

# Should governments encourage capital flows?

## Causal effects of capital flows on recipient economies

Nicolas End<sup>1,2</sup> Takashi Onoda<sup>1</sup>

<sup>1</sup>Japan Bank for International Cooperation (JBIC)

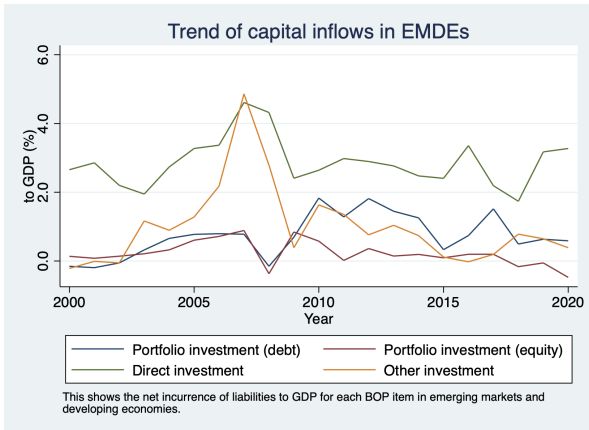
<sup>2</sup>International Monetary Fund (IMF)

July 2022

These slides reflect a work in progress; results and interpretation thereof are to be understood as tentative and subject to further refinements. The views expressed herein are ours only and do not necessarily represent the positions of either JBIC, the IMF, the IMF Executive Board, or IMF management. JBIC accepts no liability whatsoever for any direct, indirect, or consequential loss of any kind arising out of these materials.

## Motivation

- Both AEs and EMs receiving a substantial amount of capital inflows every year. But, volatile (e.g., Great Recession)
- Rising world's gross external liabilities (> 200% of global GDP) suggests global economy susceptible to shocks in capital flows.
- Now, the wave of interest rate hikes and the QT => higher uncertainty around capital flows



- A lot of research on association with business cycles, but studies on causality is limited.
- Findings in previous studies are inconclusive.
  - Expansionary effects
    - Non-bond flows (Blanchard et al. 2016)
    - Debt-based flows (Davis 2015)
    - Both equity and debt portfolio inflows (Sanders 2020)
    - Bank lending flows (Aldasoro et al. 2020)
  - No expansionary effect
    - Bond flows (Blanchard et al. 2016)
    - Equity-based capital flows (incl. FDI) (Davis 2015)

- 1 How does each type of capital flow affect recipient economies: GDP, GDP components, and other macro variables?
- 2 How does the effect vary depending on investment environments (e.g., capital controls)? (Not today)

We tackle them by reduced-form panel regressions with a IV that is new in the literature.

## OLS model

$$\Delta U_{i;t} = F_{i;t} + \sum_{j \neq i} \alpha_j X_{j|i;t} + \sum_{s \neq t} \beta_s s_{s;t} + \epsilon_{i;t} \quad (1)$$

*Capital in ow*
*growth rate*
*investment position in i*

Notice that  $F_{i;t} = \Delta X_{i|i;t}$  where  $X_{i|i;t}$  is the investment position of all the countries in country  $i$ .

## Shift-share instrument variables (IV) *a la* Bartik:

$$Z_{i;t} = \sum_{j \neq i} \frac{X_{j|i;t-1}}{X_{i|i;t-1}} g(X_{j|i;t-1}^{Wni;t}) \sum_{s \neq t} \beta_s X_{i|i;t} \quad (2)$$

*share*
*growth rate*
*investment position in i*

where

$$X_{i|i;t-1} = \sum_{j \neq i} X_{j|i;t-1}$$

$$X_{j|i;t-1}^{Wni;t} = \sum_{f \neq j} \beta_f X_{j|i;t-1}$$

## Capital flows

- All items
  - The balance of payments (BoP) by IMF

## Bilateral investment positions for shares and growth rates in IV

- Portfolio investment (equity and bond)
  - Coordinated Portfolio Investment Survey (CPIS) by IMF, 2001-2020
  - Restated Bilateral External Portfolios by Coppola et al. (2021), 2007-2017
    - reallocates investment positions in tax havens (residency basis → nationality basis )
- Direct investment
  - Coordinated Direct Investment Survey (CDIS) by IMF, 2009-2020
- Other investment
  - Locational Banking Statistics (LBS) by BIS, 1977-2021

⇒ Use annual data since 2001

## Impact on real GDP growth in EMDE

- Other investment has a positive impact
  - one percentage point exogenous inflow (as percent of GDP) raises real GDP growth by .47 percentage point
- IVs are strong for equity portfolio and other investment

	$\Delta \log(GDP)$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Portfolio investment (bond)	0.14 (0.10)				-1.08 (1.18)			
Portfolio investment (equity)		0.31 (0.13)				0.035 (0.43)		
Direct investment			0.29 (0.11)				4.17 (7.28)	
Other investment				0.19 (0.064)				0.47 (0.15)
OLS/IV	OLS	OLS	OLS	OLS	IV	IV	IV	IV
N	913	910	797	1,425	913	910	797	1,425
Period	'02-'20	'02-'20	'10-'20	'02-'21	'02-'20	'02-'20	'10-'20	'02-'21
1st stage effective F stat					2.4	11.6	0.3	19.5
Frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

Notes: Standard errors, clustered by countries, in parentheses;  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ ,

$p < 0.001$ . The independent variables are standardized by GDP in the previous year. All regressions include country and year fixed effects. Observations are weighted with GDP in USD. The IVs for the portfolio investments are based on the CPIS.

## Impact on real investment in EMDE

- Other investment has a positive impact
- The impact is almost the same size as that on real GDP

	Real investment									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Portfolio investment (bond)	0.19 (0.13)	0.18 (0.14)				-3.11 (6.77)	0.19 (1.45)			
Portfolio investment (equity)	0.41 (0.23)		0.44 (0.21)			-2.49 (4.13)		-0.41 (0.58)		
Direct investment				0.10 (0.21)					-0.97 (2.69)	
Other investment	0.17 (0.11)				0.17 (0.11)	0.52 (0.60)				0.47 (0.23)
OLS/IV	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV	IV
N	724	724	724	505	724	724	724	724	505	724
Period	'02-'20	'02-'20	'02-'20	'10-'20	'02-'20	'02-'20	'02-'20	'02-'20	'10-'20	'02-'20
1st stage robust F stat						0.1	1.2	6.0	0.8	19.2
1st stage effective F stat							1.2	6.0	0.8	19.3
Frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

Notes: Standard errors, clustered by countries, in parentheses;  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ ,  $p < 0.001$ . The independent variables are standardized by GDP in the previous year. All regressions include country and year fixed effects. Observations are weighted with GDP in USD. The IVs for the portfolio investments are based on the CPIS.



## Impact on credit growth in EMDE

- Other investment has a positive impact
- The coefficient being unity suggests credit by foreign banks do not substantially crowd out domestic credit

	$\Delta$ Credit									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Portfolio investment (bond)	0.18 (0.21)	0.17 (0.23)				6.58 (21.4)	-0.47 (1.94)			
Portfolio investment (equity)	1.23 (0.66)		1.27 (0.68)			7.97 (13.4)		6.46 (3.78)		
Direct investment				0.32 (0.19)					2.38 (1.87)	
Other investment	0.35 (0.081)				0.36 (0.078)	0.86 (1.19)				0.99 (0.17)
OLS/IV	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV	IV
N	713	713	713	498	713	713	713	713	498	713
Period	'02-'20	'02-'20	'02-'20	'10-'20	'02-'20	'02-'20	'02-'20	'02-'20	'10-'20	'02-'20
1st stage robust F stat						0.0	0.9	5.3	2.4	20.8
1st stage effective F stat							0.9	5.3	2.5	20.8
Frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

Notes: Standard errors, clustered by countries, in parentheses;  $p < 0:1$ ,  $p < 0:05$ ,  $p < 0:01$ ,

$p < 0:001$ . The independent variables are standardized by GDP in the previous year. All regressions include country and year fixed effects. Observations are weighted with GDP in USD. The IVs for the portfolio investments are based on the CPIS.

# Impact by effective portfolio inflow with restated investment positions

- No significant change in results
- Stronger IVs

Note: capital flows are approximated by  $\Delta$ restated investment position here

	$\Delta \log(GDP)$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Portfolio investment (RBEP, bond)	0.0091 (0.064)			-0.22 (0.15)		-0.066 (0.056)		
Portfolio investment (RBEP, equity)		0.013 (0.066)			-0.32 (0.30)		-0.0036 (0.065)	
Other investment			0.13 (0.099)					-2.81 (1.92)
OLS/IV	OLS	OLS	OLS	IV (CPIS)	IV (CPIS)	IV (RBEP)	IV (RBEP)	IV (LBS)
N	370	369	378	370	369	370	369	378
Period	'08-'18	'08-'18	'08-'18	'08-'18	'08-'18	'08-'18	'08-'18	'08-'18
1st stage effective F stat				14.1	4.2	683.3	32.4	1.3
Frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

Notes: Standard errors, clustered by countries, in parentheses;  $p < 0:1$ ,  $p < 0:05$ ,  $p < 0:01$ ,  $p < 0:001$ . The independent variables are standardized by GDP in the previous year. All regressions include country and year fixed effects. Observations are weighted with GDP in USD.

Following Jordà (2005),

$$\begin{aligned}
 U_{i;t+h} - U_{i;t-1} = & \sum_{n=1}^h F_{i;t+n}^{(h)} \times \sum_{n=1}^h \{Z_{i;t+n}^{(h)}\} \\
 & + \sum_{j=2}^W \sum_{s=2}^R \sum_{T} \{Z_{i;t}^{(h)}\} \times \text{lags}
 \end{aligned}$$

where  $k$  is an type of capital.

Today, we present the results with restated investment positions.



**JBIC**

JBIC

N.End  
T.Onoda

Motivation

Approach

Findings

Conclusion

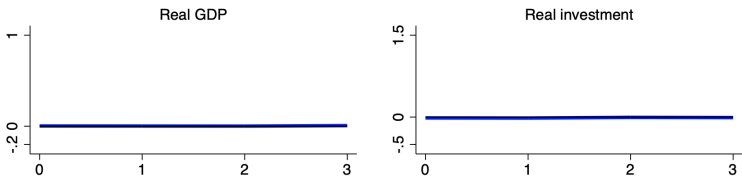
## Impact depends on the investment instrument

Bonds

Equity

# Heterogeneous impact across recipients: AEs versus EMs

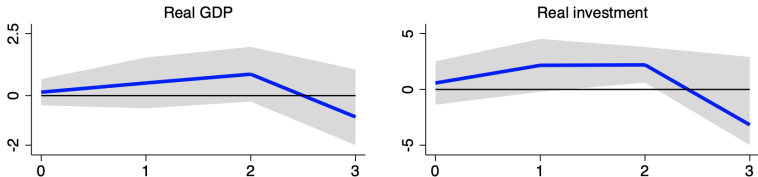
## AEs (bond flows)



*a*

<sup>a</sup>All the coefficients and the standard errors are below .03, and most of them below .01

## EMs (bond flows)



Contrary to common wisdom, capital flow positive effects are not necessarily for granted. Impact depends on:

## 1 Type of flow

- one percentage point exogenous bank lending inflow (as percent of GDP) raises (i) real GDP growth and (ii) real investment (as percent of GDP) by .5 percentage point, and (iii) credit growth by one percentage point
- over years, bond investment has positive effects while equity does not

## 2 Recipient country

- More impact in EMs

Potential policy implication:

- Type-specific capital control, particularly for EMs (to be further investigated)

Back

N.End  
T.Onoda

Motivation

Approach

Findings

Conclusion

*Notes:* Solid lines display the regression estimates, gray shaded areas the 90% confidence bands. The charts plot the accumulated change since time 0 (in log for real GDP, real investment, CPI, and the exchange rate). Regressions use the fund-holding IV, include country and region-year fixed effects, and cluster standard errors by countries.

JBIC

N.End  
T.Onoda

Motivation

Approach

Findings

Conclusion

*Notes:* Solid lines display the regression estimates, gray shaded areas the 90% confidence bands. The charts plot the accumulated change since time 0 (in log for real GDP, real investment, CPI, and the exchange rate). Regressions use the fund-holding IV, include country and region-year fixed effects, and cluster standard errors by countries.



$$\begin{aligned}
 U_{i;t+h} - U_{i;t-1} = & \sum_{j=2}^W \beta_j^{(h)} \Delta_{AE} g(X_{i;t}) X_{i;t-1} + \sum_{s=2}^T \beta_s^{(h)} \Delta_{EM} g(X_{i;t}) X_{i;t-1} \\
 & + lags + \sum_{j=i}^{(h)} \beta_j^{(h)} + \sum_{s=t}^{(h)} \beta_s^{(h)} + \beta_{i;t}^{(h)}
 \end{aligned} \tag{3}$$