Global Financial Conditions and Monetary Policy Autonomy

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International Monetary Fund

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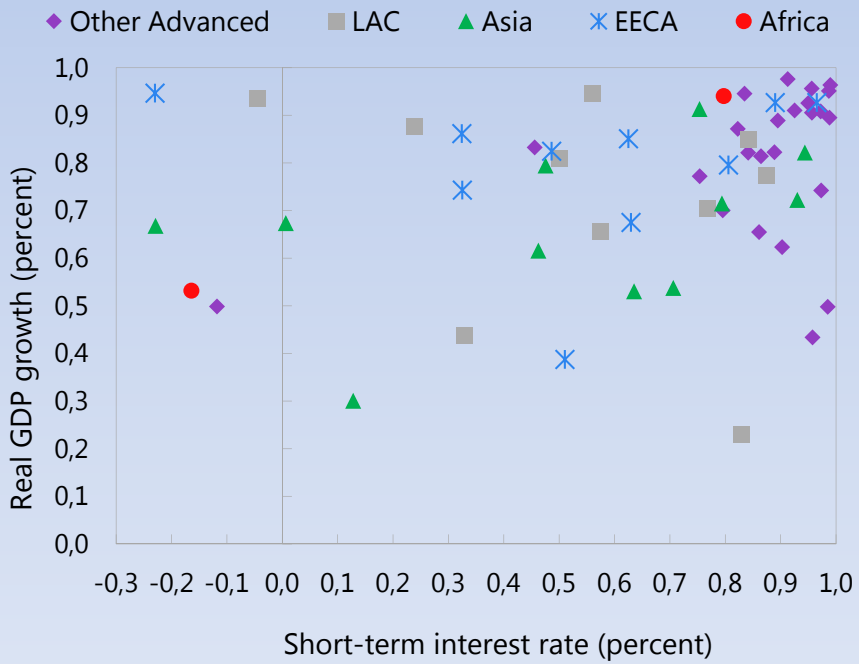
Motivation

Correlation of short-term interest rates often taken as evidence of limited monetary policy autonomy.

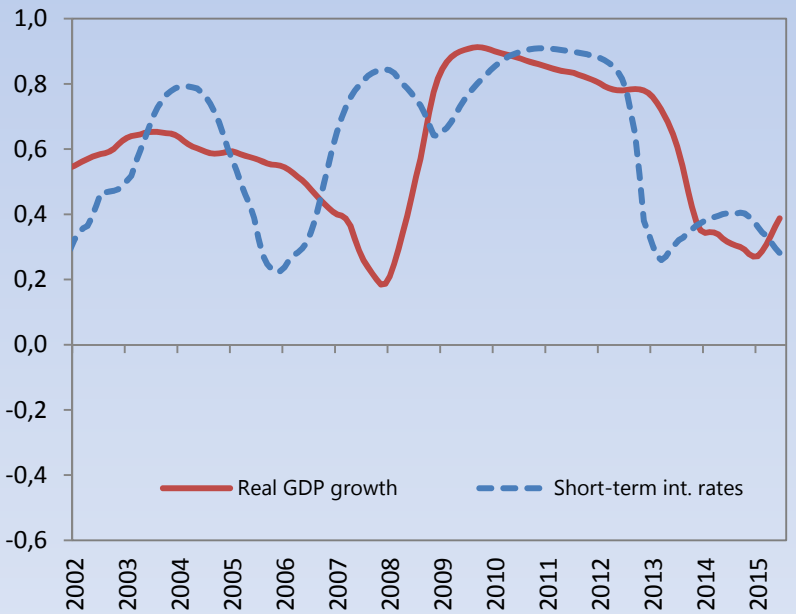
Synchronicity with global output and interest rate cycles

(Correlations of real GDP growth (vertical axis) and short-term interest rates (horizontal axis))



Evolution of Correlation with Global Factor

(Average correlations across advanced economies with corresponding "global component"; 4-year moving average)



Note: For each variable, the "global component" is computed as the first principal component, derived from principal component analysis, for all the countries in our sample, estimated over the period 2000m1 to 2014m12.

Motivation

Questions:

Do central banks in SOEs follow monetary conditions in the 'center'?

- Even if they let their currencies float?

Does the global financial cycle invalidate the policy trilemma?

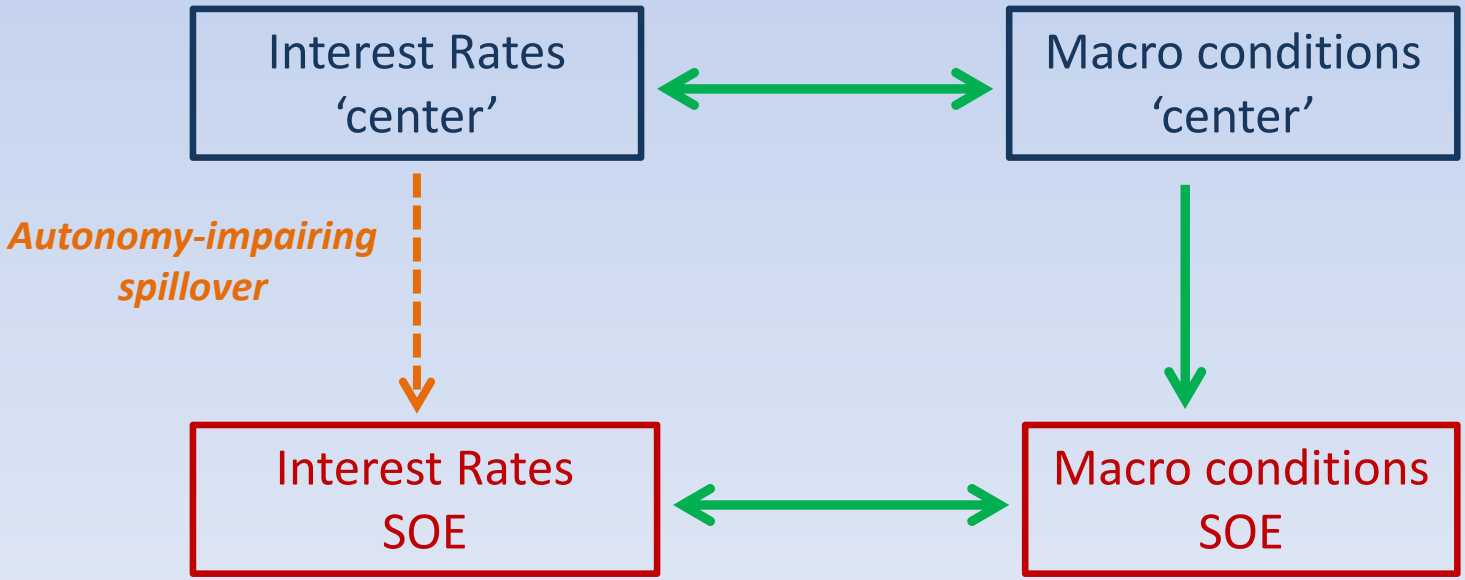
What does evidence of monetary *spillovers* tell us about monetary *autonomy* (ability to tailor monetary policy to domestic conditions)?

Conceptual framework

Concepts of monetary autonomy and monetary spillovers intimately related, but spillovers do not necessarily signal lack of autonomy

Autonomy-impairing spillovers: subset of responses of domestic interest rates to foreign shocks

→ Movements in domestic rates (i) not associated with domestic objectives, and (ii) attributable to changes in global financial conditions



Quantifying "autonomy-impairing spillovers": Empirical challenges

1. Simultaneity of international asset prices that are affected by common drivers complicates identification of foreign interest rate shocks
2. The endogenous response of domestic macro outlook to changes in foreign monetary conditions

→ Reverse the problem: start by the domestic monetary policy reaction function

One way of implementing this strategy: a multi-stage VAR procedure:

1) "remove" effects of business cycle *lags:*

$$\begin{bmatrix} \Delta i^s \\ \Delta mc^s \end{bmatrix}_t = \boldsymbol{A}_0 + \sum_{j=1}^{2} \boldsymbol{A}_j \begin{bmatrix} \Delta i^s \\ \Delta mc^s \end{bmatrix}_{t-j} + \begin{bmatrix} e^{i^s} \\ e^{mc^s} \end{bmatrix}_t$$

"remove" *contemporaneous* effects:

$$\hat{e}_t^{i^s} = \alpha + \beta' \, \hat{e}^{mc^s} + u_t^{i^s}$$

2) Use residuals in VAR with global rates:

$$\begin{bmatrix} \hat{u}^{i^s} \\ \Delta i^b \end{bmatrix}_t = \boldsymbol{B}_0 + \sum_{j=1}^{2} \boldsymbol{B}_j \begin{bmatrix} \hat{u}^{i^s} \\ \Delta i^b \end{bmatrix}_{t-j} + \begin{bmatrix} v \\ e^{i^b} \end{bmatrix}_t$$

→ Autonomy-impairing spillovers :

Cholesky-orthogonalized impulse response of *residual* interest rate to a shock to i^b

Monte Carlo simulation

Artificial stochastic series for policy rates in *base* and *small* economy:

- Macro conditions:

$$X_t^* = \alpha^* + \rho^* X_{t-1}^* + e_t^*$$

$$X_t = \alpha + \rho X_{t-1} + \gamma e_t^* + e_t$$

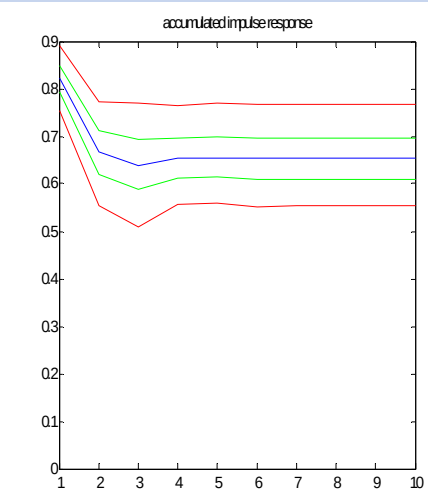
- Taylor rules:

$$i_t^* = \bar{i}^* + \tau^* i_{t-1}^* + \delta^*(X_t^* - \bar{X}^*) + u_t^*$$

$$i_t = \bar{i} + \tau i_{t-1} + \delta(X_t - \bar{X}) + \beta i_t^* + u_t$$

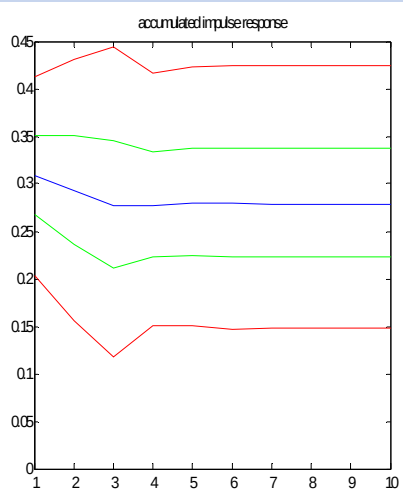
Spillover estimates, alternative VAR methods
(Simulated data, baseline parameterization)

Response of i^b

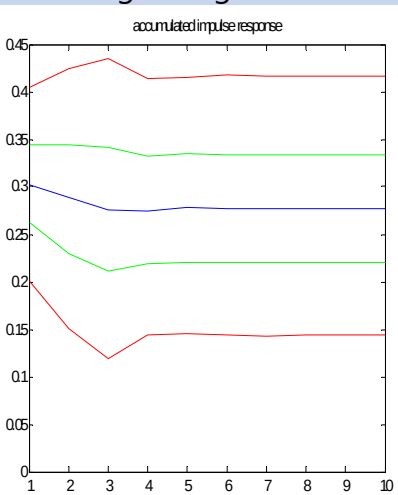


Response of i^s

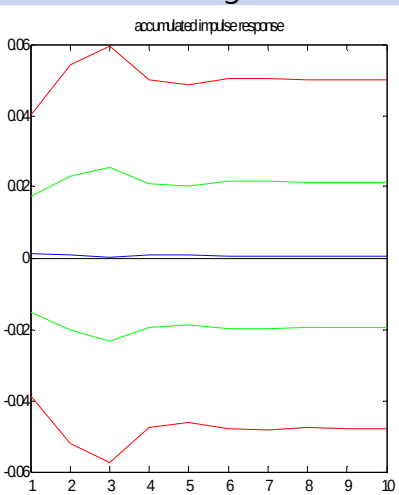
No macro conditions



Single-stage



Multi-stage



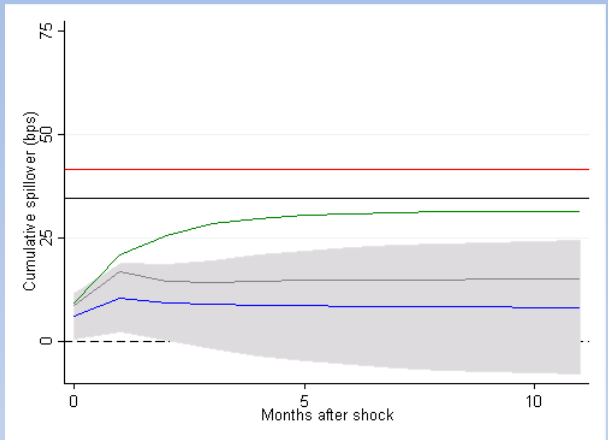
Note: Median response estimate across simulated samples (blue line), 75 percent (green lines) and 95 percent confidence bands (red lines).

Estimating autonomy-impairing spillovers in selected SOEs

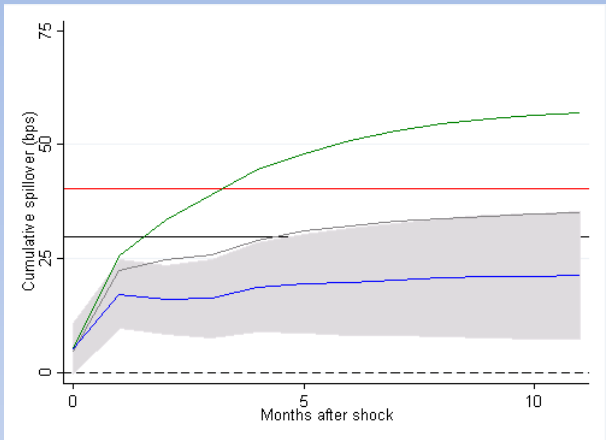
- Sample: Advanced inflation targeters with flexible exchange rates
  - Australia, Canada, New Zealand, South Korea, Sweden, U.K.
  - Monthly data, January 1998 to June 2009
- 'Center': changes in U.S. federal funds rate
- SOE: domestic short term-rates; treasury bills, 3-6 months maturity
- Changes in domestic macro outlook (X): changes in expectations about output growth and CPI inflation from Consensus (fixed 1Y horizon)
- Alternative exercises:
  - Euro area as 'base country' for Sweden and U.K.
  - Monetary surprises (Gertler and Karadi, 2015) instead of realized movements in federal funds rate

Autonomy-impairing spillovers, alternative methods

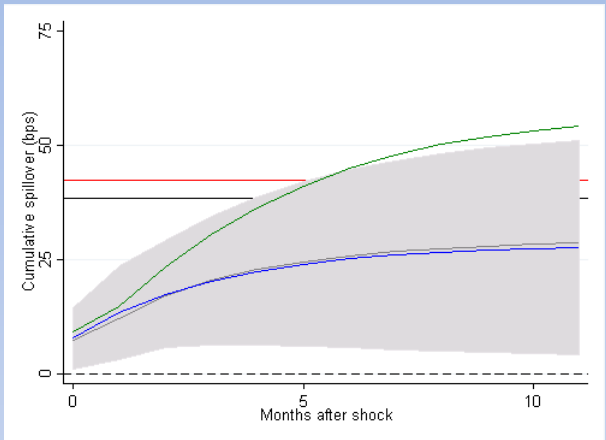
Australia



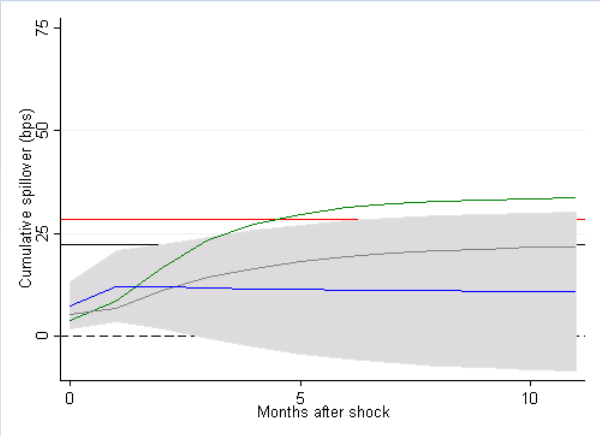
Canada



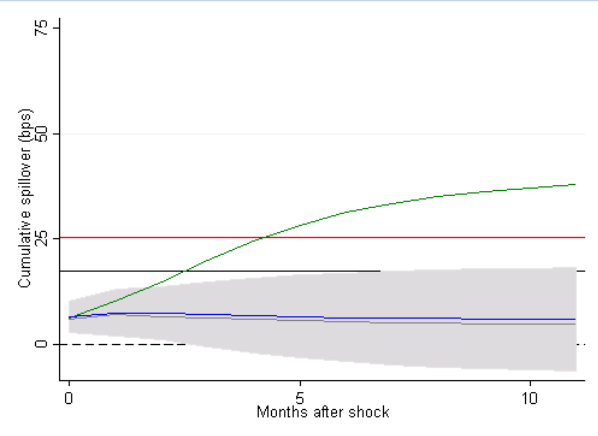
New Zealand



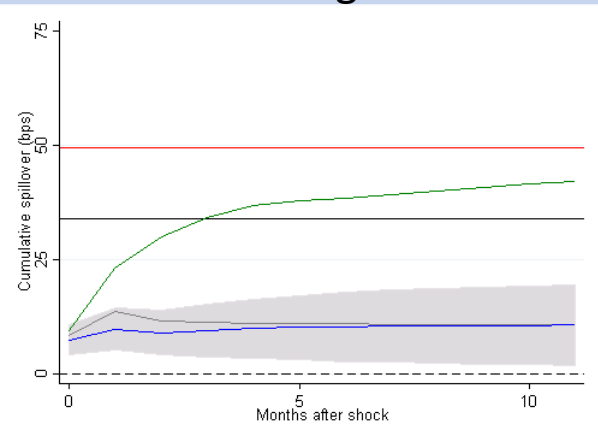
Korea

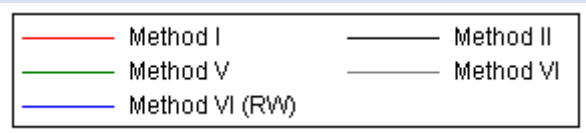


Sweden



United Kingdom

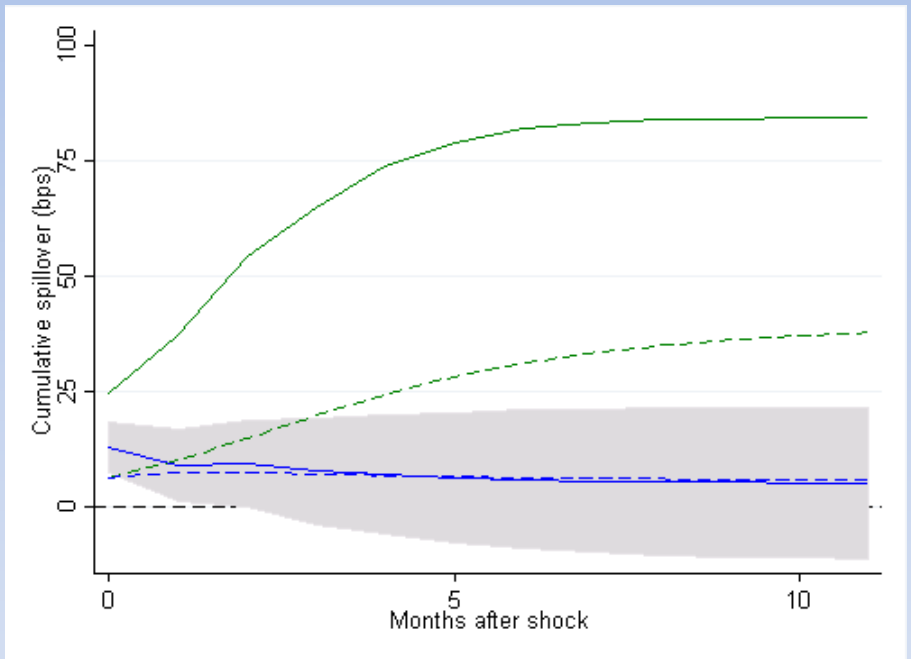




Note: Bands correspond to 95 percent confidence intervals.

Autonomy-impairing spillovers
Base country: euro area vs. U.S. rates

Sweden



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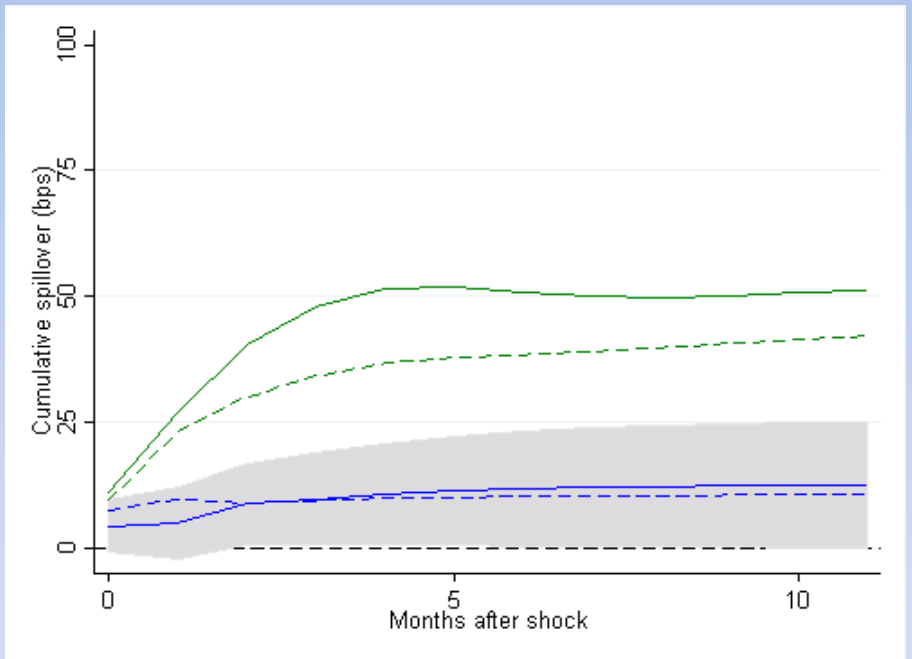
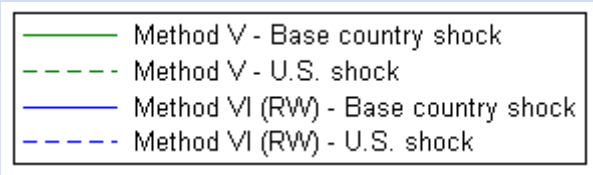
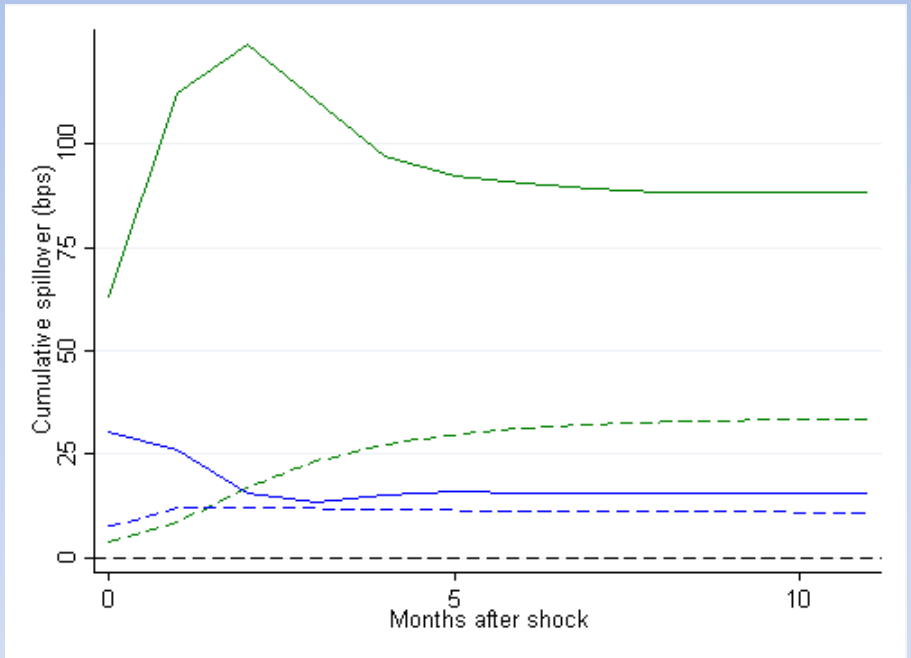




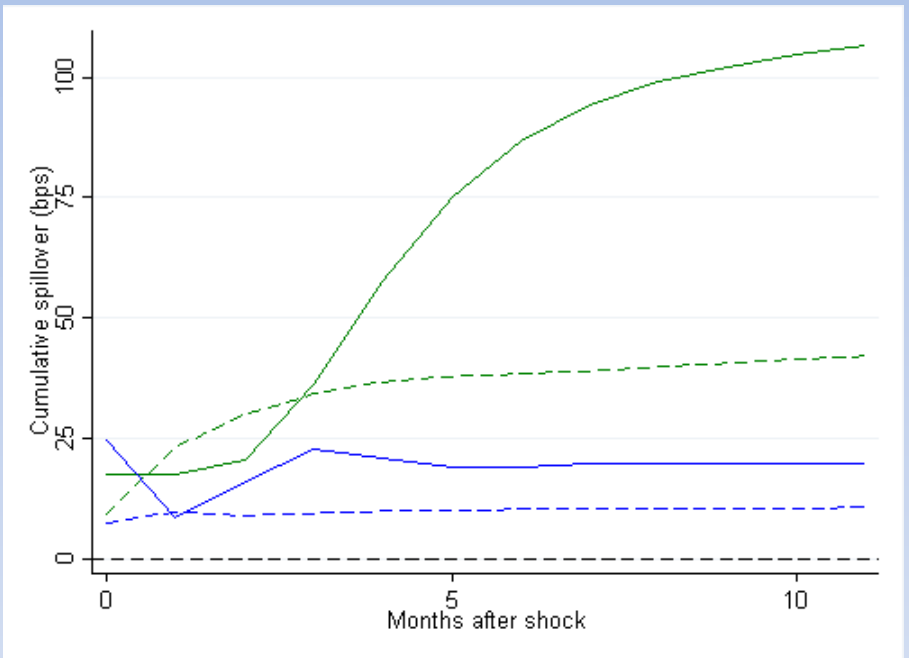
Note: Bands correspond to 95 percent confidence intervals.

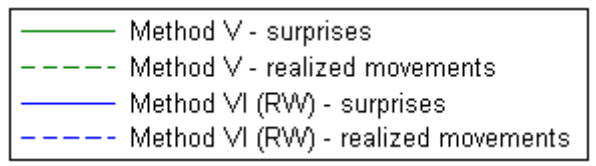
Autonomy-impairing spillovers
Monetary policy surprises (Gertler and Karadi 2015)

Korea

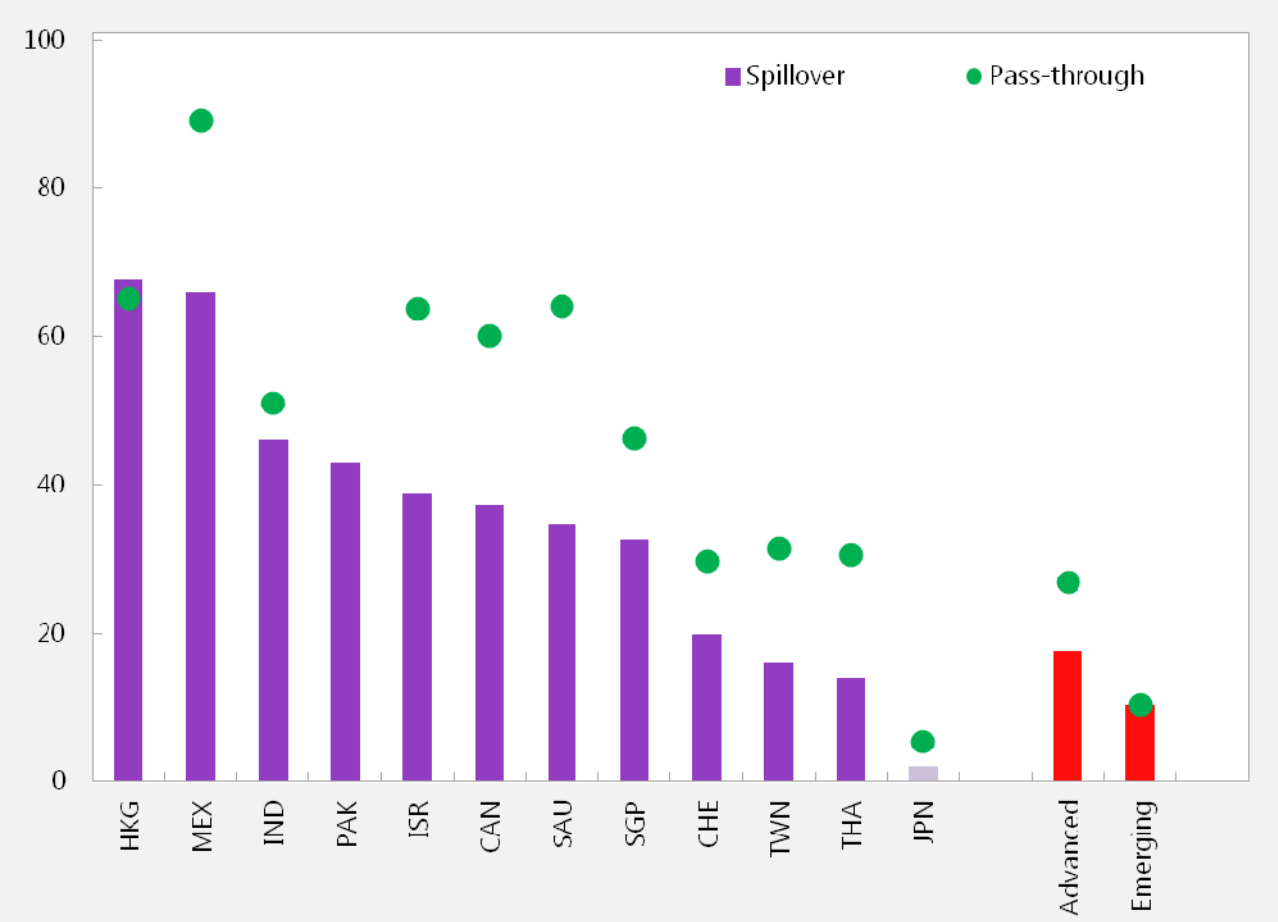


United Kingdom





Autonomy-impairing spillovers are significant in 11 our of 43 countries



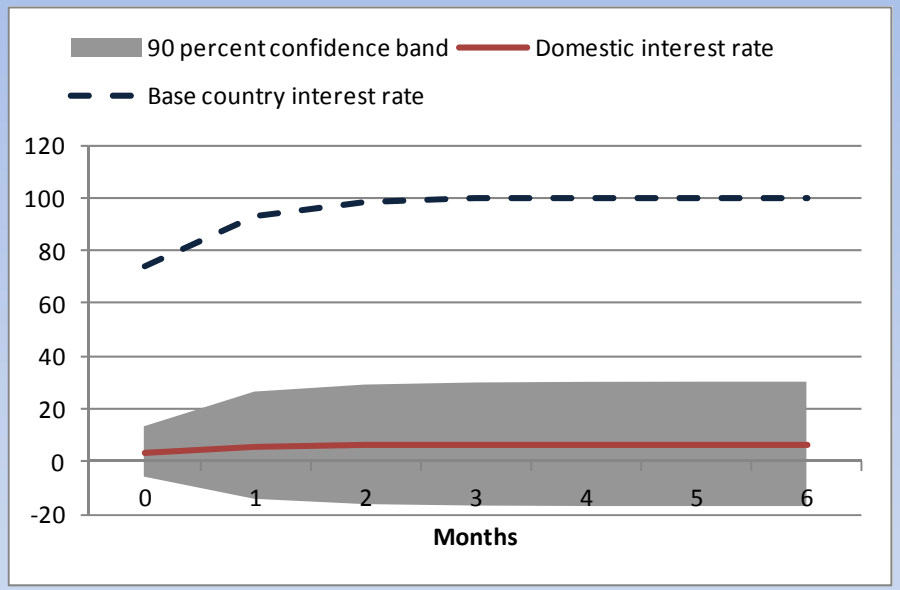
Is there a dilemma with the trilemma?

- Sample: 40 EME and ADV economies; monthly data 1/2000-10/2015
- Base country, exchange rate regime (float, soft peg, hard-peg), degree of financial openness (open, mid-open, closed) follows Klein and Shambaugh (2015).

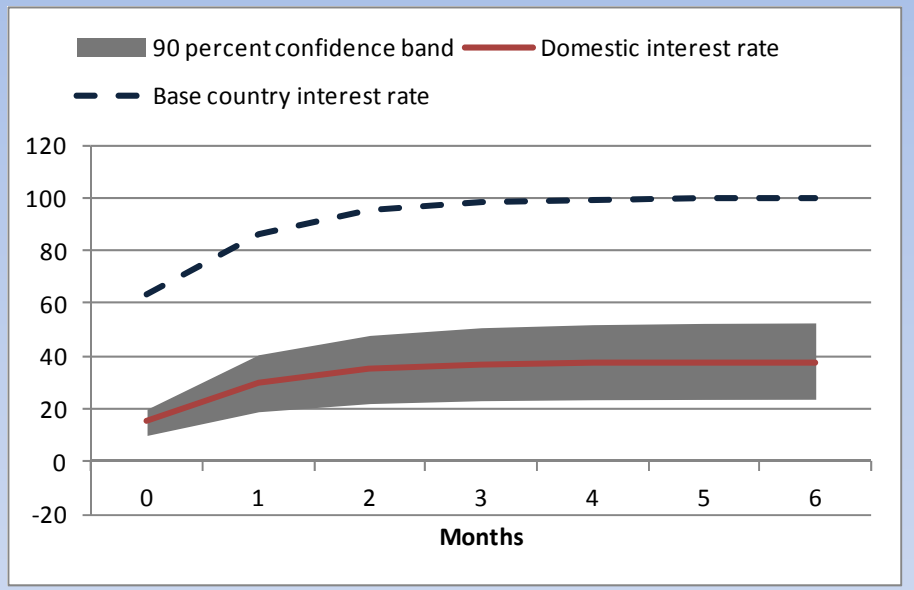
  Keep observations with open and mid-open financial markets
- Sample split in (i) floating exchange rate; (ii) soft and hard peg
- First stage: estimate country-specific Taylor-type rules
- Second stage: PVAR model separately for (i) floating exchange rate; (ii) soft and hard peg

Is there a dilemma with the trilemma?

Floating exchange rate



Hard and soft pegs



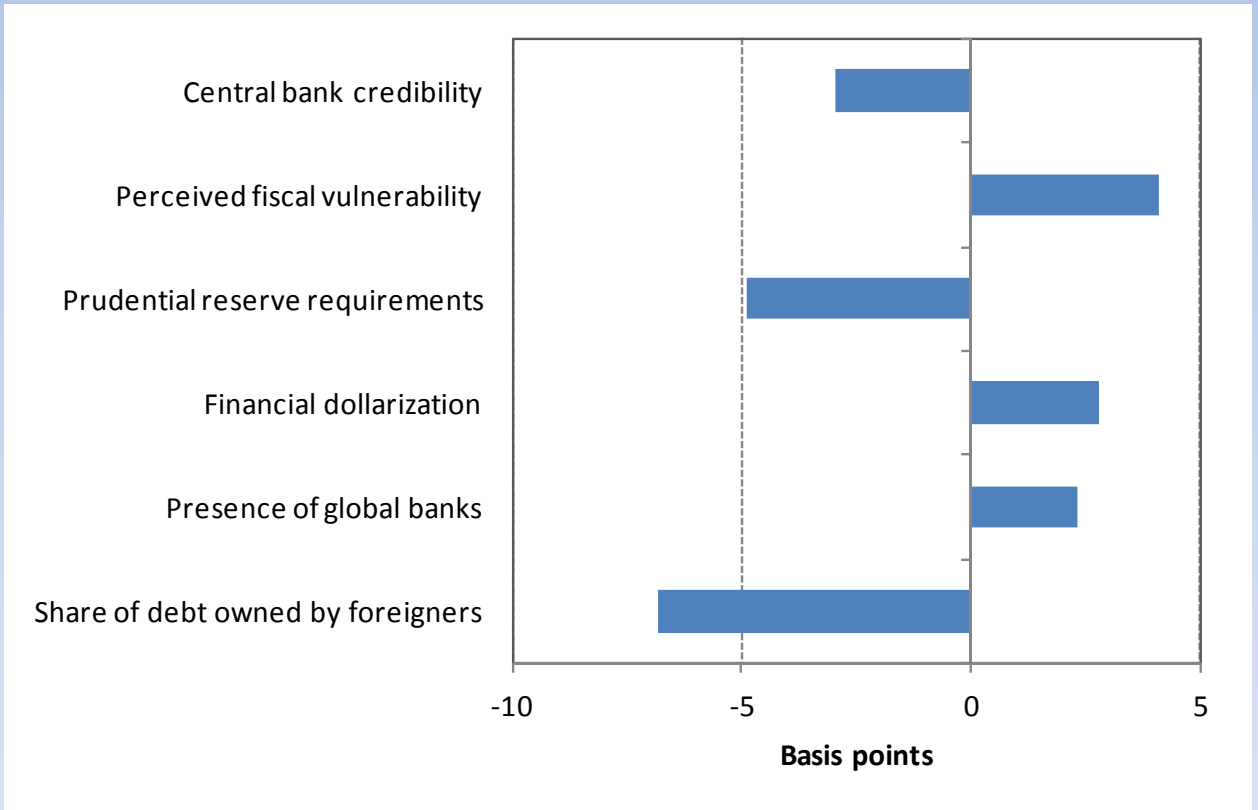
Consistent with trilemma:

→ autonomy-impairing spillovers significantly larger for pegs

→ Cannot reject null hypothesis of monetary autonomy for floaters

What buys autonomy?
IP-VAR analysis

Sensitivity of autonomy-impairing spillovers to selected fundamentals, conditional on floating exchange rate and open capital account.



Note: Bars denote the difference in monetary policy spillovers when the fundamental moves from the 3rd to the 7th decile of its empirical distribution within our sample.

Conclusions

- Assessing limits to monetary autonomy is challenging; autonomy often understated by common empirical methods
- We propose a more conservative estimation approach, reversing the problem, that is better at avoiding 'false positives' of lack of autonomy
    1. Model monetary policy in SOE. Identify rate movements that are orthogonal to the outlook for domestic outlook or inflation. (Refinements to Taylor-type approach in this paper naturally possible)
    2. Autonomy-impairing spillovers: movements in first-stage residuals attributable to foreign financial variables in separate model
- Autonomy-impairing spillovers from U.S. or base-country policy rates much smaller using our approach; can't reject null of autonomy in most countries
- Panel analysis: Spillovers much larger in countries with fixed ER regimes; no evidence of autonomy-impairing spillovers among floaters

Overall: Strong evidence in favor of trilemma's predictions

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