



# Macrofinancial Shocks and the Trilemma

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Foreign Exchange Market Intervention: Conventional or Unconventional Policy?

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## Outline:

# Continuing relevance of the monetary policy trilemma

- The traditional view of the monetary trilemma
  - What it is and where it came from; contemporary and historical evidence
- The new challenges to trilemma-based thinking
  - Dilemma v trilemma—financial linkages in the modern world (Rey)
  - Does exchange rate-regime matter? Does monetary policy matter?
- New view of the trilemma: history and evidence
  - International Monetary Relations: Taking Finance Seriously (*JEP*, Summer 2017)
  - Macrofinancial Shocks & the Trilemma (in progress, with A. Taylor)

Context:

## The trilemma and the international monetary system

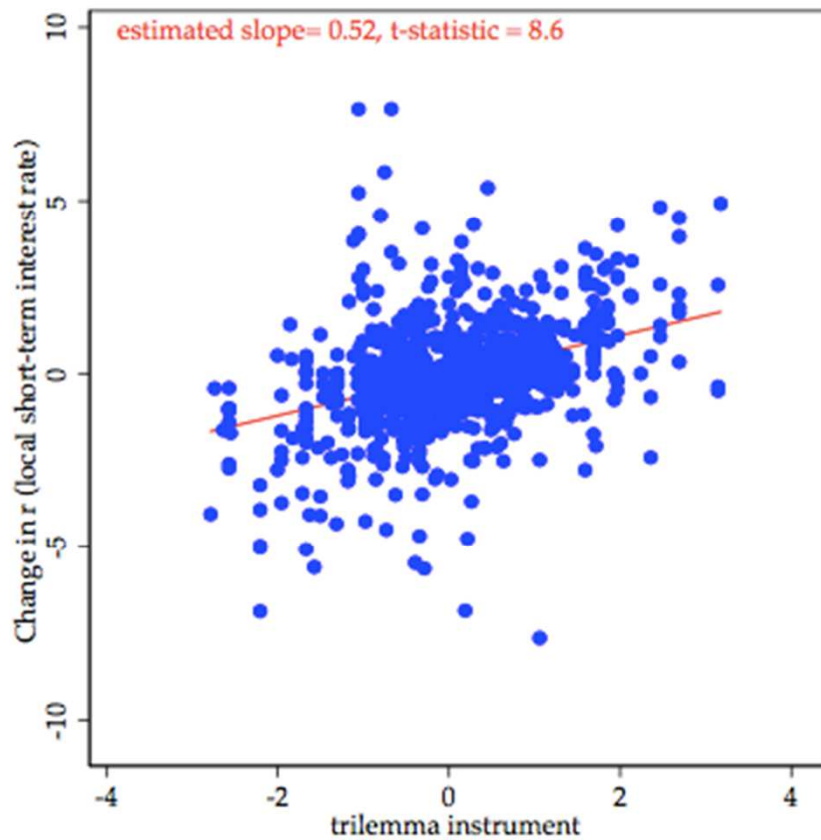
- Global financial crisis also a crisis for macroeconomic theory
- Conventional macro models were exposed as missing potent financial mechanisms
- Sources of shocks and channels of transmission
- The “Great Moderation” was undermined by financial instability
- Financial factors have also moved to the fore in thinking about the international monetary system (IMS)

# International monetary trilemma

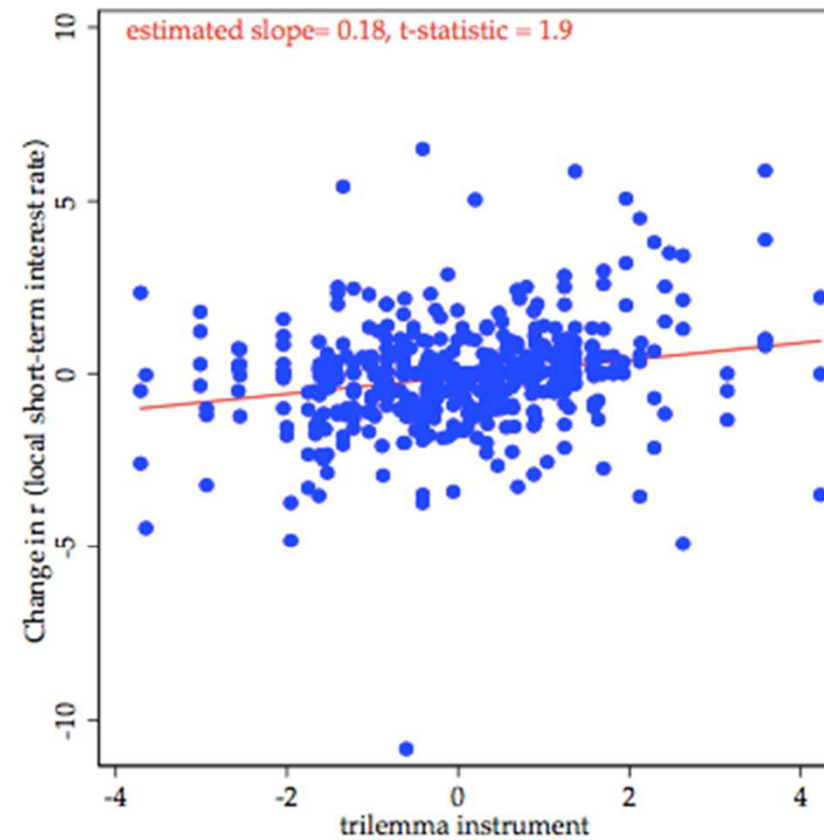
- A fundamental constraint—at most two of the following three are simultaneously compatible:
  - Exchange rate stability
  - Financial markets open to cross-border trade
  - Domestic monetary policy autonomy
- Of course, corners may be “rounded”: e.g., one can trade objectives off against each other, for example, more FX intervention (to enhance exchange stability) at the expense of less traction on domestic monetary policy goals

# Evidence: Interest rate coherence with the base country

(a) Pegs



(b) Floats



From: “The effects of quasi-random monetary experiments,” Jordà, Schularick & Taylor, October 2017.

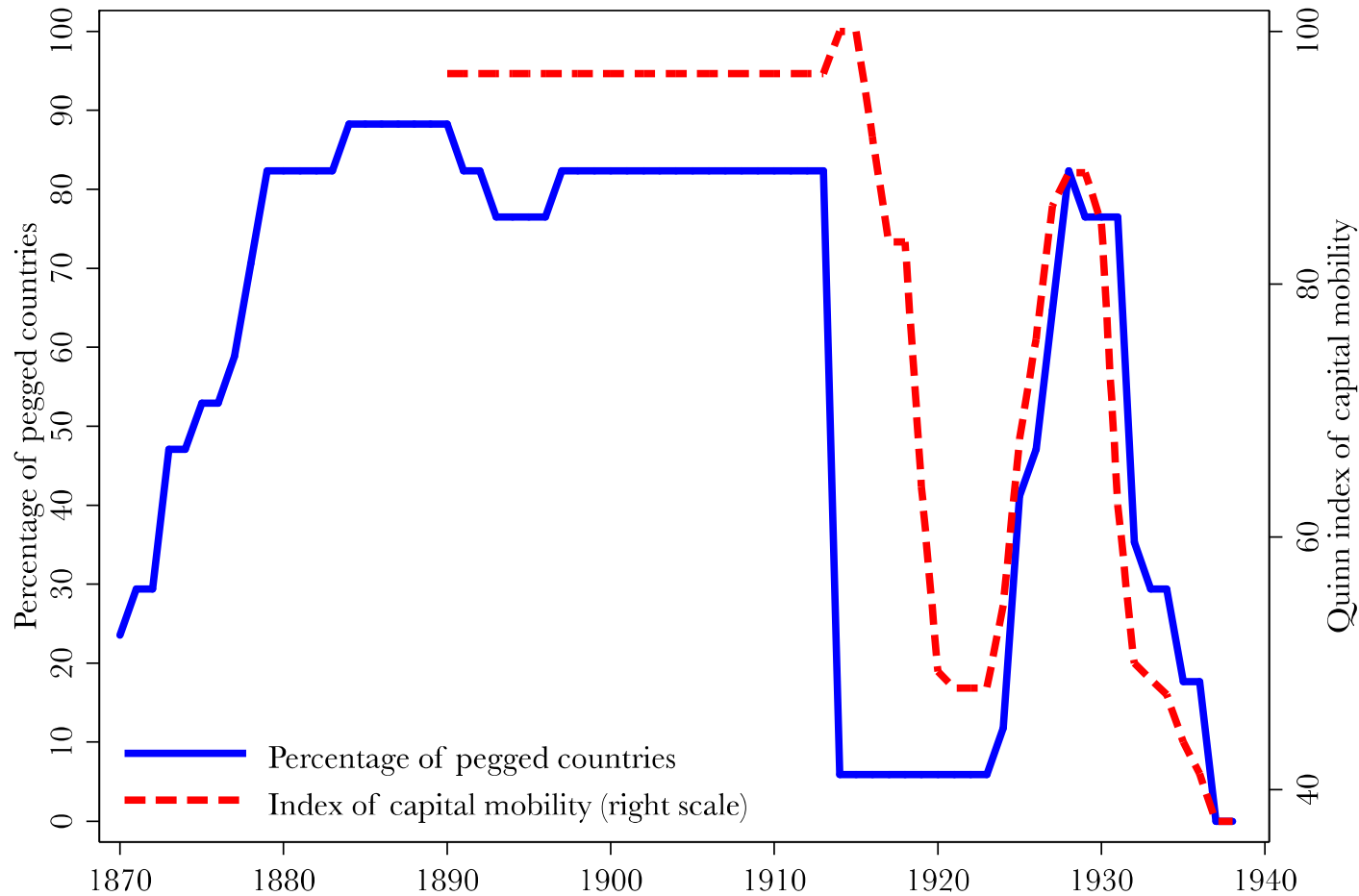
# Different solutions to trilemma over the centuries

- **Gold Standard**
  - era of globalization under the old orthodoxy
- **Interwar**
  - era of old turmoil, macro-financial experimentation
- **Bretton Woods**
  - era of constrained re-globalization, financial repression
- **Floating I (ca. 1973 – 1994)**
  - era of globalization under the new orthodoxy, financial liberalization
- **Floating II (ca. 1995 – 2017)**
  - Hyperglobalization, hyperfinance

In the 18<sup>th</sup>/19<sup>th</sup> centuries thinking about the tradeoffs largely focuses on macro side

- Exchange rates
  - Pegged to gold as a matter of orthodoxy
- External adjustment
  - Hume's mechanism and the so-called "rules of the game"
- Macro consequences
  - Exchange stability
  - But instability of  $P$  and  $Y$
  - No monetary policy autonomy
  - Controls unthinkable

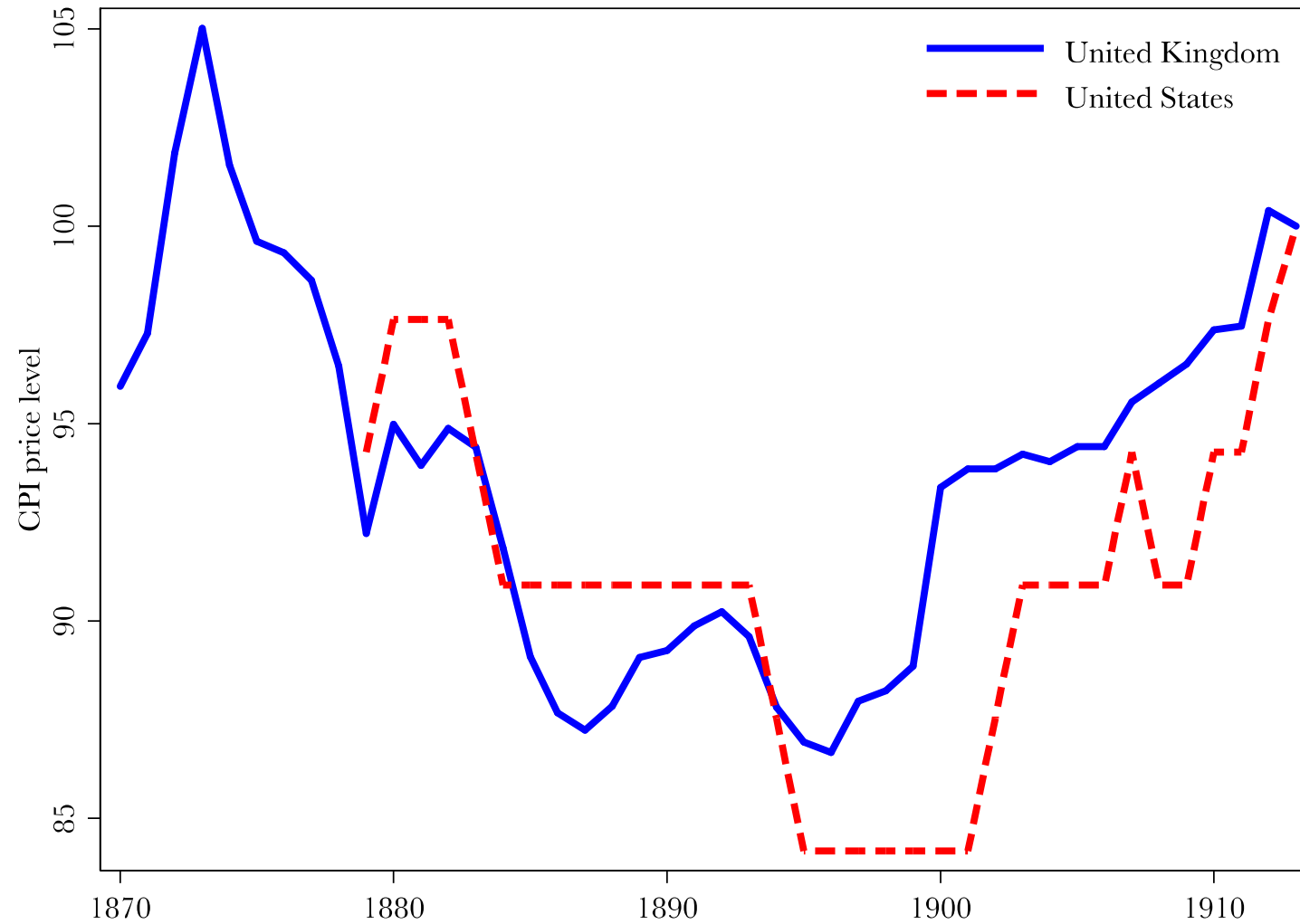
# Pegging to gold and capital mobility, 1870–1938



Source: Data from Jorda, Schularick, Taylor (2017) Macrofinancial Database; Quinn, Schindler, and Toyoda (2011).



# Price levels on the Gold Standard, UK & US, 1870–1913

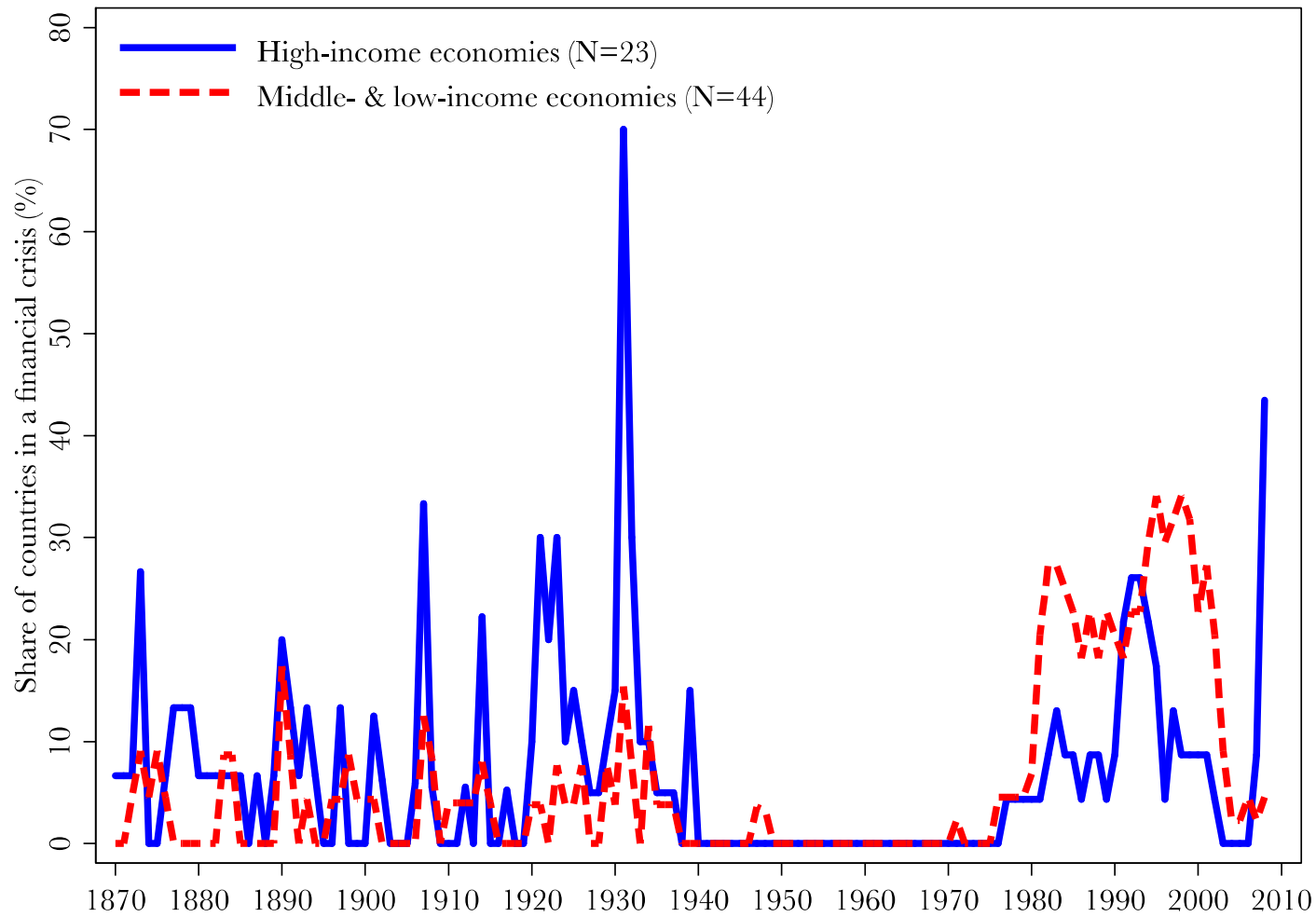


Source: Data from Jorda, Schularick, Taylor (2017) Macrofinancial Database.

## Another theme that emerges early on is *financial instability*

- Macro instability bred debt deflation, financial panics, political turmoil (gold/silver agitation)
  - Early premonitions in Thornton, Attwood, Bagehot, and the emergent doctrine of the Lender of Last Resort
  - How to reconcile LLR role with gold peg?
  - Central banks also oversaw “plumbing” of payments system (Goodhart 1988) – and central banking spread (including to US)
  - Financial systems start relatively small even in advanced economies, but getting large by the 20<sup>th</sup> century

# Financial Crises, 1870–Present

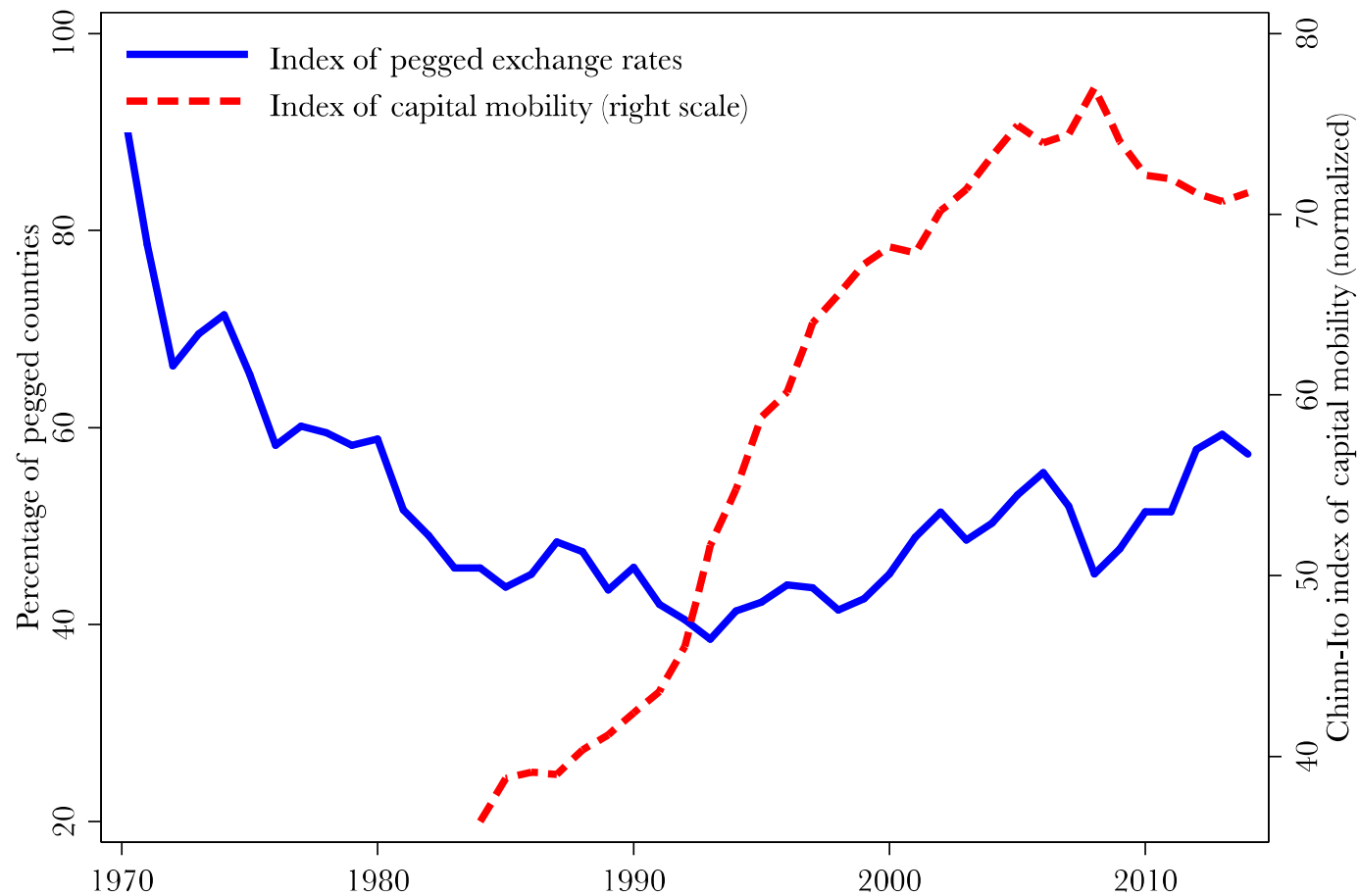


Source: Data from Qian, Reinhart, and Rogoff (2011).

## Why were financial crises in remission, 1940s–1970s?

- Roughly coinciding with the Bretton Woods period, the Great Depression and WWII led broadly to financial regulation/repression, including strong controls on cross border capital flows
- IMF original mandate was to free current, not capital, payments. Thus, at first, pegs and policy autonomy could co-exist
- More trade brought more capital mobility, which heightened distortions from domestic restrictions and led to offshore markets
- Higher inflation also a factor
- Fixed rates became fragile and collapsed, floating allowed financial opening. Limited in early phase (80s/mid-90s), massive in later phase (mid-90s/now)

# Fixed exchange rates and capital mobility, 1970–present



Source: Data from Jorda, Schularick, Taylor (2017) Macrofinancial Database; Quinn, Schindler, and Toyoda (2011).

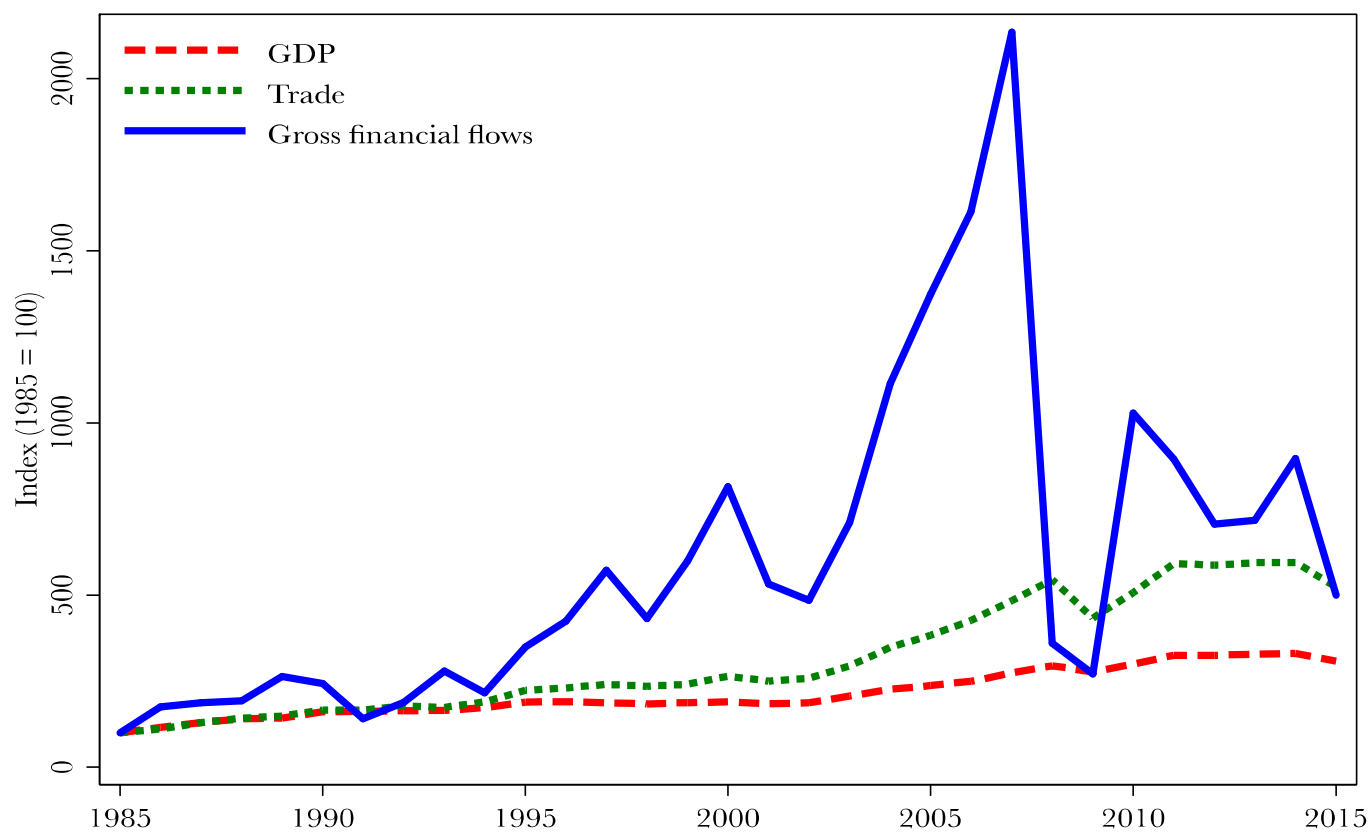
## Floating I: Transition (mid-1970s to mid-1990s)

- Developing-country debt crisis and subsequent reforms
- Advanced economies tame inflation and move to inflation targeting
- Floating exchange rates largely succeed in resolving policy divergence, current account imbalances
- EU countries open up finance and move toward the euro
- With gold effectively demonetized, what is the final means of settlement?
- Camdessus was right: Tequila was the first 21<sup>st</sup>-century crisis

## Floating II: Mid-1990s to today

- China emerges (takes baton from Japan); former Soviet economies emerge; Asian crisis is second 21<sup>st</sup>-century crisis
- Fragility of pegs —> EMs move toward floating, reduce currency mismatch, bolster regulatory defenses
- AEs/EMs embrace inflation targeting; USD is final settlement medium in global economy, dominant reserve currency
- Massive expansion of net and gross financial flows
  - Particular impetus from European banks, EM reserve accumulation
  - Wholesale funding, shadow banking, repo, financial engineering
- Abrupt setback to flows after onset of the GFC, but global financial markets still remain very open indeed

## Evolution of Real Gross Capital Flows Compared with Output and Trade, 1985—2015



Notes: Indices are calculated from data in real US dollars (deflated using US GDP deflator). Global trade is defined as the average of global exports and imports of goods and services. Gross global financial flows are defined as the sum of direct investment, portfolio investment, and other investments. Values are obtained by averaging inflows and outflows to account for measurement error.

Source: IMF WEO and IFS.



## Dilemma vs. trilemma: Definitely an old problem

- Charles P. Kindleberger, *International Short-Term Capital Movements*, 1937, pp. 230-231:

“So long as the economy depends in some way on external trade, events which have their origin abroad will affect it. A monetary policy based entirely upon the requirements of the internal economy will be based at one remove on external factors. Under these circumstances it is impossible to say that the external problem can be avoided by some expedient such as allowing the exchange rate to take care of itself. Such a decision would constitute a disposition of the problem that would in no way insulate the economy from the outside world. The response of external events would merely be felt through a different sequence of economic stimuli and repercussions.”

## What is the evidence on dilemma/trilemma?

- There is rising co-movement of global asset prices (Jordà, Schularick, Taylor, Ward 2017)
  - But they find asset price spillovers from Fed policy seem to be stronger in USD pegs v floats
- Whether there is a global financial cycle for capital flows is contested (Cerutti, Claessens, Rose 2017)
- Floating rates – even managed floating rates – provide EMs insulation from shocks to the VIX as compared to pegs (Obstfeld, Ostry, Qureshi 2017)

## Why do we care?

### Global financial forces can worsen policy tradeoffs

- Even in a closed economy, monetary policy may be complicated by financial factors (lean or clean?)
- In an open economy facing volatile capital flows, financial stability concerns create an even harsher tradeoff for policy
- Our view of financial dimension of the trilemma leads to...

#### **Conjecture: exchange-rate flexibility still helps**

- Even so, macroprudential policy can improve the tradeoff and allow exchange rates more scope to operate as buffers—subject to the *financial* trilemma (Schoenmaker 2013)

## What is the financial trilemma?

- Countries can enjoy at most two out of three:
  - Financial openness
  - Financial-policy autonomy
  - Financial stability
- Limitations of MPMs may thus leave a role for CFMs (as in the IMF's Institutional View)

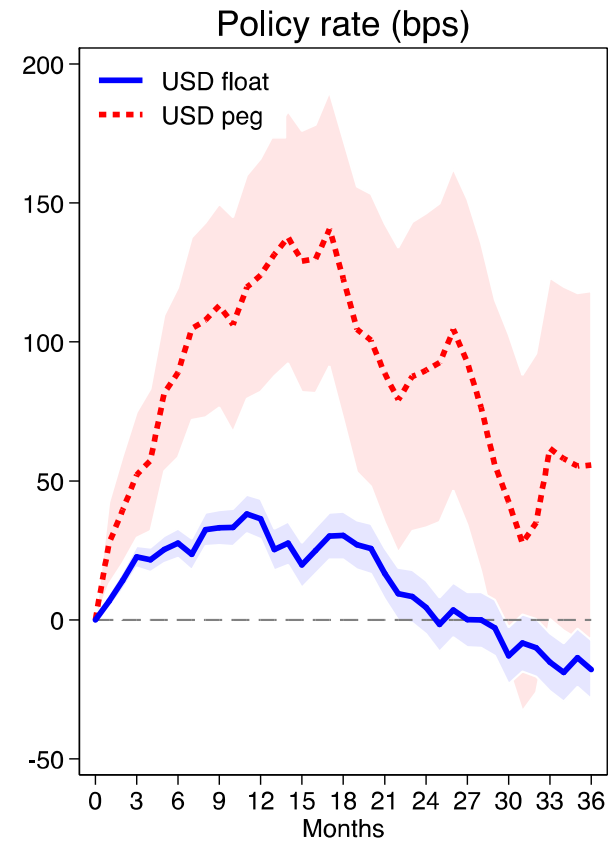
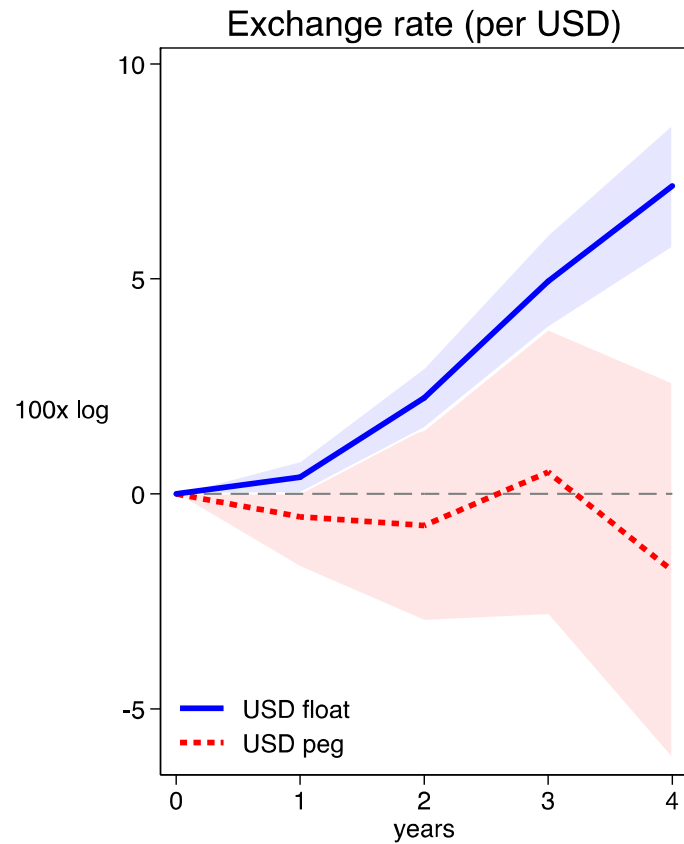
## Some new evidence from work in progress...

Empirical design is macroeconomic methods treatment effects approach using local projection methods (Jordà 2005):

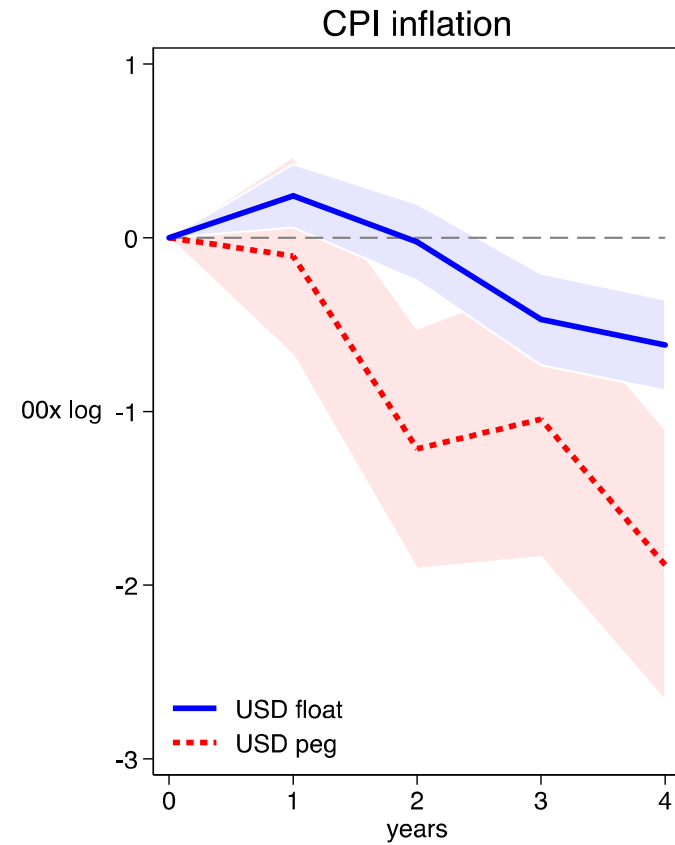
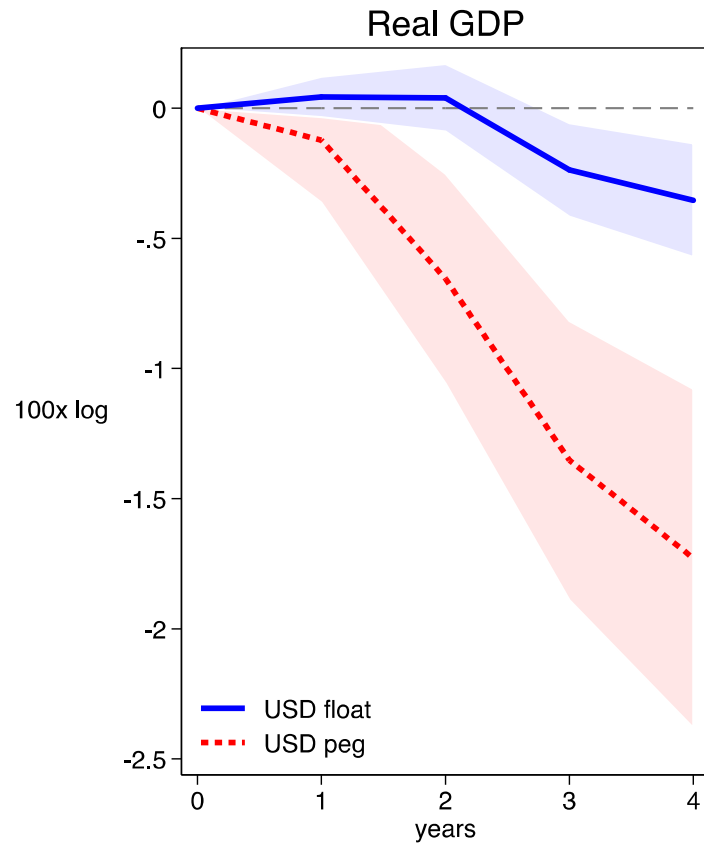
- Dataset: all available post-1970 h.f. macro/financial data
- Panel: unbalanced, open economies only (High CI score)
- Treatment:  $\Delta FFR_t$ , US monetary policy shock (+100bps)
- Outcome:  $y_{t+h} - y_t$ , change in home macro/financial conditions
- Method: LP-IV using Romer-Romer IV for  $\Delta FFR$
- Nonlinearity: state-dependent response **USD peg** v **USD float**

$$\Delta y_{it}^h = \alpha + \beta_{peg}^h USDPEG_{it} \Delta FFR_t + \beta_{float}^h (1 - USDPEG_{it}) \Delta FFR_t + \gamma x_{it} + u_{it}$$

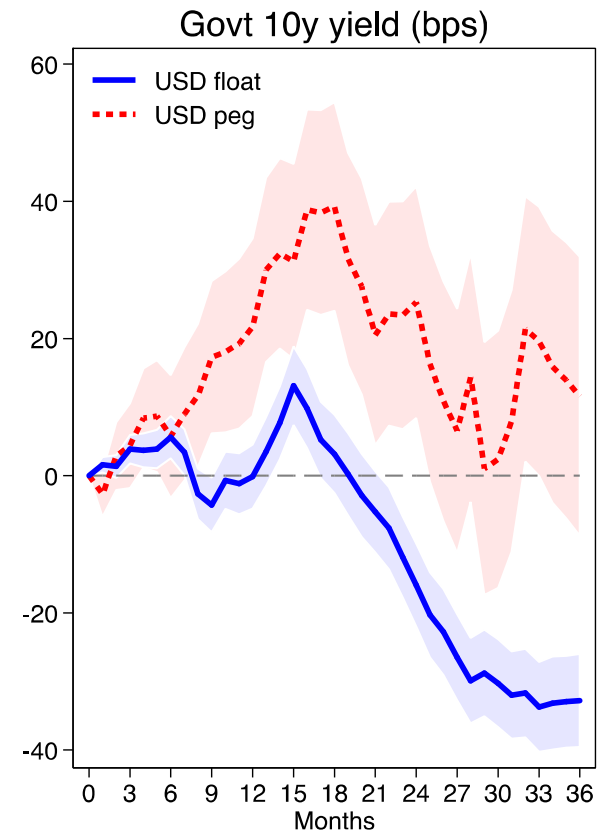
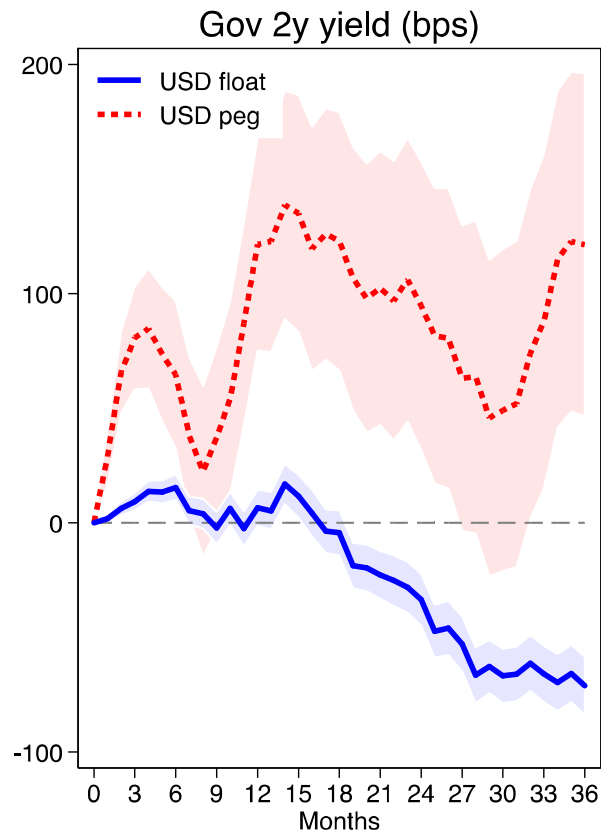
# Traditional monetary trilemma story (macro): Policy rate and exchange rate response



# Traditional monetary trilemma story (macro): Output and inflation response

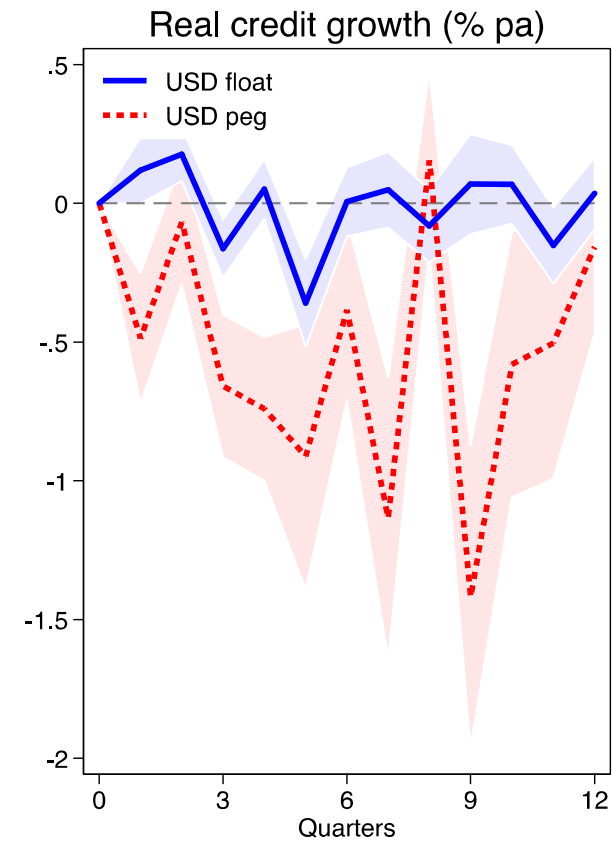
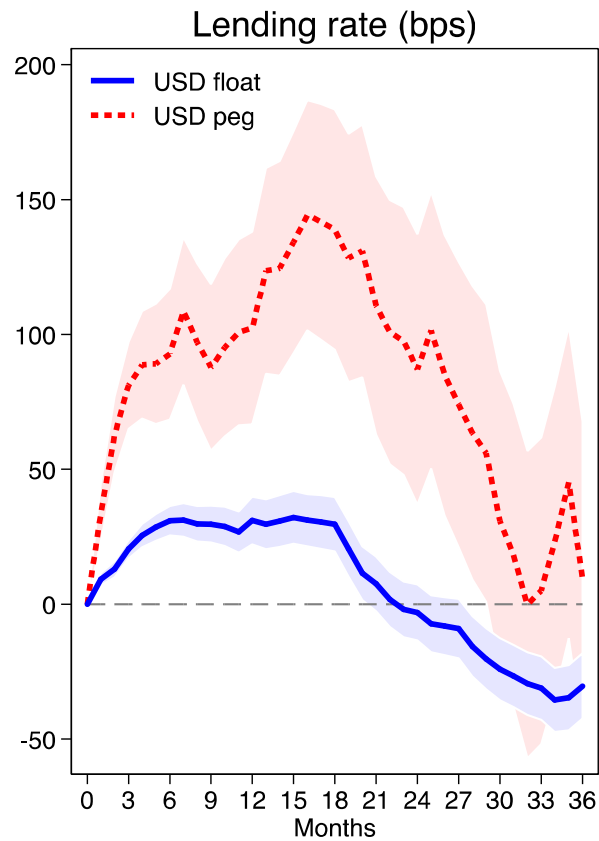


# New monetary trilemma story (financial): Government yield curve responses

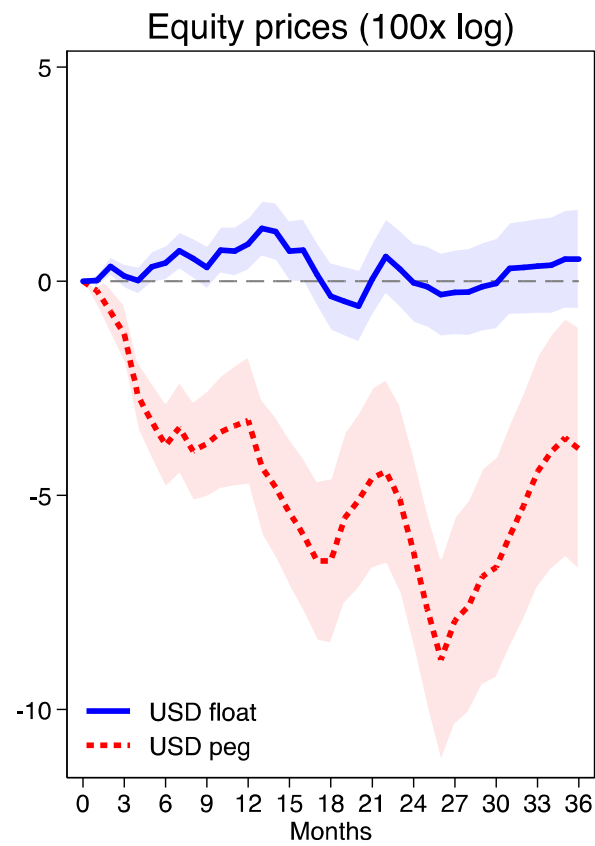




# New monetary trilemma story (financial): Private lending rates and private credit responses



# New monetary trilemma story (financial): Equity price responses



# The Monetary Trilemma Twenty Years Ago and Now

- Then (the traditional view)
  - Monetary policy autonomy versus exchange rate stability in open economies
  - Focus on conventional macro outcomes, like output and inflation
  - Open pegs inherit center-country MP shocks to output and inflation
  - Open floats can enjoy smoother outcomes than open pegs

# The Monetary Trilemma Twenty Years Ago and Now

- Now (the new view)
  - Broader stability concerns
  - Both macro and financial conditions matter
  - Open pegs inherit center country MP shocks to financial conditions as well
  - But floating insulates open economies better from the financial spillovers
  - Financial trilemma and role of CFMs
  - “Monetary policy autonomy” could be expanded to “Monetary and financial policy autonomy”?

**תודה רבה**