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Presentation Outline

- Measuring Capital Controls Policy : **New dataset**

- Two questions:

  1. Are capital controls **useful** as tools for **macroeconomic management**?

  2. Do capital controls generate **spillover** effects?

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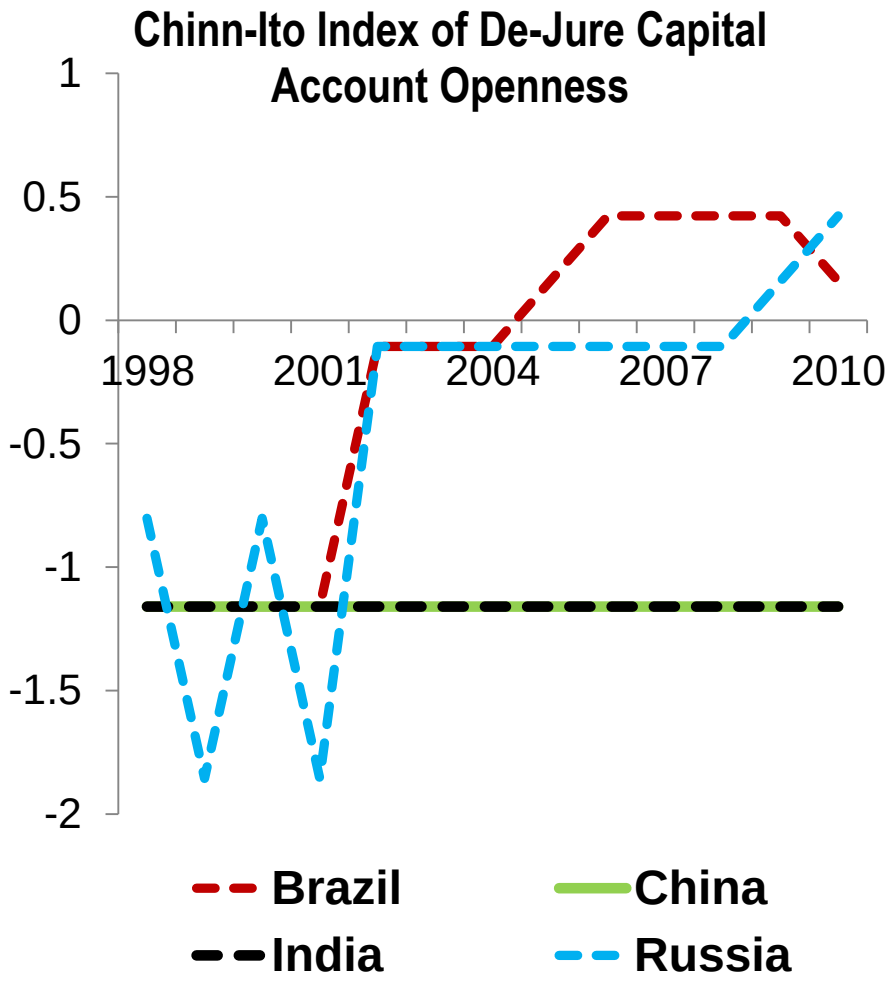
Existing indices of capital controls measure status-quo, not how policy is actually used

- Chinn and Ito, 2008; Schindler, 2009, etc.
  - Bird's eye view of **existence of regulations**
  - Annual databases
  - Did China and India not change capital controls in the last decade?
- This paper: **changes in regulation**, or policy actions



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New dataset: capital control actions

- **Data Coverage: 17 EMEs, 1 January 2001- 31 December 2011**
- **Data points: 754 policy actions**
  - Example: Brazil's 2% tax on inflows, effective 20 October 2009
- **Data Sources**: IMF AREAER, regulators' websites, news sources, Pasricha (2012), Aizenman and Pasricha (2013)
- Actions are **weighted to increase cross-country comparability:**
  - Example: A tightening of portfolio outflow controls is weighted by portfolio assets/total international assets
- We count the number of weighted actions per country-quarter

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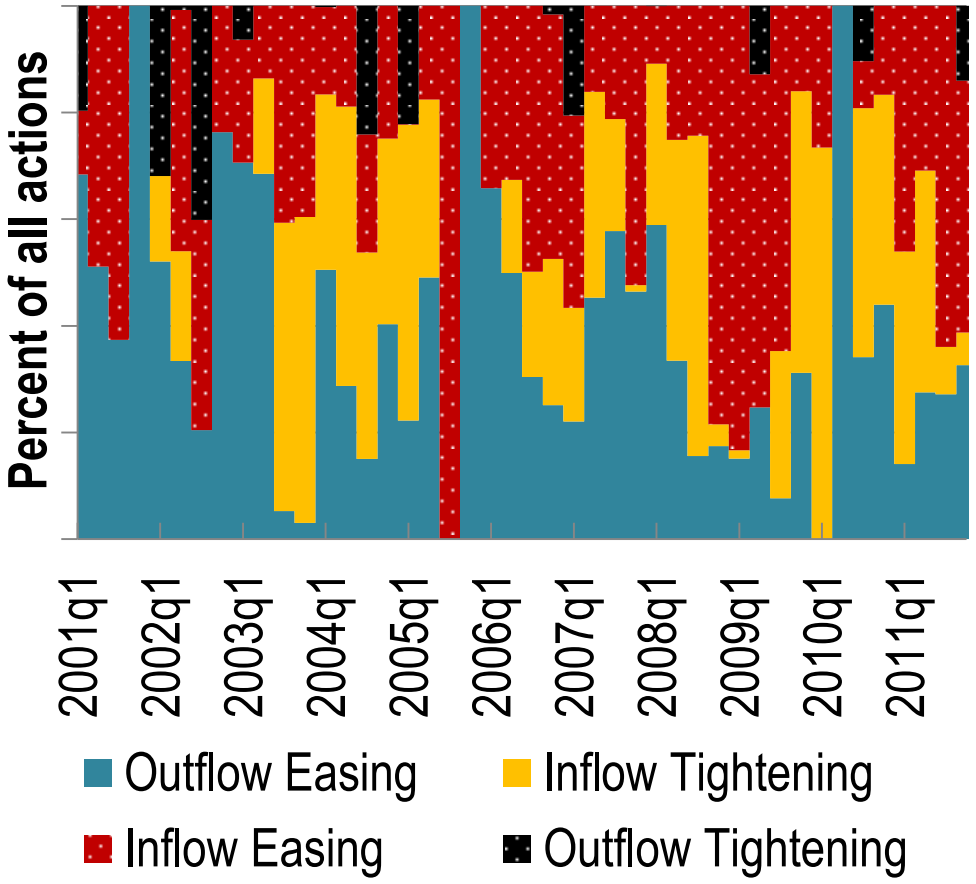
Countries often took conflicting policy actions simultaneously

- Most quarters saw **both** net capital inflow (NKI) reducing and NKI increasing measures
- We use measures of **net direction of policy**



Note: We exclude actions related to FDI. All capital control actions in the figure are weighted measures.

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Measures of net direction of policy

Inflow tightening	-	Inflow Easing	=	**Net inflow tightening measures**
Outflow easing	-	Outflow tightening	=	**Net outflow easing measures**

BASELINE

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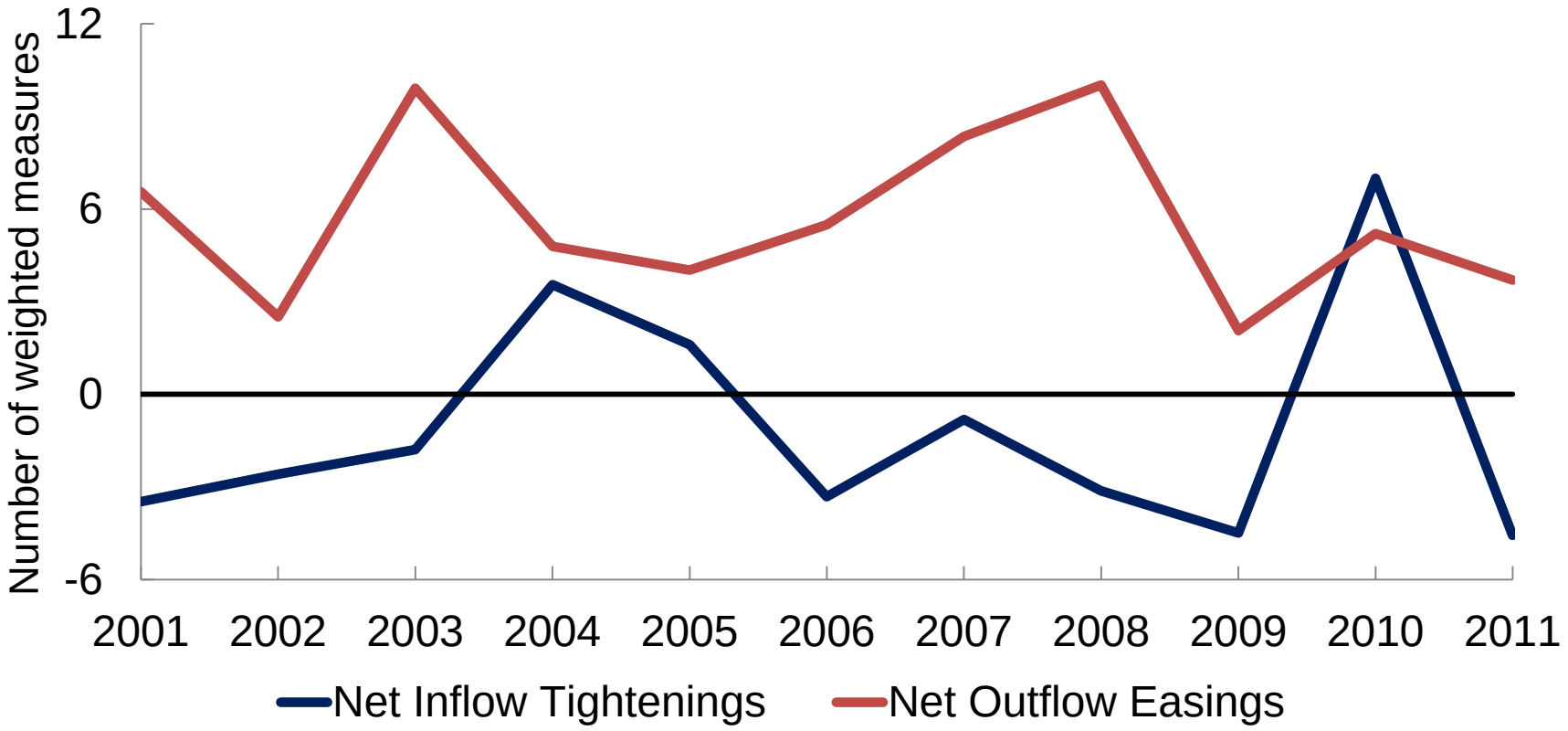
Outflow easing dominant before 2008 crisis, inflow tightening more important afterwards



Note: Net easing of outflow controls is the difference between outflow easing CCAs and outflow tightening CCAs. Net tightening of inflow controls is analogously defined. We exclude measures related to FDI. All CCA s in the figure are weighted measures.

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Are capital controls useful as tools for domestic macroeconomic management?

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Methodology is based on "impossible trinity"

- **Baseline model:** Panel VAR
- **Endogenous variables capture the trilemma options:**
  1. Net Inflow Tightening
  2. Net Outflow Easing
  3. Net Capital Inflows (NKI/GDP)
  4. Monetary Policy Autonomy Index (Aizenman et al., 2009)
  5. Spot exchange rate change (vis-à-vis the US dollar)
- **Controls:** to capture push factors
- **Sample:** 17 EMEs, 2001Q1-2011Q4

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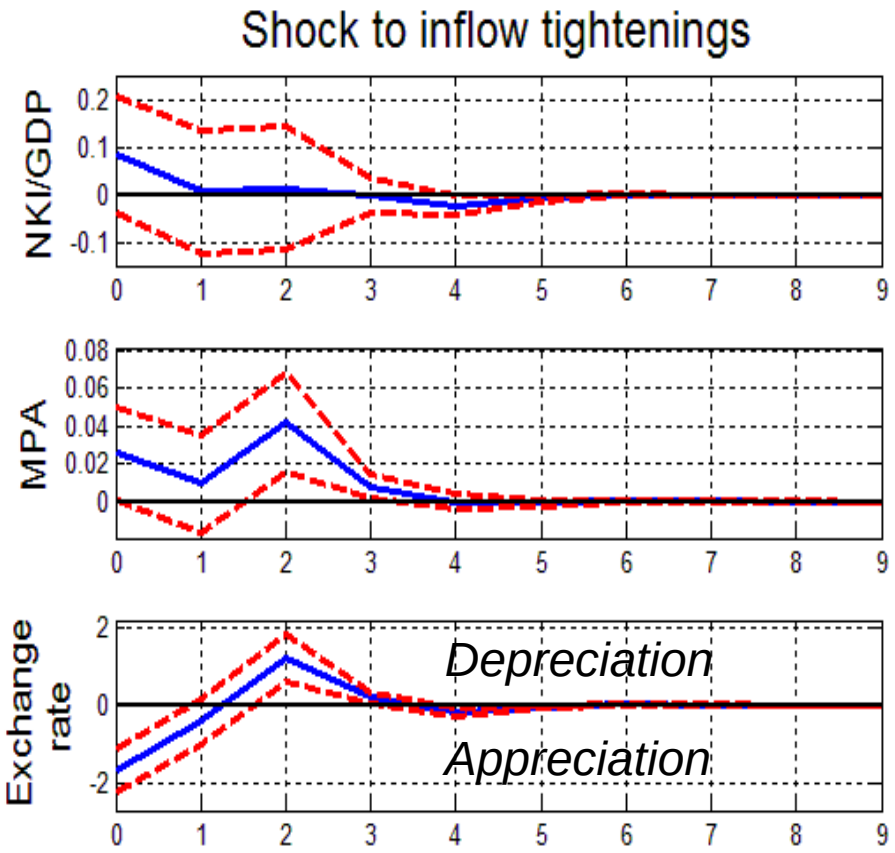
Result #1: No escape from trilemma

Shock to net inflow tightening:

- No impact on NKI
- Some increase in monetary policy autonomy
- Strengthening currency, followed by weakening
- Responses are very small



Note: Net capital inflows exclude FDI and flows to official sectors. Results are for full-sample period and correspond to figure 6 in the paper. Time periods (x-axis) are quarters.

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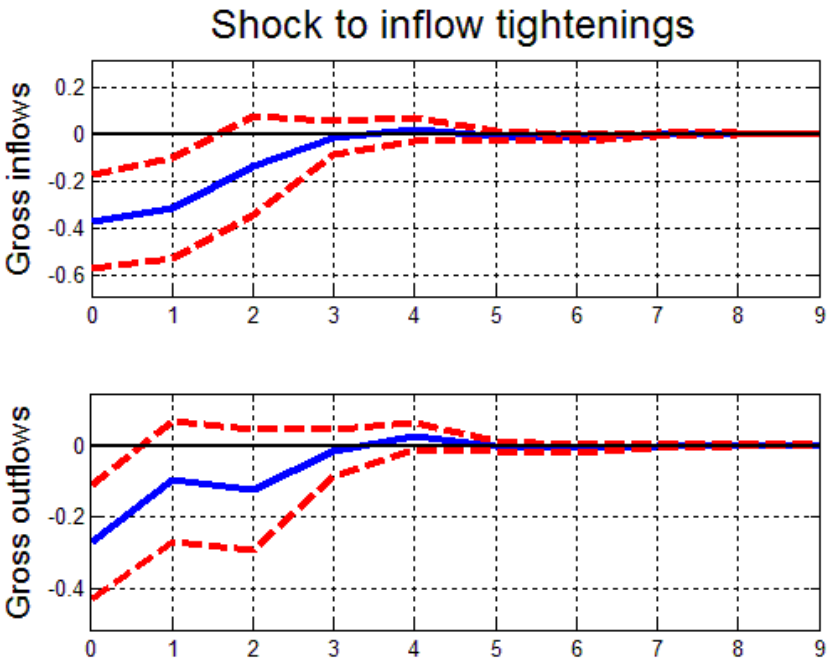
Result #2: Post-2008 crisis world different

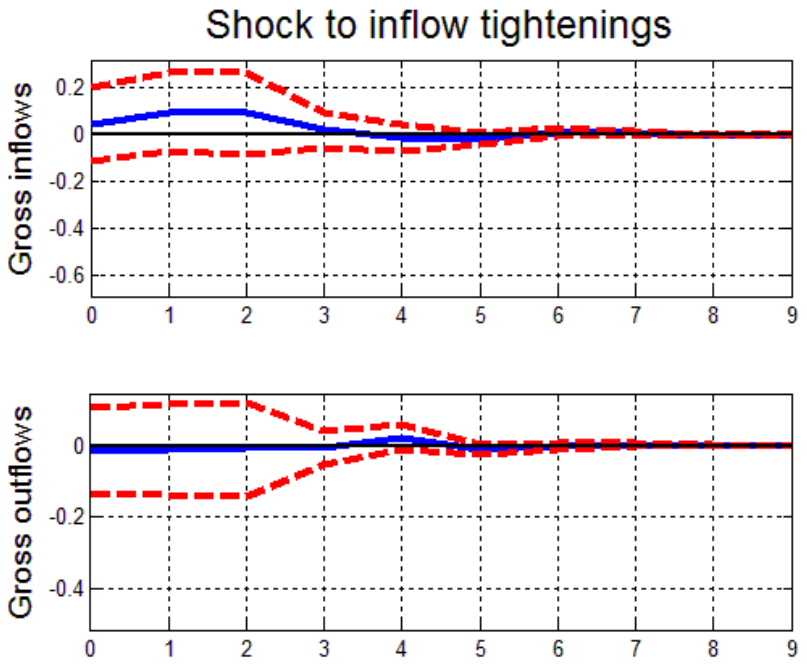
Pre-2008

Offsetting impacts on gross flows



Post-2008

No impact on gross flows



Note: Gross inflows and outflows exclude FDI and flows to official sectors and are measured as percent of GDP. Results shown correspond to figure 10 in the paper. Time periods on x-axis are quarters.

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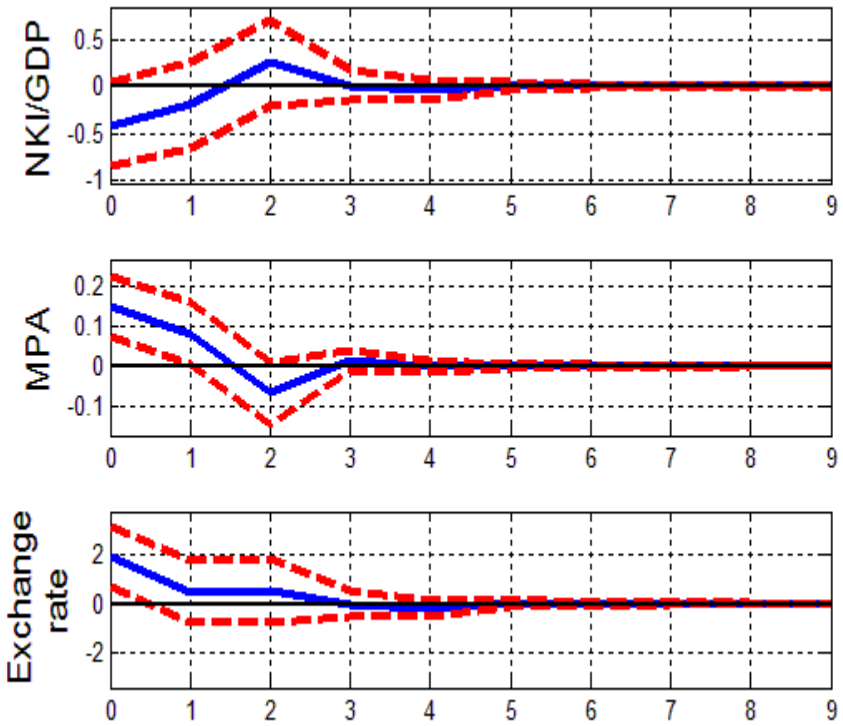
Result #3: Controls more effective in Asia than Latin America

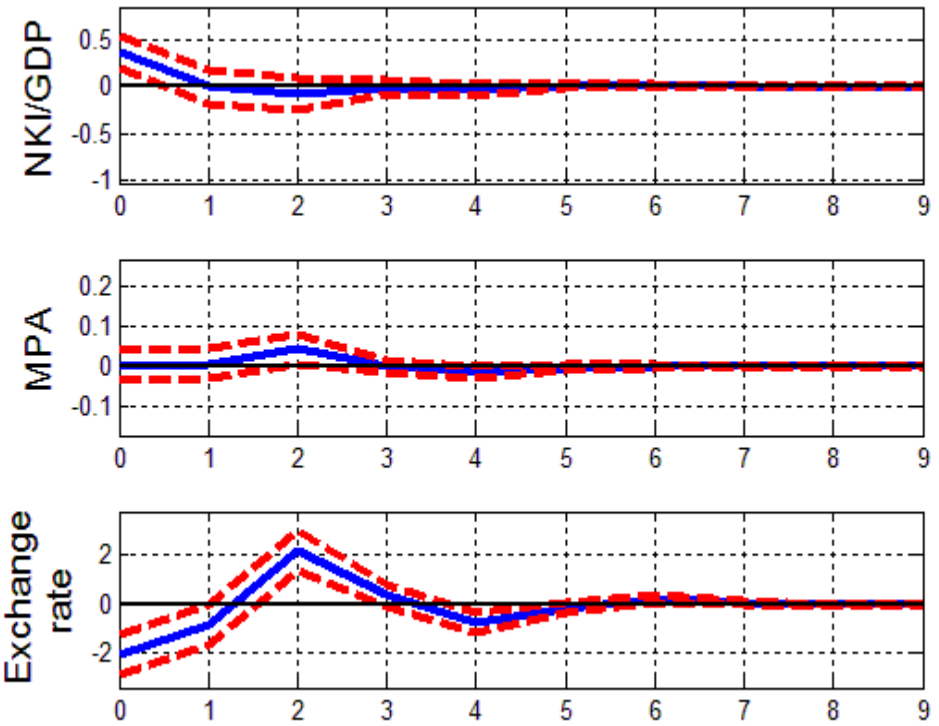
Asia

Shock to inflow tightening



Latin America

Shock to inflow tightening



Note: Exchange rate measures quarterly percentage changes. CCAs exclude those related to FDI. Results are for full-sample period. Time periods (x-axis) are quarters. An increase in exchange rate is a depreciation of the local currency.

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What are the spillover effects of capital controls?

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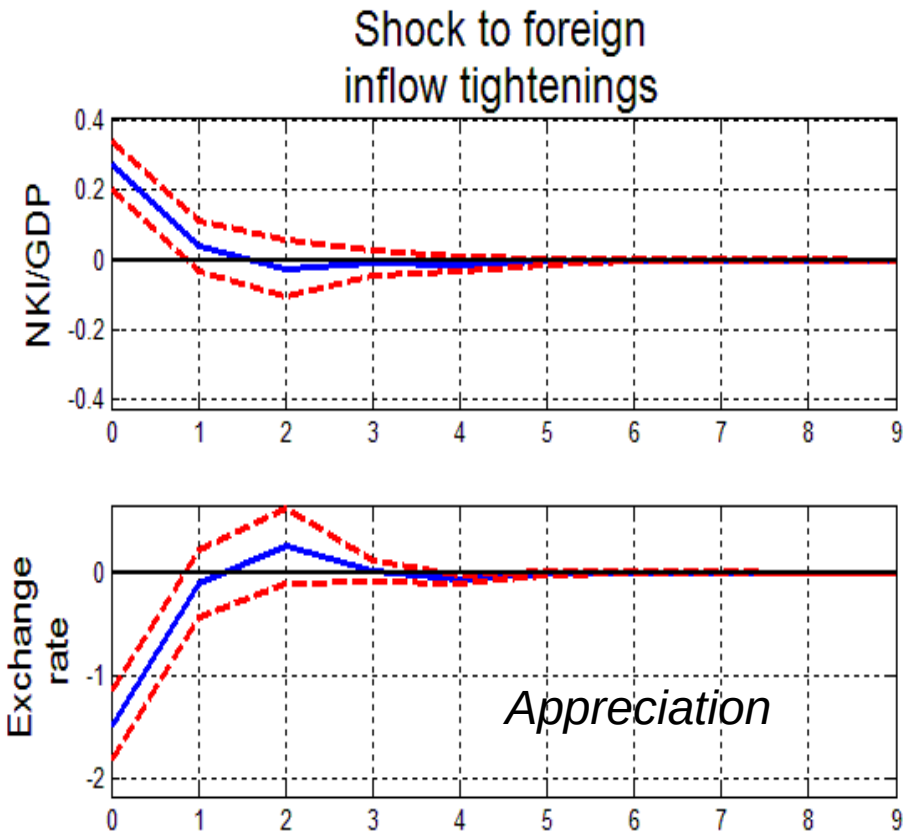
Result #4: Significant spillovers of inflow tightening

- **Foreign inflow tightening:**
  - Increases NKI
  - Appreciates exchange rate
- **No spillovers from foreign outflow easing**



Note: Net capital inflows exclude FDI and flows to official sectors. CCAs exclude those corresponding to FDI. Results shown correspond to figure 12 in the paper. Time periods are quarters.

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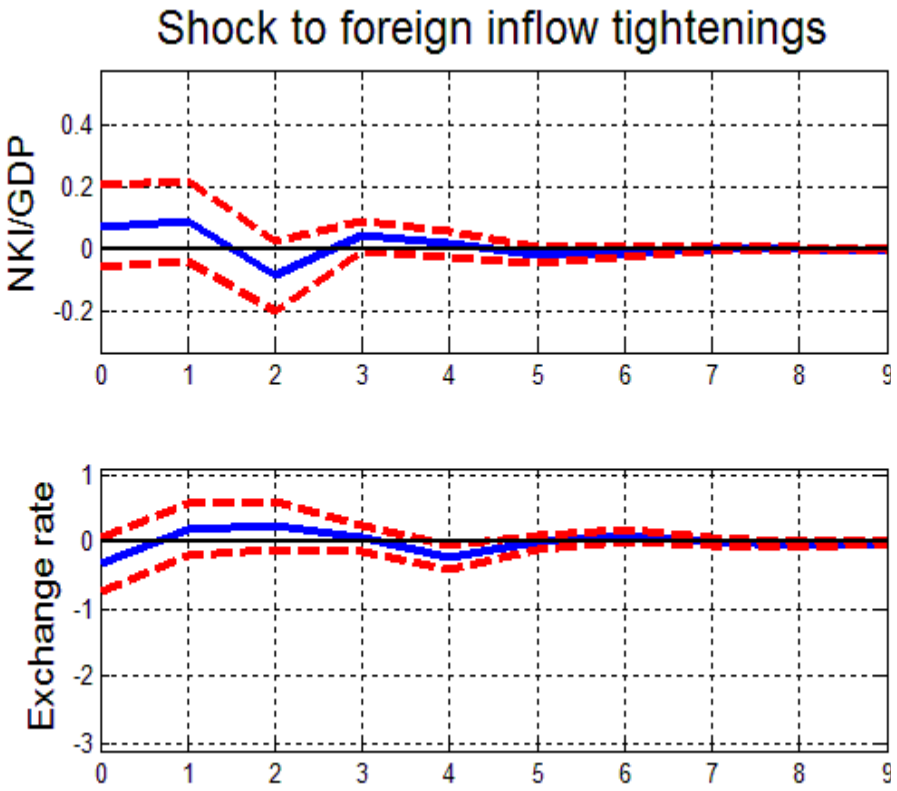
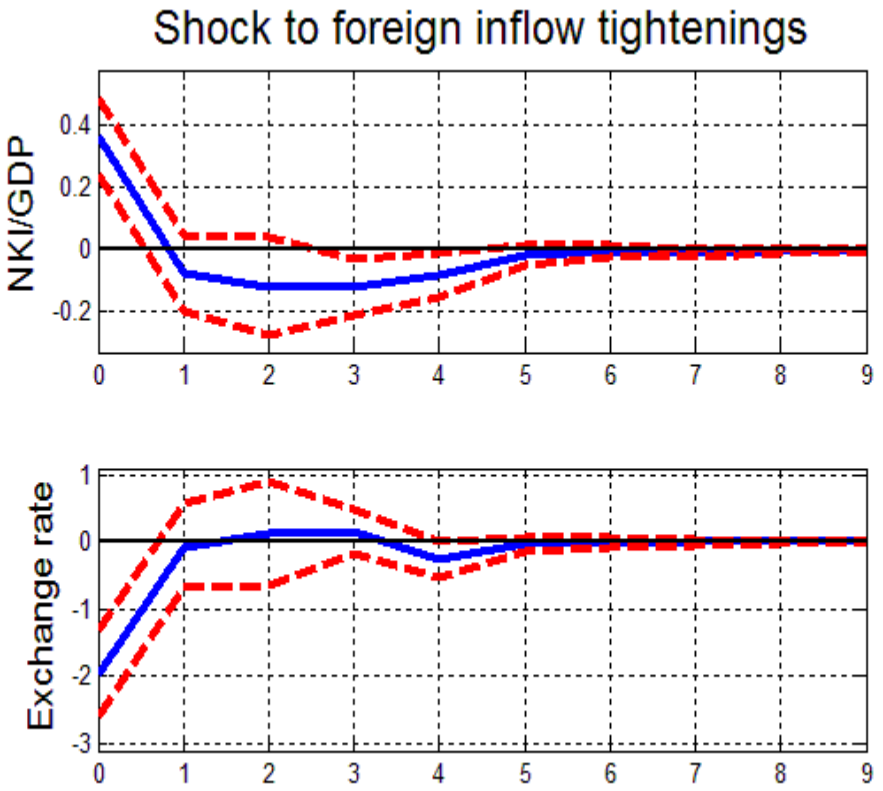
Result #5: Spillovers became larger post- 2008

Pre-2008



Post-2008



Note: Exchange rate measures quarterly percentage changes. Time periods (x-axis) are quarters. CCAs exclude those related to FDI. Results correspond to figures 13 and 14 in the paper.

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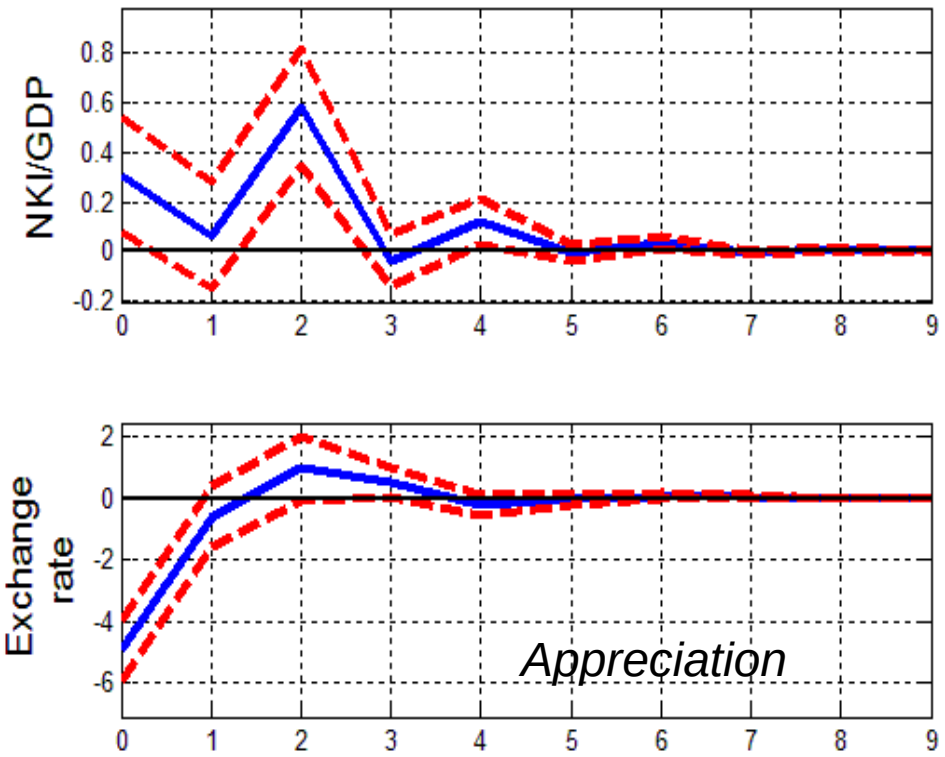
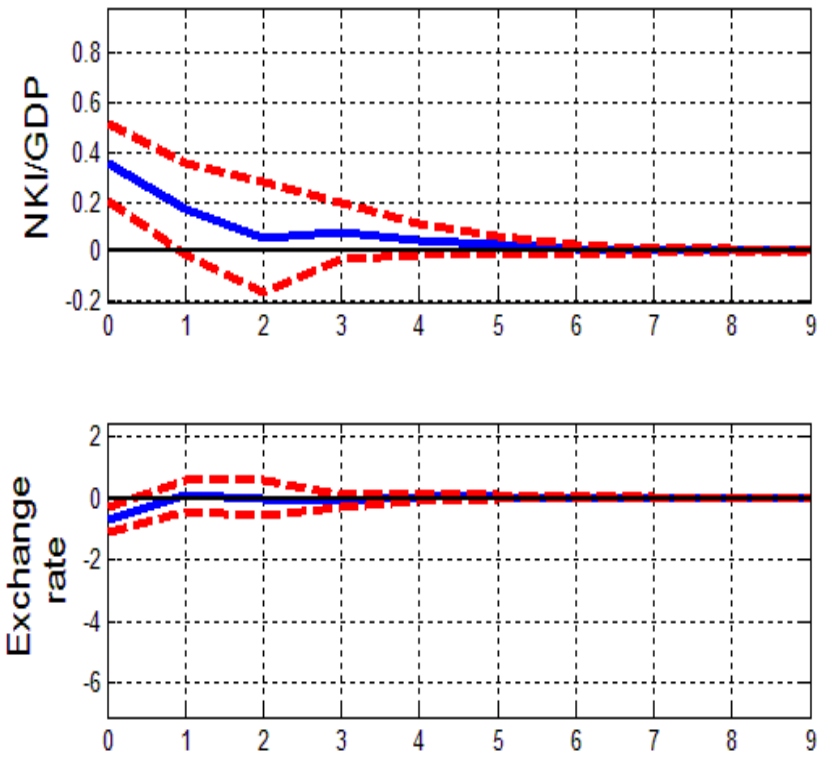
Result #6: Stronger spillovers in Latin America than in Asia

Latin America



Emerging Asia



Note: Exchange rate measures quarterly percentage changes. Time periods (x-axis) are quarters. CCAs exclude those related to FDI. Results correspond to figures 15 and 16 in the paper.

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Conclusions

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Look at gross flows, spillover effects matter

- **New dataset** shows capital control policies in EMEs often ambiguous, even excluding FDI controls. Also,
  - Pre-2008, outflow liberalization was policy tool of choice, inflow tightening after the crisis
- **No escape from the trilemma**. But:
  - Significant impacts on gross flows, often unintended
  - The role of resident flows is important
- **Spillover effects of inflow tightening** are important:
  - Especially after the crisis, and in Latin America

Thank you!

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Appendix

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Countries in Sample

Argentina	Egypt	Mexico	Thailand
Brazil	India	Peru	Turkey
Chile	Indonesia	Philippines	
China	Korea	Russia	
Colombia	Malaysia	South Africa	

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What does the dataset look like?

1.	Country	India	Peru
2.	Policy Change	**Foreign institutional investors** (FIIs) allowed to invest USD 2.6 billion in government securities (raised from USD 2 billion).	Marginal reserve requirement rate on **foreign currency deposits** and on operations indexed to the exchange rate raised from 35% to 45%.
3.	Announcement Date	19-Jan-07	18-Jul-10
4.	Effective Date	19-Jan-07	1-Aug-10
5.	Inflow/Outflow	Inflows	
6.	**Easing/Tightening**	**Easing (+1)**	**Tightening (-1)**
7.	Capital Control/ Currency Based?	Capital Control	Currency Based: Prudential Type
8.	Quant/Price/Monitoring	Quantitative	Price
9.	IIP Assets or Liabilities	Liabilities	
10.	IIP Category	Portfolio investment: Debt	Other Investment: Currency and Deposits
11.	**Weight (excl. FDI)**	**0.041**	**0.485**
12.	Source	SEBI Circular No. IMD/FII/25/2007	Verified by CB of Peru; The Free Library; AREAER

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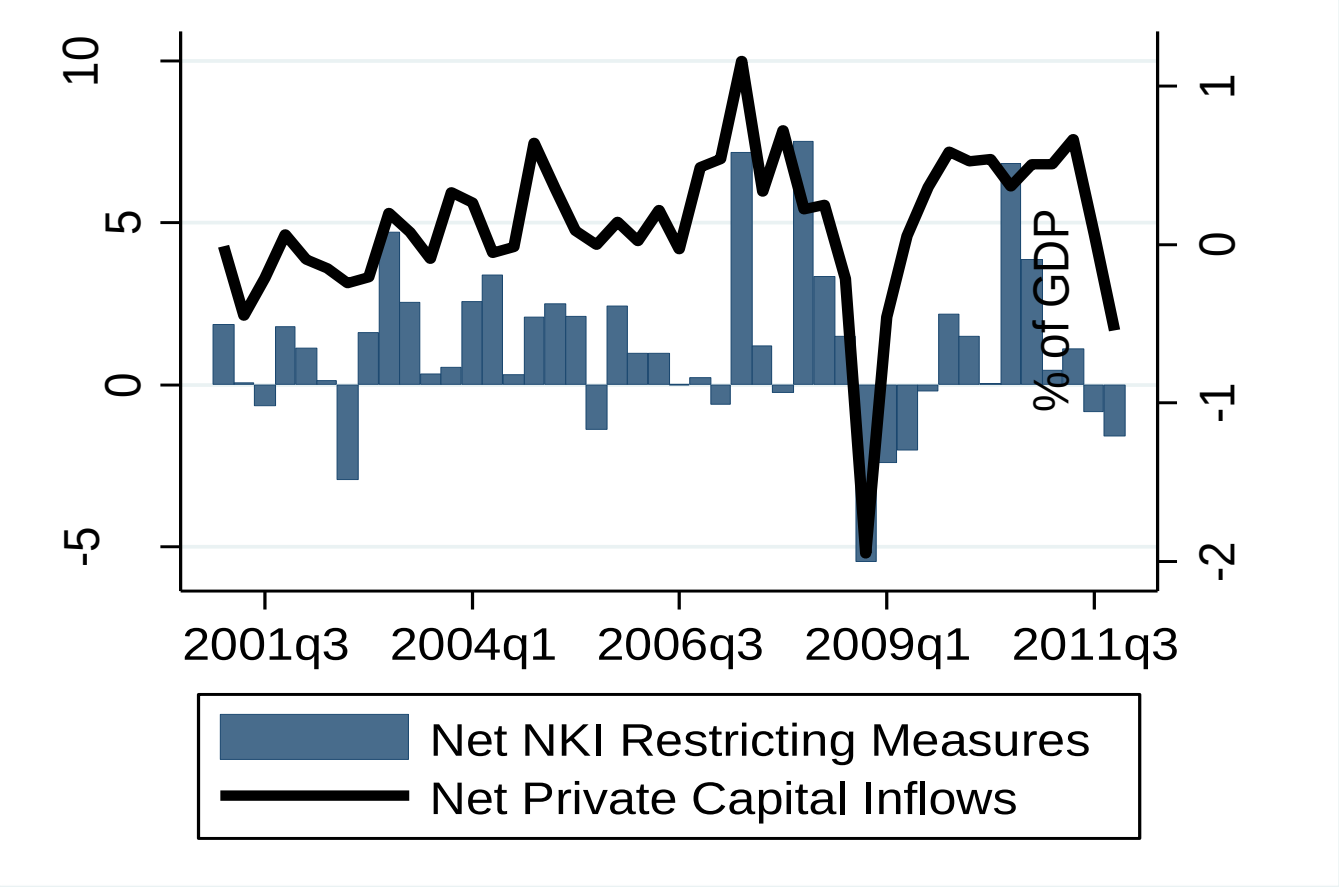
Net NKI restricting measures mirror developments in capital flows



Note: Net private capital inflows exclude FDI flows and government and monetary authority transactions from "other" inflows and outflows. Net NKI restricting measures is the difference between NKI reducing capital control actions (inflow tightenings and outflow easings) and NKI increasing actions (inflow easings and outflow tightenings). All measures are weighted. We exclude capital controls related to FDI.

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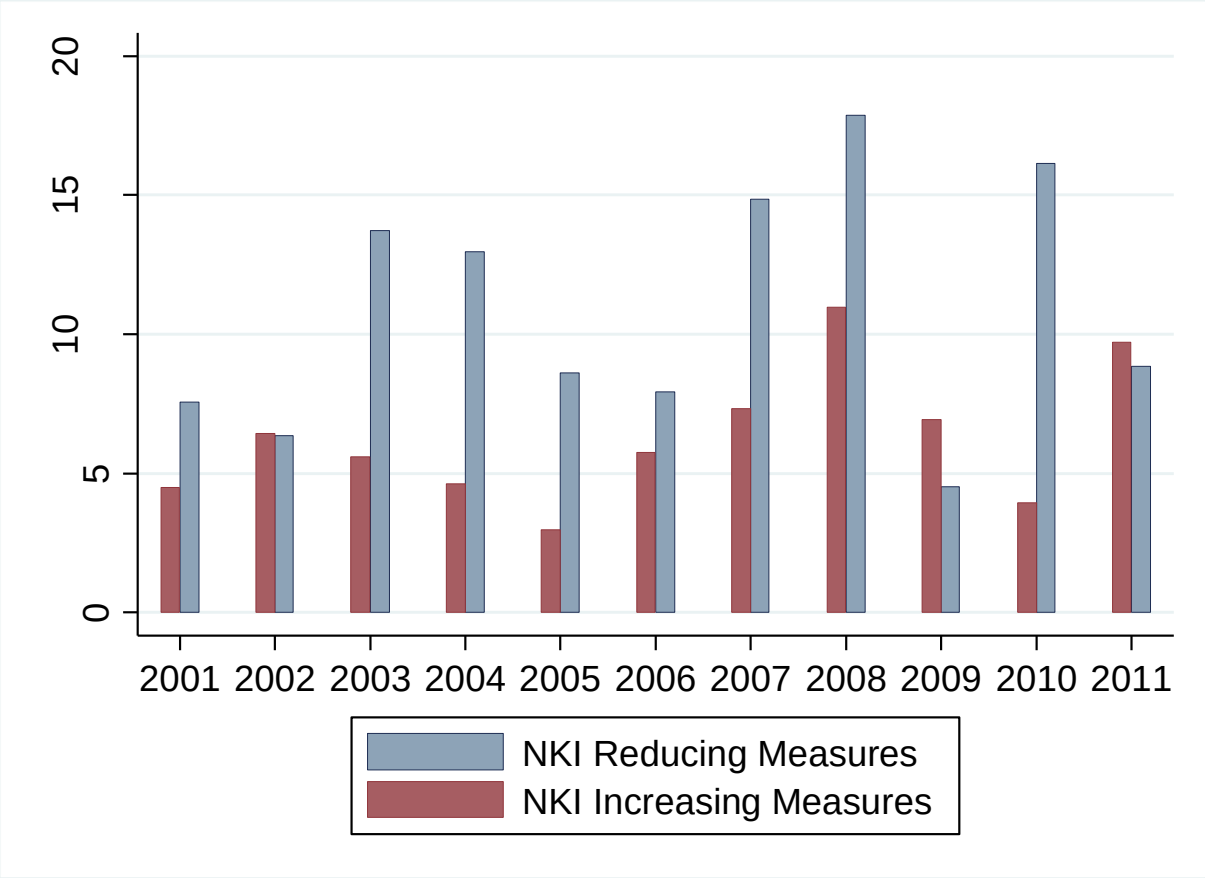
EMEs introduced both NKI reducing and NKI increasing measures in each year



Note: NKI reducing measures is the sum of inflow tightening capital control actions (CCAs) and outflow easing CCAs. NKI increasing measures is the sum of inflow easing CCAs and outflow tightening CCAs. All CCAs are weighted. We exclude CCAs related to FDI.

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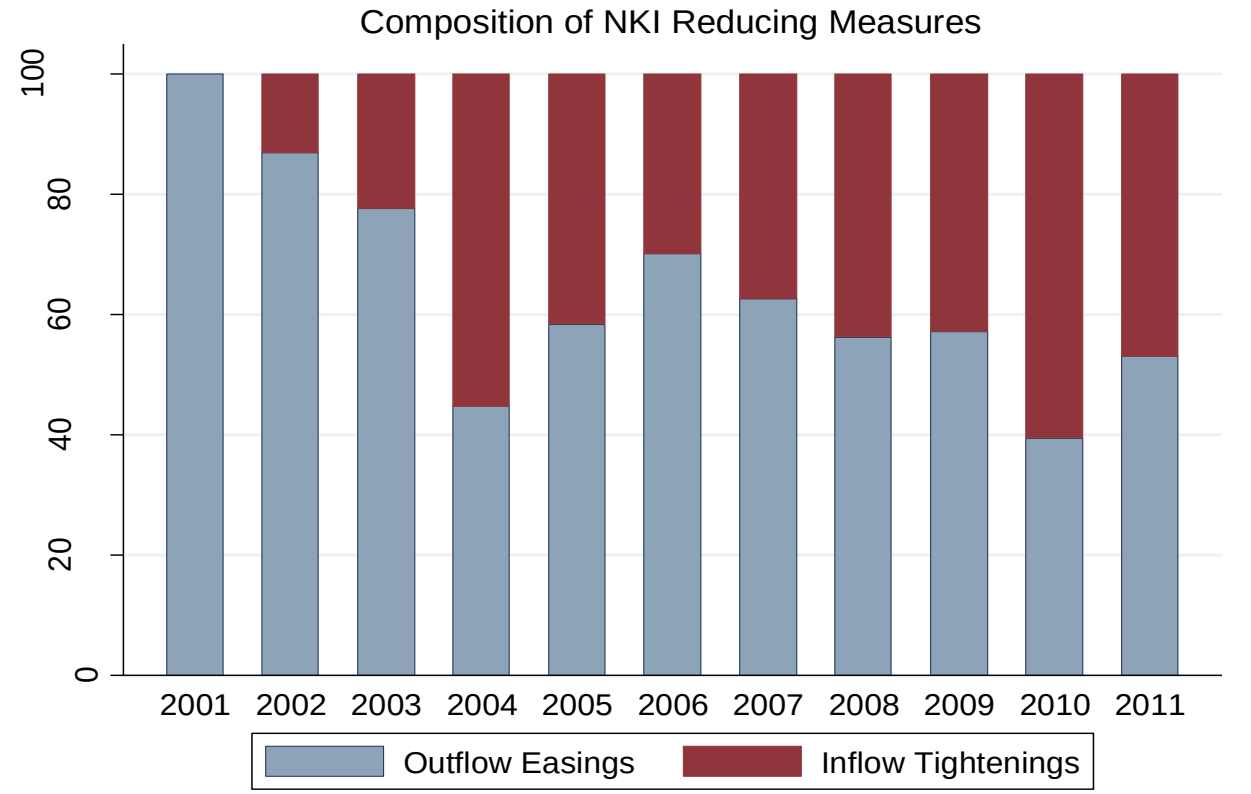
Prior to 2009, NKI reducing measures consisted primarily of outflow easings



Note: NKI reducing measures is the sum of inflow tightening capital control actions (CCAs) and outflow easing CCAs. We exclude CCAs related to FDI. All measures in the figure are weighted measures.

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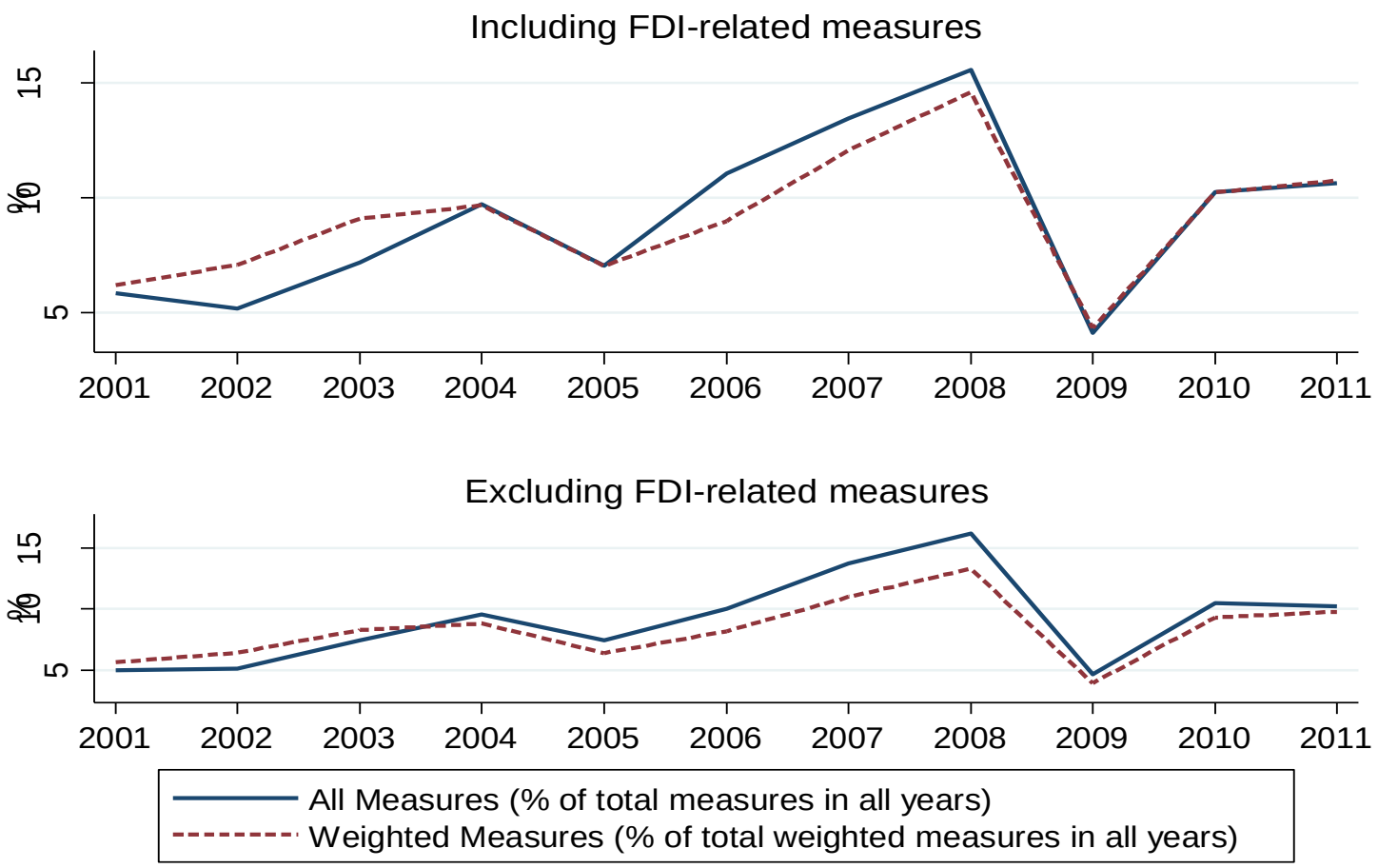
Weighted and un-weighted changes in capital controls follow similar patterns over time



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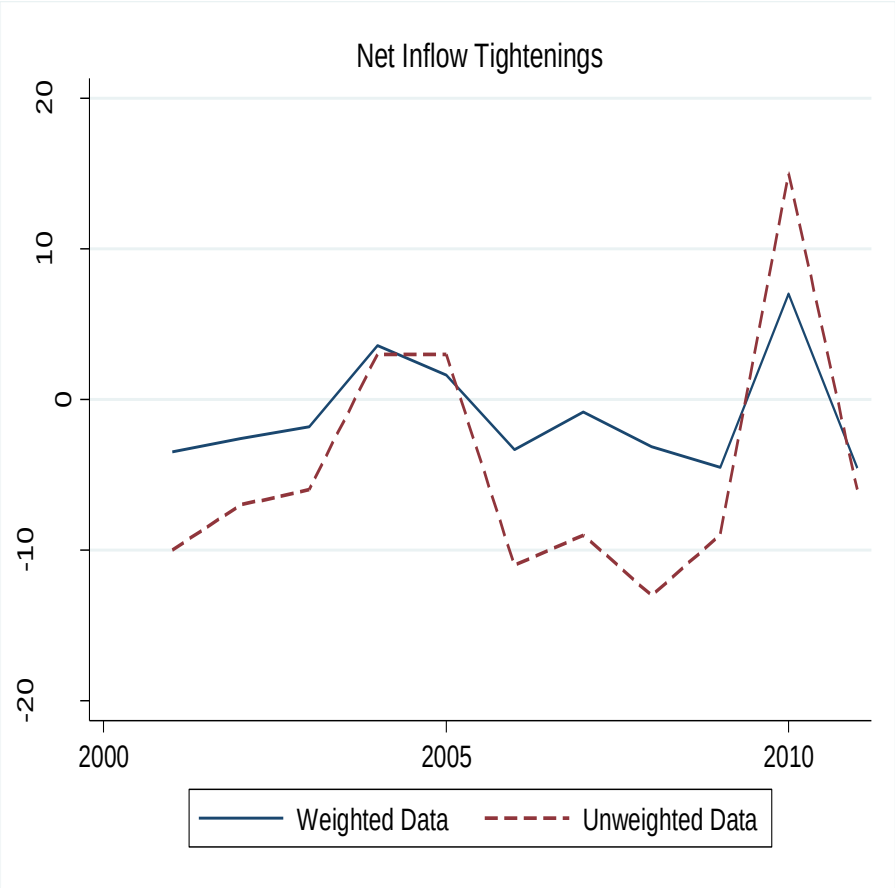
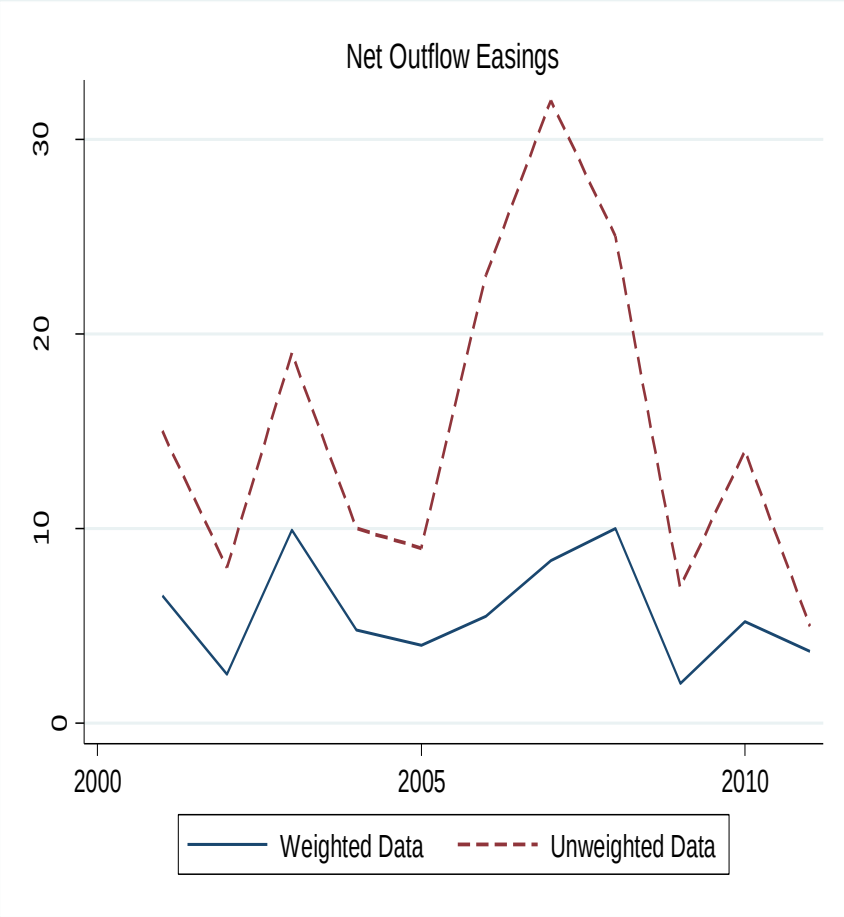
Weighting scheme affects outflow actions more





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More details on our empirical approach: Models

- **Baseline model domestic capital controls**:
  - Panel VAR
  - Number of lags: 2 quarters (using standard selection criteria)
  - Estimated using OLS
  - IRFs and error bands computed using Monte Carlo simulation with 1000 draws

- **Baseline model multilateral effects**:
  - Near-VAR: foreign capital control changes do not react to other variables in the system
  - Panel and country-specific
  - Number of lags: 2 quarters
  - Estimated using SUR
  - IRFs and error bands computed using Gibbs sampling with 25000 draws

- **Shock identification**: Choleski, with capital control changes ordered first, then financial variables, then capital flows.

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Methodology is based on the impossible trinity

- **Baseline model:** Panel VAR
- **Endogenous variables:**
  - Net Inflow Tightenings
  - Net Outflow Easings
  - Net Capital Inflows (NKI/GDP)
  - Monetary policy autonomy index
  - Change in spot exchange rates vis-à-vis the US dollar
- **Exogenous variables:**
  - Global GDP growth
  - S&P500 stock price growth
  - US Inflation
  - QE and crisis dummies
- **Sample:** 17 EMEs during 2001Q1-2011Q4

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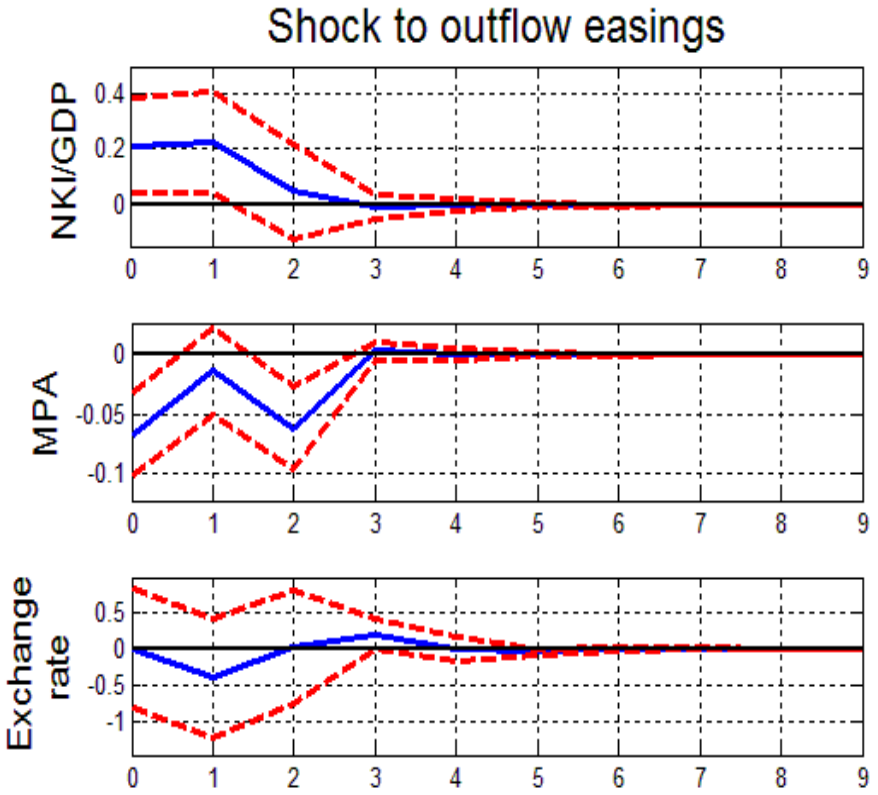
Result #7: Changes to capital controls can have unintended effects: outflow easing leads to more net capital inflows

Shock to net outflow easings:

- Upward impact on NKI (liberalization increases gross inflows)
- Weakening of monetary policy autonomy
- No impact on currency



Note: Net capital inflows exclude FDI and flows to official sectors. Results shown are for full-sample period and correspond to figure 6 in the paper.

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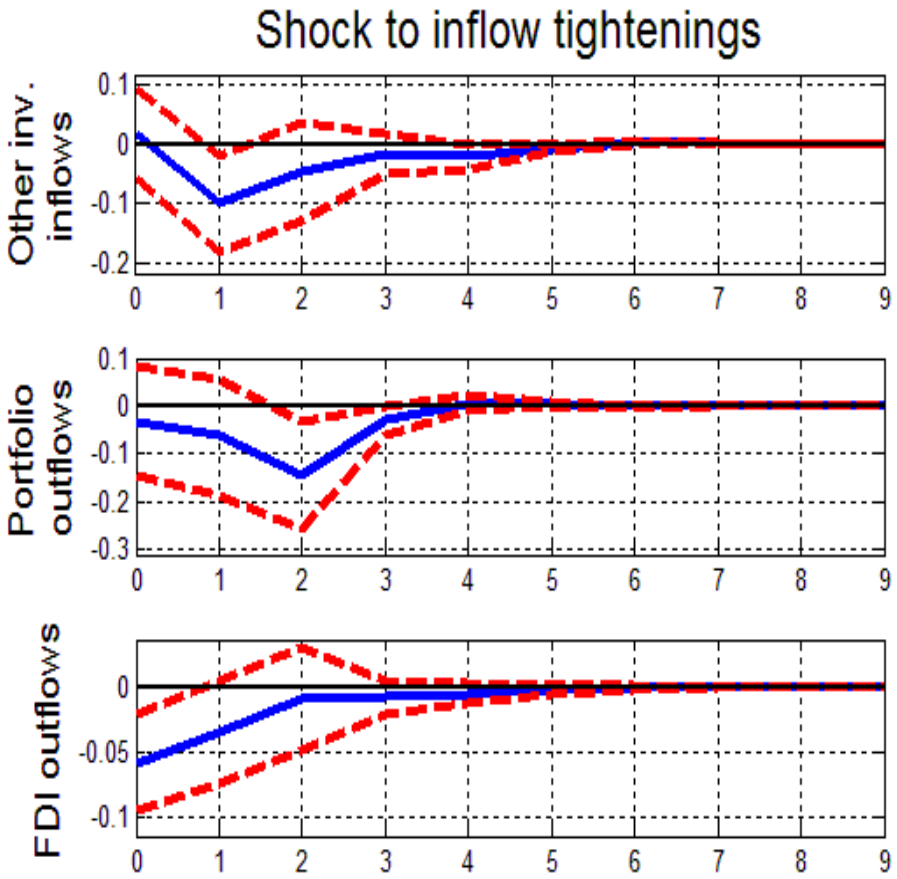
Result #8: Resident flows matter (It's not just evasion)

- **Net inflow tightening:**
  - Other investment **inflows** decline

  Also,

  - Portfolio **outflows** decline
  - FDI **outflows** decline

- **Cross-border borrowing is key**
- **Behavior EME residents important**



Note: Other inflows exclude flows to official sectors. CCAs exclude those related to FDI. Results are for full-sample period and correspond to figure 11 in the paper.

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How do we measure spillovers effects?

- Assume that spillovers effects stem from **BRICS** countries
- **Construct a variable for spillover effects:**
  - For BRICS: the sum of the number of capital control changes in other BRICS
  - For non-BRICS: the number of capital control changes in the regional BRICS country (i.e. Brazil for Latin-America, China/India for Asia, etc)
- **Use this variable** in baseline model (instead of own controls)
- **Near-PVAR:** foreign capital control changes are exogenous

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Why stronger spillover than domestic effects?

1. Different samples!
   - Testing domestic effects of all countries' capital controls but spillovers of larger countries' controls
2. Ambiguity in domestic capital control policies:
   - In the surge year 2007, of the 10 countries that took any measures on inflow controls, only 5 saw net inflow tightening
3. Expect more de-facto integrated economies to see stronger impact of foreign shocks
   - See results for Asia vs Latin America
4. Identification of structural shocks
   - Foreign shocks are truly exogenous

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Among BRICS, spillovers least important for India and South Africa, most important for Russia

	NKI/GDP		Exchange rate		Wall or gate?
	Net inflow tightening	Net outflow easing	Net inflow tightening	Net outflow easing	
ARG	N	N	Y	Y	G
BRA	(N)	N	Y	Y	G
CHL	Y	N	Y	N	G
CHN	Y	N	Y	N	W
COL	N	(Y)	Y	N	G
IDN	Y	N	(Y)	N	G
IND	N	(N)	Y	(N)	W
KOR	N	(N)	Y	N	G
MEX	(Y)	(Y)	Y	Y	G
MYS	N	N	(Y)	(N)	W
PER	N	N	Y	Y	G
PHL	Y	(N)	Y	N	W
RUS	Y	N	Y	N	G
THA	N	N	Y	N	W
TUR	N	Y	(Y)	Y	G
ZAF	(N)	N	Y	N	W

Y = significant impact with expected sign; (Y) = significant impact with expected sign with delay; N = no significant impact; (N) = significant impact with unexpected sign.