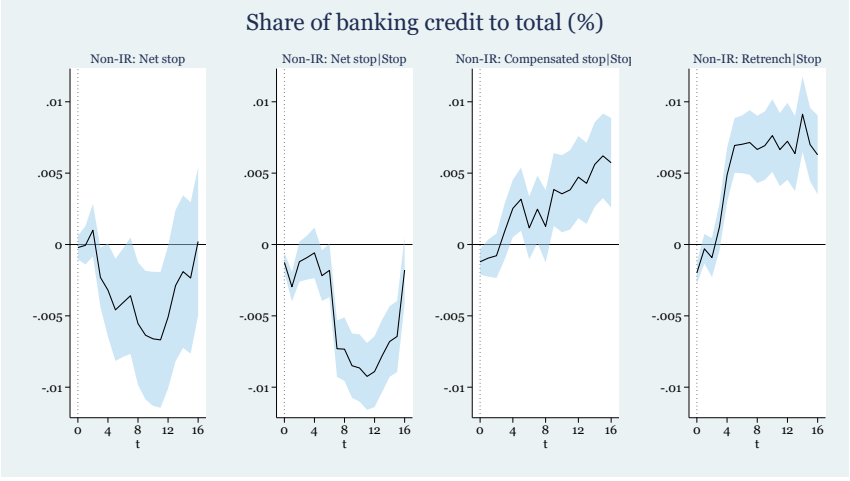

Figure 8: Impact of an extreme event in non-reserve capital flows on the share of banking credit of the total credit to the non-financial private sector. The sample include safe havens.

Alternative Results: Heterogeneous impact of net stops I

Including Safe Havens

Return

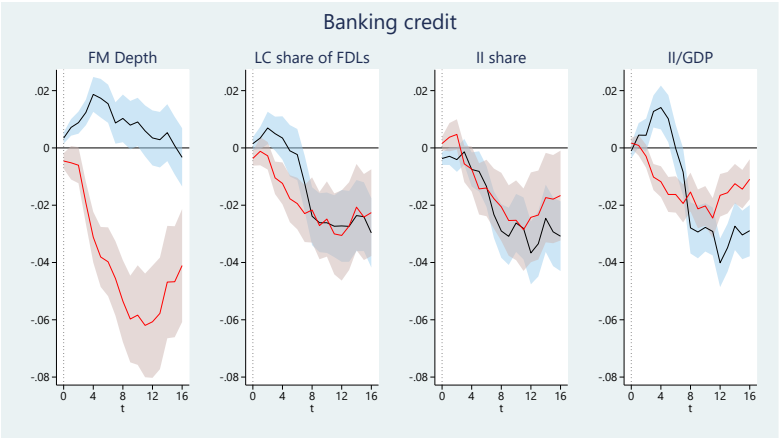

Figure 9: Impact of an extreme event in non-reserve capital flows on real banking credit to the private non-financial sector, according to the level of financial market development. This is proxied by four measures: financial market depth index (FM Depth), share of foreign debt liabilities in local currency (LC share of FDLs), share of the institutional investors assets over financial system assets (II share), and the ratio of institutional investors assets over GDP (II/GDP). Blue lines indicates the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval. The sample includes safe havens.

Alternative Results: Heterogeneous impact of net stops II

Including Safe Havens

Return

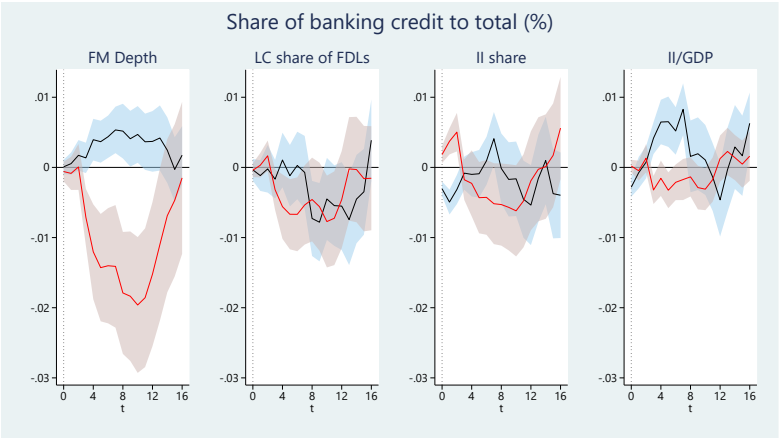

Figure 10: Impact of an extreme event in non-reserve capital flows on the share of banking credit of the total credit to the non-financial private sector, according to the level of financial market development. This is proxied by four measures: financial market depth index (FM Depth), share of foreign debt liabilities in local currency (LC share of FDLs), share of the institutional investors assets over financial system assets (II share), and the ratio of institutional investors assets over GDP (II/GDP). Blue lines indicates the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval. The sample includes safe havens.

Alternative Results: Including IR^* I

Return

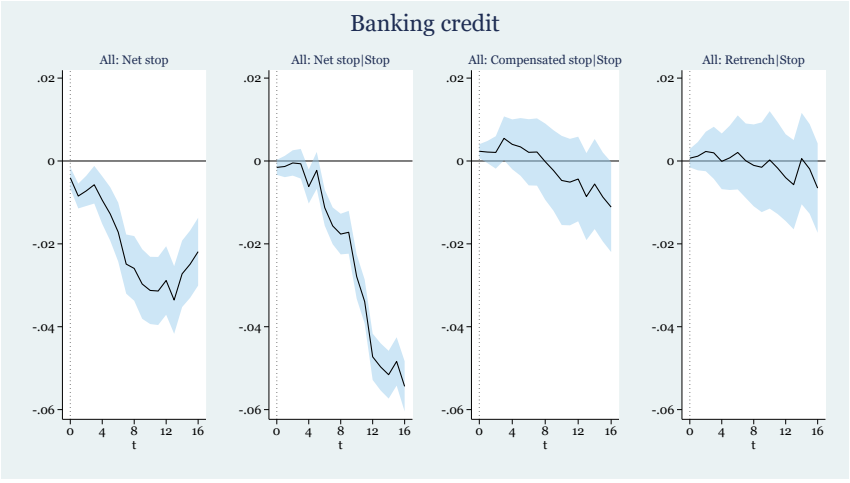

Figure 11: Impact of an extreme event in total capital flows (including international reserves) on real banking credit to the private non-financial sector. The sample excludes safe havens.

Alternative Results: Including *IR** II

Return

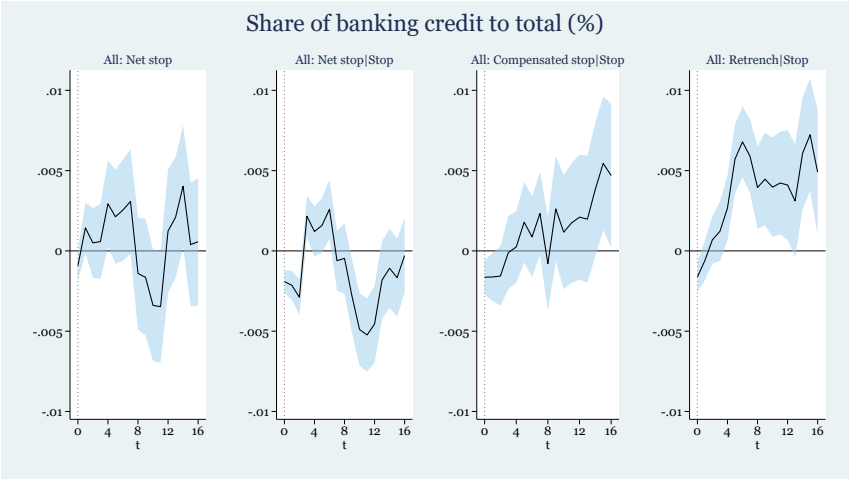

Figure 12: Impact of an extreme event in total capital flows (including international reserves) on the share of banking credit of the total credit to the non-financial private sector. The sample excludes safe havens.

Alternative Results: Heterogeneous impact of net stops I

Including IR^* Return

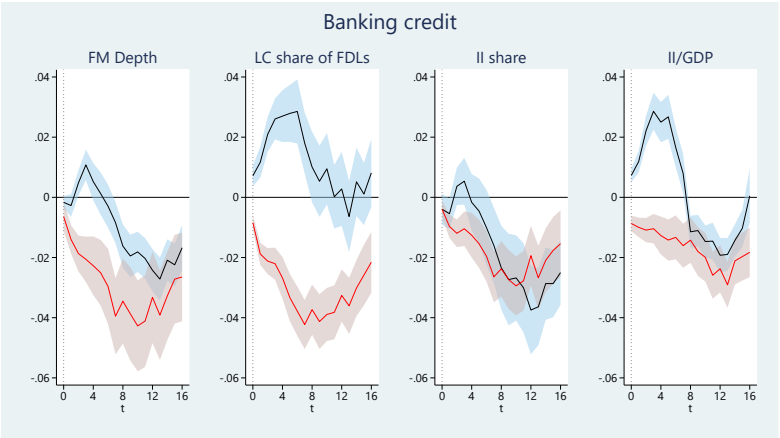

Figure 13: Impact of an extreme event in total capital flows on real banking credit to the private non-financial sector, according to the level of financial market development. This is proxied by four measures: financial market depth index (FM Depth), share of foreign debt liabilities in local currency (LC share of FDLs), share of the institutional investors assets over financial system assets (II share), and the ratio of institutional investors assets over GDP (II/GDP). Blue lines indicates the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval. The sample excludes safe havens.

Alternative Results: Heterogeneous impact of net stops II

Including *IR** Return

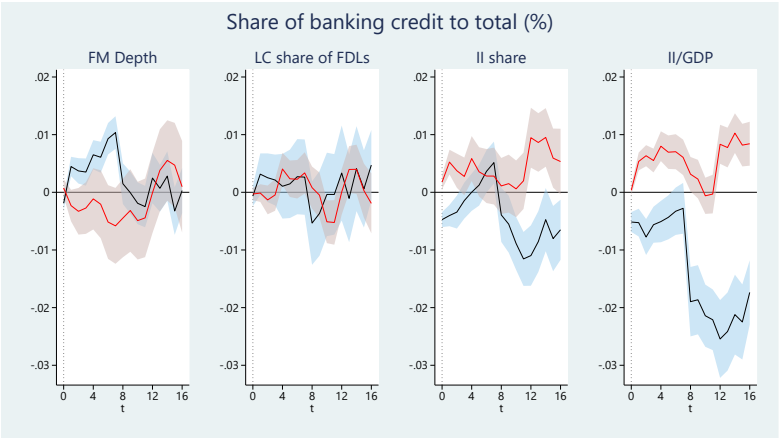

Figure 14: Impact of an extreme event in total capital flows on the share of banking credit of the total credit to the non-financial private sector, according to the level of financial market development. This is proxied by four measures: financial market depth index (FM Depth), share of foreign debt liabilities in local currency (LC share of FDLs), share of the institutional investors assets over financial system assets (II share), and the ratio of institutional investors assets over GDP (II/GDP). Blue lines indicates the case for high levels of financial market development (i.e., the variable is above the 75th percentile), and red for the low levels. The areas indicate a 95% confidence interval. The sample excludes safe havens.

Overlapping Assumptions

Benchmark estimation

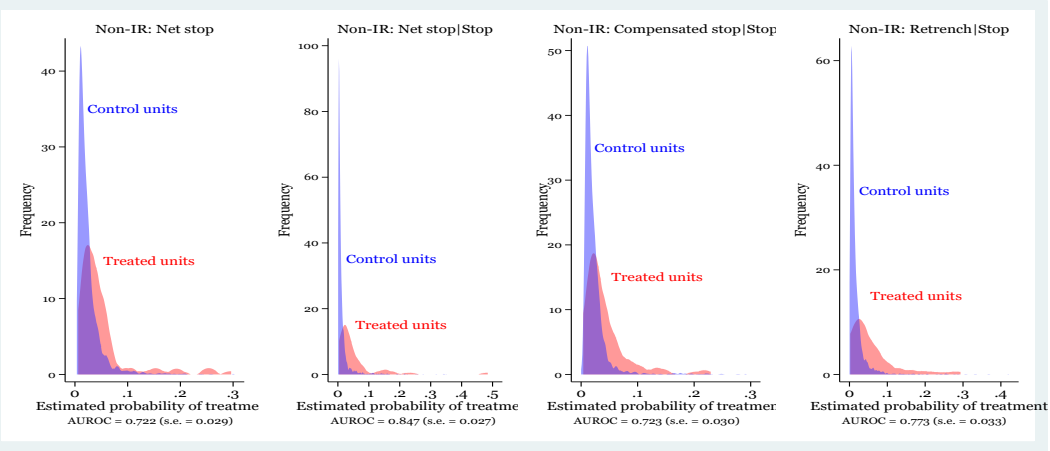

Figure 15: Distribution of control and treatment units. Treatment units are those where an extreme event in non-reserve capital flows has occurred, and the rest are controls. We exclude observations where the unit stops being in treatment, only for that period. Events included are net stops, a stop accompanied by a net stop, a compensated stop (i.e., a stop unaccompanied by a net stop), and a stop accompanied by a retrenchment. We proxy the quality of the classification using the area under the ROC curve, and its standard error. Safe havens are excluded from the sample.

Overlapping Assumptions

Including IR^*

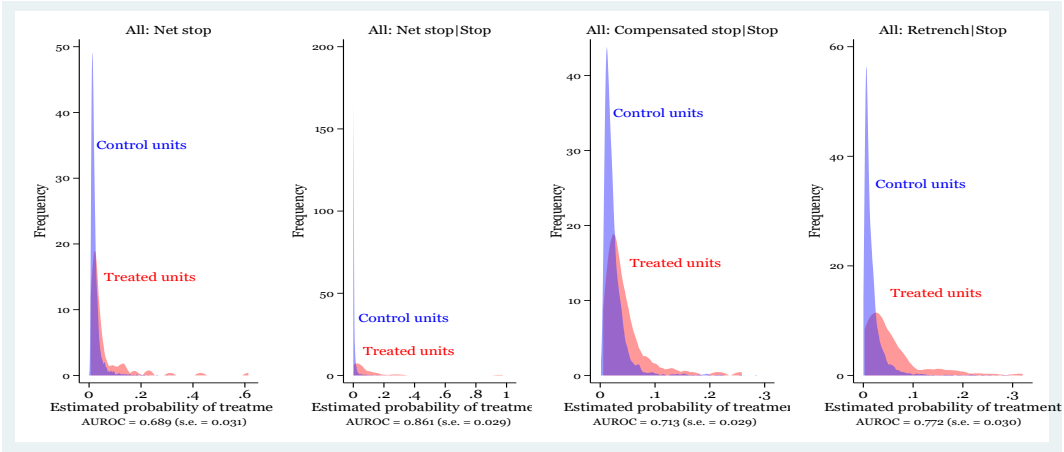

Figure 16: Distribution of control and treatment units. Treatment units are those where an extreme event in total capital flows has occurred, and the rest are controls. We exclude observations where the unit stops being in treatment, only for that period. Events included are net stops, a stop accompanied by a net stop, a compensated stop (i.e., a stop unaccompanied by a net stop), and a stop accompanied by a retrenchment. We proxy the quality of the classification using the area under the ROC curve, and its standard error. Safe havens are excluded from the sample.

Overlapping Assumptions

Including safe havens

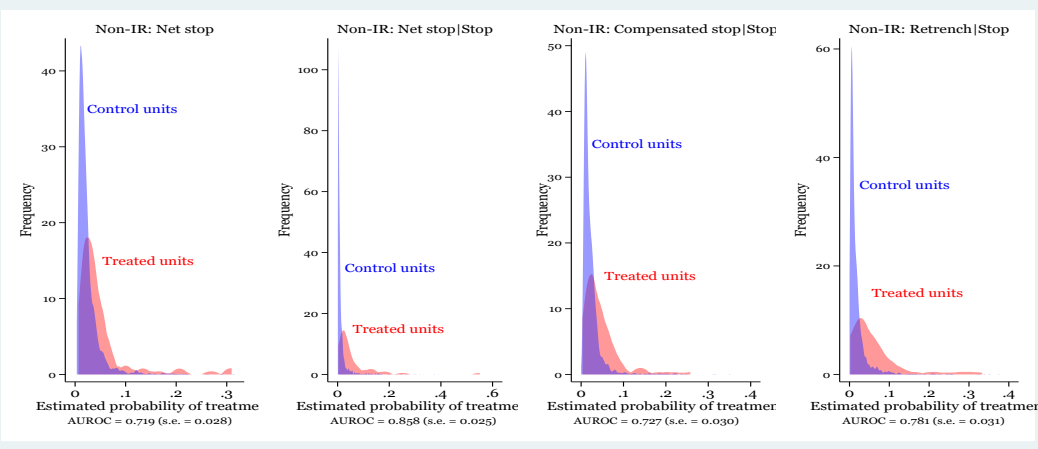

Figure 17: Distribution of control and treatment units. Treatment units are those where an extreme event in non-reserve capital flows has occurred, and the rest are controls. We exclude observations where the unit stops being in treatment, only for that period. Events included are net stops, a stop accompanied by a net stop, a compensated stop (i.e., a stop unaccompanied by a net stop), and a stop accompanied by a retrenchment. We proxy the quality of the classification using the area under the ROC curve, and its standard error. Safe havens are included in the sample.

Overlapping Assumptions

Including safe havens & IR^*

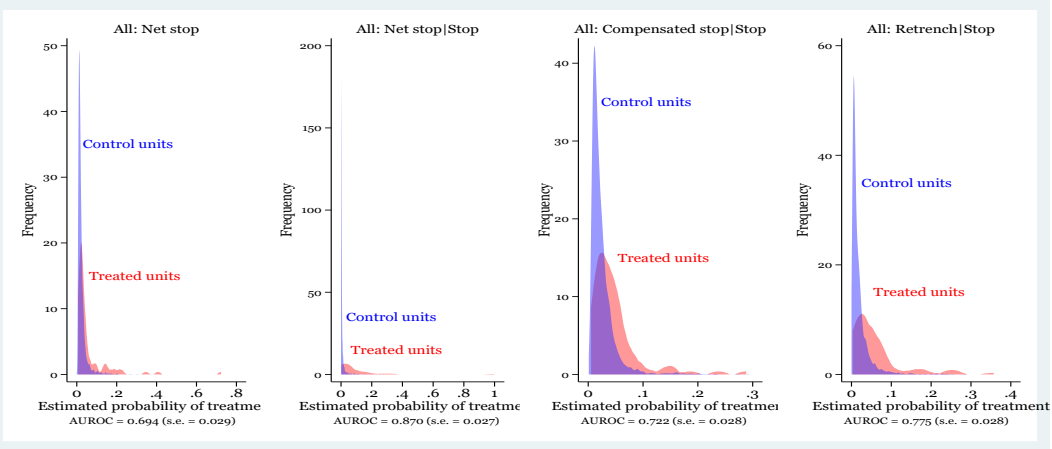

Figure 18: Distribution of control and treatment units. Treatment units are those where an extreme event in total capital flows has occurred, and the rest are controls. We exclude observations where the unit stops being in treatment, only for that period. Events included are net stops, a stop accompanied by a net stop, a compensated stop (i.e., a stop unaccompanied by a net stop), and a stop accompanied by a retrenchment. We proxy the quality of the classification using the area under the ROC curve, and its standard error. Safe havens are included in the sample.