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# Capital Flows During Covid-19 Pandemic: Insights from Sectoral Capital Flows and Policy Challenges

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# Sectoral Capital Flows: Covariates, Co-movements, and Controls

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## Sectoral Capital Flows: Covariates, Co-movements, and Controls

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What we do in this paper: We assemble a sectoral capital flows dataset for 64 advanced and emerging economies, including **direct**, portfolio, and other investment flows, for 5 sectors - central bank (CB), government (GG), banks (BKs), non-financial corporations (NFCs), and **other financial corporations (OFCs)**.

We consider: 1) significance of global and domestic covariates across sectors; 2) correlations between resident and nonresident sectoral flows; and 3) the effectiveness of sectoral controls on sectoral flows.

Sectoral approach: we highlight 1) sectoral heterogeneities in terms of patterns and sensitivities (Milesi-Ferretti and Tille, 2011; McCauley et al., 2019; McQuade and Schmitz, 2017; Avdjiev et al., 2018); and 2) structural changes in the actors engaged in cross-border financial transactions and investments (Patalano and Roulet, 2020; and Bruno and Shin, 2017; Caballero et al., 2015).

## Sectoral Capital Flows: Covariates, Co-movements, and Controls

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IMF Balance of Payments Statistics – primary data source but we added our own calculations to fill-in and compute for missing values:

- 1) Fill-in the data by taking the difference between the reported total and reported sectoral values;
- 2) Fill-in the data by classifying specific types of investments to specific sectors like official reserves, insurance and pension, and trade credit and advances; and
- 3) Compute the data by using *average sectoral weights* if two or more sectors have missing values:
  - a) Direct and foreign direct investments – OECD FDI Statistics, national sources, and IMF Financial System Stability Assessment reports, in that order
  - b) Portfolio and other investment flows – sectoral values from IMF International Investment Position, IMF Coordinated Portfolio Investment Survey, and BIS Locational Banking Statistics, in that order.



**Note: 73% of 55,205 data points were reported values, 7% were fill-in data; and 21% were computed values.**

# Sectoral Capital Flows: Covariates, Co-movements, and Controls

**Resident flows mostly came from OFCs in recent years, while nonresident flows mostly went to NFCs.**

Figure 6a: Resident Sectoral Flows – Full Sample (US\$ bn)

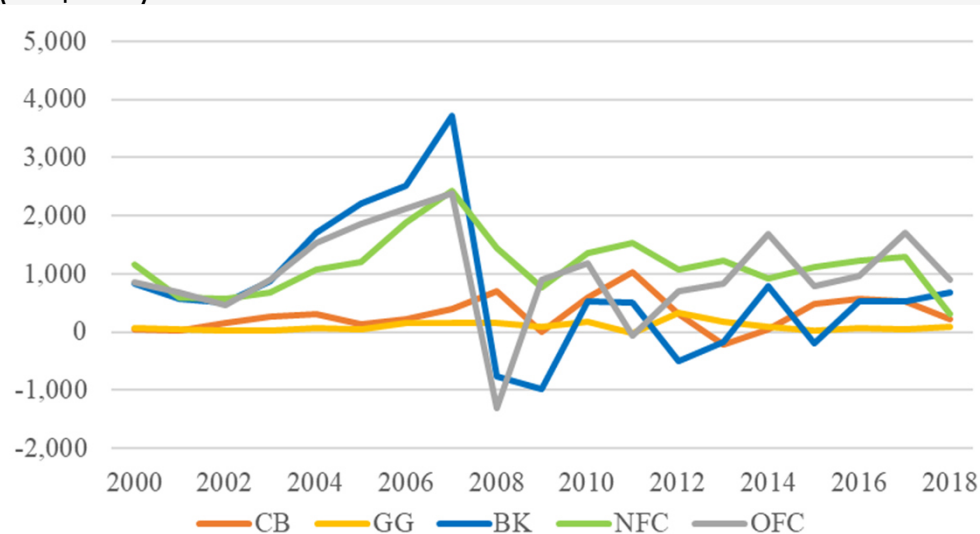
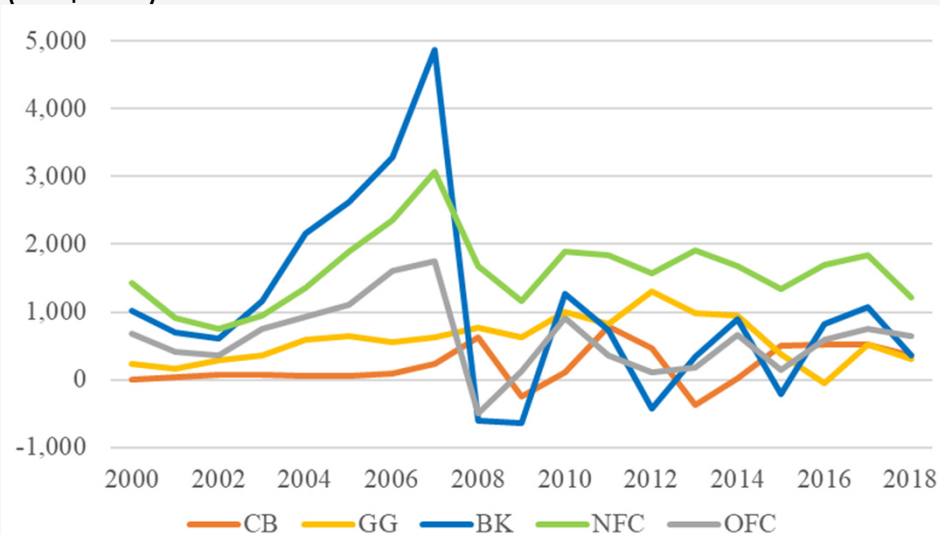


Figure 6b: Nonresident Sectoral Flows – Full Sample (US\$ bn)



**ADB** Notes: Resident (nonresident) sectoral flows are financial account assets (liabilities) of central bank (CB), general government (GG), banks (BK), non-financial corporates (NFC), and other financial corporate (OFC) across types of investments including direct, portfolio, and other investments.  
Source: Lepers and Mercado (2020).

# Sectoral Capital Flows: Covariates, Co-movements, and Controls

**For emerging economies, resident flows came from NFCs and BKs, while nonresident flows mostly went to NFCs.**

Figure 7a: Resident Sectoral Flows – EMEs (US\$ bn)

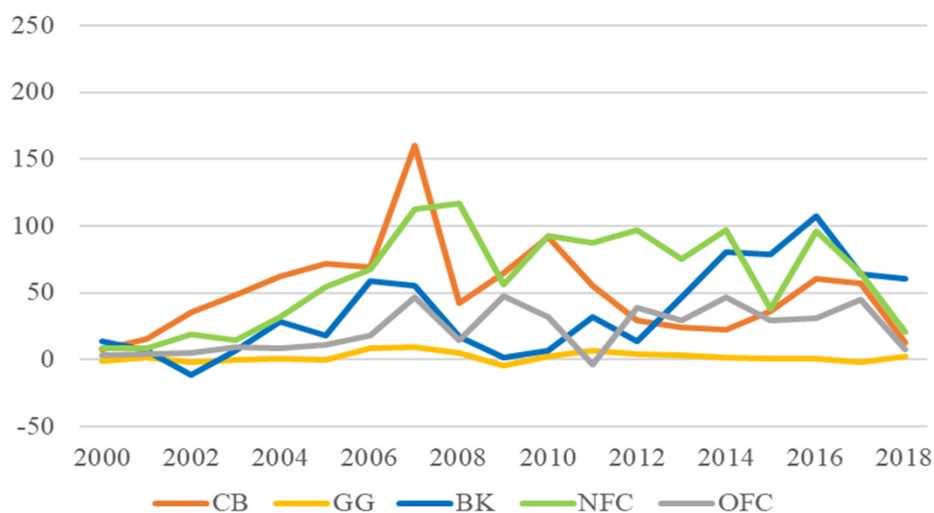
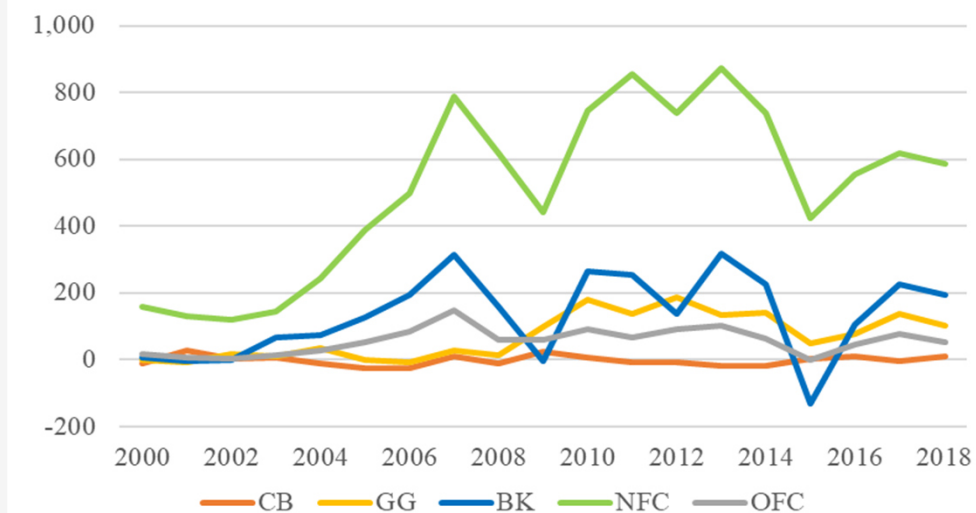


Figure 7b: Nonresident Sectoral Flows – EMEs (US\$ bn)



Notes: Resident (nonresident) sectoral flows are financial account assets (liabilities) of central bank (CB), general government (GG), banks (BK), non-financial corporates (NFC), and other financial corporate (OFC) across types of investments including direct, portfolio, and other investments.

Source: Lepers and Mercado (2020).

# Sectoral Capital Flows: Covariates, Co-movements, and Controls

## Differences in nonresident sectoral flows in Emerging Asia

Figure 8a: Nonresident Sectoral Flows to PRC (US\$ bn)

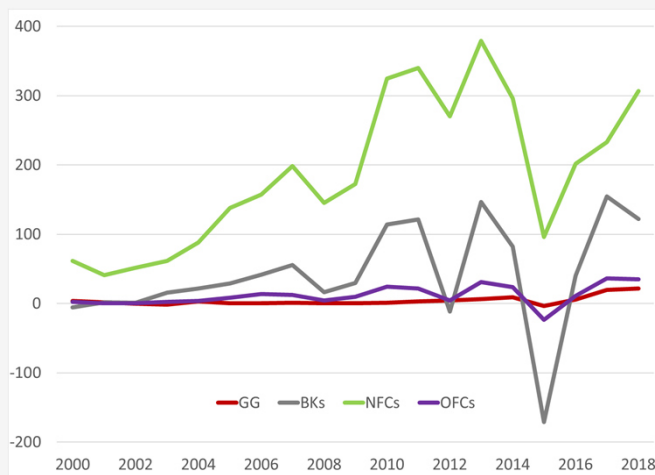


Figure 8: Nonresident Sectoral Flows to India (US\$ bn)

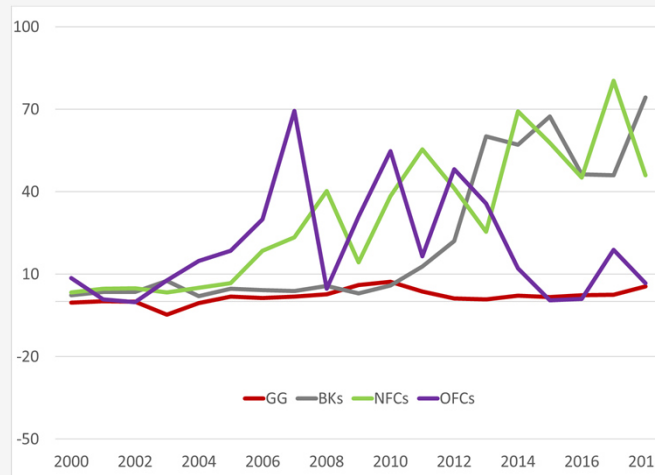
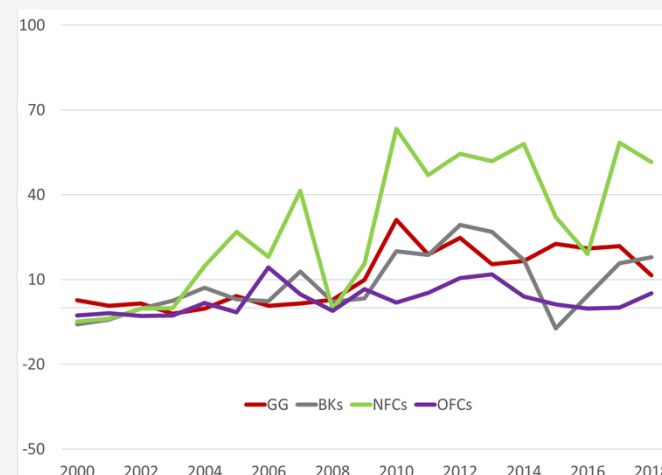


Figure 8: Nonresident Sectoral Flows to ASEAN4 (US\$ bn)



Notes: Nonresident sectoral flows are financial account liabilities of general government (GG), banks (BK), non-financial corporates (NFC), and other financial corporate (OFC) across types of investments including direct, portfolio, and other investments.

Source: Lepers and Mercado (2020).

# Sectoral Capital Flows: **Covariates**, Co-movements, and Controls

*How responsive sectoral flows are to various global and domestic factors?*

Table 1: Resident Sectoral Flows Covariates

Resident Flows	(1) CB	(2) GG	(3) BK	(4) NFC	(5) OFC
Global GDP Growth	-0.172 (0.169)	0.211 (0.178)	0.793** (0.307)	0.499** (0.206)	-0.224 (0.134)
Global Liquidity	0.036 (0.023)	-0.005 (0.010)	0.217*** (0.054)	0.176** (0.066)	0.089*** (0.025)
VIX	-0.056 (0.040)	0.017 (0.012)	-0.128** (0.049)	-0.008 (0.047)	-0.123*** (0.025)
Global Commodity Price	-0.001 (0.006)	0.006** (0.003)	-0.019 (0.013)	0.011* (0.006)	-0.014** (0.006)
Domestic GDP Growth	-0.054 (0.066)	-0.007 (0.030)	0.128* (0.068)	0.089 (0.065)	-0.079*** (0.022)
Observations	772	703	772	772	762
R-squared	0.101	0.462	0.148	0.315	0.278
Country F.E.	Yes	Yes	Yes	Yes	Yes

Table 2: Nonresident Sectoral Flows Covariates

Non-Resident Flows	(1) CB	(2) GG	(3) BK	(4) NFC	(5) OFC
Global GDP Growth	-0.044 (0.180)	-0.026 (0.159)	0.686** (0.291)	0.267 (0.214)	0.144* (0.074)
Global Liquidity	0.007 (0.015)	-0.020 (0.023)	0.312*** (0.071)	0.144** (0.062)	0.051*** (0.016)
VIX	-0.008 (0.038)	0.049 (0.029)	-0.163*** (0.051)	-0.046 (0.069)	-0.022 (0.018)
Global Commodity Price	0.002 (0.004)	0.023*** (0.004)	-0.026*** (0.010)	0.039*** (0.012)	-0.003 (0.003)
Domestic GDP Growth	0.026 (0.028)	-0.192*** (0.037)	0.383*** (0.122)	0.261** (0.130)	0.077*** (0.023)
Observations	1068	1191	1198	1198	1181
R-squared	0.068	0.180	0.227	0.265	0.168
Country F.E.	Yes	Yes	Yes	Yes	Yes



**These results imply that sectoral flows exhibit varying responses and sensitivities to global and domestic factors.**



## Sectoral Capital Flows: **Covariates**, Co-movements, and Controls

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Our key results hold under several sensitivity tests, including

- 1) Removing country fixed-effects;
- 2) Using lagged global covariates;
- 3) Using unclustered robust standard errors;
- 4) Including domestic governance, financial depth and financial openness measures;
- 5) Using pooled regression with additional domestic covariates;
- 6) Winsorising resident and non-resident sectoral flows at the top and bottom 10%;
- 7) Using G7 growth instead of global growth;
- 8) Using global commodity inflation instead of price level;
- 9) Using global liquidity growth instead of level;
- 10) Including global interest rate as global covariate; and,
- 11) Adding the domestic macroeconomic volatility measure

We also extended analysis by considering advanced and emerging sample splits, debt and equity splits, and net sectoral flows, then conducted sensitivity tests on those extensions.

# Sectoral Capital Flows: Covariates, **Co-movements**, and Controls

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Motivation: Real business cycle models predict that higher productivity raises expected returns, leading to higher nonresident inflows but lower resident outflows.

But existing studies show positive correlation between resident and nonresident total gross flows (Avdjiev et al., 2018; Broner et al., 2013; Tille and Van Wincoop, 2010; and Davis and van Wincoop, 2018; Davis, 2015) and cross-sectoral correlations of both resident and nonresident flows (Alfaro et al., 2014; Avdjiev et al., 2018; and Cerutti and Hong, 2018).

Understanding the positive correlation between capital inflows and outflows may reinforce global imbalances.

We contribute to this strand by considering more sectors that include all types of flows.

# Sectoral Capital Flows: Covariates, **Co-movements**, and Controls

**Co-movements between resident and nonresident OFC sectoral flows contribute to the observed positive correlation between gross inflows and outflows.**

Table 3: Resident Sectoral Flows Co-movements

	Resident Flows				
	CB	GG	BK	NFC	OFC
Non-Resident Flows - CB	0.232*	0.032	0.387***	0.242***	0.007
Non-Resident Flows - GG	0.080	0.262***	0.367***	0.054	0.078
Non-Resident Flows - BK	0.077*	0.011	0.559***	0.160	0.051***
Non-Resident Flows - NFC	0.039	0.023	-0.002	0.435***	0.095***
Non-Resident Flows - OFC	-0.089	-0.063*	-0.004	0.943***	0.356***
Observations	671	623	671	671	671
R-squared	0.164	0.606	0.613	0.732	0.561
Country F.E. & Controls	Yes	Yes	Yes	Yes	Yes

Table 4: Nonresident Sectoral Flows Co-movements

	Non-Resident Flows				
	CB	GG	BK	NFC	OFC
Resident Flows - CB	0.208*	0.076	0.515***	0.162**	0.044
Resident Flows - GG	-0.045	0.983***	-0.305*	0.208*	-0.075**
Resident Flows - BK	0.010	0.019	0.869***	0.042	0.057**
Resident Flows - NFC	0.097	-0.014	0.349	0.497***	0.164***
Resident Flows - OFC	-0.108	0.076	0.319***	0.178*	0.360***
Observations	623	700	700	700	700
R-squared	0.168	0.414	0.750	0.587	0.631
Country F.E. & Controls	Yes	Yes	Yes	Yes	Yes

Notes: CB = central bank; GG = general government; BK = banks; NFC = non-financial corporates; and, OFC = other financial corporate. Values refer to estimated coefficients of the regression sectoral flows (sectors in columns) on global and domestic baseline regressors and other sectoral flows (in rows). All specifications are regressed with country fixed effects and clustered robust standard errors at the country level. \* p<0.10, \*\* p<0.05, and \*\*\* p<0.01.

# Sectoral Capital Flows: Covariates, **Co-movements**, and Controls

Sector Y = Sector X + VIX + Sector X\*VIX + other controls; and use marginal effects.

**As risk aversion increases, positive correlation between resident BK flows and nonresident GG flows increases; while the correlation between nonresident BK flows and resident NFC flows decreases, even turning negative.**

Figure 9: Resident BK Flows and Non-Resident GG Flows

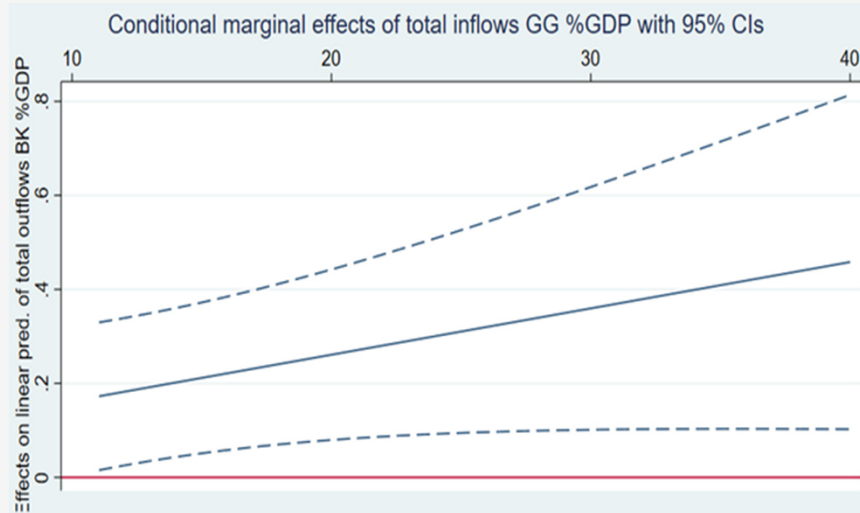
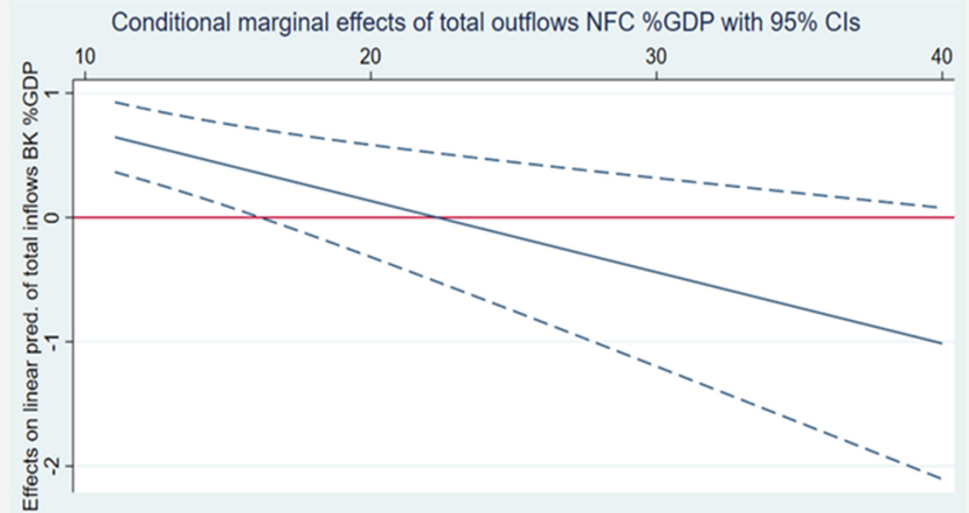


Figure 10: Nonresident BK Flows and Resident NFC Flows



**Thank you!**  
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