Global Dimensions of U.S. Monetary Policy

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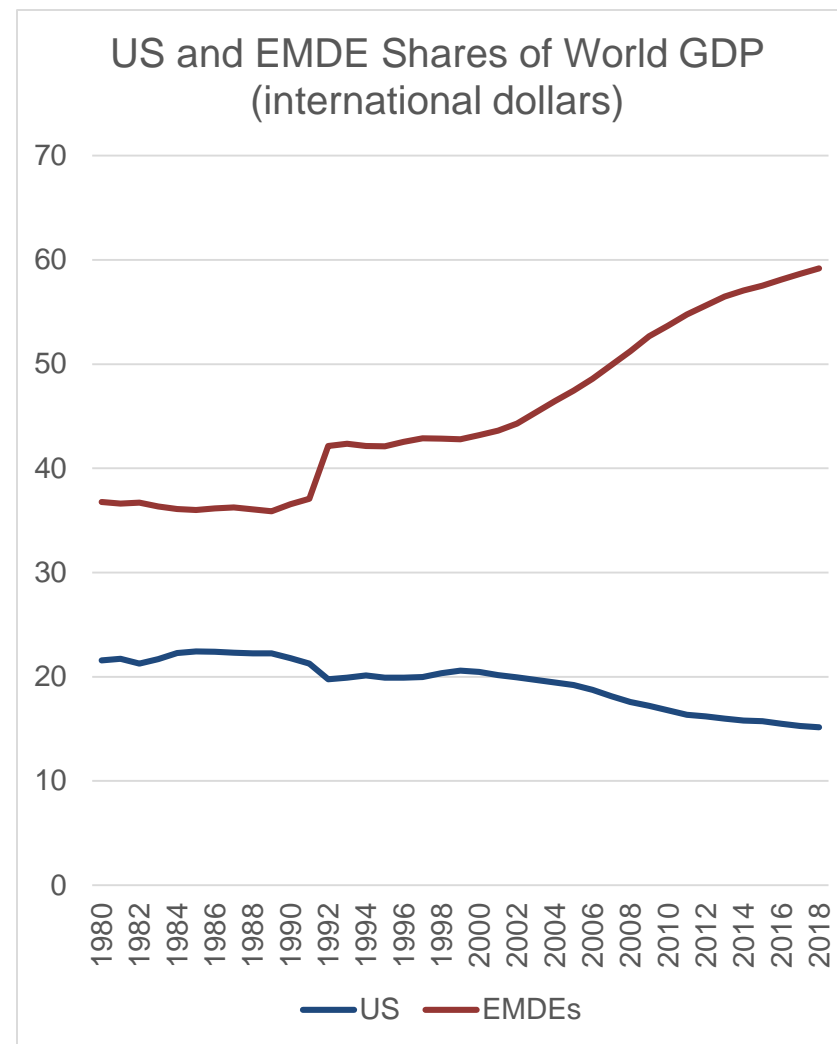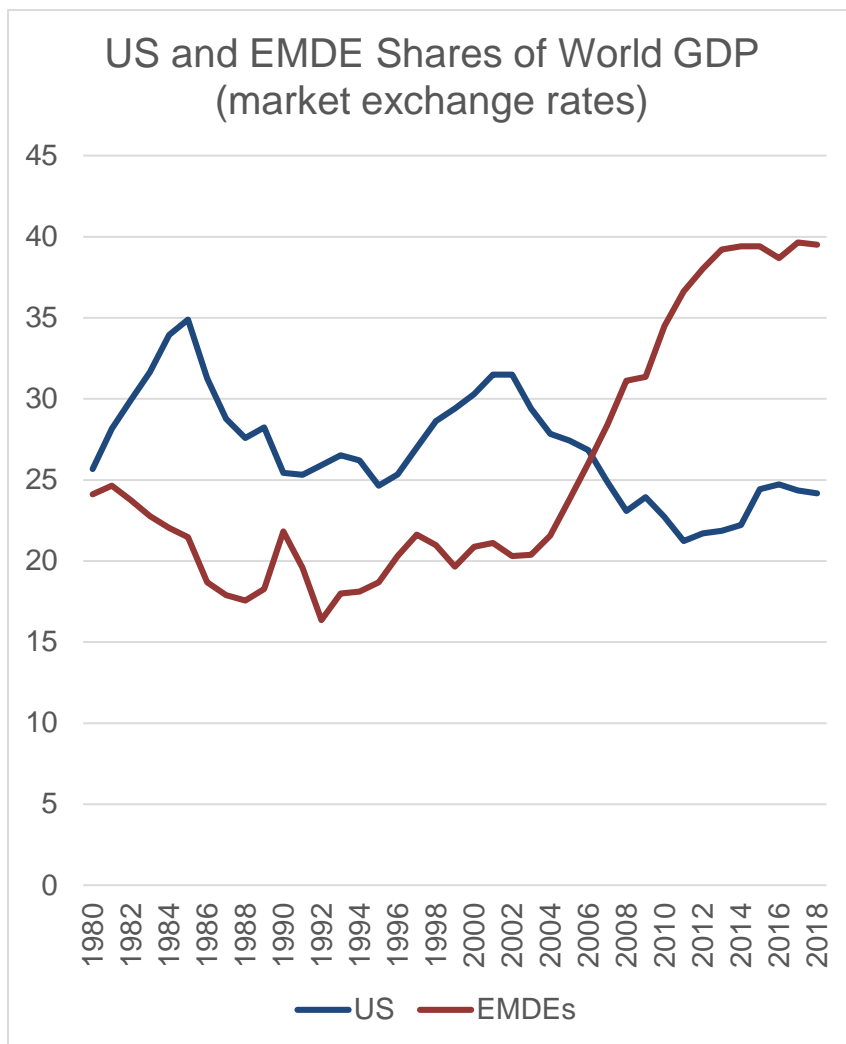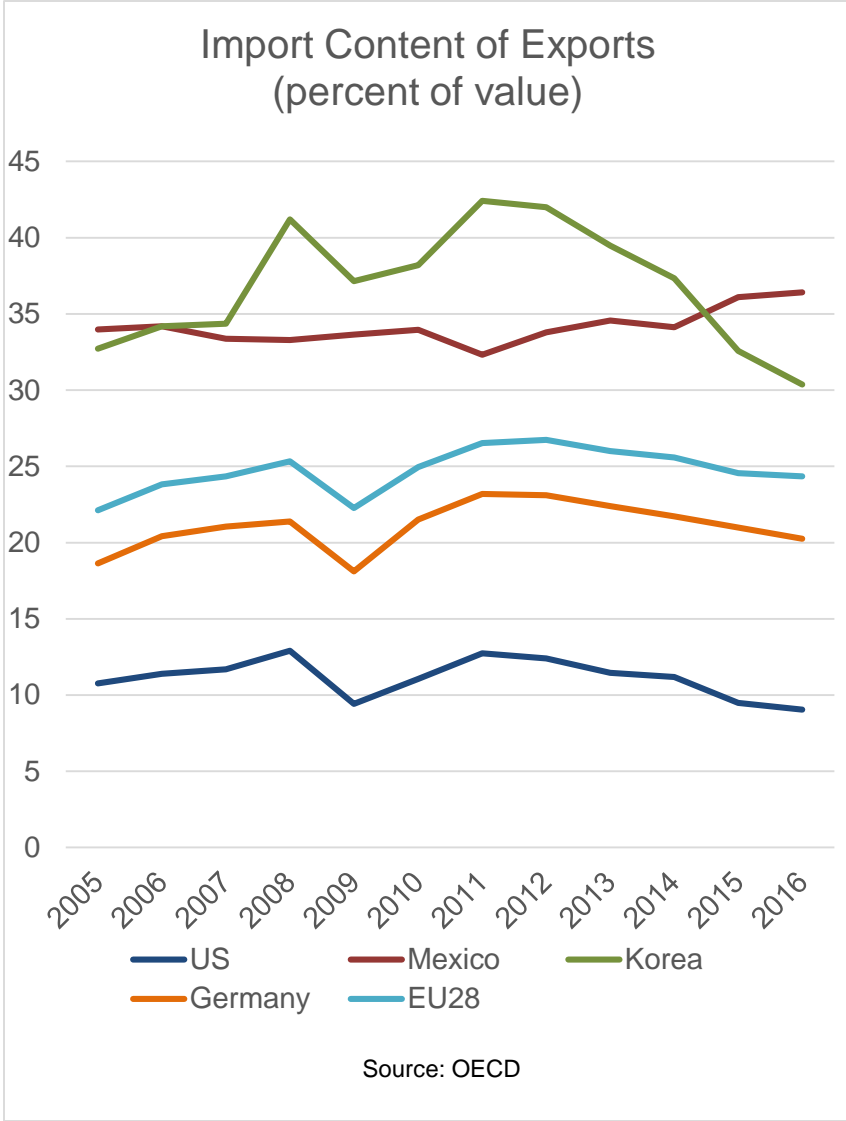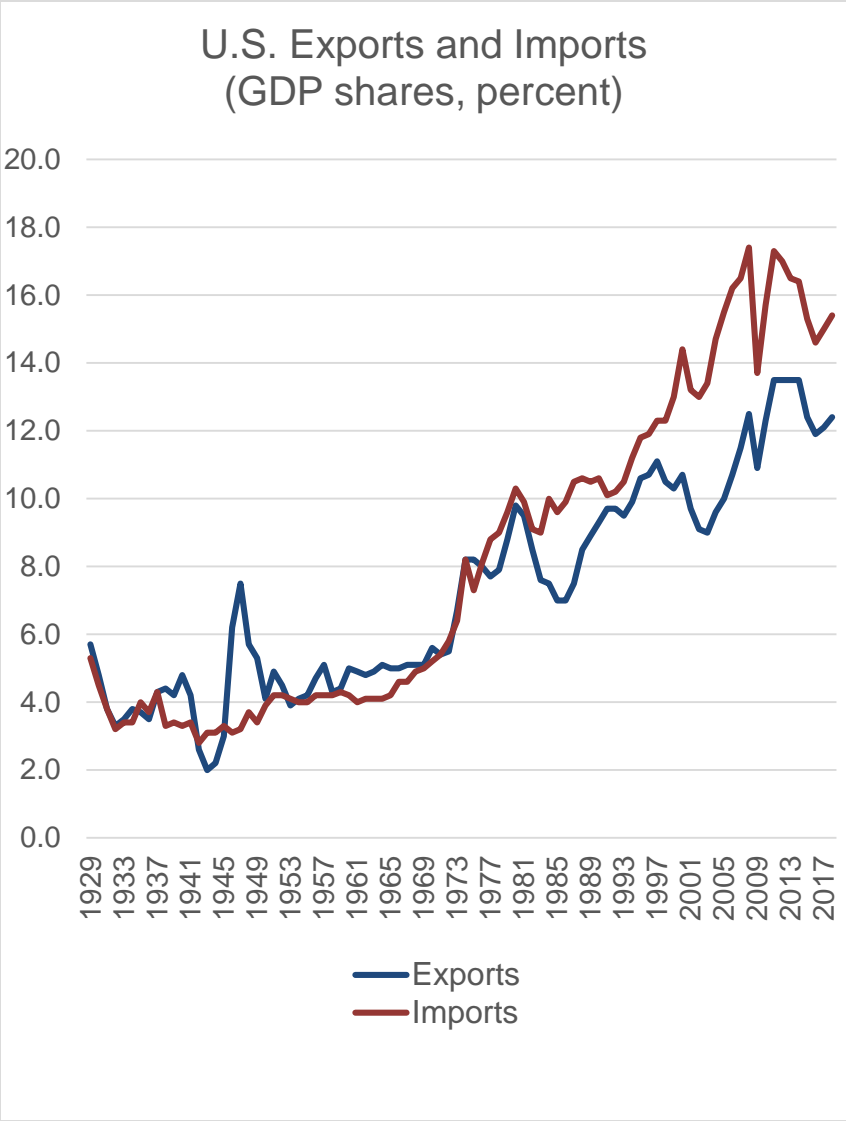June 4, 2019

Goal of the paper

- To explore the literature on main mechanisms through which global factors affect the Fed's *policy tradeoffs*

- I focus on three channels:
  - Global influences on the domestic inflation process.
  - Global financial markets and asset returns (including r^*)
  - Spillbacks from the impact of U.S. monetary policy abroad

- Tentative conclusions on:
  - The price Phillips curve and wages
  - The natural rate r^*, the U.S. current account, and the global determination of overall financial conditions
  - U.S. monetary policy's uniquely influential global role

1. U.S. openness: Quantity indicators

U.S. size depends on how you measure it

US and EMDE Shares of World GDP (market exchange rates)

US and EMDE Shares of World GDP (international dollars)

Trade openness has grown, remains moderate

U.S. Exports and Imports
(GDP shares, percent)

Import Content of Exports
(percent of value)

Source: OECD

But financial openness has surged

U.S. Gross Foreign Assets and Liabilities (percent of GDP)
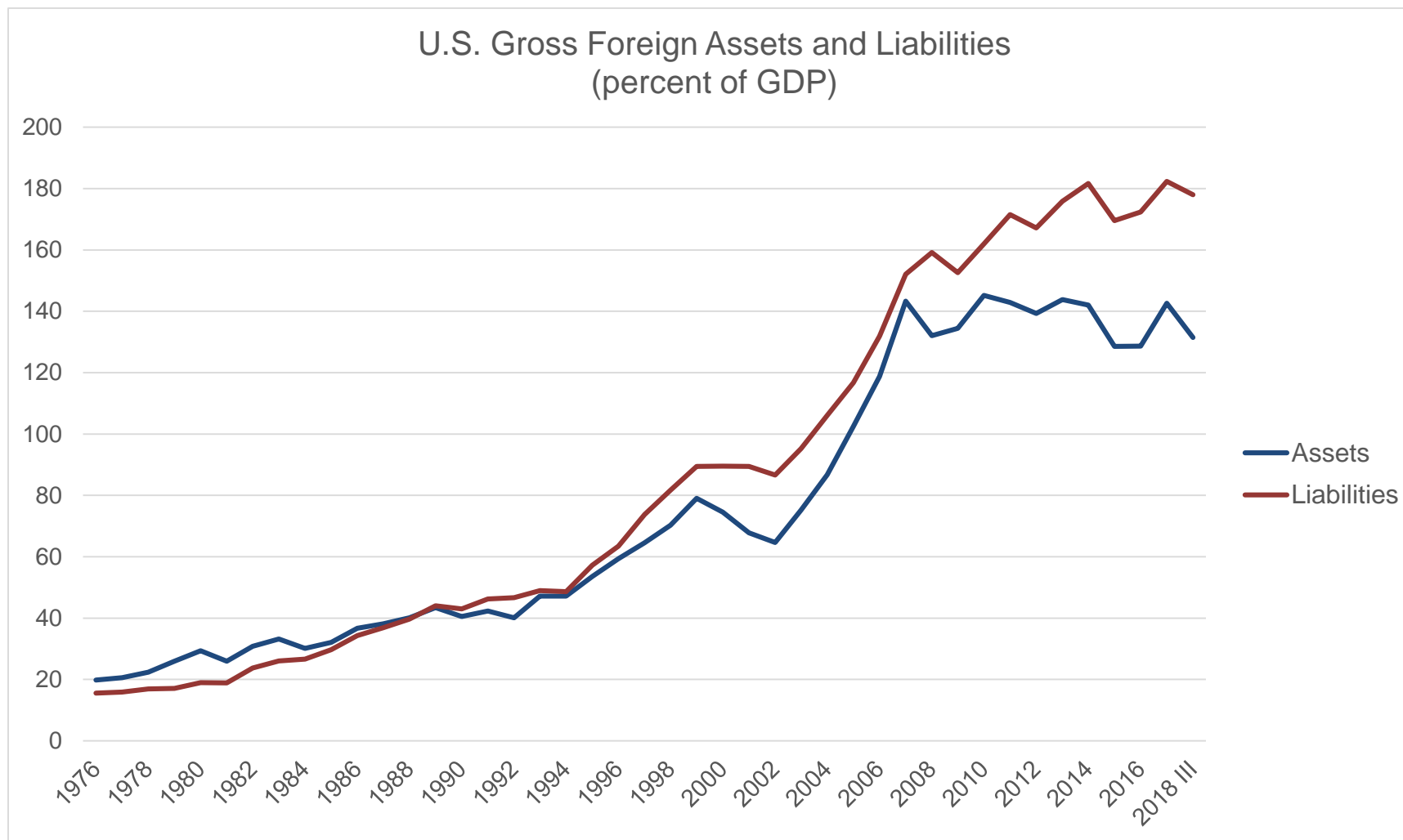
2. Global aspects of the inflation process

Role of global competition

- In many advanced economies: Flatter Phillips curves

- Consistent with slow pickup in inflation during recovery

- Can greater international competition explain a weaker reaction of (CPI) inflation to domestic slack?

- Dornbusch and Fischer (1984):

  Theory suggests and empirical evidence supports the notion that under flexible exchange rates, the Phillips curve is much steeper.

- But they were talking about something else: the response of inflation to a monetary shock, taking account of the exchange rate's impact on import prices – not the <u>partial effect of slack</u>

- (Problematic to identify this parameter econometrically – e.g., depends on the policy reaction function)

Price competition

- Some evidence that globalization has lowered markup *levels* (e.g., Feenstra and Weinstein 2017)

- But: that is not the same as a weaker price response to slack

- Models with *strategic complementarity in price-setting* can illuminate (e.g., Sbordone 2009, Erceg et al. 2009)

- If $P = \mu MC$, more globalization may well lower μ

- The adjustment to lower μ may well display transitorily low π

- Not the same as saying that, given a new lower markup, *P* will adjust more slowly to changes in *MC* – it could adjust *more quickly* if frequency of price adjustment rises with globalization

- We cannot conclude that more globalization (by itself) implies a flatter Phillips curve

Wage Phillips curve

- Wage response to slack is a major way for slack to feed into real marginal cost, and thence into product price inflation
- Big structural changes in the world economy – e.g. entry of China and the ex-Soviet bloc, movement of manufacturing to emerging markets, technological change – have affected wages and labor's bargaining power
- Once again: showing that globalization reduces either (real) wages or bargaining power implies a *level* effect, but does not show that the sensitivity of wage growth to slack has changed
- On the whole, the evidence for a flatter wage Phillips curve is weaker than for the price Phillips curve
- The Stock-Watson (2018) correlations suggest little change

Foreign prices

- Dollar import prices directly affect producer and consumer prices
- While dollar pricing will ultimately reflect U.S. conditions, U.S. import prices (at least 90%) tend to be set in USD, subject to pricing-to-market, and adjust slowly (Gopinath 2015)
- "Long and variable lags" for monetary policy to affect import-price inflation
- Role of imports in production (more intermediate imports) and consumption (more consumption imports) have risen over time for the United States
- So potentially this channel of globalization can complicate the transmission of monetary policy to the economy

A regression exercise

- Abstracting non-labor sources of domestic value added, one can write the following consumer inflation equation, based on the definitions of the CPI and marginal cost:

$$\pi_C = \kappa_1 \widehat{w} + \kappa_2 \hat{p}_{PM} + \kappa_3 \hat{p}_{CM} - \theta g + \theta \widehat{\mu}$$

- Above:
  - "Hats" denote percent changes and θ is the CPI share of home products
  - $\widehat{\mu}$ is a catch-all residual capturing competitive returns to non-labor factors as well as rents
  - g is labor productivity growth
  - $\kappa_1 + \kappa_2 + \kappa_3 = 1$
- In an OLS regression, how do the partial correlates of CPI inflation change over time?

Findings (1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	64Q1-18Q4	64Q1-92Q1	64Q1-73Q1	73Q1-92Q1	92Q1-18Q4	92Q1-08Q1	08Q1-18Q4
Wage growth	0.856***	0.792***	0.444	0.940***	0.399***	0.118	0.245*
	(0.118)	(0.154)	(0.291)	(0.127)	(0.114)	(0.141)	(0.141)
Import price growth	0.128***	0.099***	0.111	0.080***	0.140***	0.109***	0.144***
	(0.021)	(0.030)	(0.139)	(0.028)	(0.012)	(0.012)	(0.007)
Productivity growth	-0.255***	-0.454***	-0.347***	-0.328**	-0.045	-0.088*	-0.199***
	(0.088)	(0.133)	(0.112)	(0.132)	(0.066)	(0.051)	(0.033)
Constant	0.001	0.004**	0.005	0.003**	0.003***	0.006***	0.003***
	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	216	108	32	76	108	64	44
R^2	0.822	0.766	0.536	0.856	0.766	0.610	0.923

Findings (2)

|	(1)	(2)	(3)
	92Q1-18Q4	92Q1-08Q1	08Q1-18Q4
Wage growth	0.419***	0.251**	0.231
	(0.116)	(0.113)	(0.164)
Consumer import price growth	0.006	0.004	0.082**
	(0.033)	(0.040)	(0.034)
Producer import price growth	0.051***	0.046***	0.065***
	(0.008)	(0.014)	(0.008)
Productivity growth	-0.111**	-0.139***	-0.226***
	(0.049)	(0.035)	(0.041)
Constant	0.003***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)
Observations	104	60	44
R^2	0.805	0.698	0.902

Comments and questions

- Results are robust to wage measure
- Import-price growth has relatively constant effect; seems more important for producer goods
- Regressions indicate role of wages (and possibly also labor productivity) declining over time
- Consistent with earlier work on falling roles of wages, u.l.c.
- This may have longer-run structural drivers – e.g., technological and global developments driving fall in labor's GDP share
- A smaller labor share could indeed flatten the price Phillips curve, to the extent wages are more domestic slack-sensitive than other cost components – could owe to globalization
- Role of global slack? Inflation low globally now despite recovery

3. International financial linkages

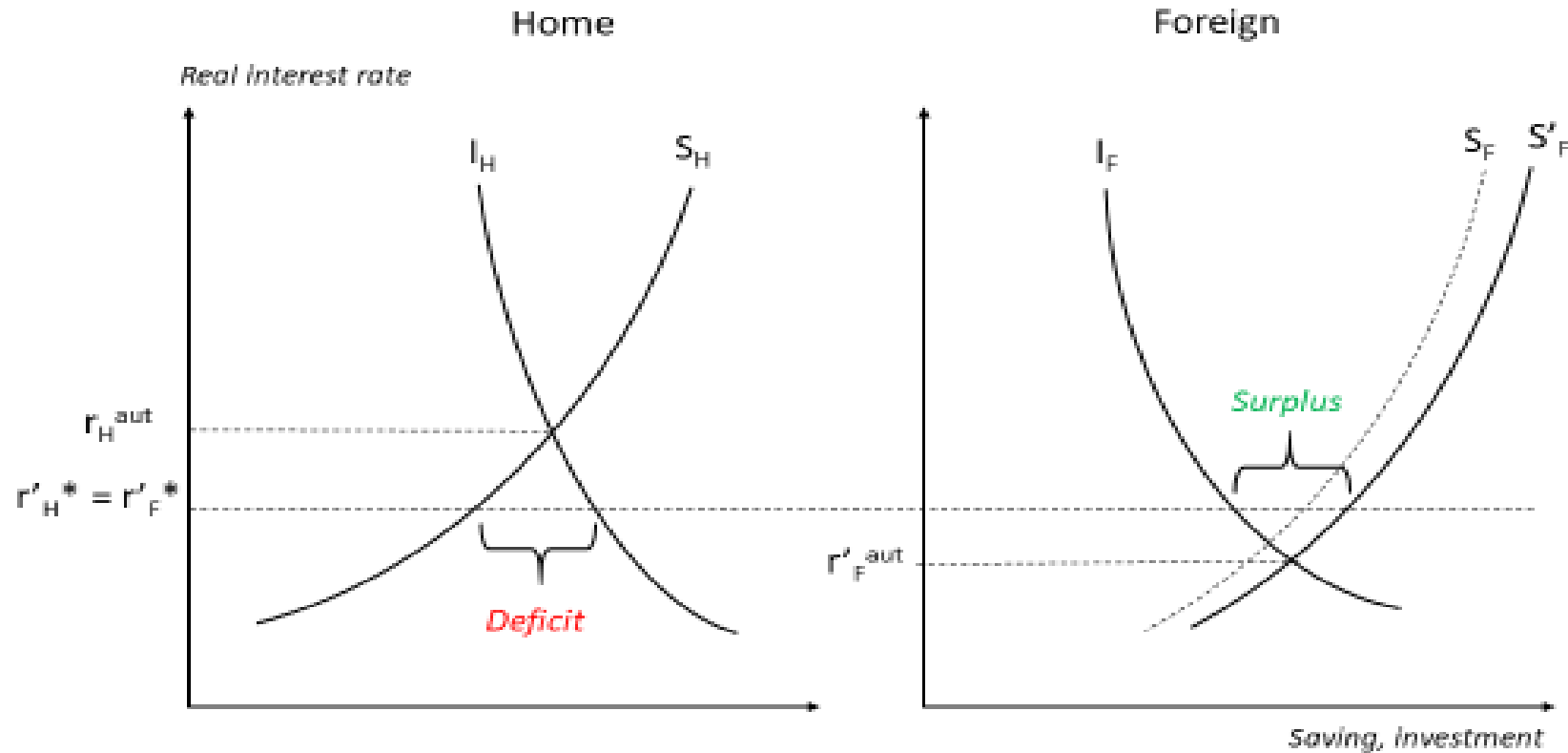# Coherence of long-term real interest rates

Selected Real Long-Term Interest Rates

USA DEU JPN GBR
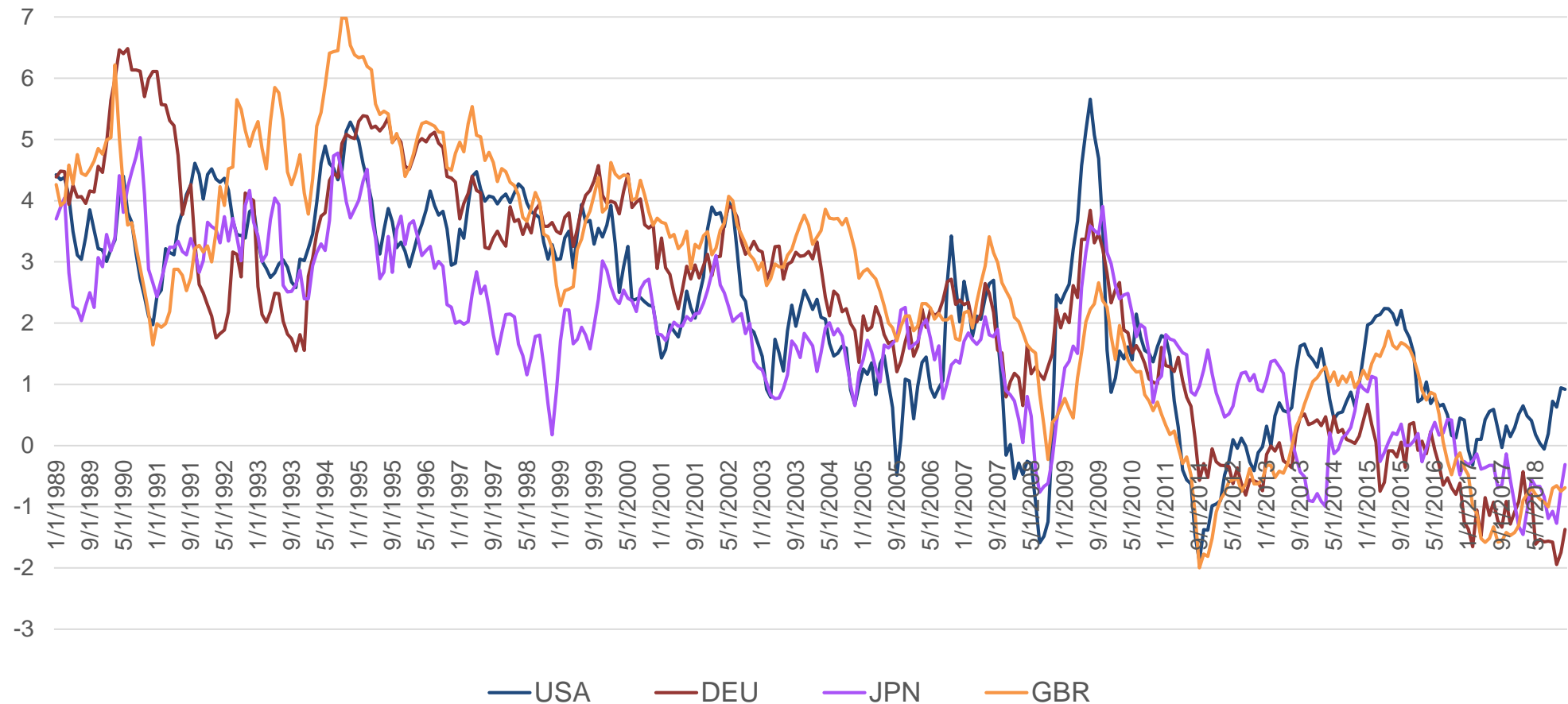
Determining *r** has to be explicitly global

- This is the basic model of Metzler (1968) and Bernanke (2005)

Figure 10: An Increase in Foreign Saving

Role of the real exchange rate, *q*

- That model assumes a single good-world wide; no goods-market frictions
- Assume a fall in aggregate demand leads to real depreciation (rise in *q*)
- But then, *q* is expected to revert over time (that is, $E\Delta q < 0$)
- We can modify the picture using the interest parity relation:

$$r_H^* = r_F^* + E\Delta q$$

- The bottom line is that real exchange rate changes likely dampen, but do not eliminate, the effects of shocks on global imbalances and autarky natural rates

*r** rises with the deficit if investment rises

Figure 12: An Increase in Home Investment
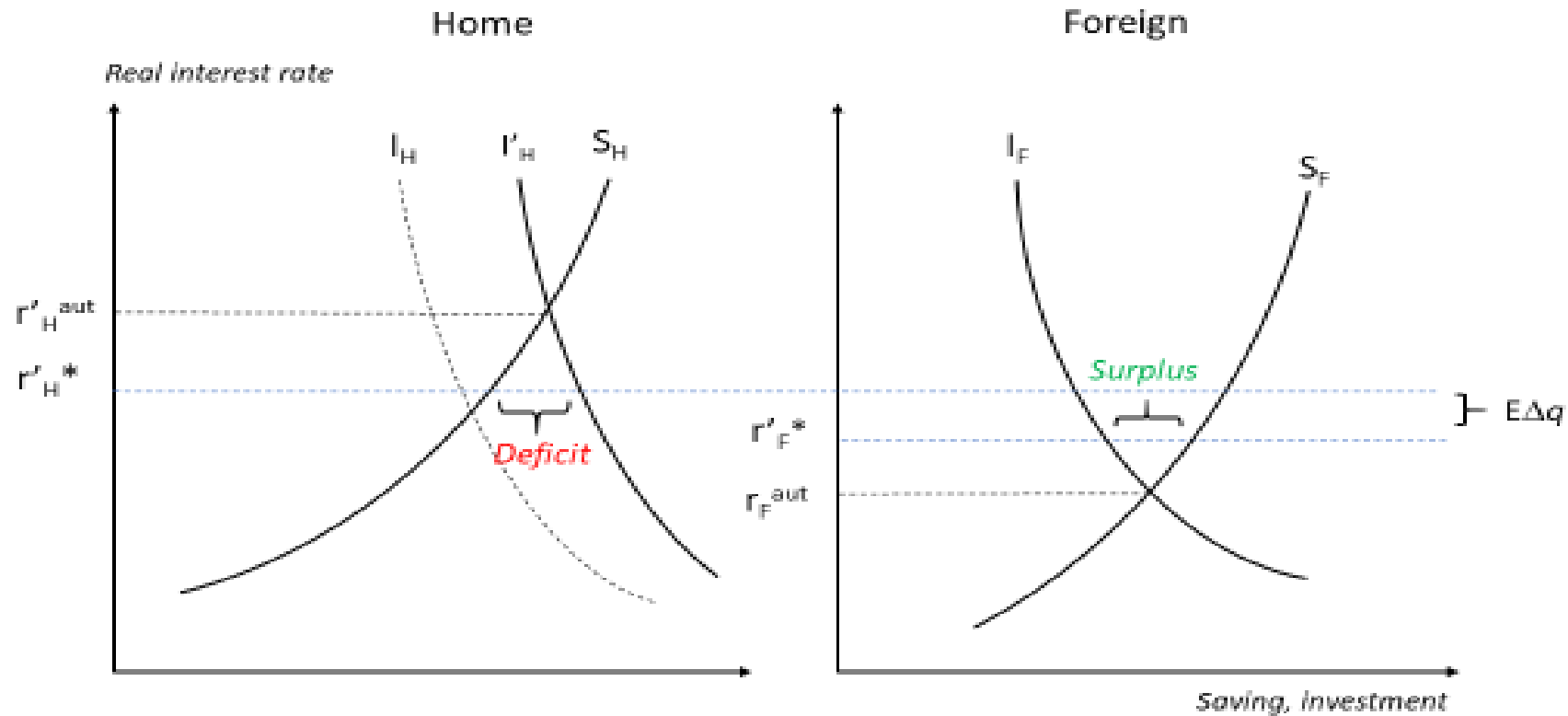
Other financial forces are at work

- In a world of multiple risky assets, $r*$ may not be a sufficient statistic for setting the policy rate (no "divine separability")
- The exchange rate may not provide much insulation from two-way capital flows, as actors alter *gross* positions
- Such flows may not set up any ex ante imbalance in the FX market, and not have much exchange rate impact
- Example: U.S. MMF flows to European banks, recycled back into the market for subprime loans; fueled U.S. housing investment (Bernanke et al. 2011)
- In general FCI and monetary policy can diverge – and more likely so in a financially open economy
- Example: U.S. dollar "liquidity premium"

Monetary policy versus overall FCIs

US and Euro Area Financial Conditions

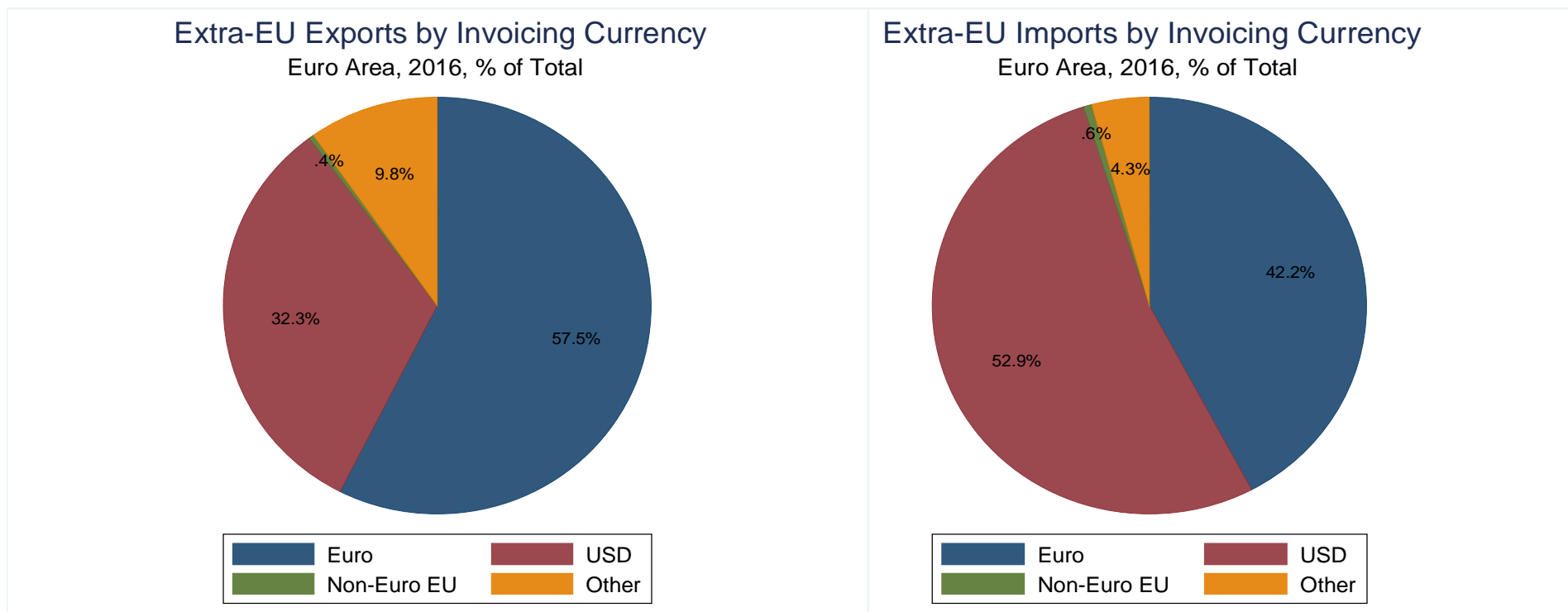US FCI   Euro area FCI
US One-Month Treasury Rate
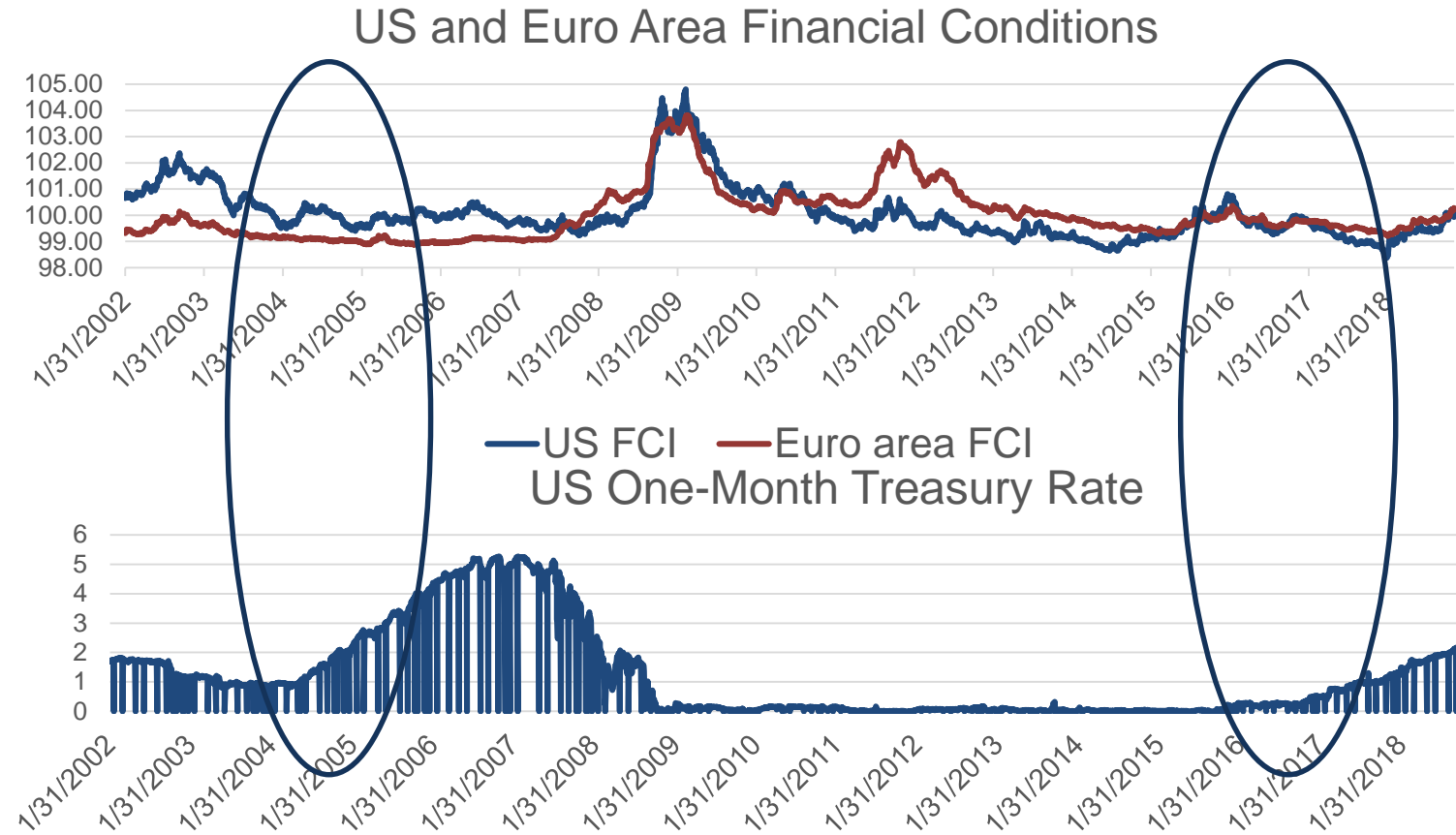
Source: BIS, *Quarterly Review*, December 2018, box A;
and Federal Reserve historical data.

4. Implications of the dollar's global role

The dollar's global role is unique

- Several factors explain the U.S. dollar's liquidity premium and confer on U.S. monetary policy a uniquely powerful role:
  o 66 percent of global FX reserves ($6.6 trillion) are dollars
  o 88 percent (out of 200) of FX turnover involves dollars
  o The dollar is the premier invoicing currency (Goldberg and Tille 2006, 2008; Gopinath 2015)
  o The dollar is the premier funding currency
- These roles are not independent – on the contrary, they reinforce each other (Gopinath and Stein 2018)
- For example, an international firm that invoices its exports in dollars will find it prudent and cheaper to borrow in dollars

Invoicing example: Euro area extra-EU trade

Extra-EU Exports by Invoicing Currency
Euro Area, 2016, % of Total

- 57.5%
- 32.3%
- 9.8%
- .4%

Legend: Euro | USD | Non-Euro EU | Other

Extra-EU Imports by Invoicing Currency
Euro Area, 2016, % of Total

- 42.2%
- 52.9%
- 4.3%
- .6%

Legend: Euro | USD | Non-Euro EU | Other

- EU's trade shares with the United States in 2017 were 20 percent of exports and only 13.8 percent of imports
- EU energy imports (mainly dollar invoiced) were 16% of 2018 imports

How does a U.S. hike affect world trade?

- Outside of major industrial countries, many countries face imports priced in dollars and invoice their exports in dollars.

- A dollar appreciation raises import prices

- But it does not make exports more competitive (though each unit sold is more profitable in domestic-currency terms)

- On the other hand, exports are less competitive against countries that price in non-dollars or domestic goods

- This part is contractionary

- Boz, Gopinath, and Plagborg-Møller (2017): empirically, a U.S. dollar appreciation leads within a year to a contraction in the volume of global trade between other countries, even conditional on the world business cycle

U.S. policy and the global financial cycle

- Research points to a global financial cycle in asset prices, bank leverage, and cross-border dollar lending related to the dollar's foreign exchange value and Fed policy (Rey 2013 and others)

- U.S. monetary policy and dollar exchange rate changes can work through both the supply and demand for offshore credit

- For borrowers with dollar liabilities, a dollar depreciation can enhance net worth, easing informational frictions that impede the flow of credit

- Changes in borrowers' financial strength also affects banks' willingness to lend through a risk-taking channel, perhaps driven by VaR considerations (e.g., Bruno and Shin 2015)

- A powerful multiplier amplifying U.S. monetary shocks globally, on top of any effects related to dollar invoicing

Dollar dominance in international banking

Cross-Border Dollar and Euro Bank Positions
(USD trillions, all BIS reporting banks)
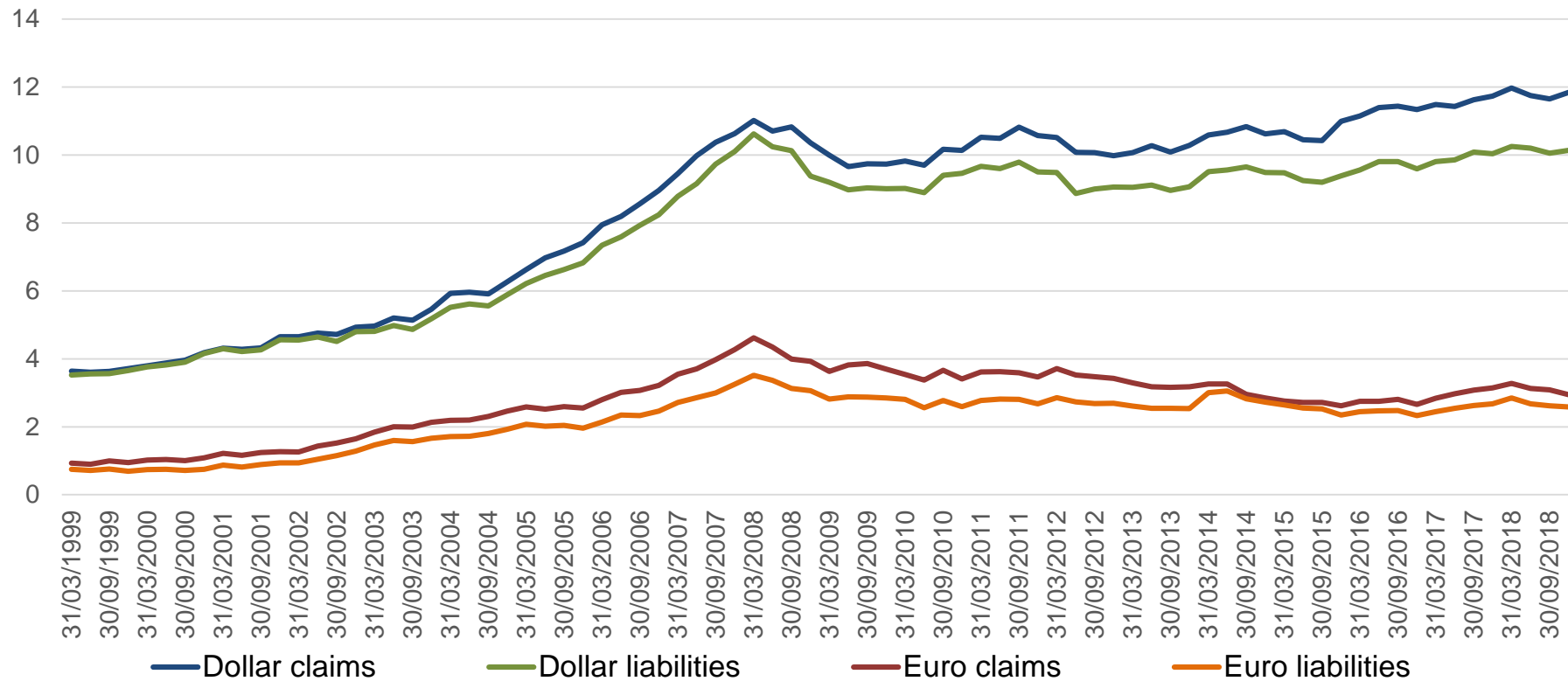
Source: BIS Locational Banking Statistics

Financial stability implications

- U.S. monetary accommodation can also have financial stability implications, especially for EMDEs
- The macro-prudential tools countries deploy increasingly to handle such effects are imperfect
- Dollar funding has an implication for Federal Reserve balance-sheet policy: only the Fed can act as a true global LOLR in dollars
- In a new global crisis, politically-motivated constraints on swaps, so useful during the global crisis, would be damaging
- Even pure self-interest mandates a concern for the global impact of U.S. monetary policy and of the dollar's dominant role in world financial markets

5. Conclusion

Closing thoughts

- Global linkages complicate a world that is already complex
- Economic openness can affect the tradeoff between the "dual mandate" goals of price stability and high employment
- This is so even leaving aside the risk of financial instability – which has big potential price and output effects
- Macro-prudential instruments can be helpful
- An important agenda is to understand their interaction with interest-rate policy and to distance them from political forces
- The effectiveness of such tools can be enhanced through multilateral regulatory cooperation

Thank you