# Portfolio Flows to Emerging Market Economies

Shaghil Ahmed (Board of Governors)
Stephanie Curcuru (Board of Governors)
Frank Warnock (University of Virginia-Darden)
Andrei Zlate (Board of Governors)

**June 2013**

University of Virginia
Darden School of Business

The usual FRB disclaimer applies.

# The Plan

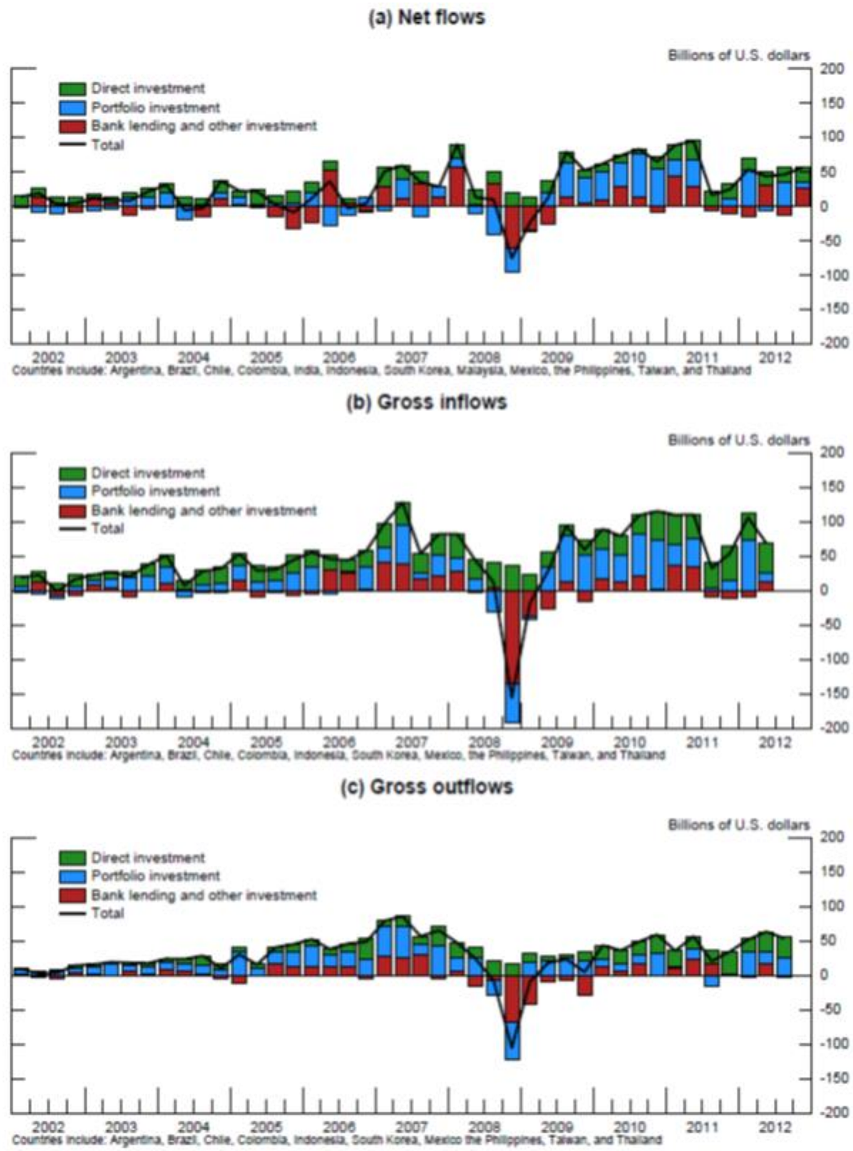
- A descriptive tour of portfolio flows to EMEs, some possible proximate causes, and some EME policy responses.*
- How do the seminal papers on capital flows help us think about recent flows, causes, and responses?
- Preliminary work on including EME policy responses in empirical models of capital flows.

* This part is largely from Ahmed and Zlate IFDP 2013-12.

# Private Net Capital Flows to EMEs were sizable pre-GFC, plummeted during the crisis, and have since (with some pauses) rebounded strongly.

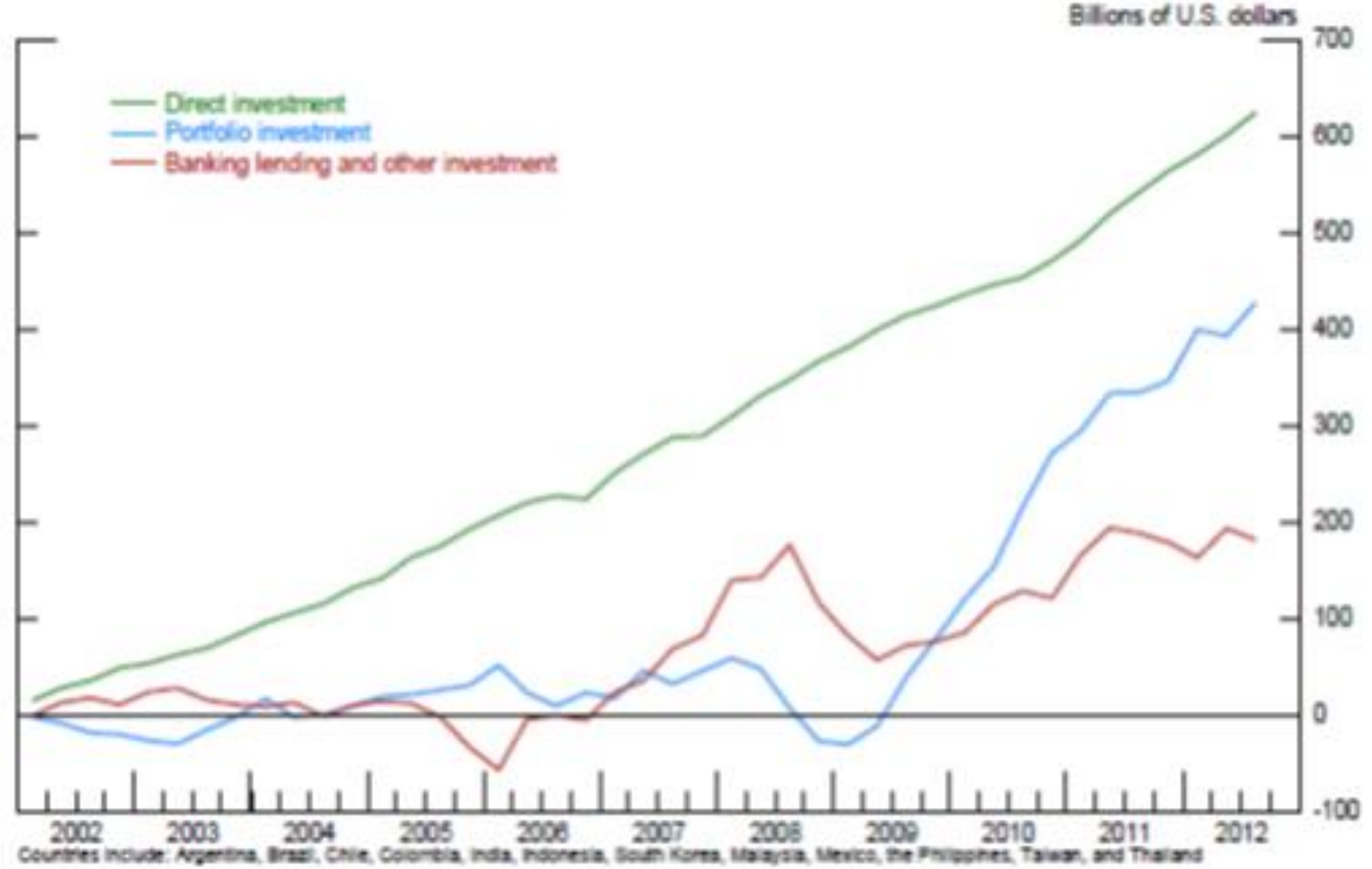
In this version we will focus on net private portfolio inflows (scaled by GDP).

In subsequent versions we will utilize a range of flow series and scale factors.



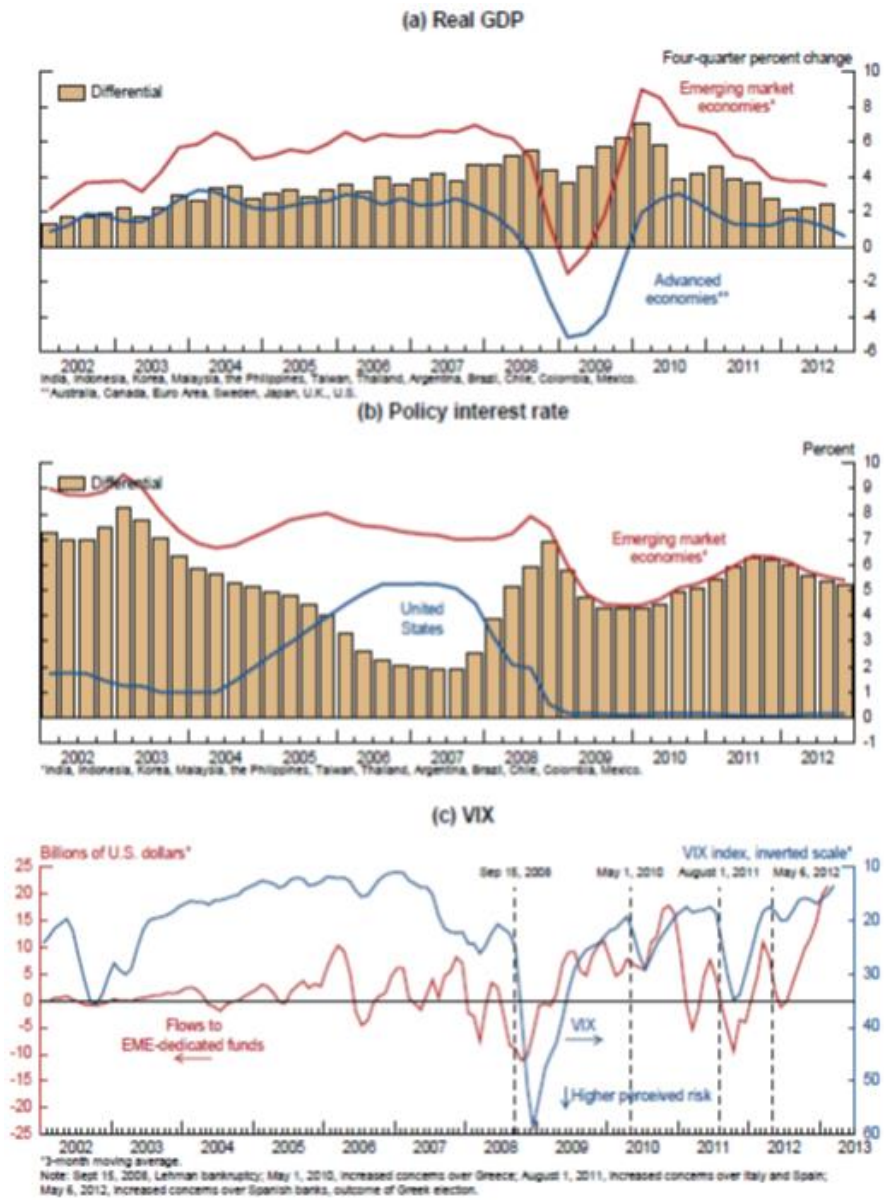

Ahmed Curcuru Warnock Zlate

# Portfolio investment to EMEs has surged since the end of the GFC.

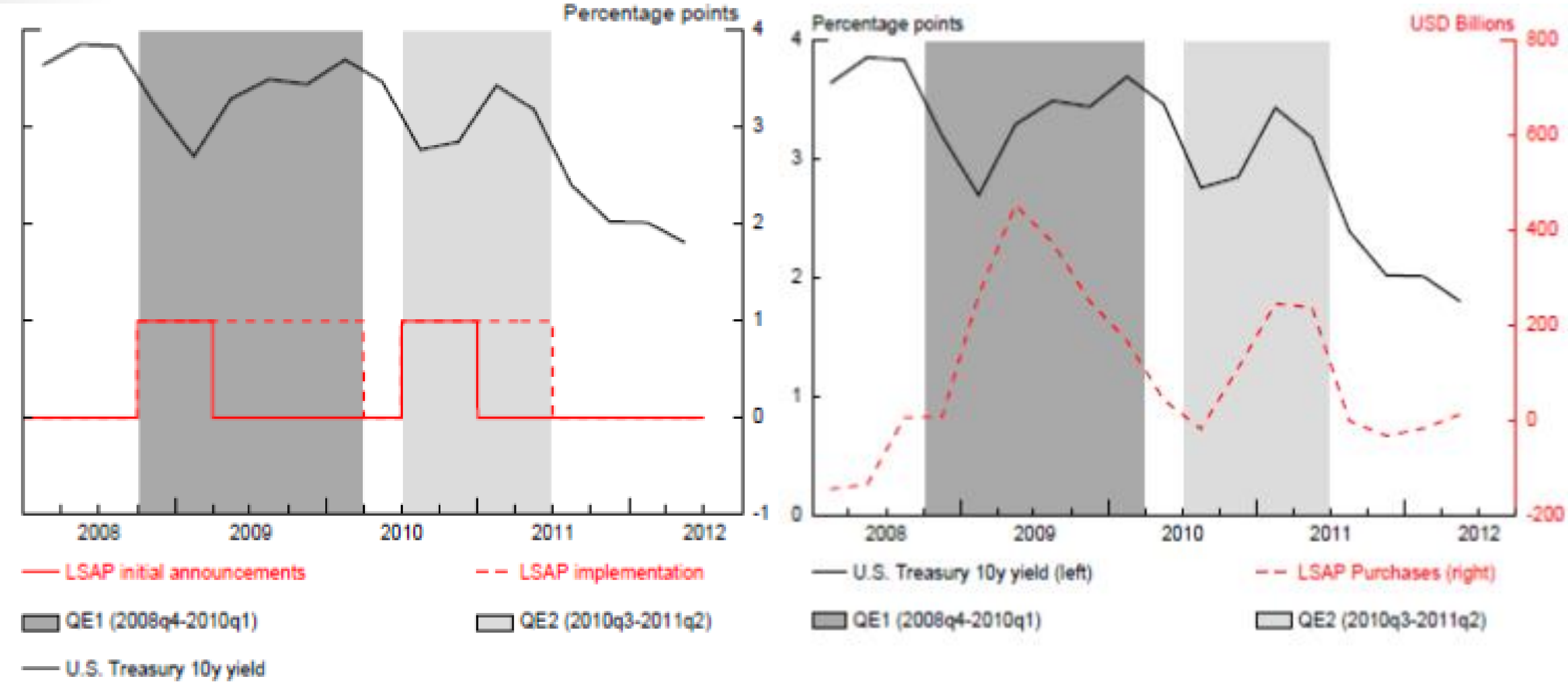



Ahmed Curcuru Warnock Zlate

# Growth and policy rate differentials have favored EME flows. And risk appetite has been a positive too.



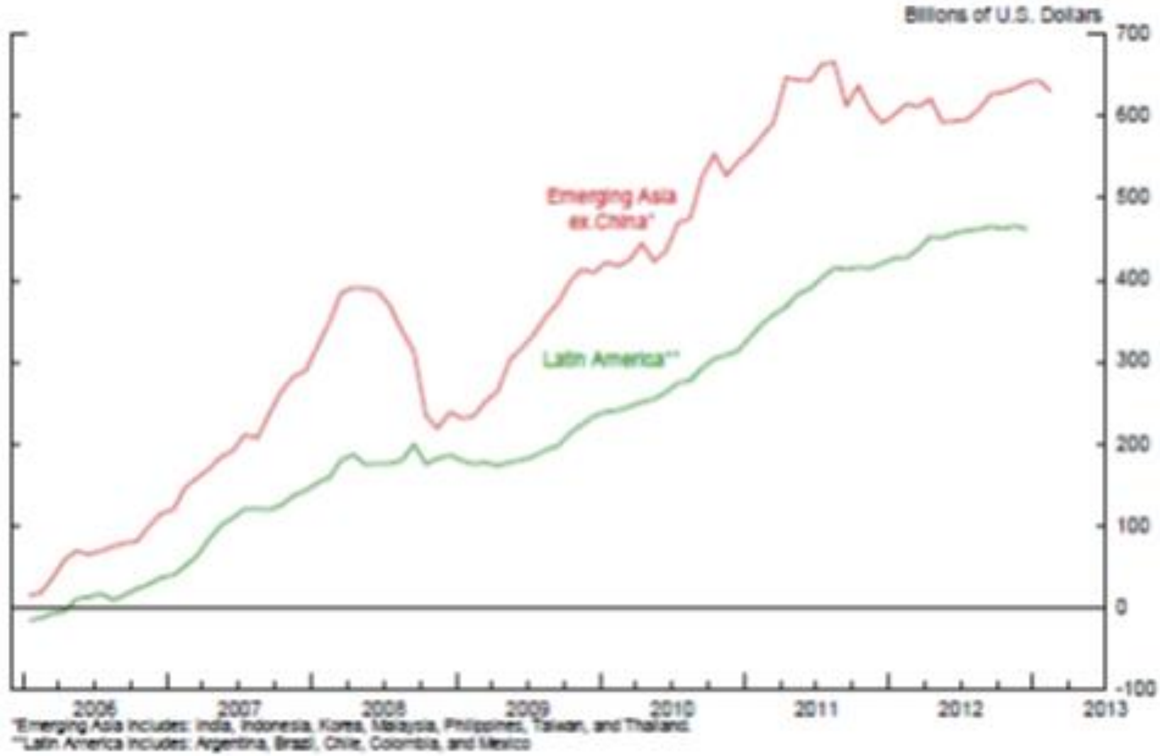
# The US Federal Reserve (and others) has implemented unprecedented monetary policy.




I'll note, parenthetically, that it is difficult to find strong evidence that goes from LSAP to surges in capital flows to EMEs.

# Throughout the post-GFC period, EME real exchange rates have appreciated (on net), but policy rates haven't increased as much as the tightening output gaps might suggest.


# Perhaps in response to the sizable inflows, reserve accumulation has been robust…




Ahmed Curcuru Warnock Zlate

# …and some EMEs have implemented capital flow management measures.

| | Restrictions on portfolio flows | | Restrictions on banking flows | | |
|---|---|---|---|---|---|
| Country | Tax on foreign investments | Restrictions by asset type or maturity | Tax on short-term external borrowing | Quantitative limits on banks' FX exposure | Required reserves on FX liabilities |
| Brazil | Oct, Nov 09[X], Oct, Dec 10[X], Jul, Dec 2011[X] | | Mar-Apr-Jul-Aug 11, Mar- Jun-Dec 12 | | Jan, Jul 11, Dec 12 |
| Indonesia | | Mar, Jun 10, Apr 11 | | Jun, Dec 10 | Dec 10[X] |
| South Korea | Nov 10[X], Jan 12[X] | Jul 11 | Apr 11 | Nov 09[D], Jan 10, Jun 10[D], Jun 11[D], Nov 12[D] | |
| Taiwan | | Nov 09[X], Nov 10[X] | | Dec 10[D] | Jan, Dec 10[X] |
| Thailand | Oct 10[X] | | | | |

Ahmed Curcuru Warnock Zlate

# With this brief tour in mind, how do reserve accumulation and capital controls fit in a model of capital flows?

- Since the GFC, portfolio flows to EMEs have (with some pauses) been robust.
- A number of factors has supported these flows:
  - Growth and policy rate differentials have favored EME flows.
  - Risk appetite has been a positive too.
  - Unprecedented monetary policy in AEs has prompted a search for yield.
- In response, EME policy rates haven't increased as much as the tightening output gaps might suggest, and many EMEs have accumulated sizable reserves and/or implemented a number of capital flow management measures.

Qu: How do we think about reserve accumulation (RA) and capital flow management (CFM) measures in empirical models of capital flows?

Ahmed Curcuru Warnock Zlate

# What do the seminal papers tell us about how to think about RA and CFM in models of flows?

- Not much.
- Most empirical work on international capital flows lean (appropriately) on a framework with push (global) and pull (local) factors driving capital flows.
- Some (very few) papers include RA and/or CFM as exogenous factors. Even fewer allow that RA/CFM are choices countries make in response to flows.*
  - De Gregorio (2012) makes this point in arguing that RA should be a factor on par with push and pull factors.

* A notable exception is Cardoso and Goldfajn (1998).

# What we do (or will do)

- Model RA and CFM as functions of flows (and other things).
- Think about RA and CFM in an empirical model of flows.

- First draft ready by end-August. That is, everything here is "pre-first draft".

# Reserve Accumulation in the Context of Modeling Capital Flows

- The simple point in De Gregorio (2012): CurrAcct + FinancialAcct = RA, so if RA has limited effect on the real exchange rate and CA, it must affect FA and hence should not be omitted.
- Causation could go either way
  - Large net capital inflows may be the result of an explicit policy of reserves accumulation rather than a capital inflows push, or an excessive expansion of domestic expenditure that leads to a current account deficit.
  - or…large accumulation of reserves may be the policy response to massive capital inflows.

- RA cannot be omitted from capital flows models. And we should allow it to be endogenous.

# Reserve Accumulation in the Context of Modeling Capital Flows

- RA cannot be omitted from capital flows models. And we should allow it to be endogenous.

- But how to measure RA?
  - Malloy (2013) starts from the stock of reserves and strips out valuation adjustments (some VA reported, others estimated).
  - Or could just take the Reserve Assets line from the BOP presentation
    - It is naturally the flows, not the valuation adjustments.
    - It's broader than FX intervention – countries accumulate reserves for many reasons – but seems very similar in practice.

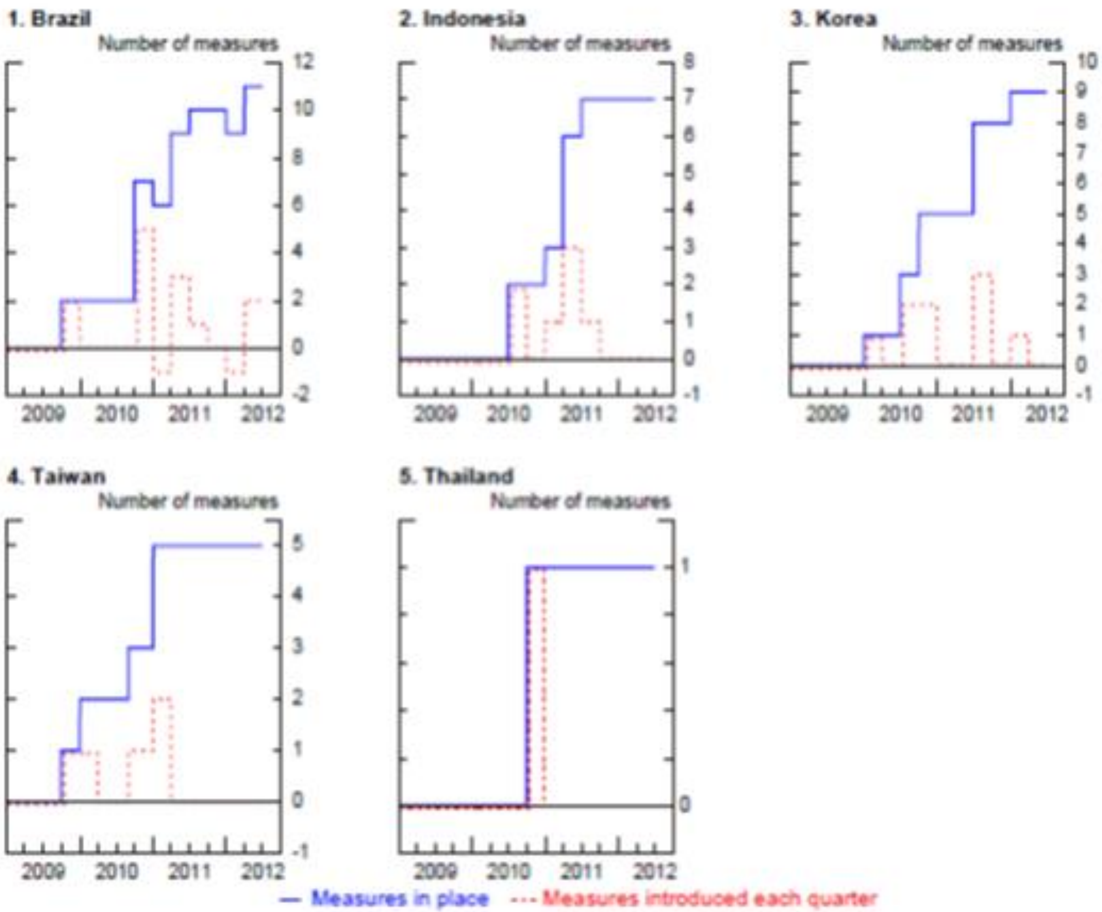
- In a post-GFC EME sample, RA is positively (and strongly) related to private inflows and negatively related to the policy rate differential (ie when EME policy rates decrease, RA increases).

Ahmed Curcuru Warnock Zlate

# Capital Controls in the Context of Modeling Capital Flows

- Capital controls are less often omitted in capital flow studies.
- But, still, causation could go either way
  - Capital controls might be a response to capital flows that also impact capital flows.
- How to measure capital controls?
  - There are many annual measures, but few at the quarterly frequency.
- In a post-GFC EME sample, RA is positively (and strongly) related to private inflows and negatively related to the policy rate differential (ie when EME policy rates decrease, RA increases).

# Ahmed and Zlate (2013) “number of measures” measure



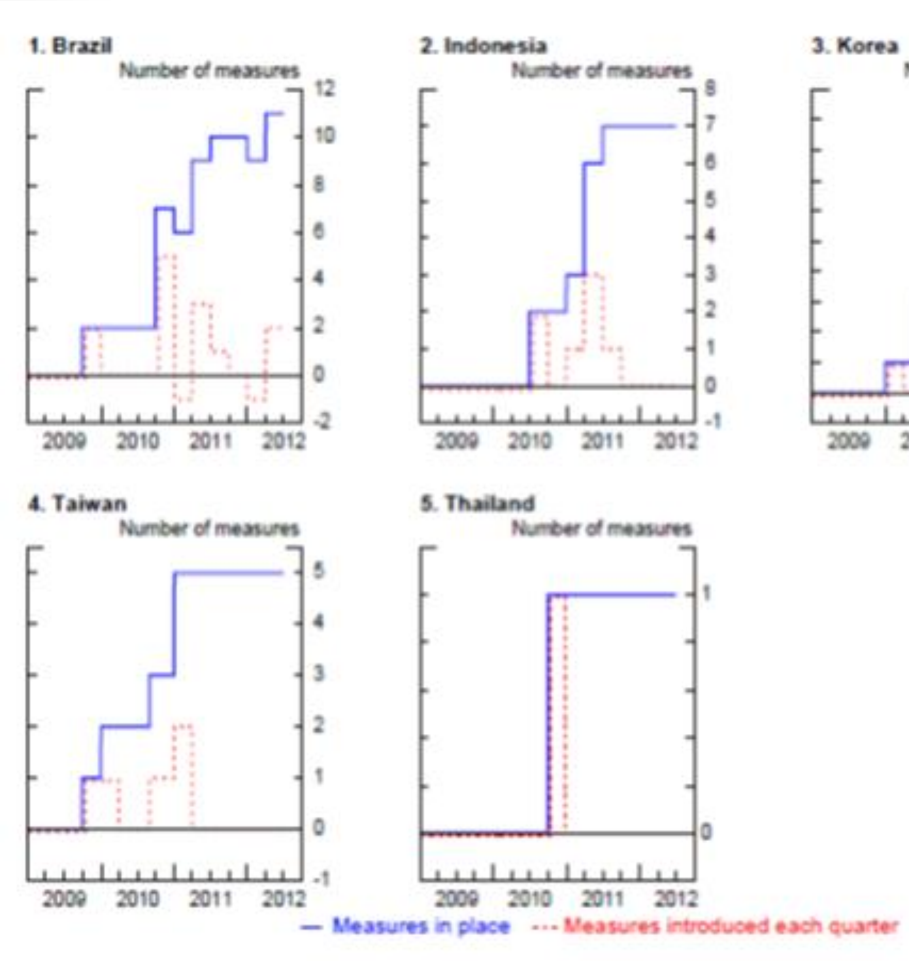

Number of new measures countries put in place when attempting to control capital inflows.

# Ahmed and Zlate (2013) "number of measures" measure

| | Restrictions on portfolio flows | | Restrictions on banking flows | | |
|---|---|---|---|---|---|
| Country | Tax on foreign investments | Restrictions by asset type or maturity | Tax on short-term external borrowing | Quantitative limits on banks' FX exposure | Required reserves on FX liabilities |
| Brazil | Oct, Nov 09$^{R}$, Oct, Dec 10$^{R}$, Jul, Dec 2011$^{R}$ | | Mar-Apr-Jul-Aug 11, Mar- Jun-Dec 12 | | Jan, Jul 11, Dec 12 |
| Indonesia | | Mar, Jun 10, Apr 11 | | Jun, Dec 10 | Dec 10$^{R}$ |
| South Korea | Nov 10$^{R}$, Jan 12$^{R}$ | Jul 11 | Apr 11 | Nov 09$^{D}$, Jan 10, Jun 10$^{D}$, Jun 11$^{D}$, Nov 12$^{D}$ | |
| Taiwan | | Nov 09$^{R}$, Nov 10$^{R}$ | | Dec 10$^{D}$ | Jan, Dec 10$^{R}$ |
| Thailand | Oct 10$^{R}$ | | | | |

Ahmed Curcuru Warnock Zlate

# Ahmed and Zlate (2013) "number of measures" measure




In the post-GFC period, countries have more measures in place when inflows are *weak*, the currency is overvalued, policy rate is high relative to the Fed Funds rate, and when the country's growth differential vis-à-vis AEs is lower.

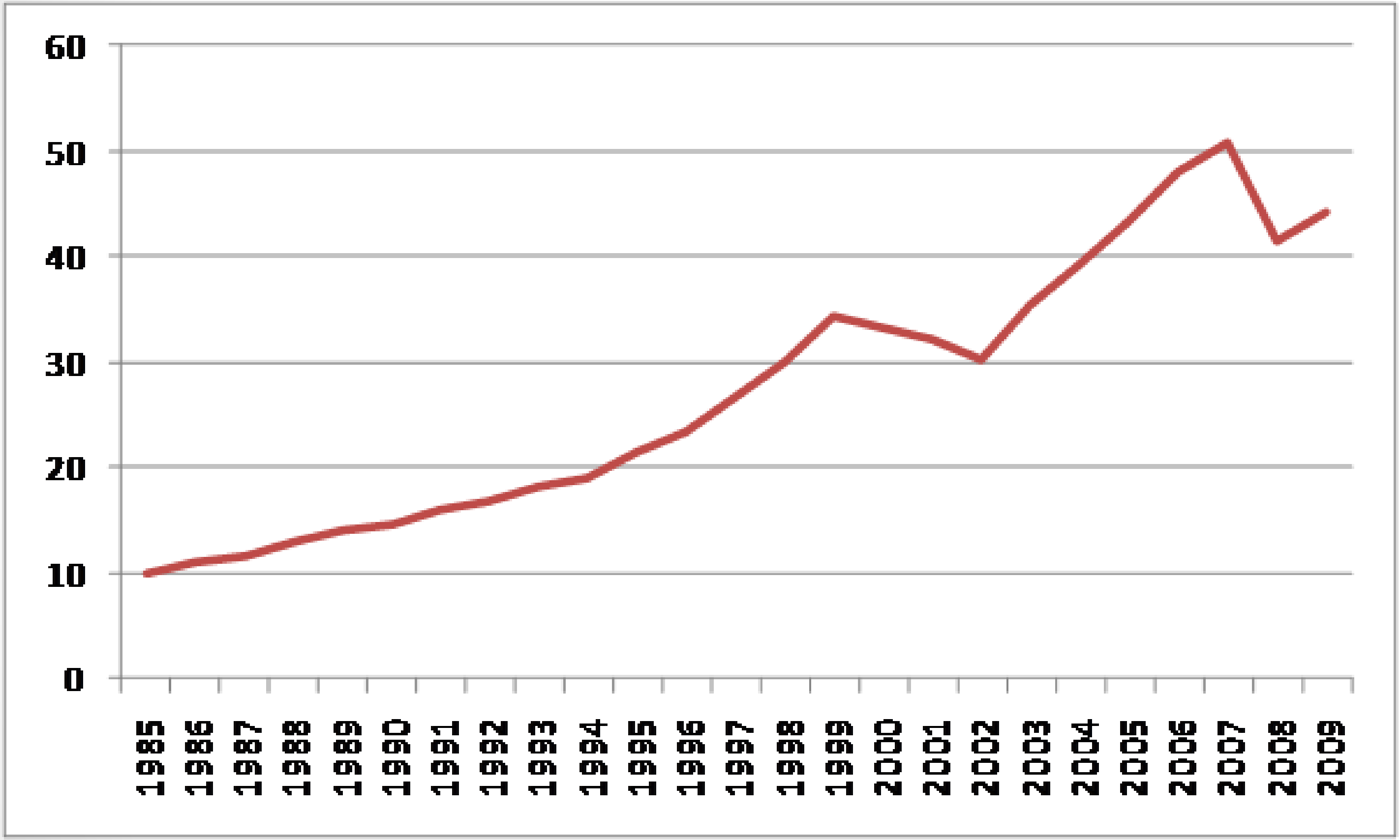
Ahmed Curcuru Warnock Zlate

# How to model capital flows allowing RA and CFM to be endogenous?

- Easy enough to endogenize one.
  - 2SLS panel regression with endogenous CFM. First stage: new CFM measures introduced every quarter as a function of contemporaneous and lagged flows. Second stage: inflows as a function of the previous quarter's new CFM measures (instrumented). Similar for RA.
- Endogenizing both at the same time…Structural VAR?
  - RA, CFM, and flows in a structural vector auto-regression (VAR) system augmented with exogenous variables--policy differentials, growth differentials, VIX, and perhaps exchange rate undervaluation.
  - CFM might be considered causally prior to RA and flows—plausible that CFM is affected by current and past flows but that it takes at least one period before CFM would dampen flows—and so might be a VAR-type identification assumption. A bit trickier with RA.

Ahmed Curcuru Warnock Zlate

# Something Else to Ponder: The Scale Factor
# A disconnect between flow-based analysis and portfolio analysis is that financial wealth is not constant.




Trillions of US dollars.

Portfolio analysis is typically about reallocations.

Flow-based analysis comingles changes in portfolio size (wealth) and reallocations.

Recognizing this can improve analysis.



Source:
Curcuru Thomas Warnock Wongswan 2011. US International Equity Investment. American Economic Review

# Summary and Next Steps

- Empirical models of capital flows should properly include RA and CFM.
- We're currently building the "CFM measures" database back to 2000, and increasing the country coverage.
- Will also utilize numerous capital flow measures (and other CFM measures, if appropriate), as well as get at the reallocation v. flow issue (ie how choice of scale factor influences the analysis).
- Everything is trivial, in a sense, except for the decision on exactly how to model capital flows, RA, and CFM…

Thank you.

University of Virginia

Darden School of Business