

Global Financial Cycle and Liquidity Management*

Olivier Jeanne

Johns Hopkins University,
CEPR, and NBER

Damiano Sandri

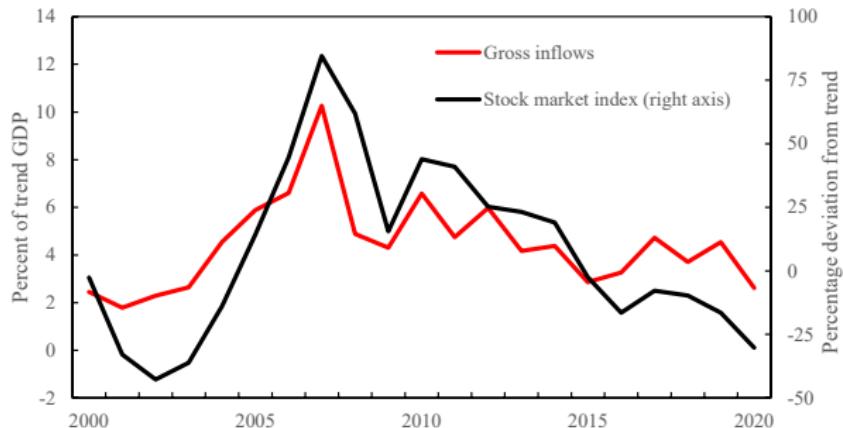
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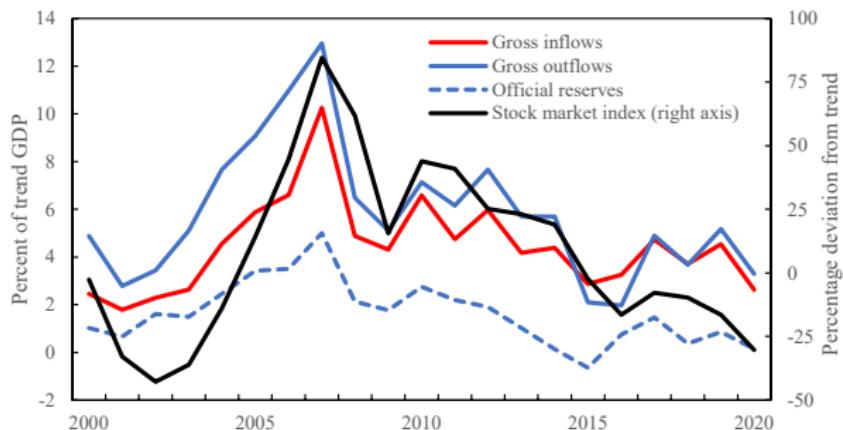
Introduction

- EMs are exposed to large fluctuations in gross capital inflows which affect domestic asset prices and macroeconomic conditions
⇒ Calls for capital controls to reduce and stabilize inflows



Introduction

- EMs are exposed to large fluctuations in gross capital inflows which affect domestic asset prices and macroeconomic conditions
 - ⇒ Calls for capital controls to reduce and stabilize inflows



- Fluctuations in gross inflows are largely offset by gross outflows
 - What explains the comovement between inflows and outflows?
 - Is there a need for public interventions?

Our paper

- We present a simple model of an EM economy where
 - gross inflows are driven by exogenous fluctuations in foreign investors' appetite for the EM assets
 - domestic investors sell domestic assets to foreign investors when their appetite is high and buy them back when their appetite is low ("sell high" and "buy low")
- We use the model to characterize optimal policy interventions by a social planner
 - capital outflows stabilize EM asset prices under laissez-faire
 - but there is scope for capital flow management
 - optimal public intervention leads to larger and more volatile gross capital flows
- We present evidence consistent with the model

Literature Review

The paper is related to various strands of literature

- **Global financial cycle and the impact on EMs**

Rey (2013, 2016), Bruno and Shin (2015), Dedola et al. (2017), Choi et al. (2017), Cerutti et al. (2019), Kalemli-Ozcan (2019), Bräuning and Ivashina (2019), Miranda-Agrrippino and Rey (2020)

- **Comovement between gross inflows and outflows**

Forbes and Warnock (2012), Broner et al. (2013), IMF (2013), Davis and van Wincoop (2017), Avdjiev et al. (2017)

- **Theoretical models of capital controls**

Korinek (2011), Bianchi (2011), Korinek and Sandri (2016), Benigno et al. (2016), Schmitt-Grohé and Uribe (2017), Jeanne and Korinek (2018), Bengui and Bianchi (2019), Enter et al. (2021), Caballero and Simsek (2020)

- **Stabilization benefits of government reserves**

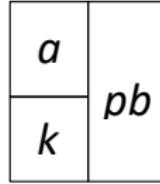
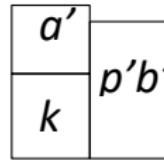
Caballero and Panageas (2008), Jeanne and Rancière (2011), Bussière et al. (2015), Aizenman et al. (2015), Blanchard et al. (2015), Gourinchas et al. (2017), Bianchi et al. (2018), Cavallino (2019)

Outline

- ① Model
- ② Laissez-faire vs. Social Planner
- ③ Policies
- ④ Evidence

Model

EM BORROWERS

$t=0$ Investment and balance sheet buildup	$t=1$ Balance sheet adjustment to external financial conditions	$t=2$ Production and consumption, $U=E_0(c_2)$
	$a-a'=p'(b-b')$ 	$c^{EM}=f(k)-b'+a'$
Capital flow surge	Possible sudden stop +retrenchment	

Country's borrowing may be constrained

$$pb \leq \beta$$

β interpreted as country's level of **financial development**

Model

Foreign investors are risk-neutral and maximize expected period-2 consumption

Bankers

- Period 0: bankers issue deposits to buy EM debt at price p
- Period 1: With probability π the bankers sell EM debt to EM agents and arbitrageurs at price q (sudden stop leading to fire sale)
- In a sudden stop bankers liquidate a legacy asset that yields a gross return $R > 1$

Arbitrageurs

- Foreign arbitrageurs with endowment ϕ in $t = 1$
- Arbitrageurs can purchase EM debt at price p'

Laissez-faire vs. Social Planner

- Budget constraint and market clearing

$$\begin{aligned} pb &= k + a \\ qb &= a + \phi \end{aligned}$$

- Bankers' demand for bonds

$$p = \frac{1 - \pi + \pi Rq}{R^e}$$

where $R^e = 1 - \pi + \pi R$

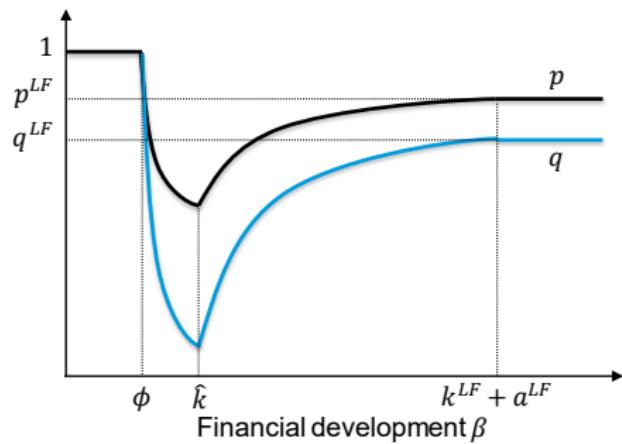
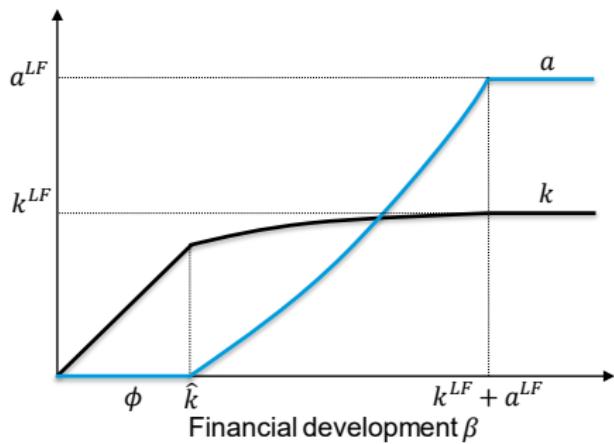
- EM agents' investment in physical capital and foreign liquidity (assuming $pb \leq \beta$ not binding)

$$\begin{aligned} pf'(k) &= 1 \\ \frac{1}{p} &= 1 - \pi + \frac{\pi}{q} \end{aligned}$$

- Five equations for 5 endogenous variables (p, q, b, k, a): equilibrium characterized in Proposition 3.

Laissez-faire vs. Social Planner

Impact of financial development on external balance sheet



Laissez-faire vs. Social planner

- Consider a social planner who sets the EM ex ante balance sheet (k, a, b) so as to maximize EM welfare
- The equilibrium price of EM debt depends on what the debt finances

$$p = p(k, a)$$

- **Pecuniary externality:** private agents do not internalize the impact of the aggregate balance sheet on p
- Not a priori obvious whether and how the social planner should change the EM balance sheet relative to laissez-faire
 - EM agents are both sellers and buyers of EM debt

Laissez-faire vs. Social Planner

- The social planner allocation (i) maximizes capital inflows ($pb = \beta$); (ii) has more reserves than under laissez-faire ($a^{SP} > a^{LF}$) (Proposition 6)
- Global welfare does not depend on the EM's liquidity

$$U_0^W = U_0^B + U_0^{EM} + U_0^A = R\kappa + f(k) - R^e k + R^e \phi$$

- EM liquidity affects the distribution of welfare between EM residents and foreign arbitrageurs

$$U_0^{EM} = f(k) - R^e k + \pi \phi \left(R - \frac{1}{q} \right)$$

$$U_0^A = \phi \left(1 - \pi + \frac{\pi}{q} \right)$$

- We argue that EM welfare maximization makes more sense than global Pareto optimality

Policies

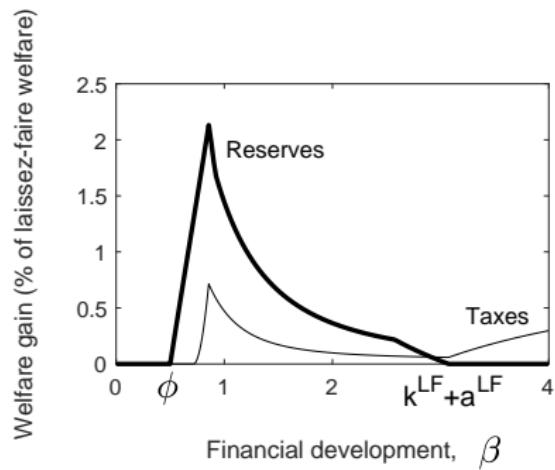
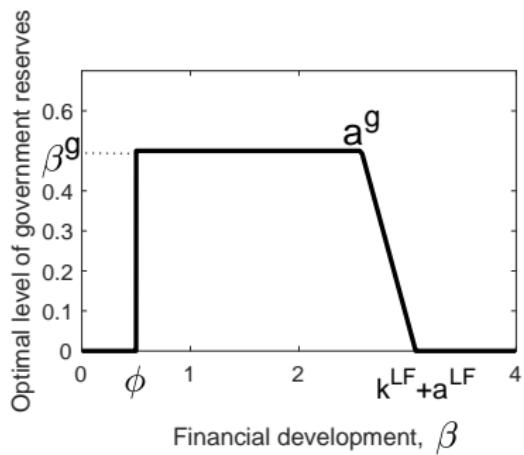
- The SP allocation can be implemented with a subsidy on private reserves
- In practice EMs tend to use FX interventions more than taxes on capital flows
- The government can engage in sterilized FX intervention within the following budget constraints

$$\begin{aligned}a^g &= pb^g \\a^g + p'b'^g &= a'^g + p'b^g \\b'^g + z &= a'^g\end{aligned}$$

where z is a lump-sum transfer to domestic agents

Policies

- FX interventions raises the country's welfare only at intermediate levels of financial development β (Prop.7) but are more effective than capital controls in this range



Evidence

- Suggestive empirical evidence (not a test of the model against alternatives)
- We use IIP and BOP data between 1990 and 2020. Robustness tests:
 - Annual and quarterly frequency
 - Core sample of countries in the MSCI EM Index and larger EM sample
 - Full sample 1990-2020 and balanced panel post-2005
- We define international borrowing spreads à la Gourinchas and Rey

$$r_t^L - r_t^A$$

where

$$\begin{aligned} r_t^L &= (L_t - I_t + Y_t^L) / L_{t-1} - 1 \\ r_t^A &= (A_t - O_t + Y_t^A) / A_{t-1} - 1 \end{aligned}$$

Evidence

- Gross capital flows and international borrowing spreads are positively correlated

Correlation between gross capital flows and international borrowing spreads

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual data			Quarterly data		
	Core EM sample	Large EM sample		Core EM sample	Large EM sample	
Correlation:						
Inflows/outflows	0.65***	0.47***	0.53***	0.74***	0.64***	0.69***
Inflows/spreads	0.13***	0.07*	0.10*	0.15***	0.07*	0.13*
Outflows/spreads	0.28***	0.20***	0.21***	0.21***	0.15***	0.17**

*** p<0.01, ** p<0.05, * p<0.1

Evidence

- FX intervention is less used in countries with larger foreign liabilities

Size and use of official reserves over foreign liabilities						
	(1)	(2)	(3)	(4)	(5)	(6)
	Share of reserves in foreign assets			cov(reserves,infl.) / cov(outflows,infl.)		
	Core EM sample	Larger EM sample		Core EM sample	Larger EM sample	
		all years	post 2005		all years	post 2005
Liabilities	-0.20*** (0.07)	-0.13** (0.05)	-0.15*** (0.05)	-0.33** (0.14)	-0.28** (0.13)	-0.27** (0.10)
Constant	56.40*** (6.34)	54.88*** (4.78)	57.75*** (5.53)	75.02*** (13.36)	79.10*** (13.45)	80.42*** (10.91)
Countries	24	64	52	23	53	42
R-squared	0.27	0.10	0.15	0.20	0.08	0.15

*** p<0.01, ** p<0.05, * p<0.1

Evidence

- Countries with larger foreign liabilities have lower international borrowing spreads

International borrowing spreads over foreign liabilities

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual data			Quarterly data		
	Core EM sample	Large EM sample		Core EM sample	Large EM sample	
Liabilities	-0.04*	-0.05***	-0.05***	-0.07**	-0.03*	-0.18***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Constant	7.31***	9.10***	9.37***	9.39***	5.69***	20.12***
	(1.74)	(1.68)	(1.89)	(2.99)	(1.81)	(4.04)
Countries	24	64	52	21	50	14
R-squared	0.14	0.12	0.13	0.25	0.06	0.71

*** p<0.01, ** p<0.05, * p<0.1

Conclusions

- Common wisdom calls for restricting capital inflows to protect EMs from the GFC
- This paper provides a different perspective by analyzing the balancing role of gross outflows
- Under laissez faire, domestic agents accumulate foreign liquidity and use it to partially offset fluctuations in gross inflows
- Yet private accumulation of liquidity is insufficient
- A social planner expands gross flows to stabilize asset prices
 - The planner's solution can be implemented by subsidizing liquidity
 - FXI is effective at intermediate levels of financial development
- Some empirical facts are *prima facie* consistent with the model