The Natural Level of Capital Flows
Burger, Warnock, Warnock

Comments

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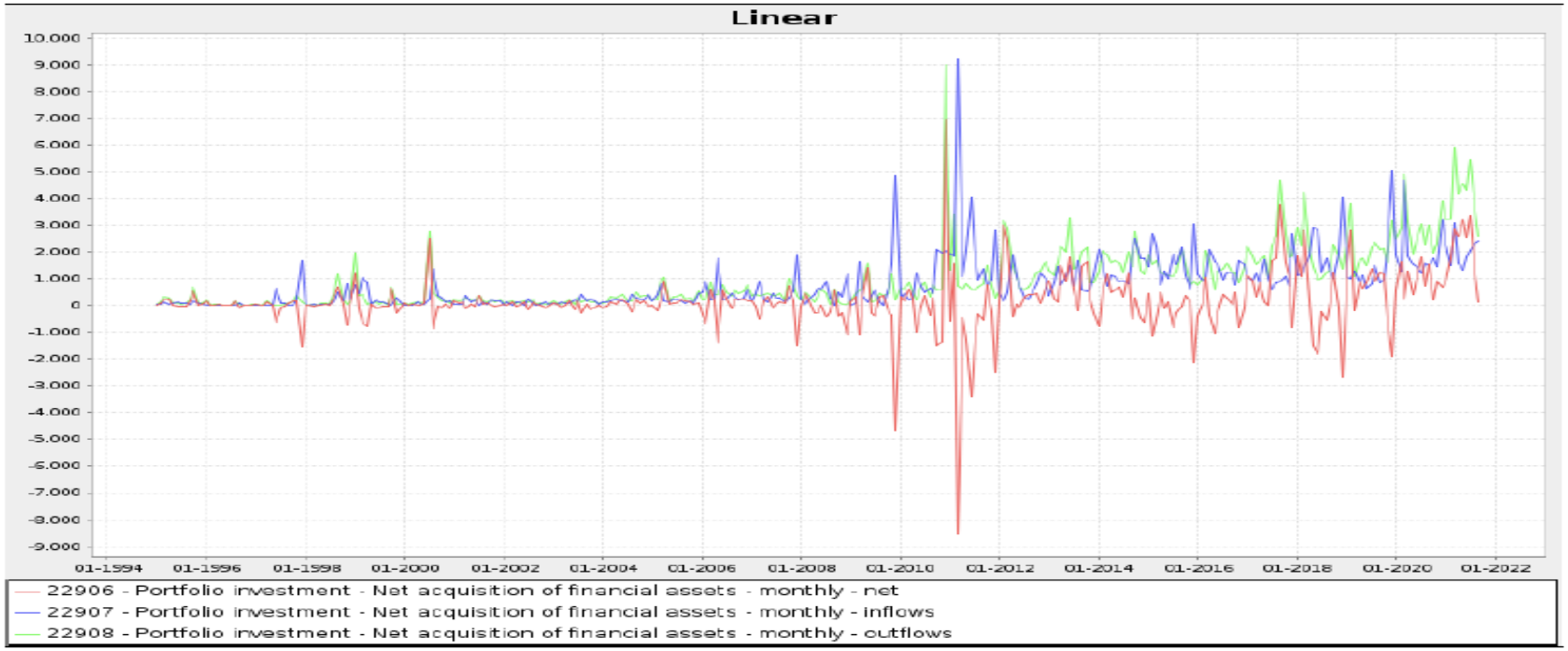
Capital Flows are Volatile

- Should we distinguish transitory fluctuations from fundamental movements?
- Can We?
  - ✓ Yes: Burger, Warnock, Warnock



Brazil: Source BCB

The Natural Level of Capital Flows
Burger, Warnock, Warnock

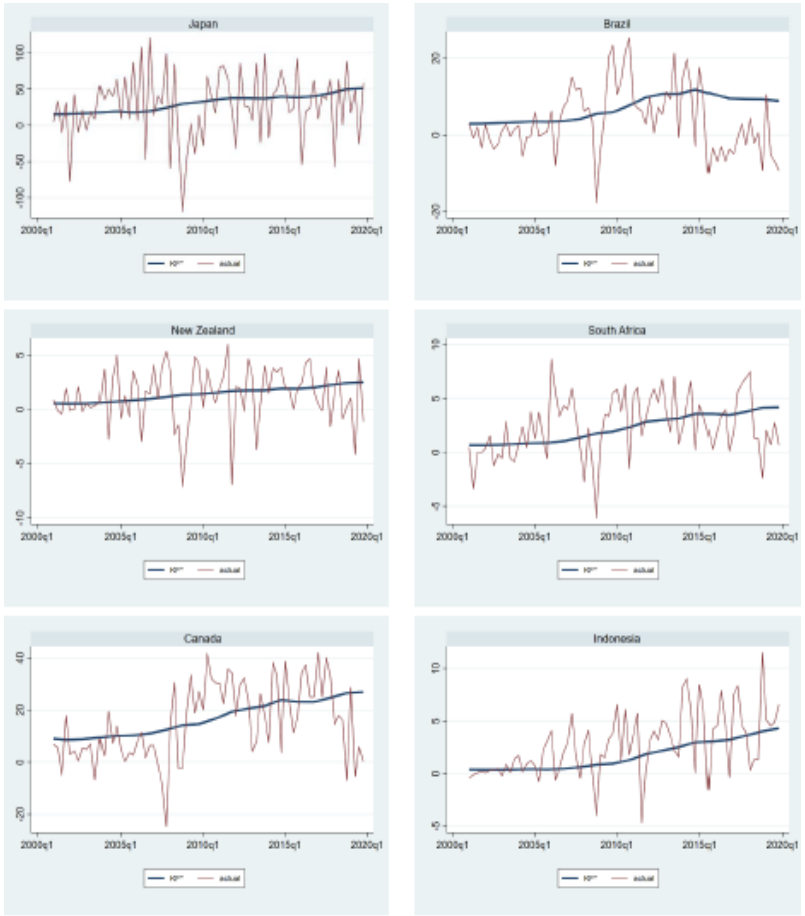
- Measure "slow-moving **supply-side** benchmark that approximates the level flows should converge to over a **medium-term horizon** and thus helps gauge the amount of gross portfolio inflows countries can expect to receive"

$$KF^{*}_{d,t} = \frac{1}{5} \sum_{i=1}^{5} \omega_{ROW,d,t-i} \, S_{ROW,t}$$

- Theory-based
  - Supply side Measure based on World Saving and lagged portfolio weights Tillle and van Wincoop (2010) and Devereux and Sutherland (2011)
  - Medium Term
- Easy to Construct
  - Lagged portfolio weight (portfolio liabilities data from Lane and Milesi-Ferretti, 2018) × current ROW savings (IMF).
  - 5 lags (paper acknowledges ad hoc, best fit).

The Natural Level of Capital Flows
Does it Work? Yes

- Measurement performs well when comparing to out of sample and filtering techniques
- Out of sample tests: deviations of actual flows from KF* are transitory.
  - Portfolio inflows, converge to KF* **over a 1 to 2 year horizon**.
- The reversion of portfolio flows to KF* **can explain roughly 40% of the medium-run variation** of flows (>more than what is explained by traditional push and pull factors)



Applications: Early Warnings Flows

$$Prob(STOP_{i,t+h} = 1) = F(KF^{*}gap_{i,t}, Global\ Factors_{t}, Local\ Factors_{i,t})$$

- Early Warnings: predicts sudden stops (1-2 years ahead).
- *KF*gap*—actual flows minus KF* scaled by GDP—and global growth are one standard deviation above their mean (*KF*gap* of 3.4% of GDP and global growth of 4.2%):
  - Probability of a sudden stop in six quarters is 31.8%. *KF*gap* : a strong predictor of countries' flows during GFC crisis.

Panel A	Prob(Stop) t+ 6 quarters	Prob(Surge) t+ 6 quarters
KF* gap	16.109***	-0.532
	(4.984)	(3.064)
Global Variables		
Global GDP Growth	0.541***	-0.178*
	(0.208)	(0.103)
Risk	0.067***	-0.003
	(0.021)	(0.076)
Liquidity	0.115	-0.002
	(0.070)	(0.041)
Oil Prices	-0.004	0.003
	(0.003)	(0.004)
Monetary Policy	0.286	0.213
	(0.187)	(0.141)
Local and Contagion Variables		
Local GDP Growth	0.022	0.065***
	(0.028)	(0.024)
Regional Contagion	-0.129	0.219
	(0.167)	(0.167)
Observations	1783	1783
Countries	26	26

Applications: Early Warning Prices

- ✓ Predicts equities: if the gap of actual flows from KF* and global growth are both one standard deviation above their means,
- ✓ equity returns in the next year are predicted to be 10 percentage points lower.

- Covid: few countries positive *KF*gap*, suggesting transitory shocks.

Lagged Dependent Variable	-0.124**
	(0.055)
KF* Gap / GDP	-1.379***
	(0.452)
<u>Global Variables</u>	
Global GDP Growth	-4.486***
	(1.417)
VXO	0.738**
	(0.291)
<u>Local Variables</u>	
Dividend Yield	1.624
	(1.454)
Returns Volatility	0.925
	(0.811)
Local GDP Growth	0.715
	(0.846)
Country Fixed Effect	YES
Within R^2	0.141
Observations	617
Countries	34

Comments

- Clever and Useful!
- Suggestion: Most go away from the "easy to implement"
- Theory: Supply Side/Push
  - Sources of changes in the Supply Side (savings)
  - Weights
  - What about Fundamentals/Pull?
- Data:
  - Comments on data and trends
  - "Natural Level of **Capital Flows**" Why just portfolio?
  - China (Next work)
- General comment: Adoption of BM6 (Staggered) Messed up series

Background: Theories

- Tille and van Wincoop (2010)
  - 2 country production; exogenous AR(1) productivity process;
  - Consumption home bias, and incomplete financial markets (iceberg costs to investing in foreign equity)
  - Agents maximize wealth: must allocate between home and foreign equities (equate discounted return on each asset)

- Kraay and Ventura (2000, 2004); Kraay et al (2000).
  - Domestic residents save in 2 assets: risky domestic capital and riskless foreign bonds.
  - Transitory small income shocks.
  - Optimal share of wealth in foreign bonds is kept to a constant level (parameters, relative risk of capital):
  - Additional unit of wealth (given by savings): invested like existing one.
  - Adjustment cost (rebalance towards home).

- Decomposition: portfolio growth (changes in the size of the country portfolio) and **portfolio rebalancing** (changes in the composition of the country portfolio).
  - Portfolio growth: increased savings
  - Portfolio rebalancing: reallocation by expected returns and risk

Theories: Implications

- Models hard to solve: Methodological, Tille and van Wincoop (2010) and Devereux and Sutherland (2011).
  - AK (2000, 2004): partial equilibrium, restricts investment opportunities; transitory shocks.

- Decomposition: portfolio growth and portfolio rebalancing **+ valuation effects**
  - Implicit/design: asset valuations are small or solution methodology.

- Deviating from "simple":
  - Would fit improve if "savings shocks" differentiated: government savings, versus productivity driven ones, reserves (footnote 12)?
  - Would fit improve with valuation effects (Gourinchas and Rey, 2014)?
  - Would fit improve if using bilateral flows (less data)?

Portfolio Weights
Portfolio Liabilities LM

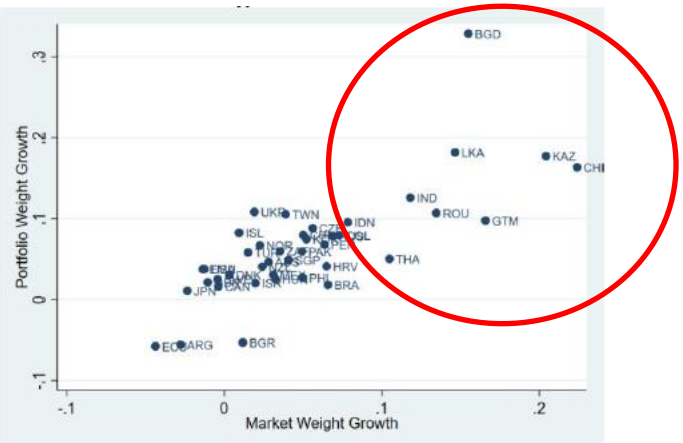
- Lane and Milesi-Ferretti: "our method relies on direct estimates of stocks, assembled from a variety of sources, and on indirect estimates constructed using **cumulative flows** with appropriate valuation adjustments."
  - "the value of holdings at the end of period t is the sum of holdings at the end of the previous period, adjusted for valuation changes, and net purchases during the year, evaluated at end-of-year asset prices"

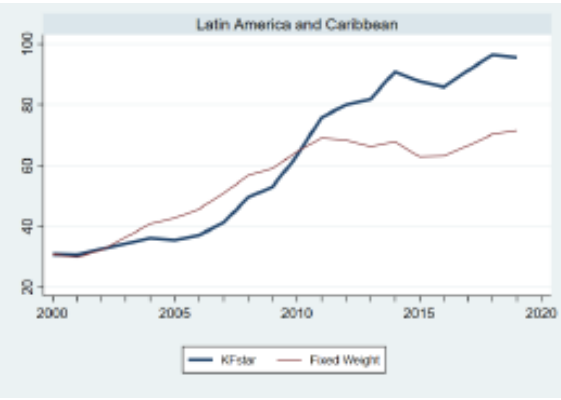
$$D_t = \frac{p_t}{p_{t-1}} D_{t-1} + \frac{p_t}{\bar{p}_t} d_t \ .$$

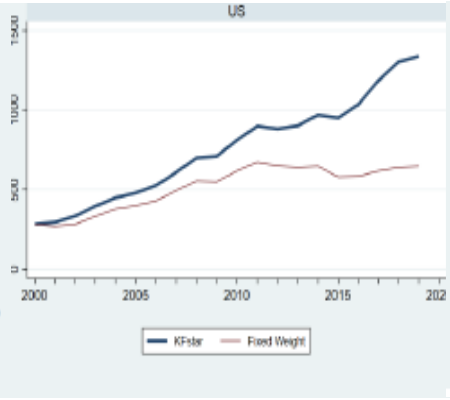
  - D_t :the stock of holdings at the end of year t, d_t the flow of net purchases during year t. Let p_t be the U.S. dollar price of asset category D at the end of period, and t $\bar{p}_t$ the average price of asset D during year t.

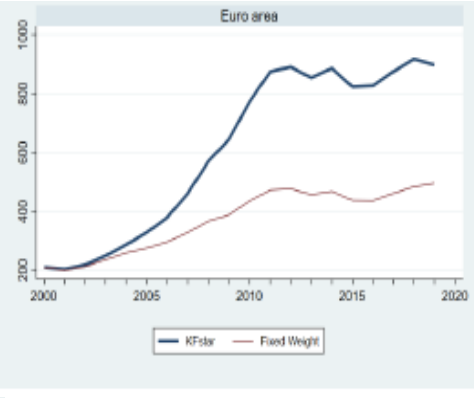
- Stock of debt=sum of flows; 5 last weights f(lags of capital flows i, all countries)
- Hamilton: Four more recent values of capital flows.
  - Is improved fit given by valuation effects?
- Authors run additional regressions Capital control indexes include "authorizations": not intensity (Acosta, Alfaro, Fernández, 2020).

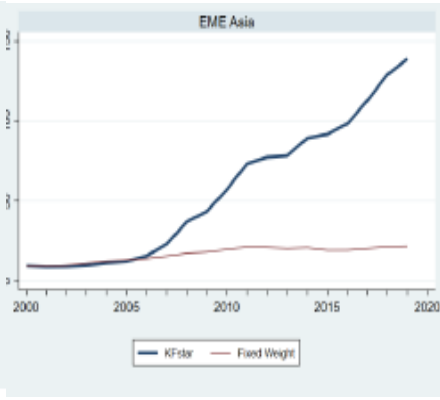
Data: Private Savings and Portfolio Weights Results









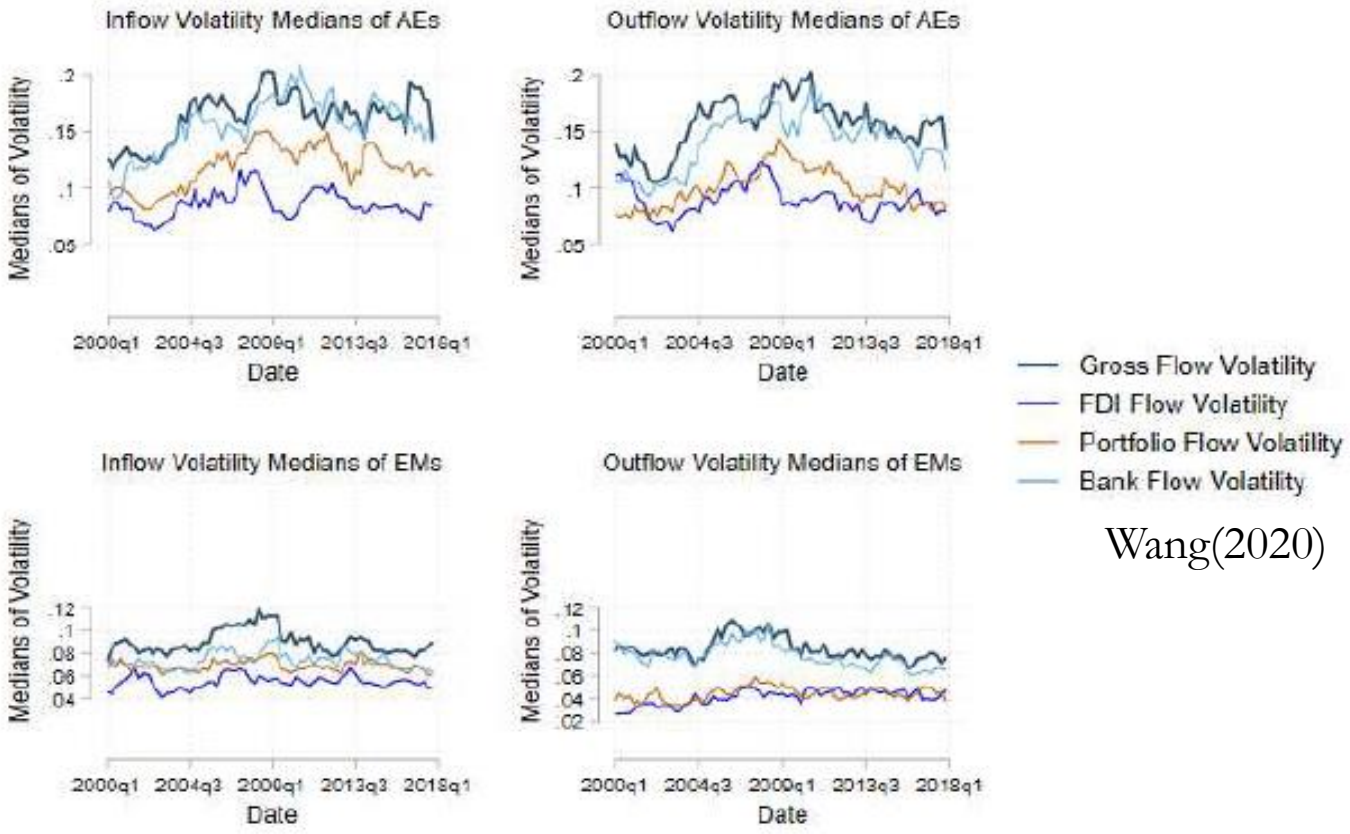


Capital Flows: Volatility EMEs and AEs
Wang (2020)

	Gross Inflow	Gross Outflow	FDI Inflow	FDI Outflow	Portfolio Inflow	Portfolio Outflow	Bank Inflow	Bank Outflow
All Countries Median of Coefficient of Variation	1.28	1.34	0.94	1.27	1.81	1.82	3.11	3.50
Advanced Economies Median of Coefficient of Variation	1.46	1.33	1.44	1.29	2.057	1.41	3.86	4.03
Emerging Markets Median of Coefficient of Variation	0.87	1.49	0.76	1.25	1.48	2.33	2.62	3.02

Natural Rate of Capital Flows
All Capital Flows?

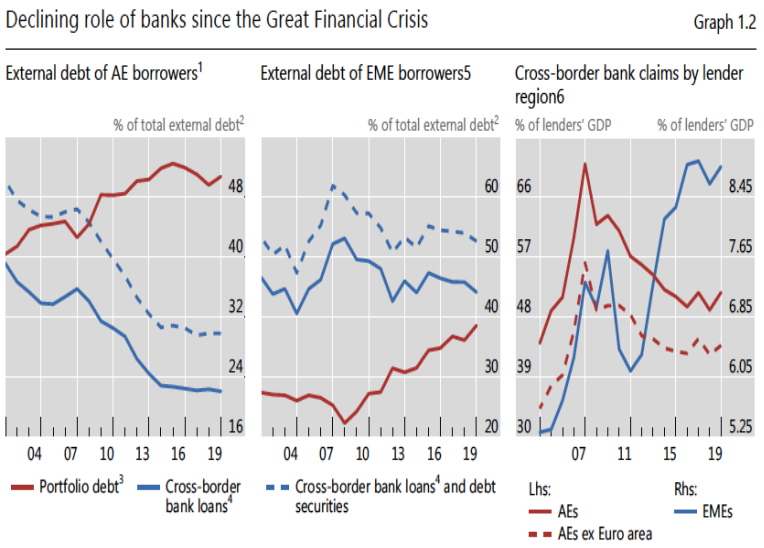
- If "K": shouldn't it be all flows?
- Are portfolio flows independent of other flows: FDI and derivatives?



Wang(2020)

Changing Patterns of Capital Flows
Committee on the Global Financial System, BIS

- Decline Banks → Shadow Banking
- Financialization of MNCs
- Role Tax Havens Financial Centers in Intermediating Risky $ Securities by Non-Bank Financial Actors (Alfaro et a. 2020)
  - Low Interest Rates/QE + Other Measures
- Is this a just reshuffling one flow to another?
  - Does it matter for KF / volatility?

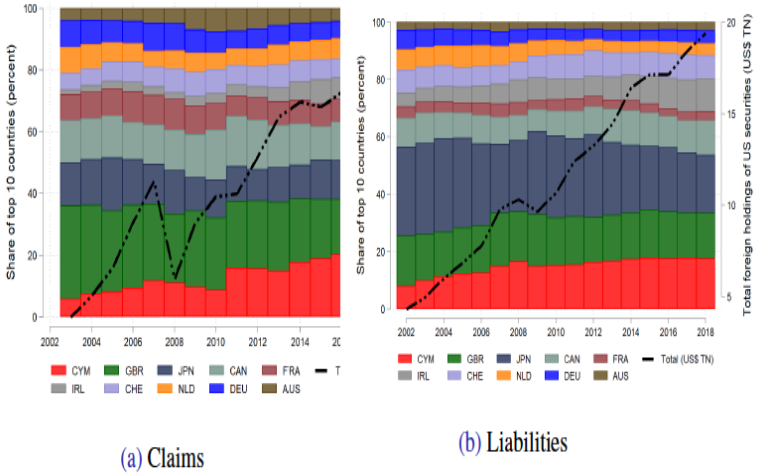


[1] Outstanding amounts for AT, AU, BE, CA, CY, CH, DE, DK, EE, ES, FI, FR, GB GR, IE,IT, JP, LV, LT, LU, MT, NL, NZ, NO, PT, SE, SK, SI, VA, and US. [2] Defined as the stock of debt securities portfolio investment liabilities plus the stock of other debt instrument liabilities across all sectors for both components. [3] Stock of portfolio investment liabilities for all sectors.. [4] Cross-border loans include interbank deposits and deposits with own affiliates. [5] Outstanding amounts for AL, BR, CL, CN, CO, CZ, EG, HR, HU, ID, IL, IN, KE, KR, KZ, MA, MY, MZ, MX, PE, PH, PK, PL, RO, RU, SA, TH, TN, TR, UA, and ZA. [6] The GDP of LBS-reporting countries (lenders' GDP) enters the denominator as a scaling factor in the year when the country started to report to the LBS.

Sources: IMF *International Investment Position Statistics*; IMF, *World Economic Outlook*; BIS locational banking statistics (LBS); CGFS Working Group calculations.

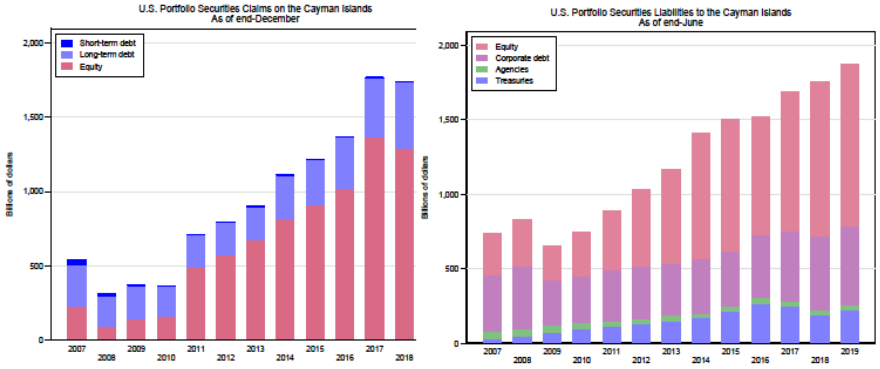
THFC: Intermediating Risky Dollar Flows
Alfaro, Faia, Judson, Schmidt-Eisenlohr (2020)

Two-Way Flow CYM



(a) Claims (b) Liabilities

U.S. Portfolios Claims and Liabilities to the Cayman Islands (2007-2018)

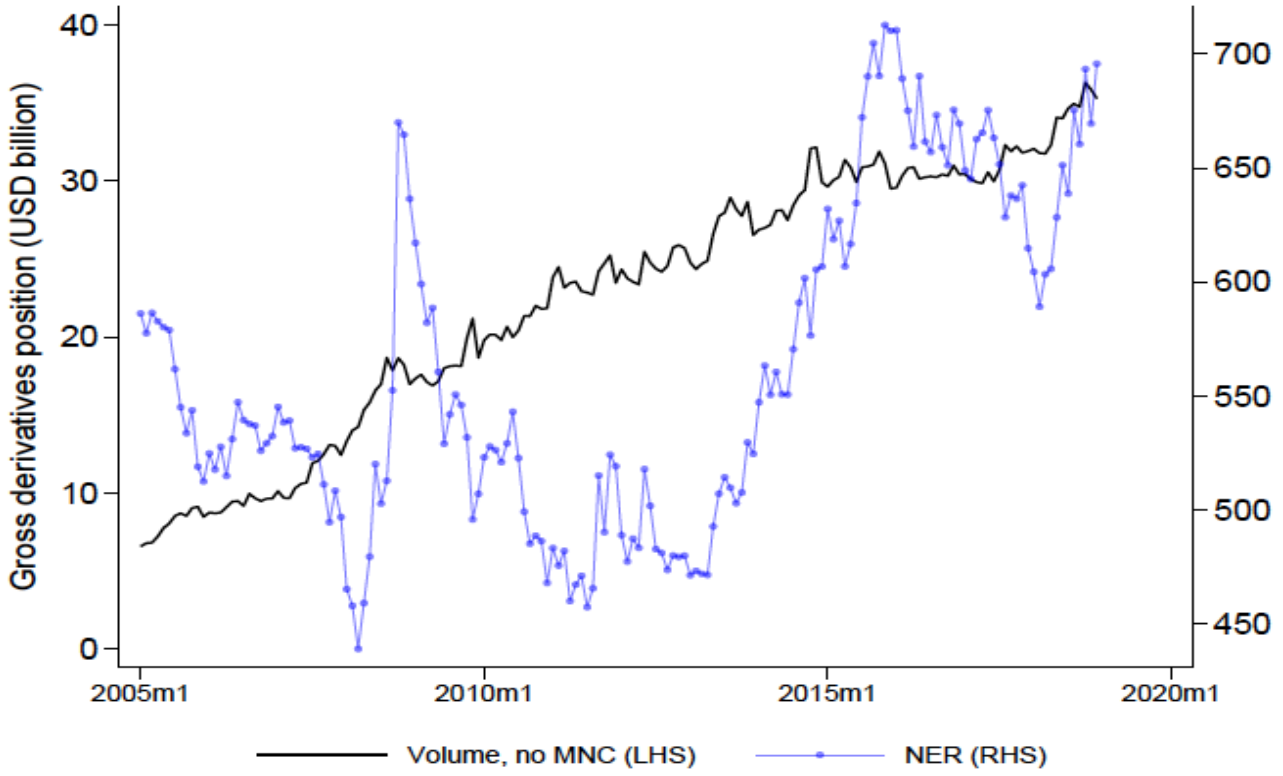


U.S. Claims and Liabilities to Cayman Islands, main Tax Haven and Financial Center (THFC) for the United States grew very strongly after the GFC: Claims in Equities (700%); Liabilities (480%).

TIC Data: unique, granular and confidential data set derived from official reporting system. U.S. residents' holdings of foreign securities and on foreign residents' holdings of US securities.

How Should we Think about Derivatives? Alfaro, Calani, Varela (2021)

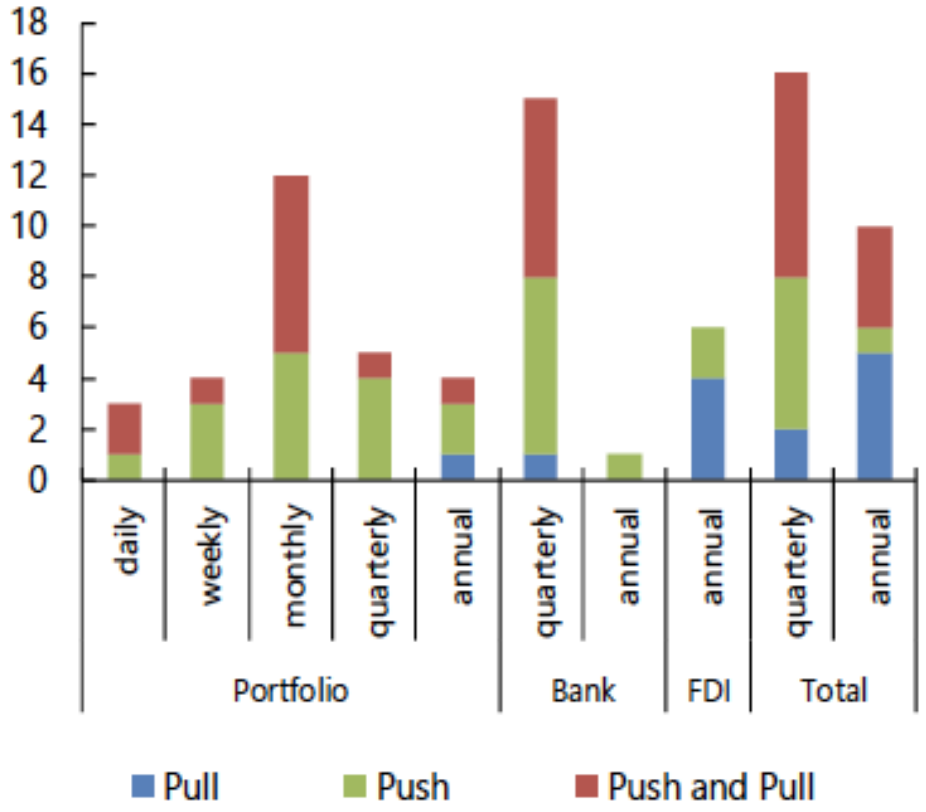
Fig: FX Derivative Position and Exchange rate (peso to US dollars)



Natural Rate of Capital Flows
All Capital Flows?

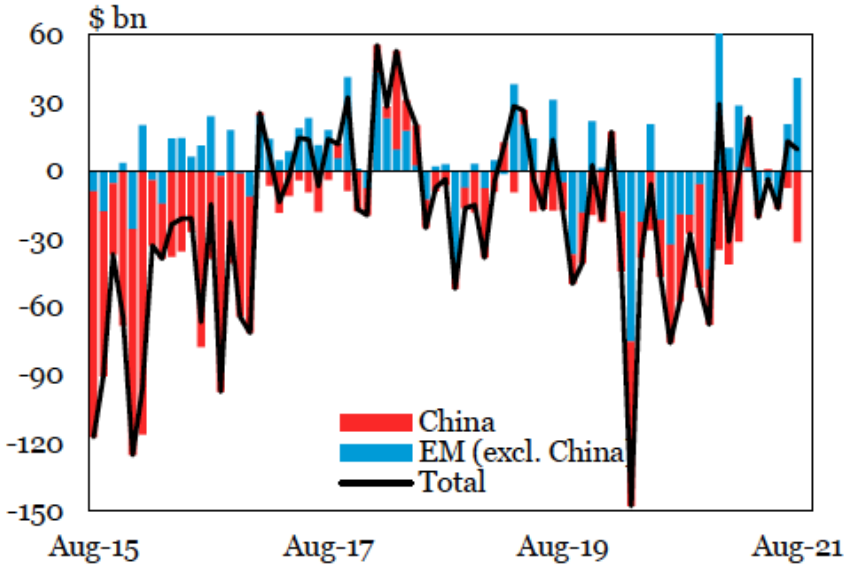
- Would pull factors matter "more" if considering all capital flows?

Figure 11. Numbers of Papers by Flow Component and Frequency Focusing on Pull vs Push Factors



Next Project: What about China?

Exhibit 2. Net Capital Flows.



Source: IIF

- Agarwal, Gu, Eswar (2020) "The Determinants of China's International Portfolio Equity Allocations," IMF Eco Review.
- **Hidden Flows,** Horn et al. (2020)

Great Paper
Must Read!