The Policy Trilemma and the Global Financial Cycle: Evidence from the International Transmission of Unconventional Monetary Policy

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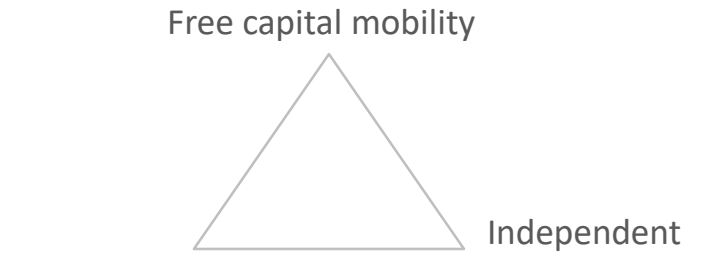
Two views on international spillovers and exchange rate regime

Flexible exchange rate economies are more insulated to external shocks

A reflection of the Mundellian Trilemma

Countries can attain just 2 of 3 objectives



Flexible FX are not enough to insulate the economy

Because of the Global Financial Cycle (Rey, 2013)

Developments in the United States

↓

International comovement in financial prices and aggregates (the Global Financial Cycle)

All countries are subject to this Cycle regardless of FX regime

Which view dominates?

A Global VAR to assess the international spillovers of US monetary policy

A model of the global economy

- 33 interconnected economies (>90% of world GDP)
- Full country heterogeneity in parameters
- Account for third-country & spillback effects

Identify both conventional & unconventional shocks

- Theory-based sign restrictions on US variables
- Agnostic on spillovers (unrestricted responses of RoW)

Results support Helene Rey's view of the Global Financial Cycle

US monetary policy drives equity prices worldwide and lead to high financial comovement

(and especially so with unconventional measures)

Weak evidence that flexible FX imply smaller spillovers

Road map

1. **The GVAR**
   - Structure of the model
   - Identification strategy

2. **International spillovers from US monetary policy**
   - Conventional monetary policy
   - Unconventional monetary policy
   - Sources of international spillovers

3. **Conclusions**

Countries in the GVAR

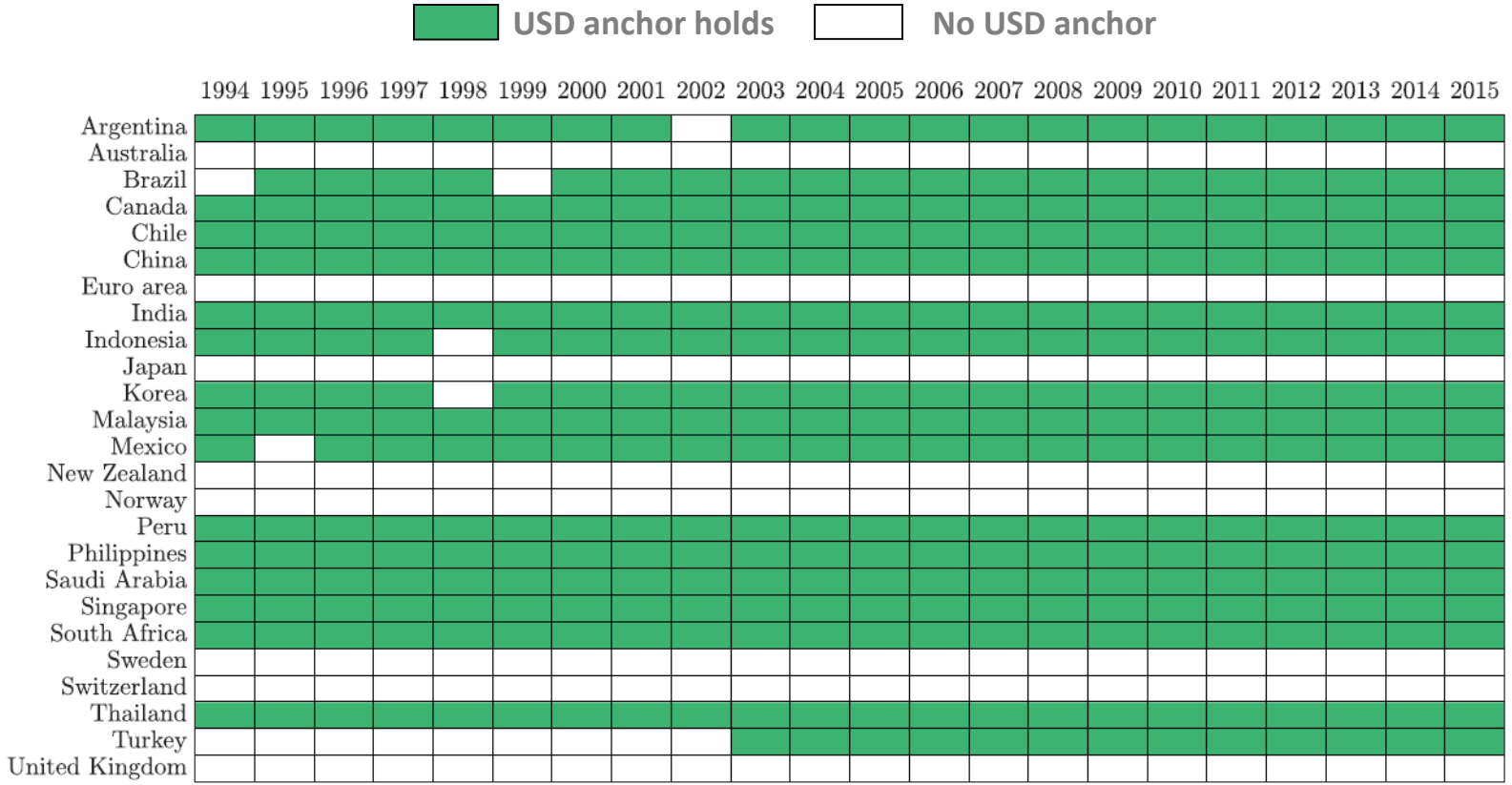
33 advanced & emerging economies (accounting for more than 90% of world GDP)

Asia and Pacific	North America	Europe
Australia	Canada	Austria*
China	Mexico	Belgium*
India	United States	Finland*
Indonesia		France*
Japan	**South America**	Germany*
Korea	Argentina	Italy*
Malaysia	Brazil	Netherlands*
New Zealand	Chile	Norway
Philippines	Peru	Spain*
Singapore		Sweden
Thailand	**Africa and Middle East**	Swizerland
	Saudi Arabia	Turkey
	South Africa	United Kingdom

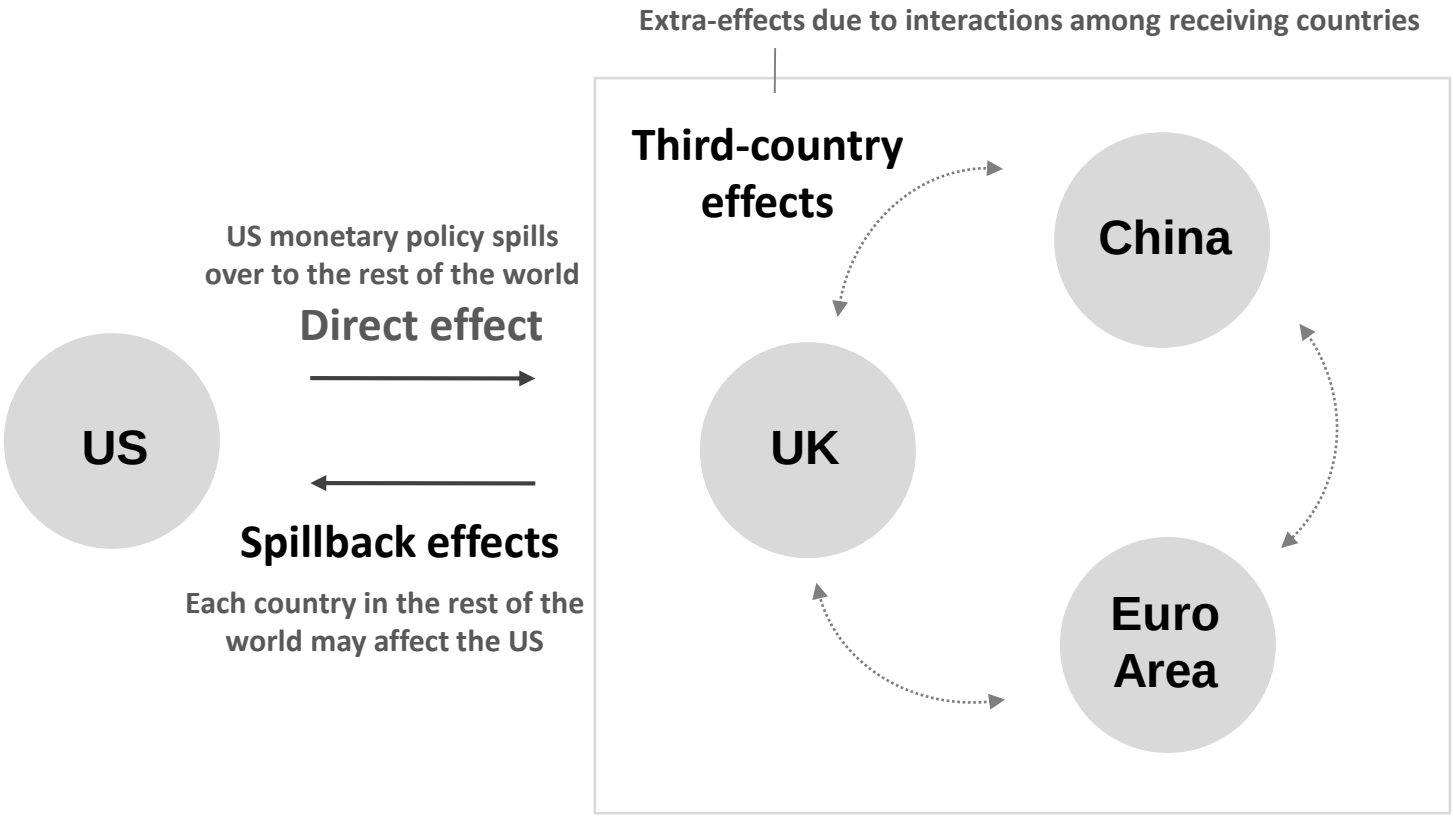
* Euro area countries are modelled jointly (as in Dées et al. 2007)

Several countries anchor their currencies to the US Dollar

USD anchor index of Ilzetzki, Reinhart & Rogoff (2017)



The GVAR consists of a network of country-specific models



The country-specific VARX models

Each economy depends on both domestic and external developments

$$Y_{it} = a_i + b_i t + \sum_{j=1}^{p_i} A_{ij} Y_{i,t-j} + \sum_{j=0}^{q_i} B_{ij} Y^*_{i,t-j} + \sum_{j=0}^{q_i} C_{ij} X_{t-j} + u_{it}$$

Domestic variables

- Real GDP growth
- CPI inflation
- Short-term interest rate
- Term spread (long – short rates)
- Real equity prices
- Nominal effective exchange rate

(quarterly data: 1994Q1 – 2016Q4)

Foreign variables

Weighted averages of other countries' domestic variables

$$Y^*_{it} = \sum_{j \neq i} w_{ij} Y_{jt}$$

weights capture the importance of country *j* for *i*
(based on bilateral trade flows)

Oil prices

- Common observed factor
- Endogenous to global developments

$$X_t = a_x + b_x t + \sum_{j=1}^{p_x} D_j X_{t-j} + \sum_{j=0}^{q_x} F_j \tilde{Y}_{t-j} + u_{xt}$$

weighted averages of GDP growth & inflation across all countries
(GDP-based weights)

Identification of US monetary policy shocks

Restrict responses of US variables

Restrictions informed by standard monetary theory

Unrestricted responses in rest of the world

Agnostic on size & sign of international spillovers

	Conventional	Unconventional
Responses of US variables:		
Short-term interest rate	−	0
Term spread	+	−
Inflation	+	+
Output growth	+	+
Real equity prices	+	+
NEER	−	−

Compression of term spread raises growth and inflation, policy rate unchanged (Baumeister & Benati, 2013)

Asset prices rise

USD depreciates

Note: sign restrictions are imposed on impact and one period after the shock

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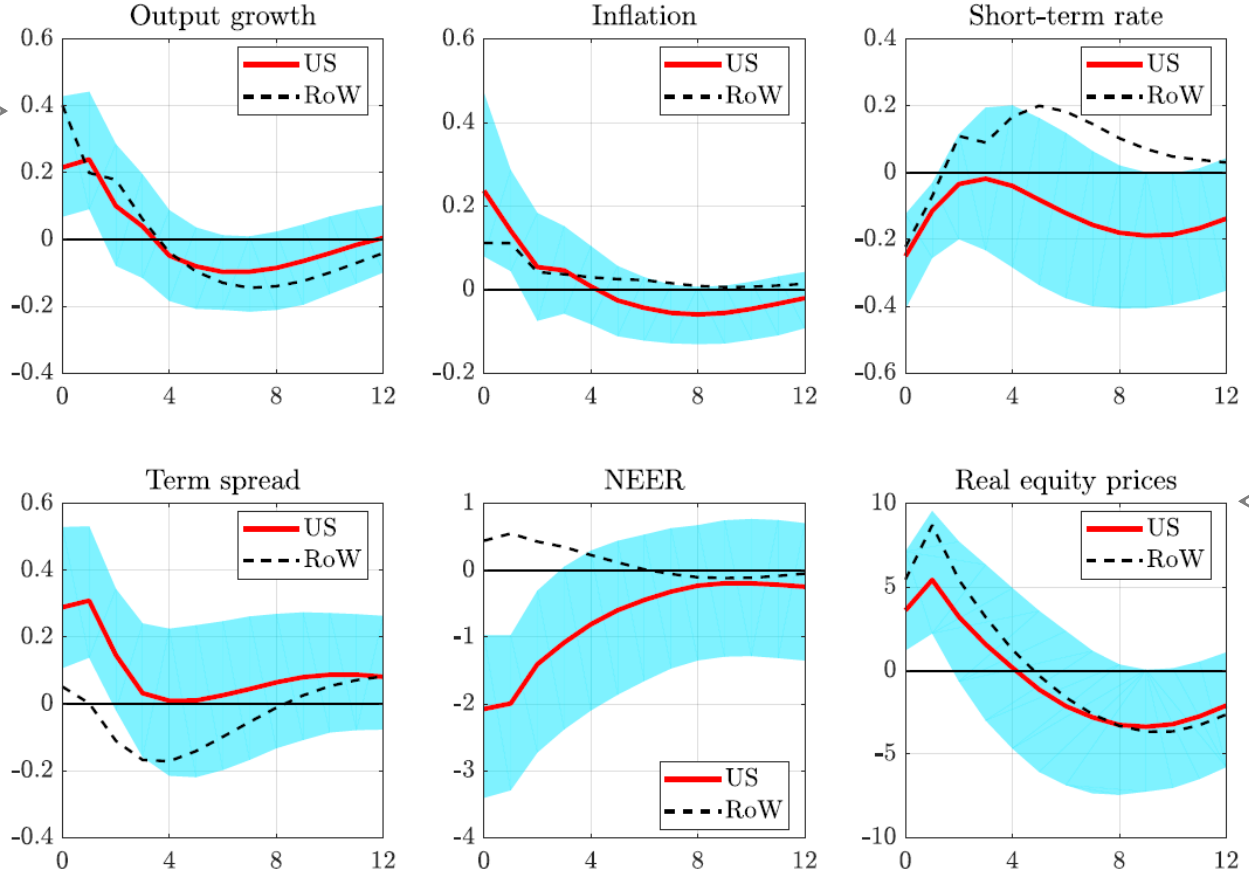
   - **Conventional monetary policy**
   - **Unconventional monetary policy**
   - **Sources of international spillovers**

3. Conclusions

Drop in US policy rate: domestic and spillover effects

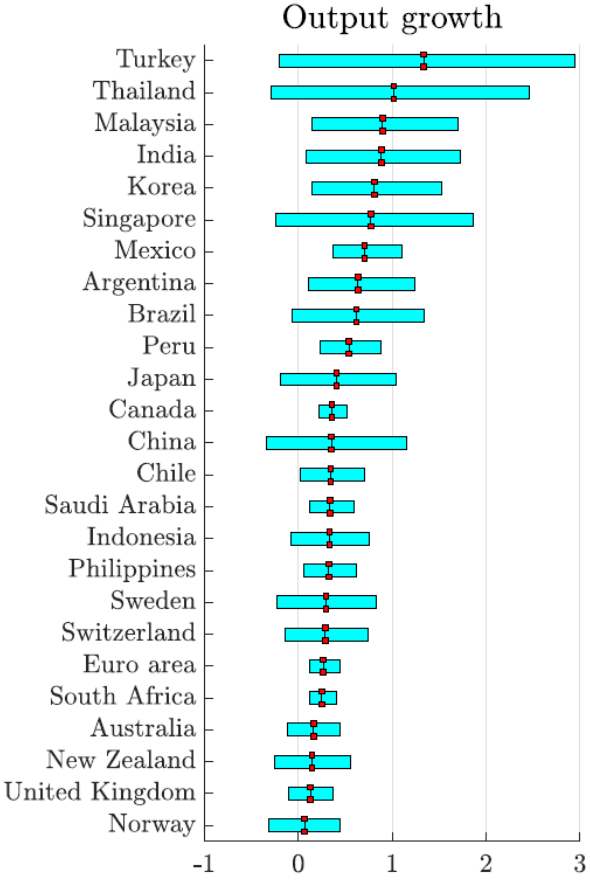
Sizable output spillovers (outsize domestic effects) -->

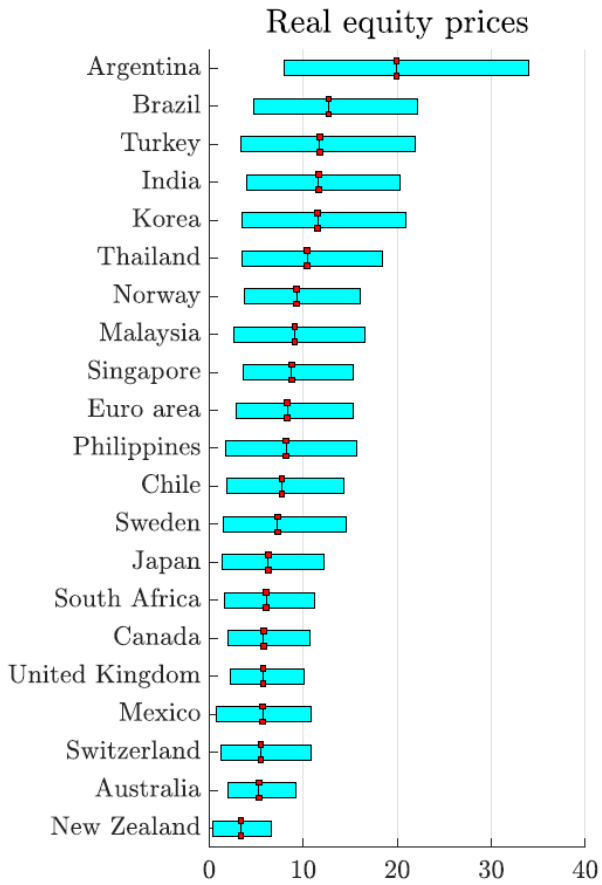


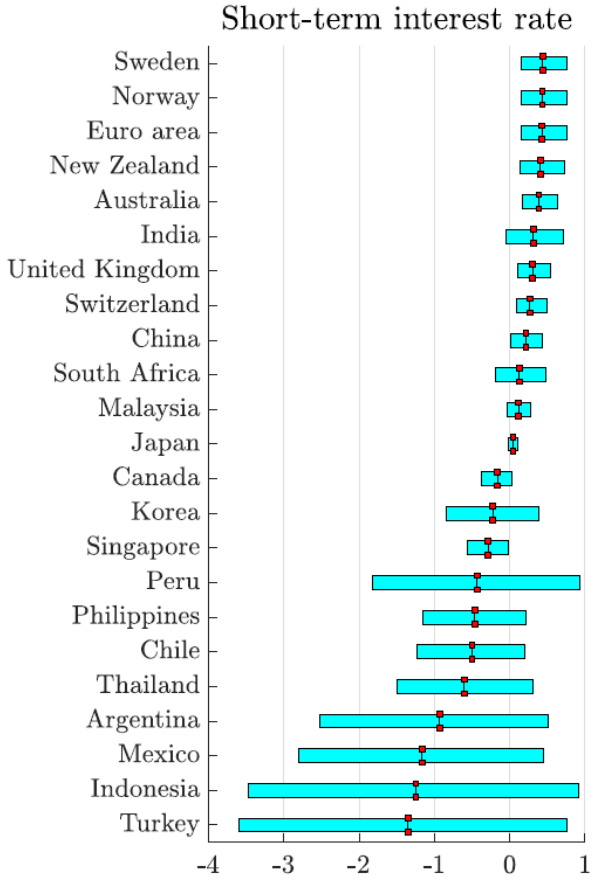
<-- Strong reaction of world equity prices (confirm Rey 2016)

Note: median responses & 68% bands for the US and rest of the world to an expansionary US monetary policy shock (25 basis points)

Drop in US policy rate: country-level spillovers

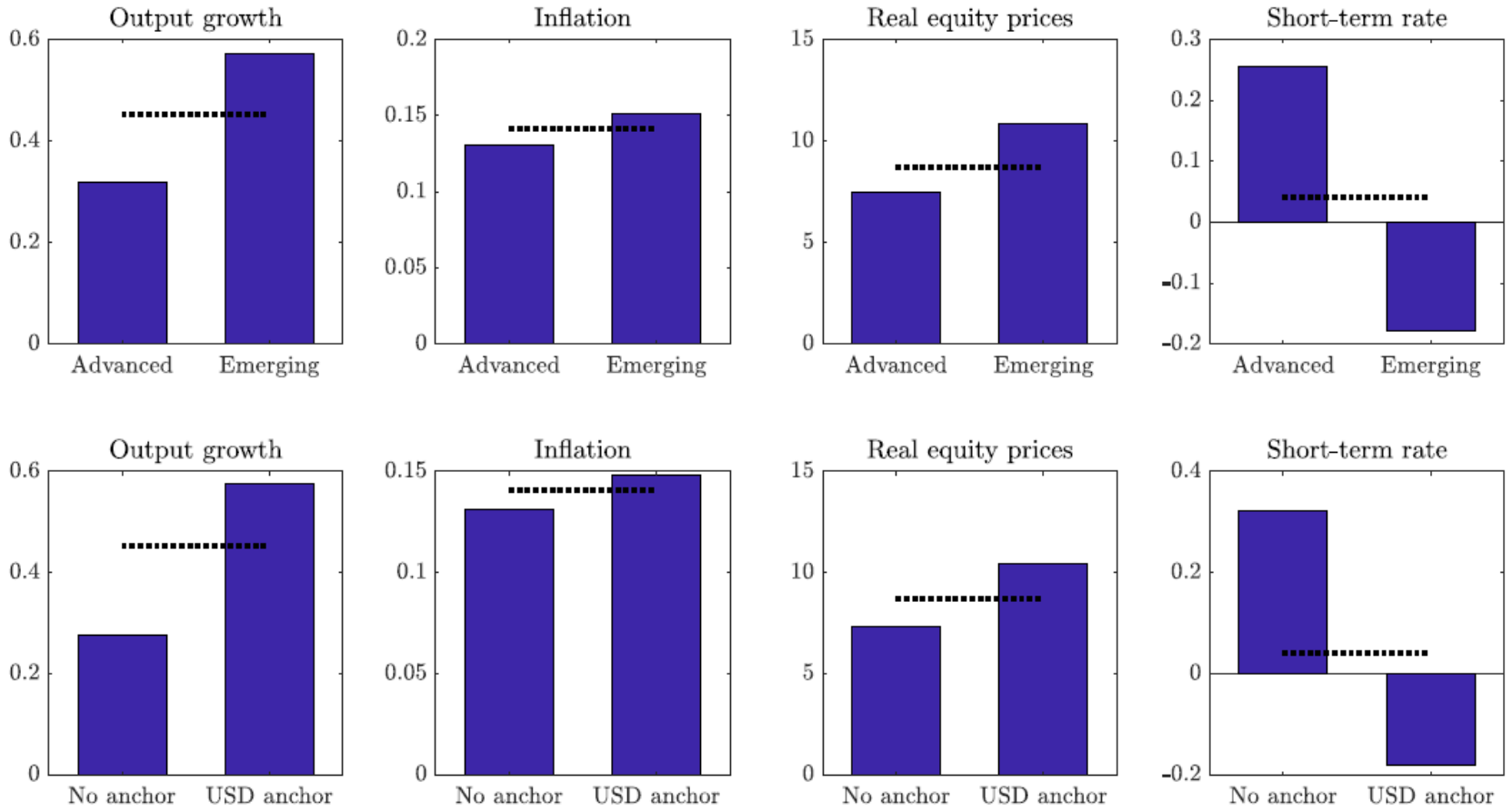






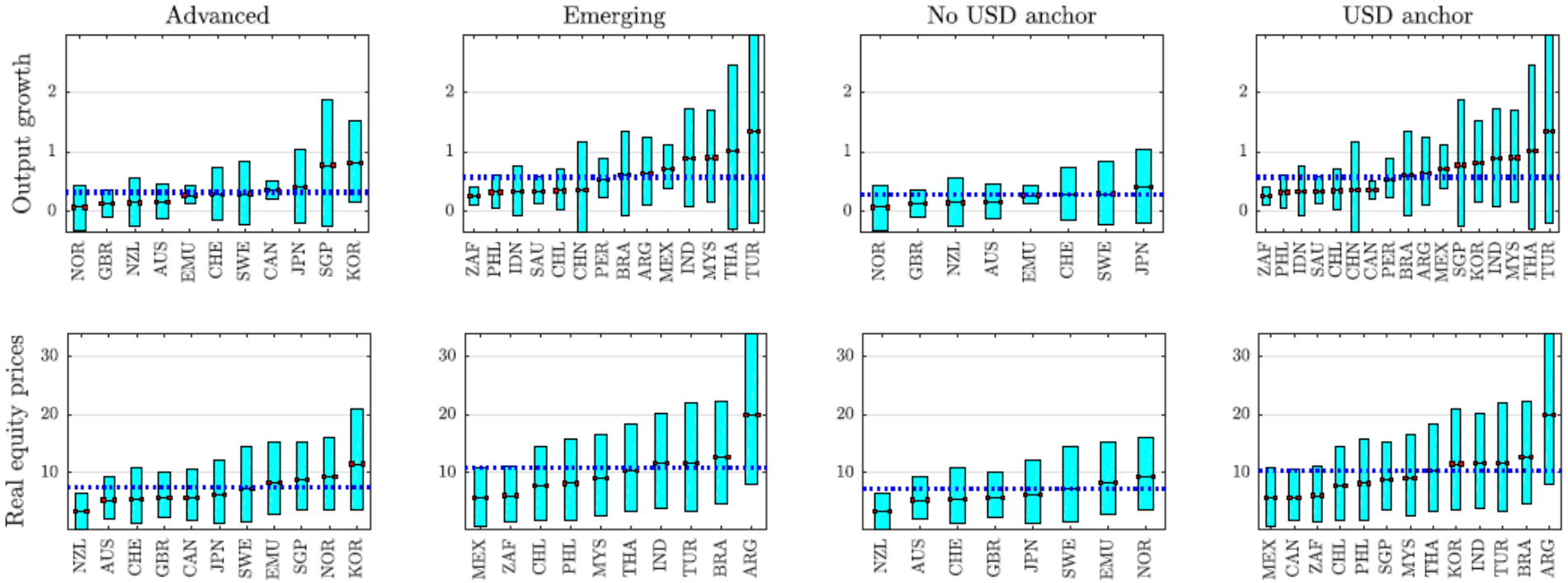
Note: maximum absolute responses and associated 68% bands

Flexible FX countries feature smaller spillovers…



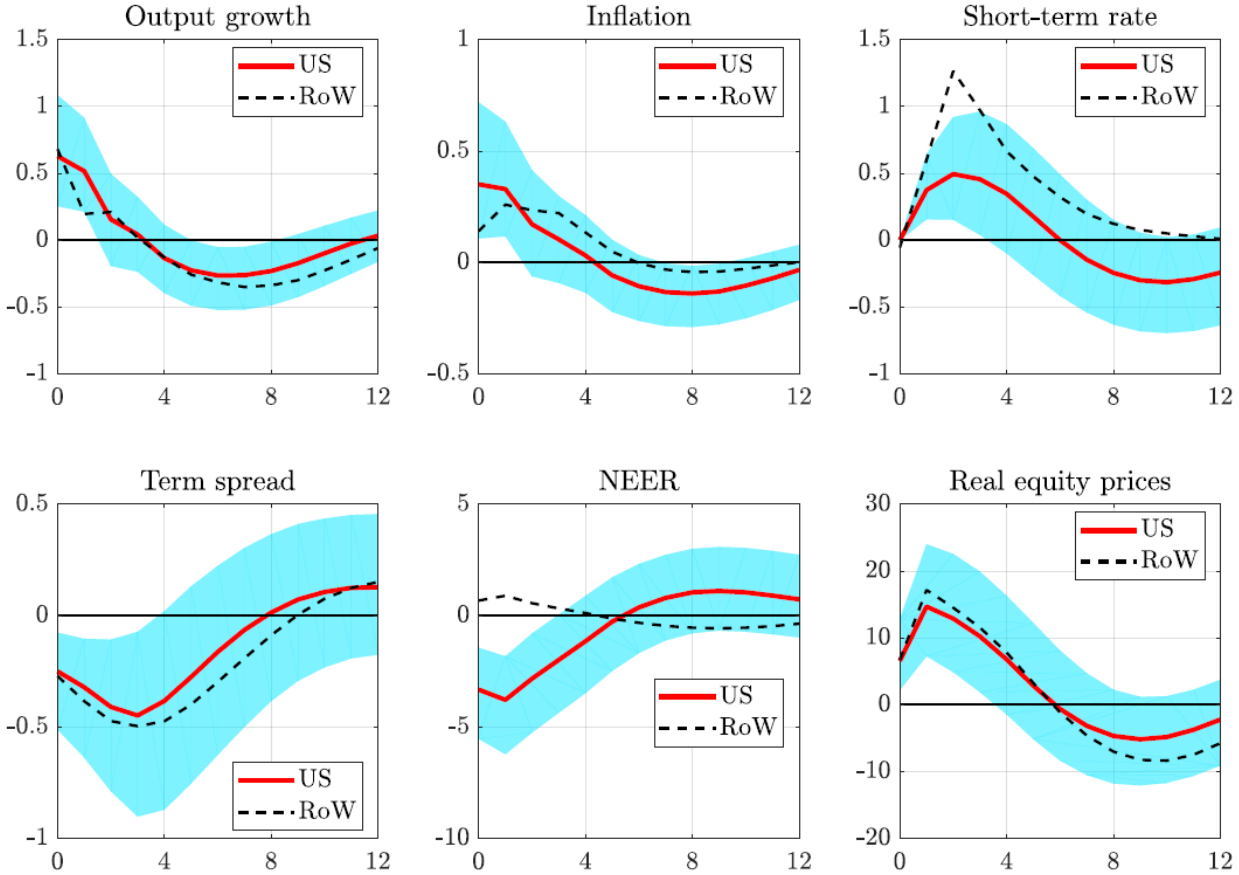
Note: GDP-weighted means for groups (in blue) and for rest of the world (dashed black)

… but the relationship is weak due to large uncertainty



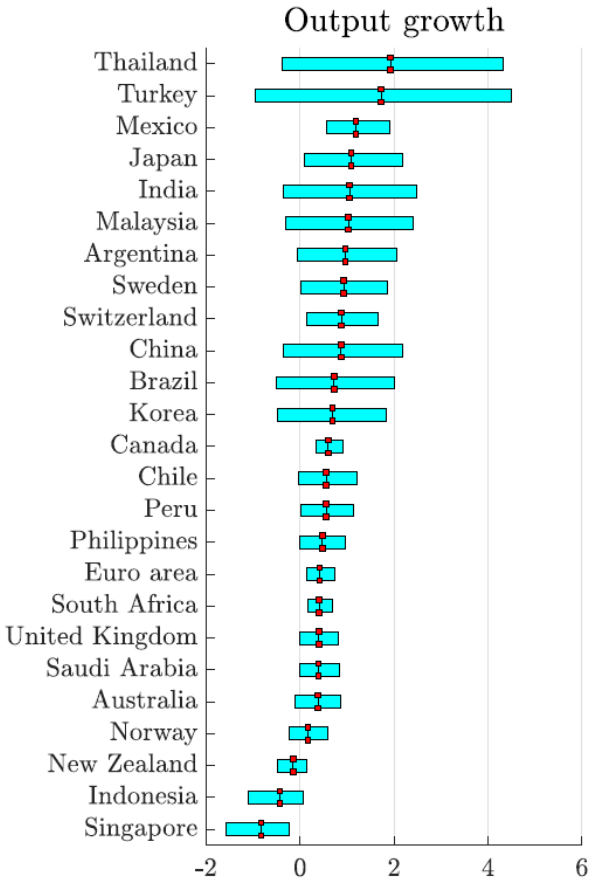
Note: maximum absolute responses and associated 68% bands, GDP-weighted group means in dotted blue

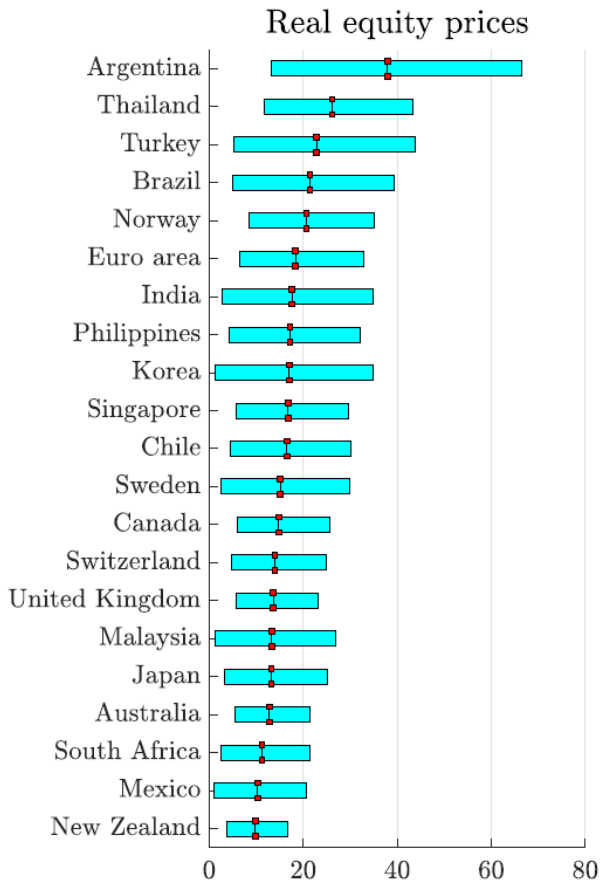
Compression in US term spread: domestic and spillover effects

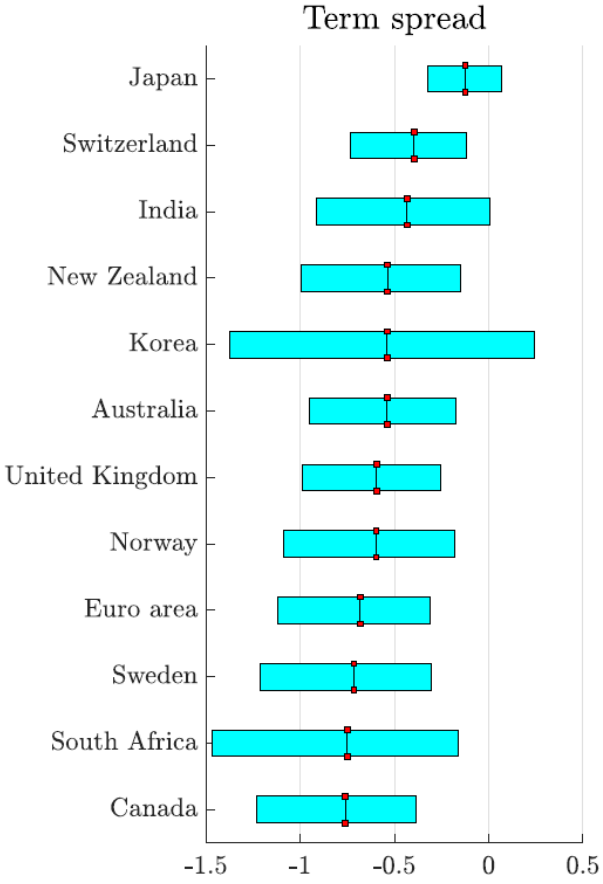


Note: median responses & 68% bands for the US and rest of the world to an expansionary US term spread shock (25 basis points)

Compression in US term spread: country-level spillovers

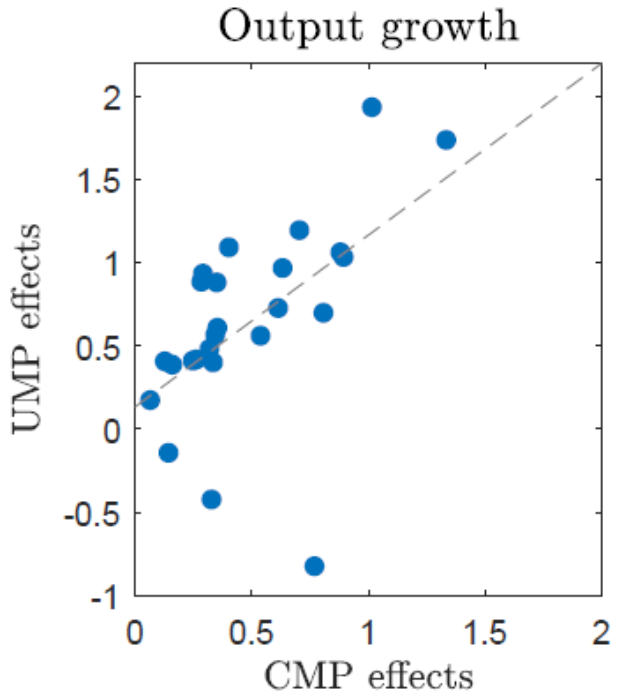


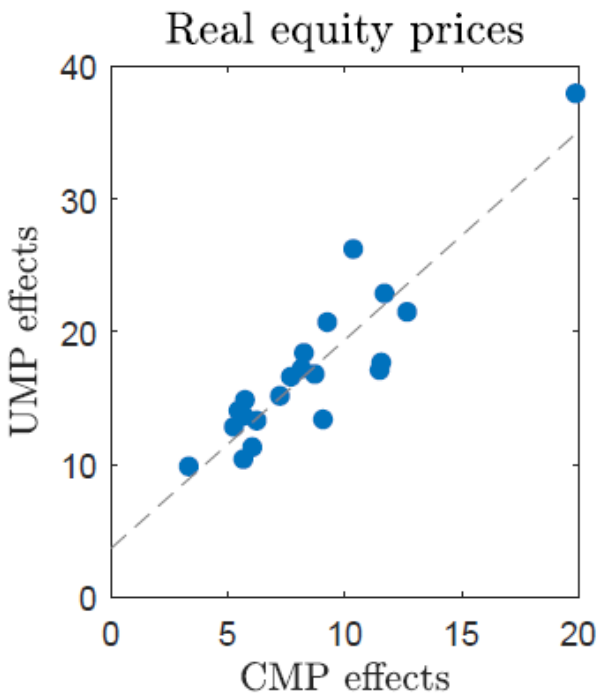




Note: maximum absolute responses and associated 68% bands

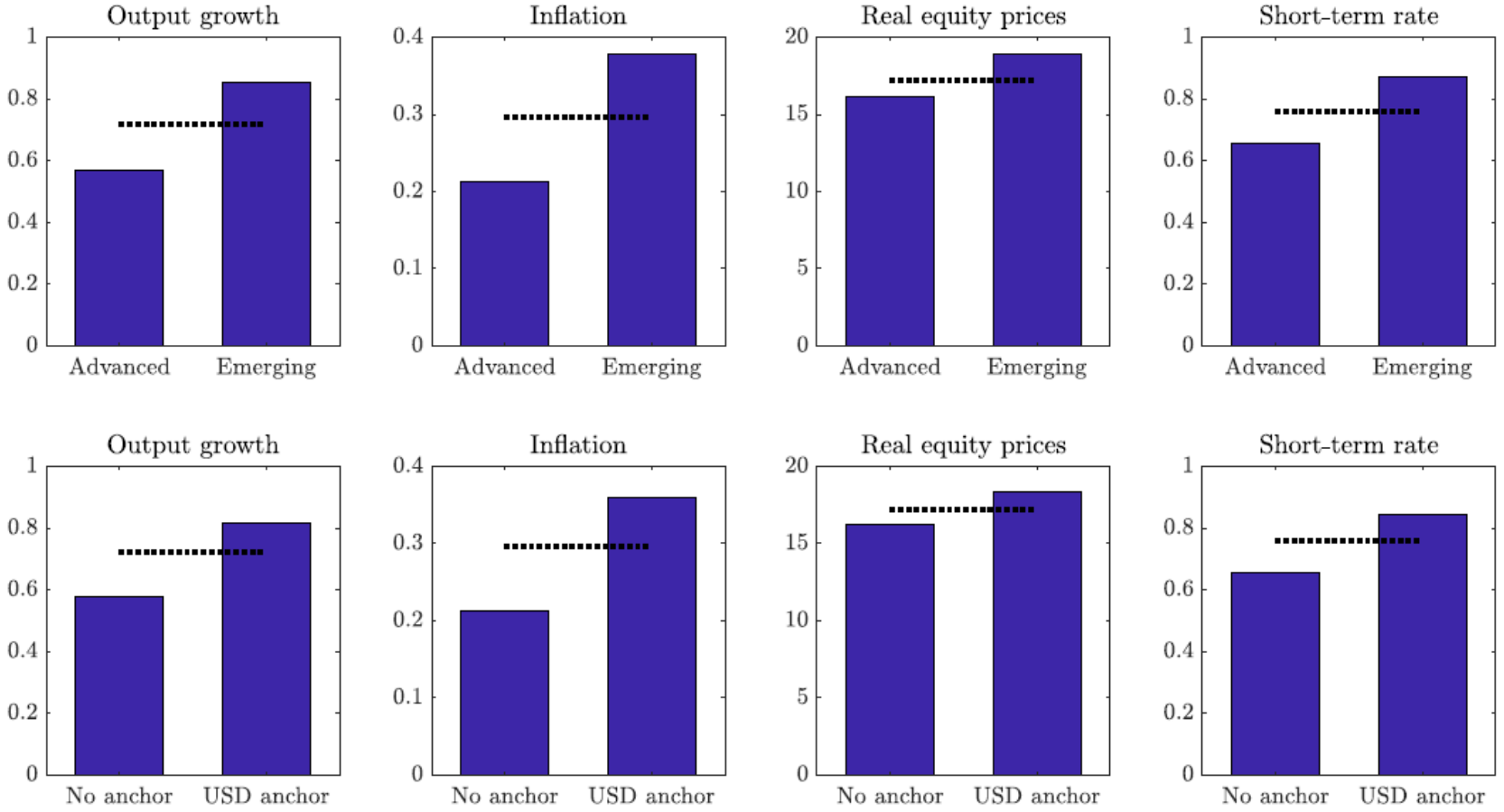
Comparing spillovers from conventional & unconventional measures





Note: maximum absolute responses to expansionary conventional (*x*-axis) and unconventional (*y*-axis) monetary policy shocks

Again, flexible FX countries feature smaller spillovers…



Note: GDP-weighted means for groups (in blue) and for rest of the world (dashed black)

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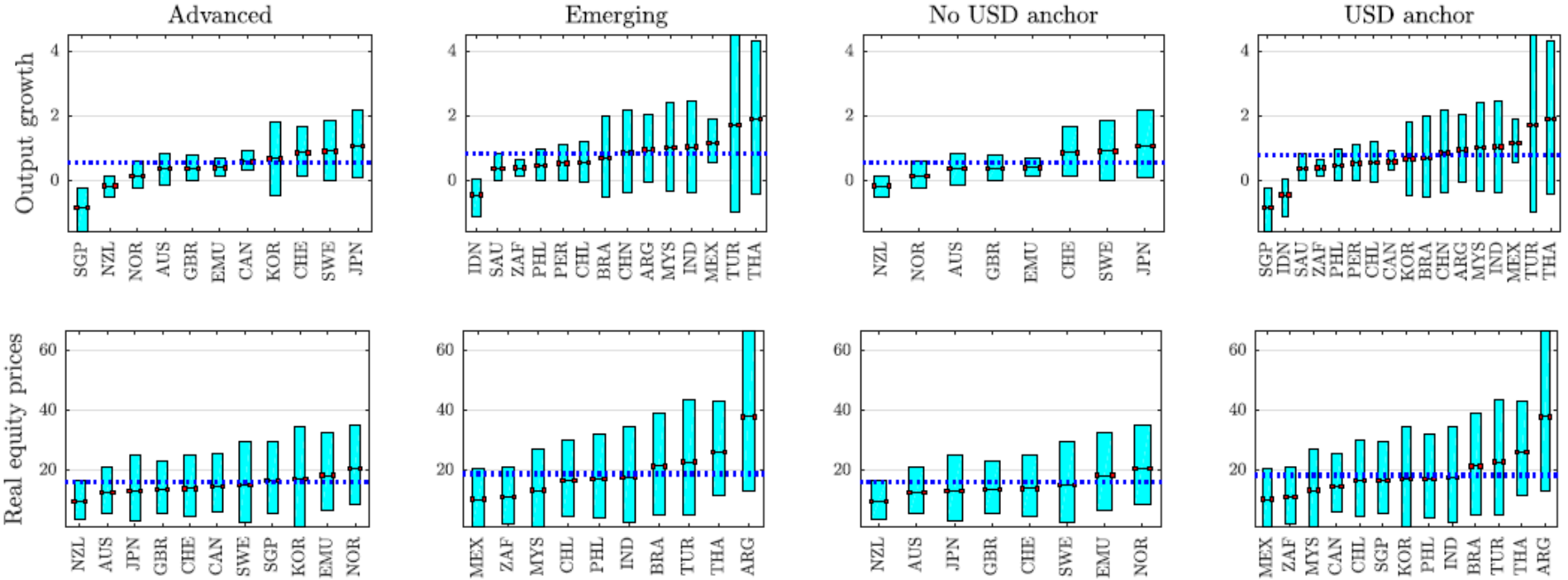
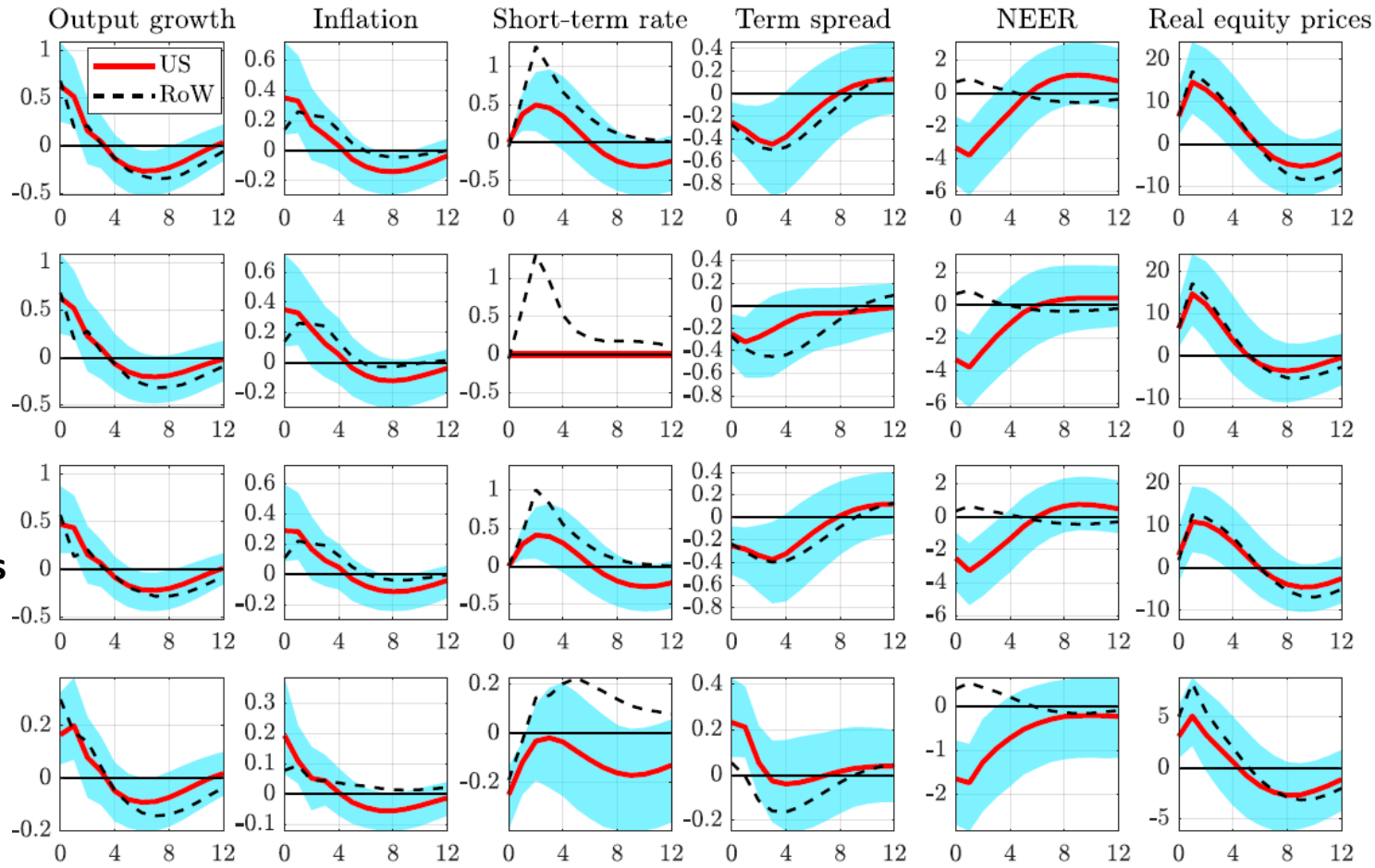


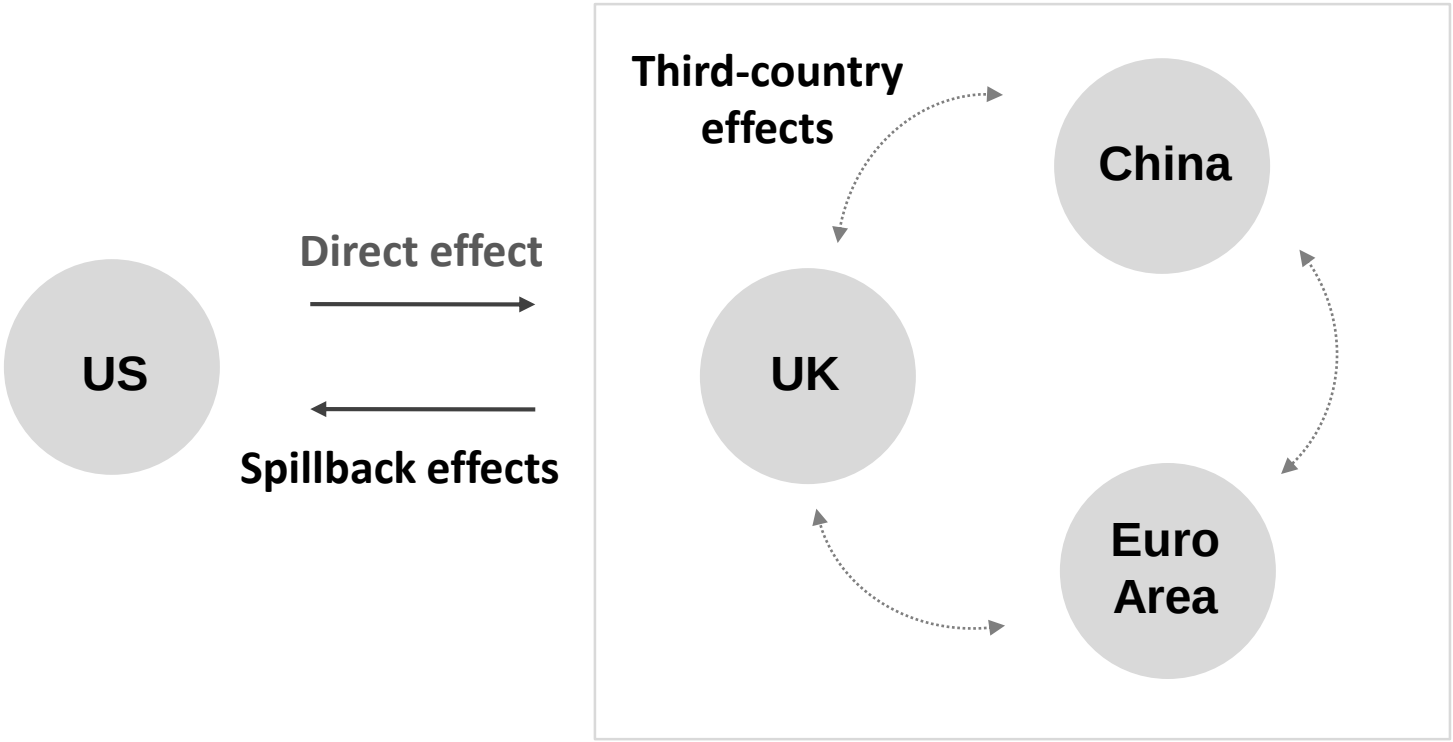
Note: maximum absolute responses and associated 68% bands, GDP-weighted group means in dotted blue

Alternative identification strategies of unconventional monetary policy



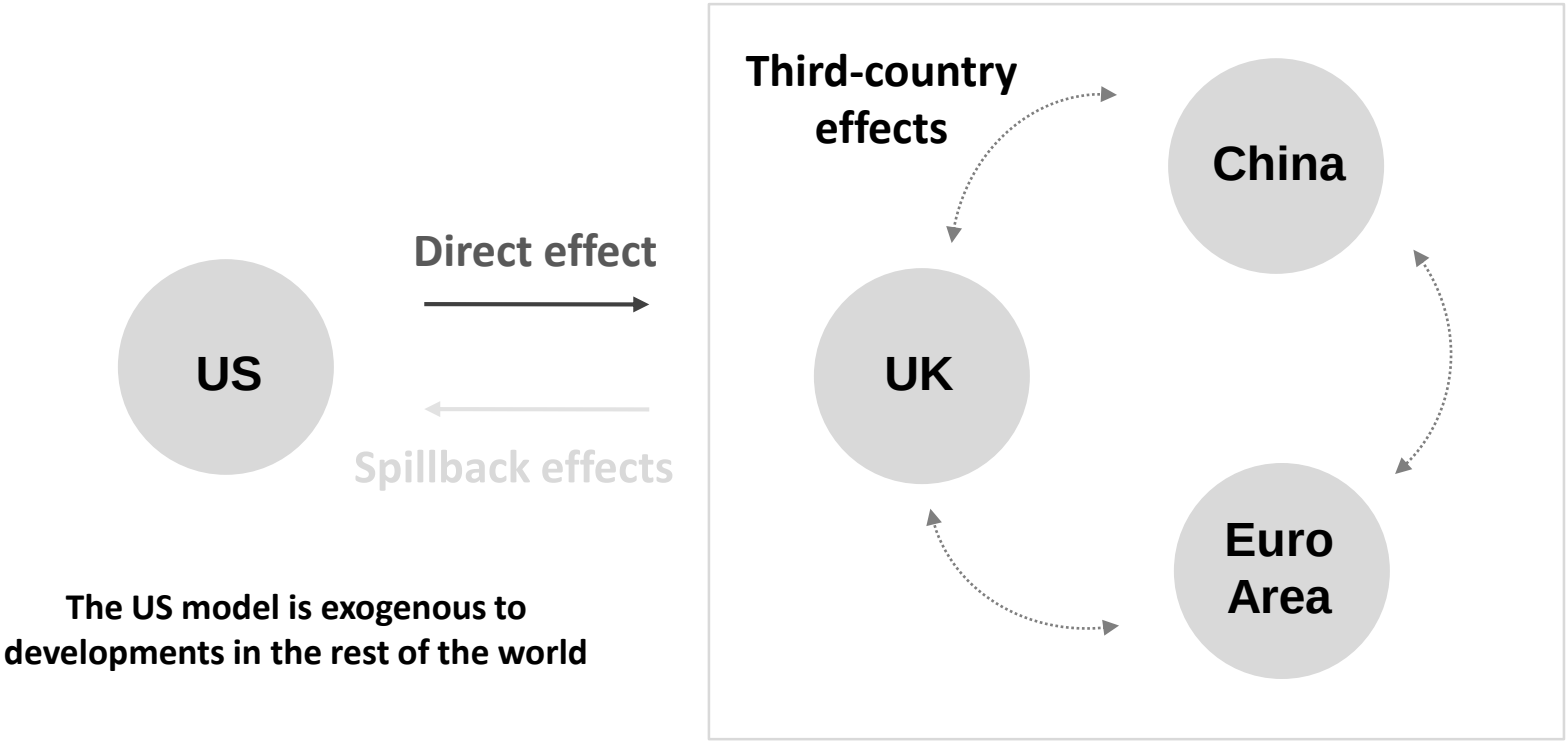
Investigating the sources of international spillovers

To what extent do spillovers depend on third-country & spillback effects?



Investigating the sources of international spillovers

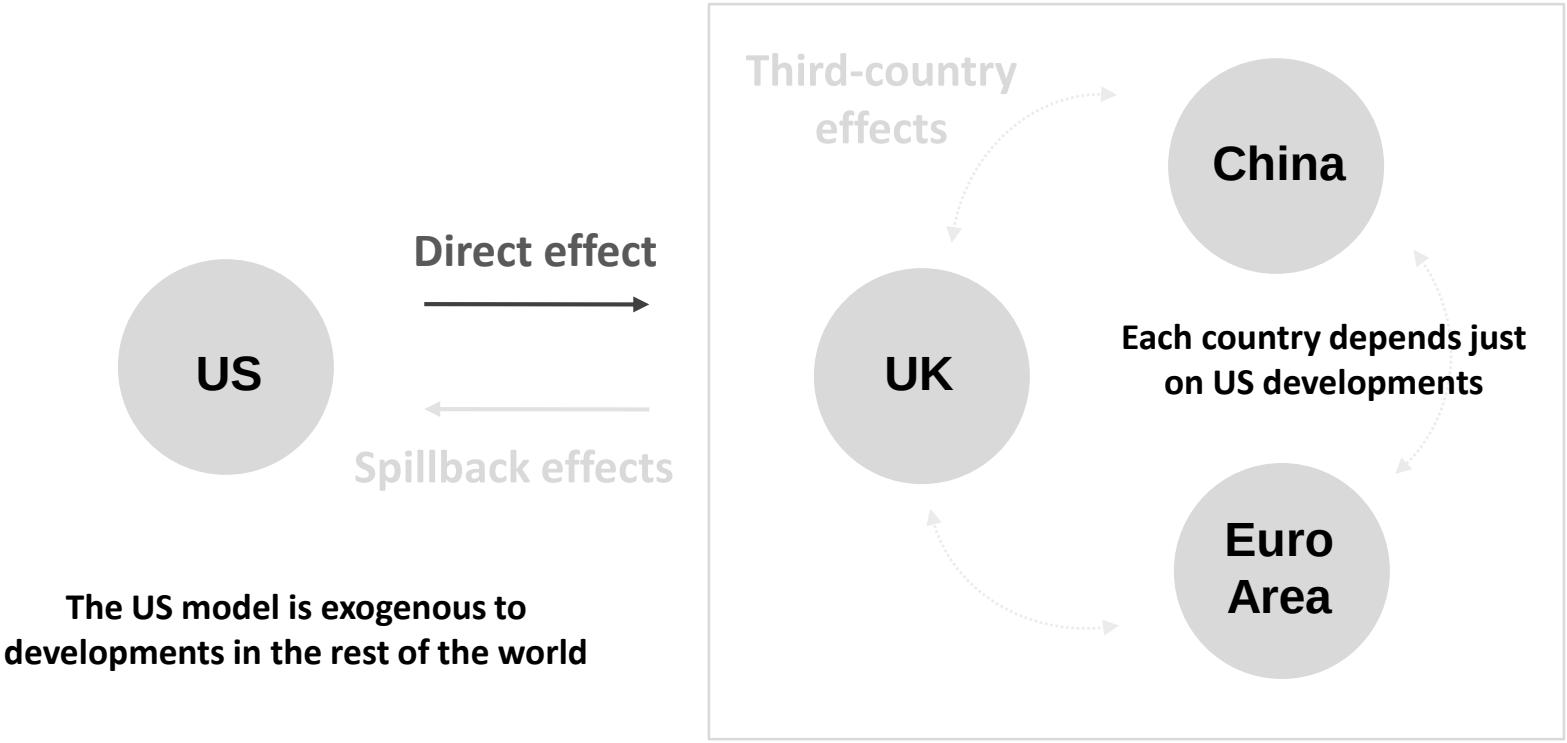
Case 1: shut down spillback effects



The US model is exogenous to developments in the rest of the world

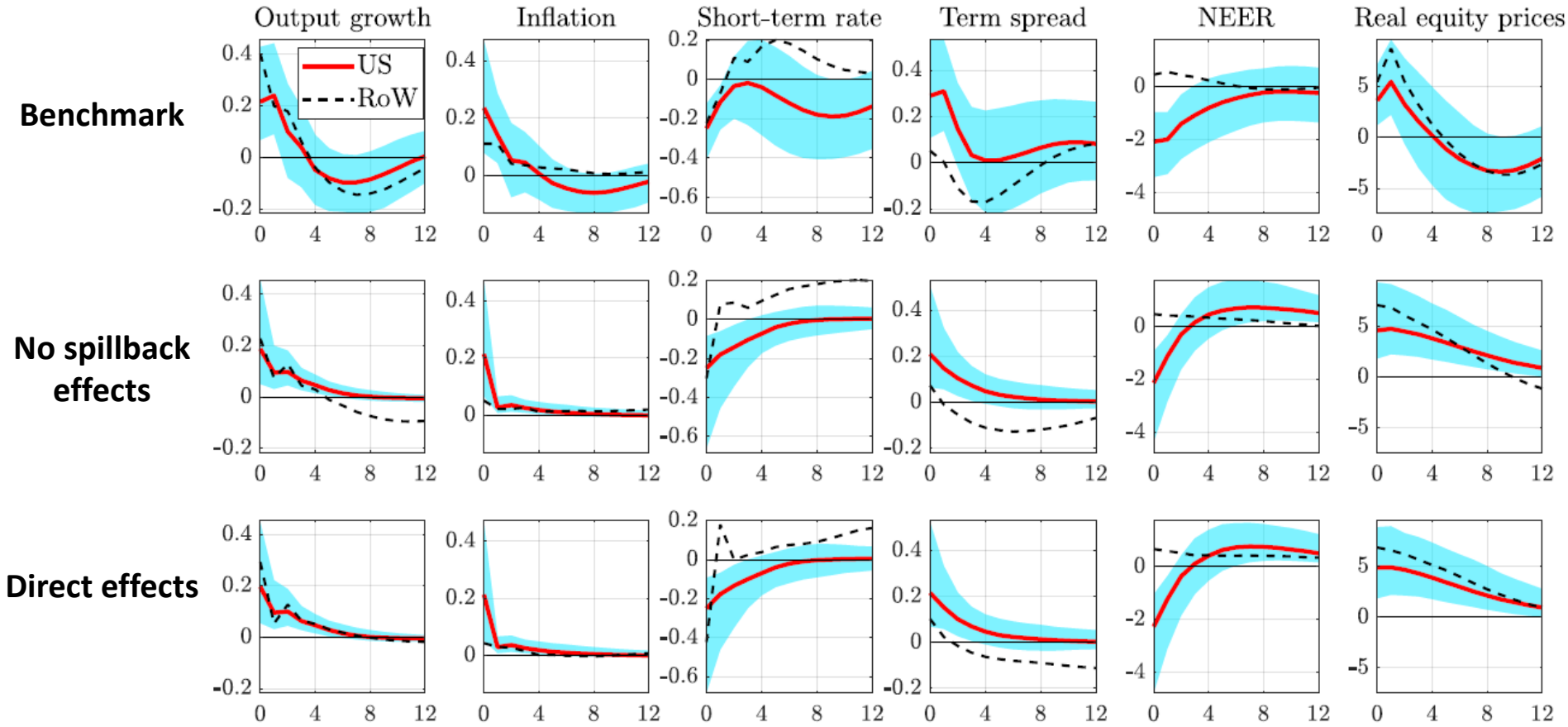
Investigating the sources of international spillovers

Case 2: shut down spillback and third-country effects

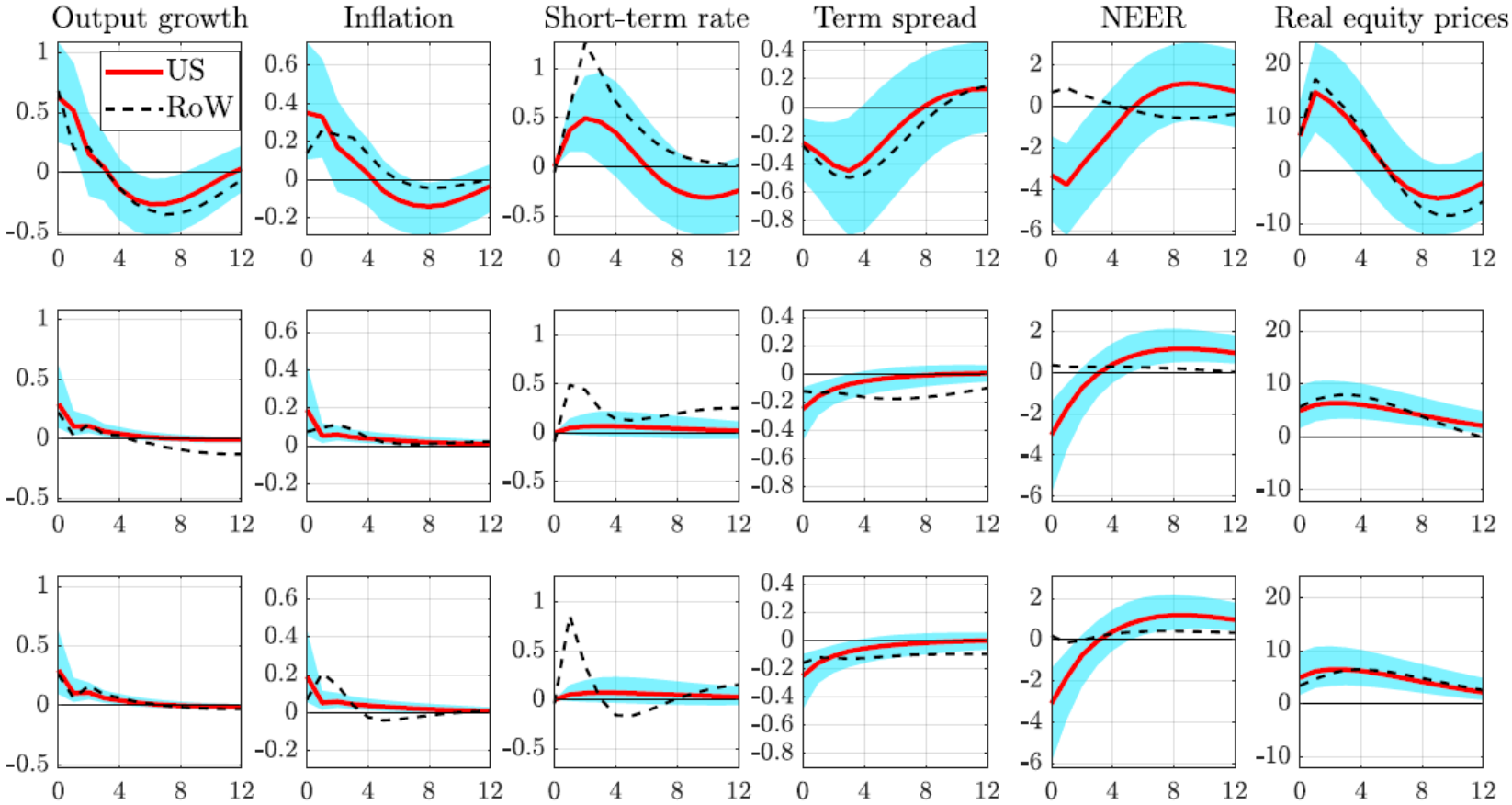


The US model is exogenous to developments in the rest of the world

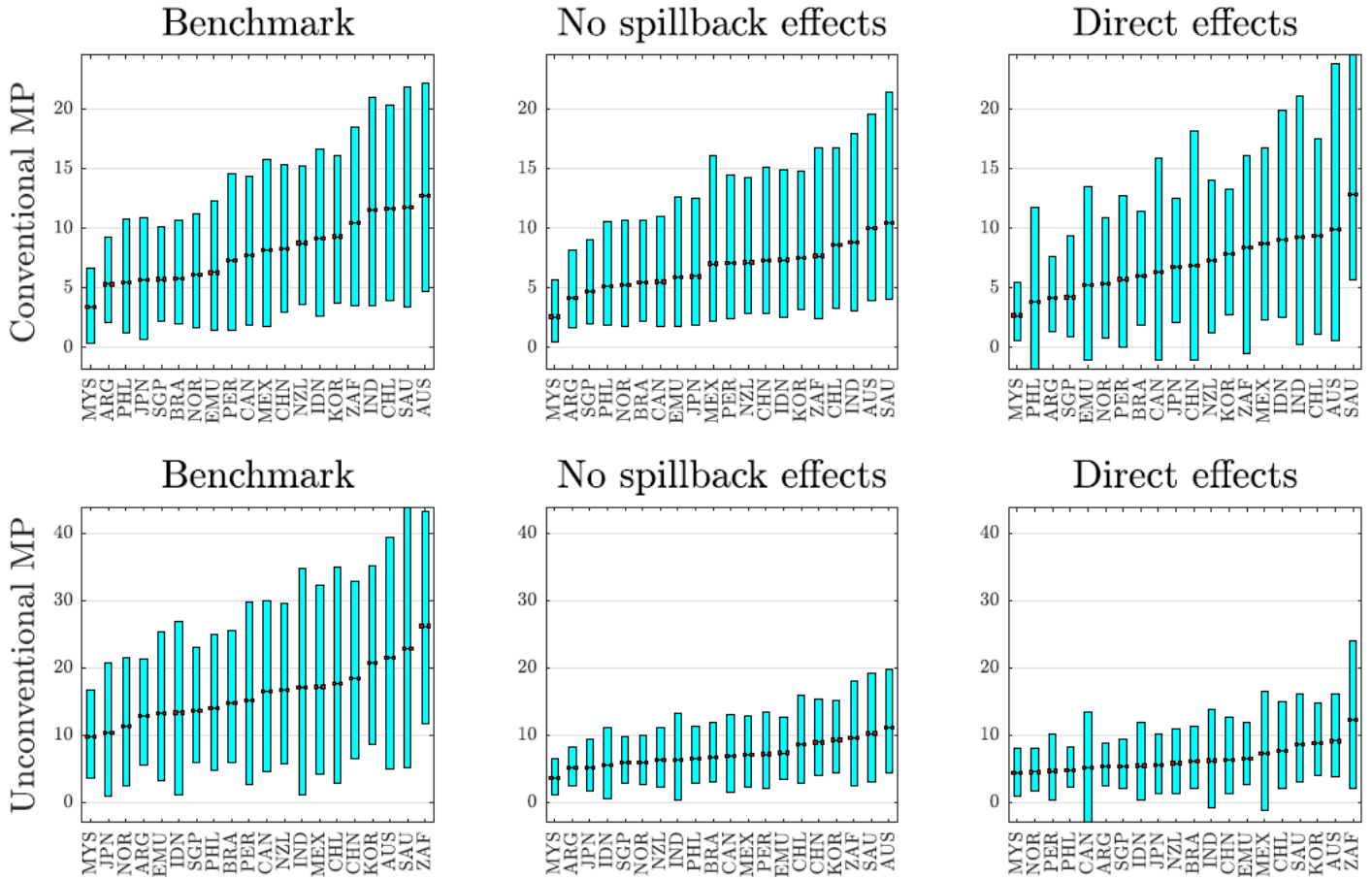
Drop in US policy rate



Compression in US term spread



Investigating the sources of international spillovers on equity prices



Conclusions

Two views on international spillovers and FX regime

Mundellian Trilemma

Flexible exchange rate economies are more insulated to external shocks

Global Financial Cycle

Flexible FX are not enough to insulate the economy

A GVAR to study the international transmission of US (un)conventional monetary policy

Allow for full country heterogeneity

Account for third-country & spillback effects

Theory-based identification strategy (agnostic about spillovers)

Results support the Global Financial Cycle's view

US monetary policy leads to high financial comovement

(especially so with unconventional measures)

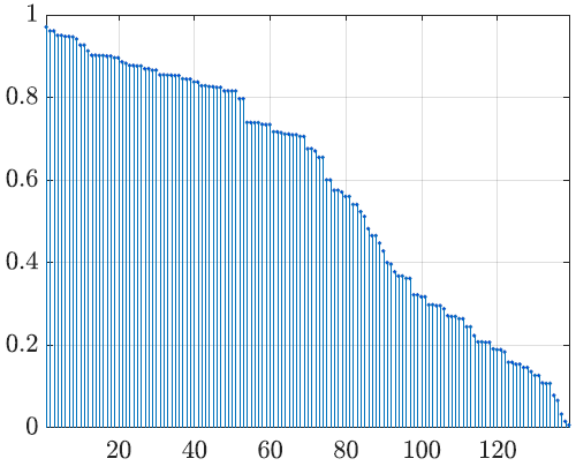
Weak evidence that

flexible FX imply smaller spillovers

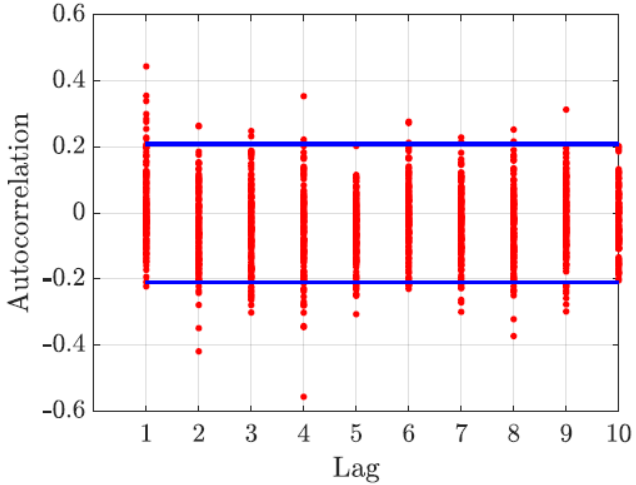
Additional slides

GVAR diagnostics

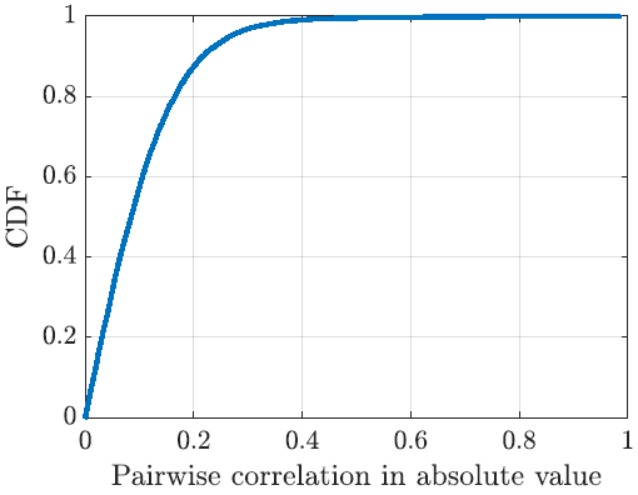
Eigenvalues of the GVAR



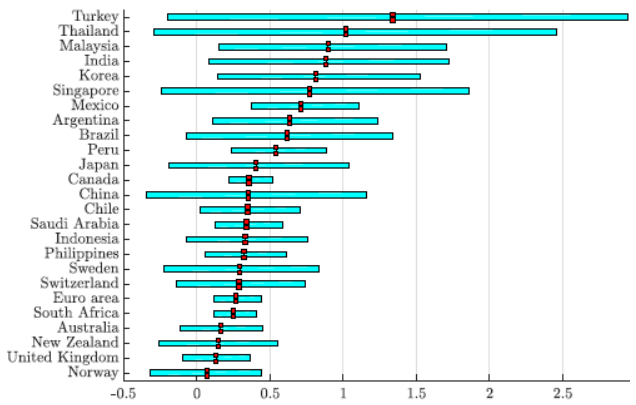
Residual serial dependence



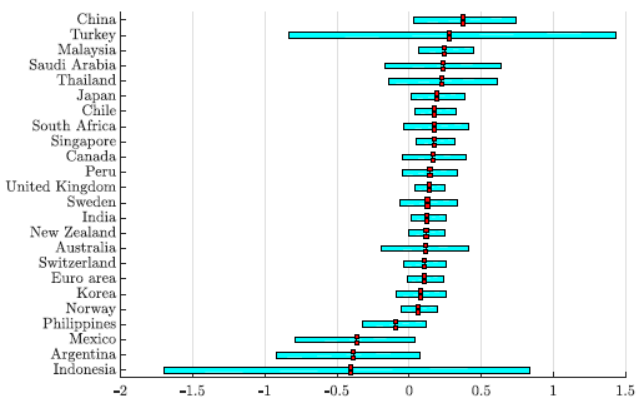
Residual cross-sectional dependence



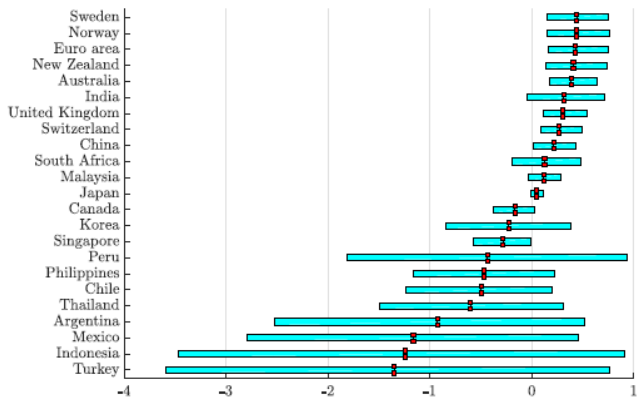
Drop in US policy rate: country-level spillovers



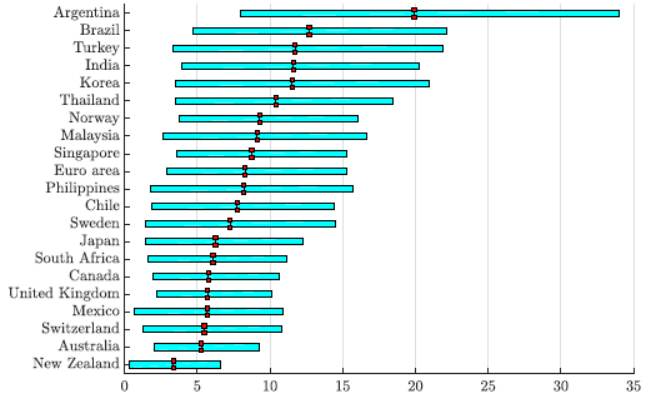
(a) Output growth



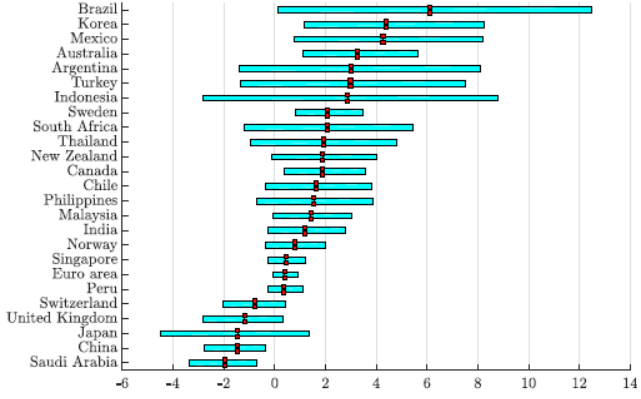
(b) Inflation



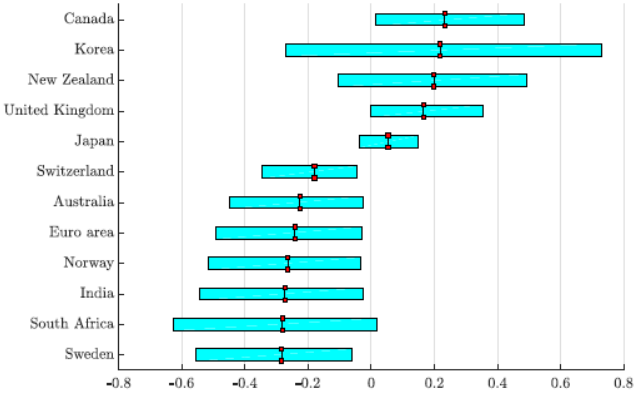
(c) Short-term interest rate



(d) Real equity prices



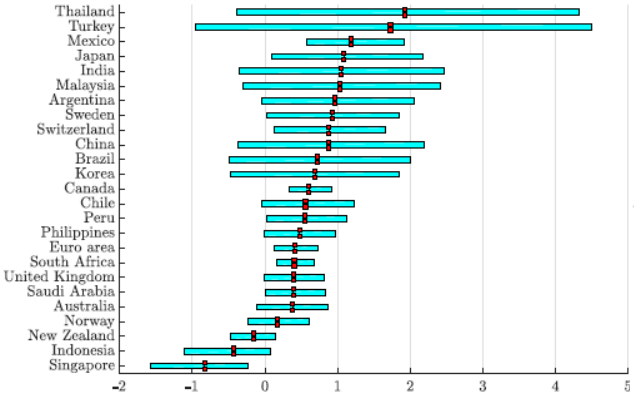
(e) NEER



(f) Term spread

Note: maximum absolute responses and associated 68% bands

Compression in US term spread: country-level spillovers



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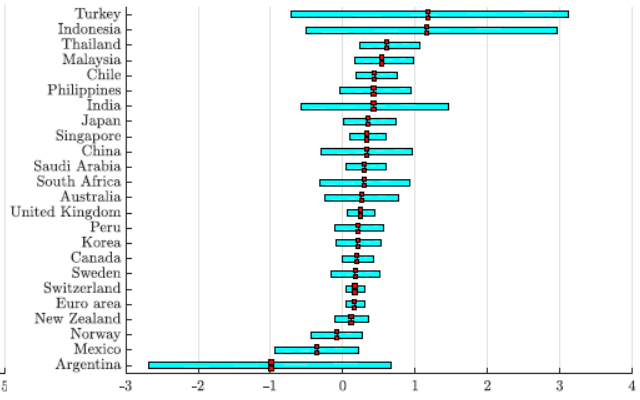

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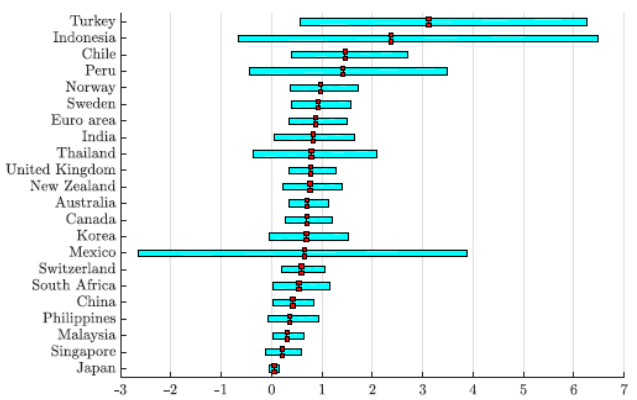

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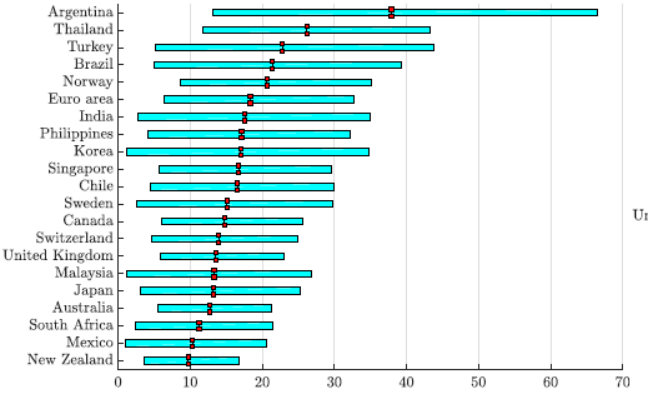

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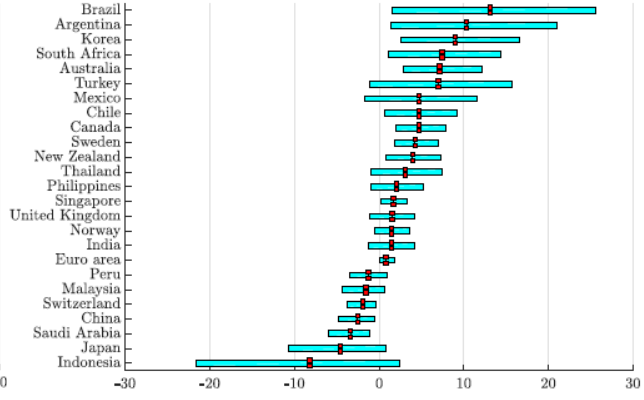

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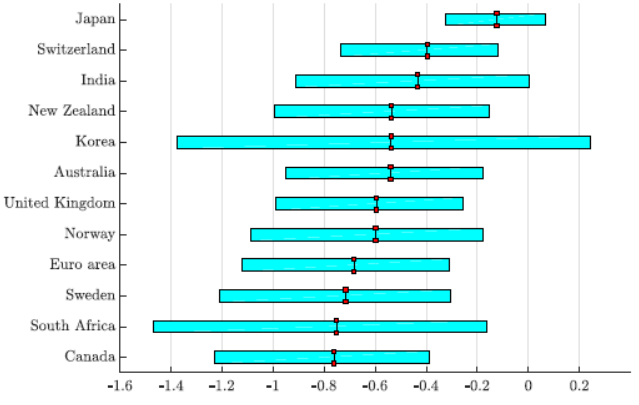

(f) Term spread

Note: maximum absolute responses and associated 68% bands

Comparing spillovers from UMP and CMP shocks