GLOBAL CYCLES AND A MULTIPOLAR WORLD

HÉLÈNE REY
LONDON BUSINESS SCHOOL, CEPR & NBER & ABFER

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DRAWS ON JOINT WORK OVER THE YEARS WITH PIERRE-OLIVIER GOURINCHAS, SILVIA MIRANDA-AGRIPPINO AND TSVETI NENOVA

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This Talk

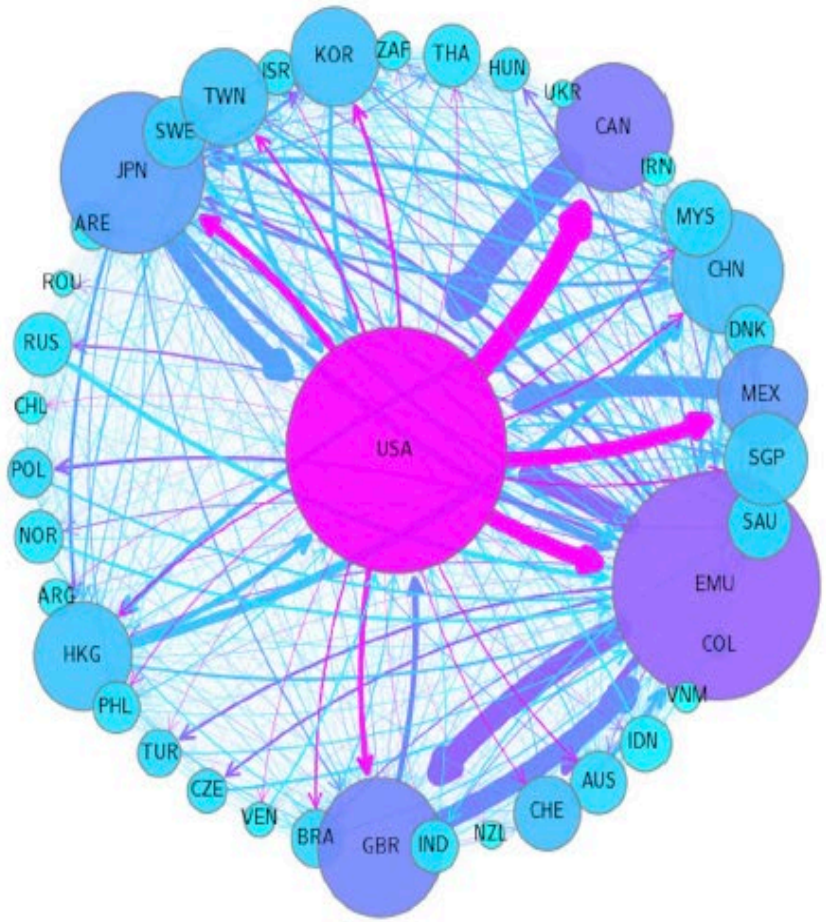
1. World Networks

2. Global Cycles: Financial, Commodities and Trade

3. Central Banks' spheres of influence

4. Fragmentation in International Finance

Time variation in networks: Trade (Exports), 2000 vs 2019



- Merchandise trade, excludes services
- IMF's Direction of Trade Statistics (DOTS)

Miranda-Agrippino, Nonova and Rey (2022)

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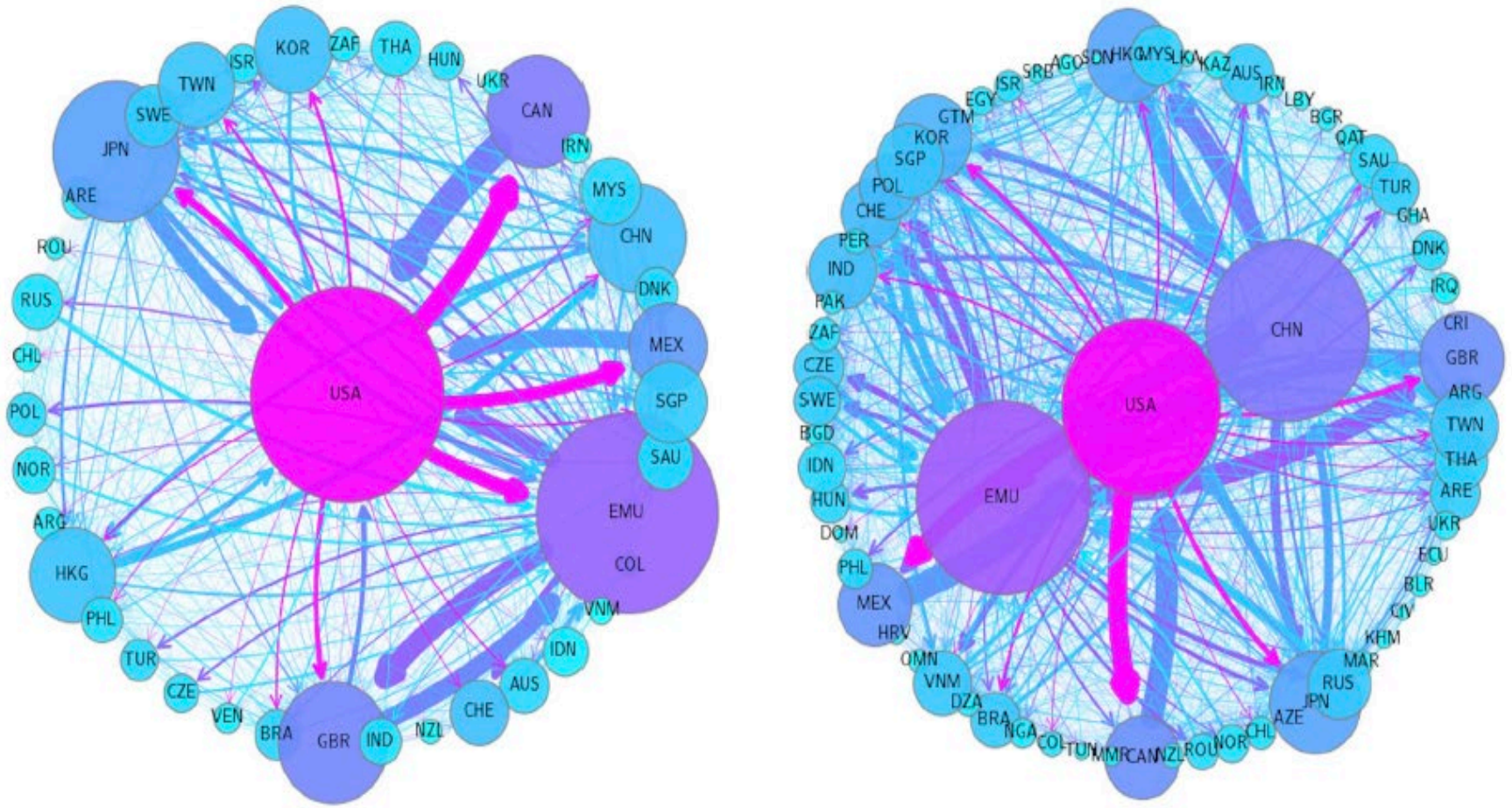

- Merchandise trade, excludes services
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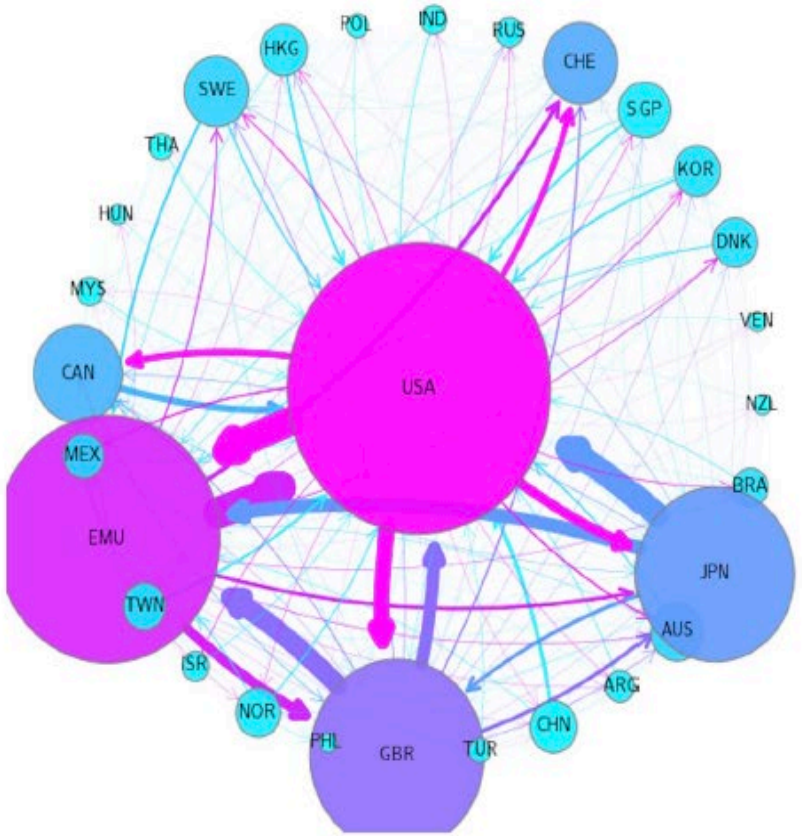
➢ Tripolar

Miranda-Agrippino, Nonova and Rey (2022)

Time variation in networks: Finance (PF Assets), 2000 vs 2018



- Includes private & official cross-border investment in Eqy + Debt securities
- Coppola, Maggiori, Neiman and Schreger (2021) + IMF's Coordinated Portfolio Investment Survey (CPIS)

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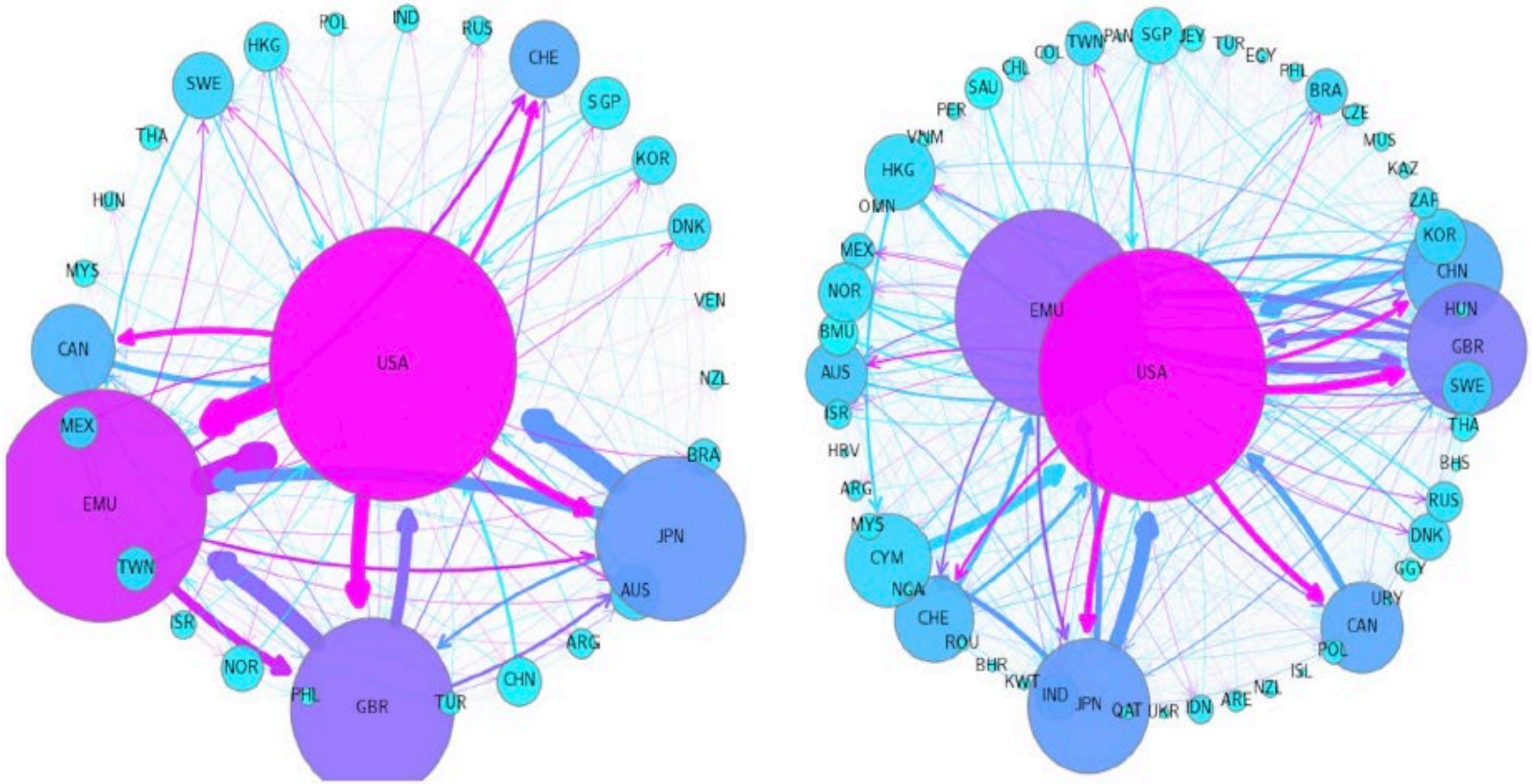

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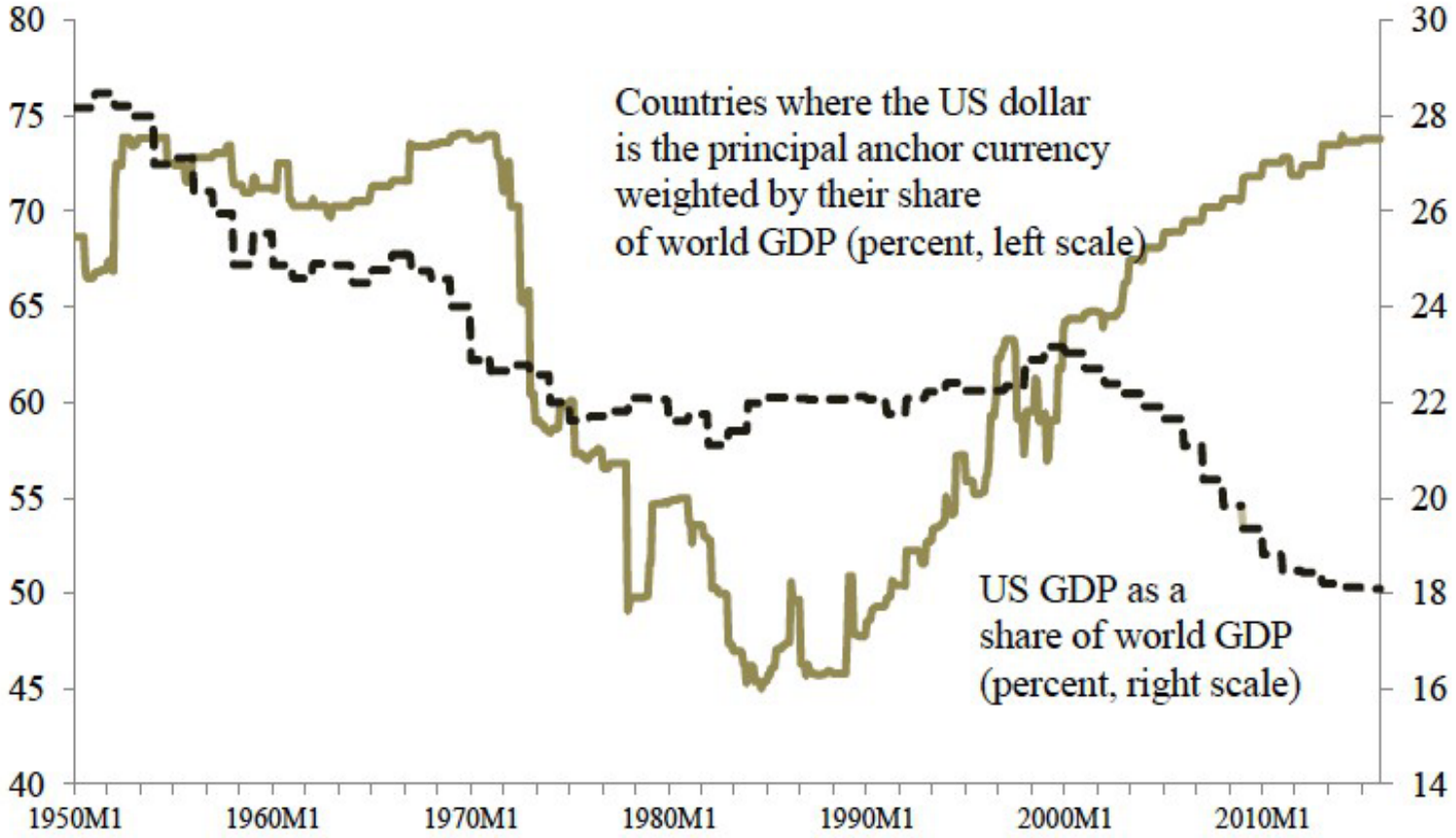
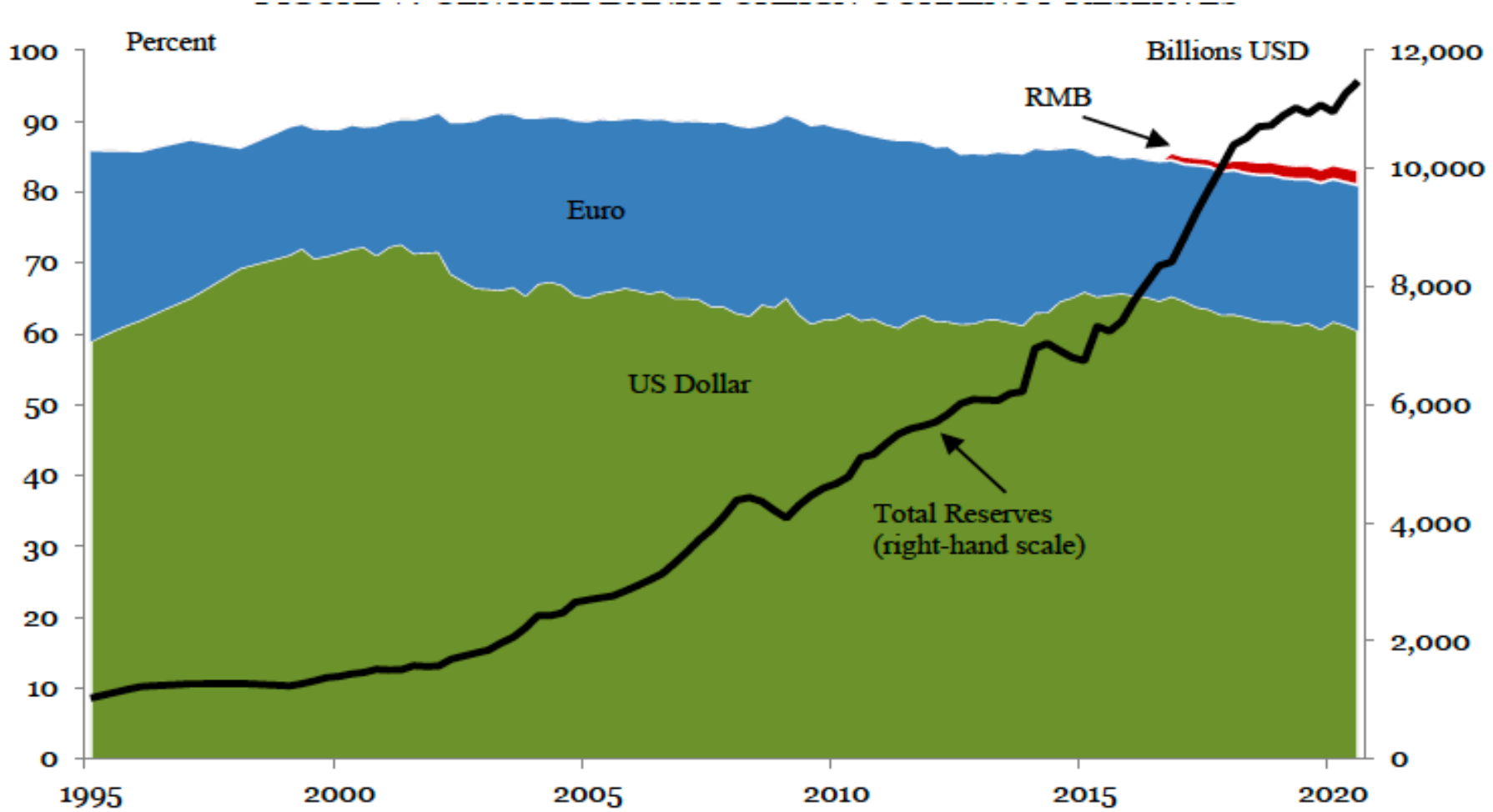
➢ Unipolar

Countries fixing their exchange rates to the dollar



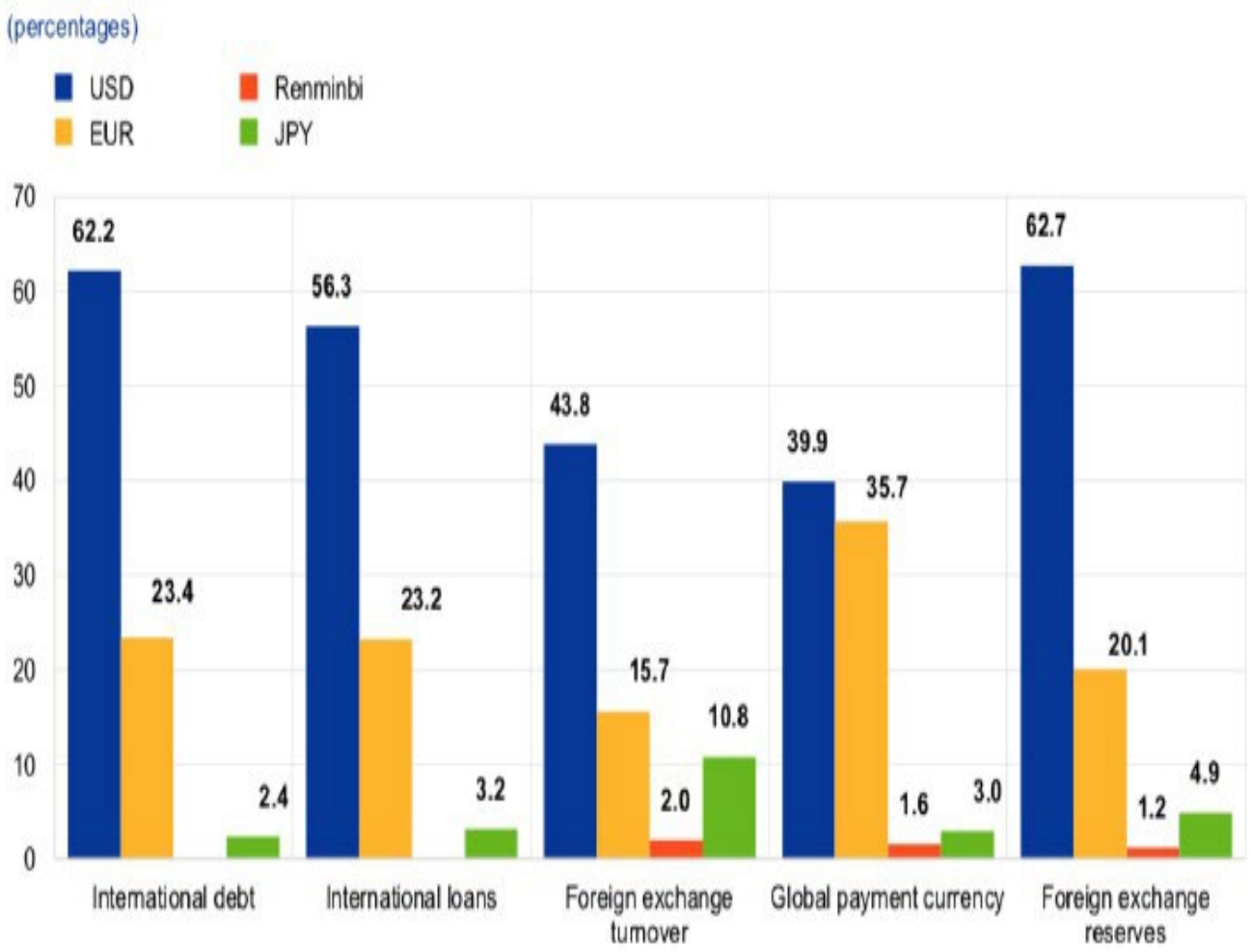
Source: Ilztekhi, Reinhart and Rogoff (2018)

Central banks: Dollar Reserves, Euro Reserves



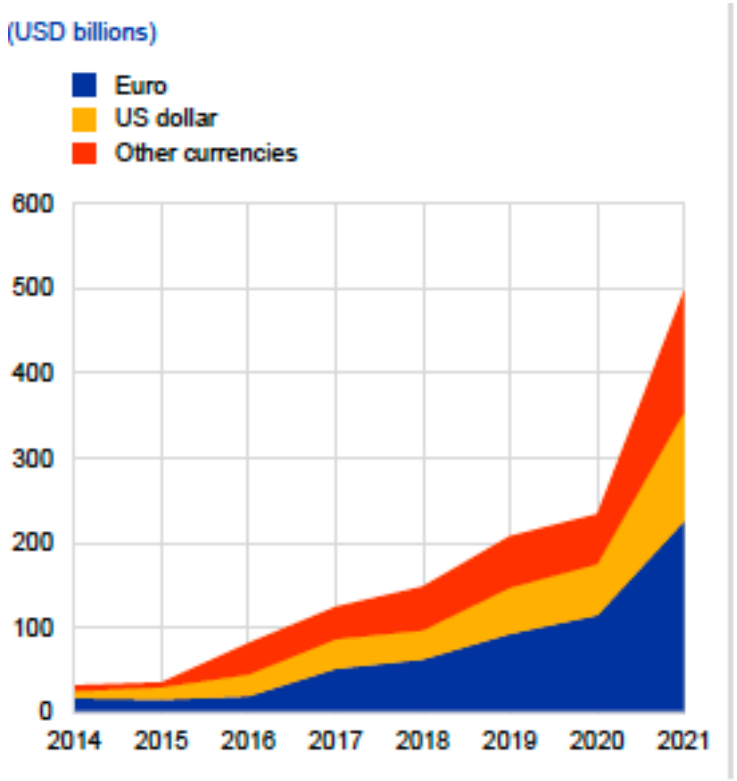
Note: The solid line shows the total stock of world central bank reserves in billions of US dollars (right-hand scale). The shaded areas show the share of central bank reserves by currency denomination in percent of total (left-hand scale). Sources: Ilzetzki, Reinhart and Rogoff (2020a), IMF Cofer and the authors.

Dollar Roles



Source: Gourinchas, Rey and Sauzet (2019)

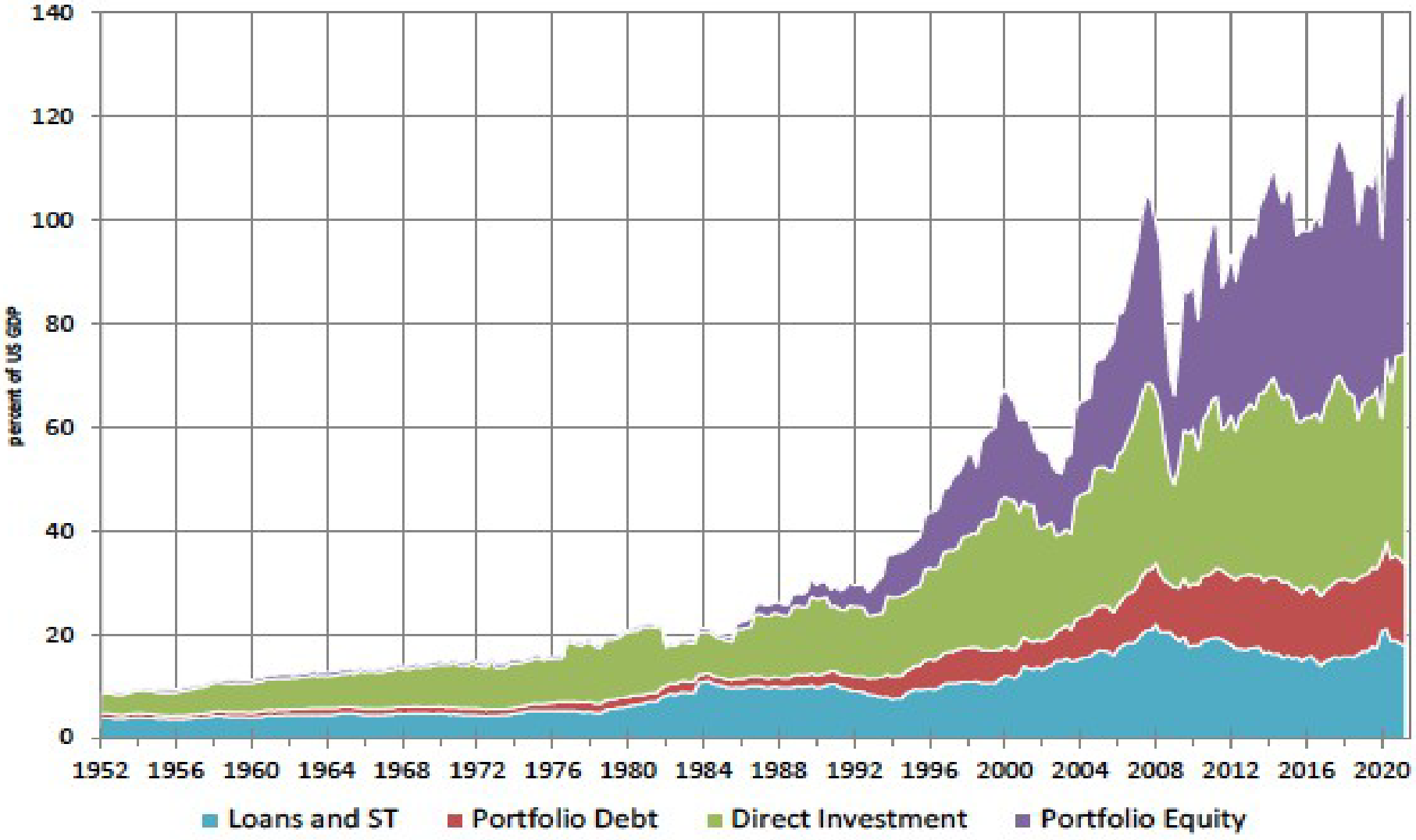
A (small) exception:
Green bonds



Currency composition of global green bond issuance in 2021

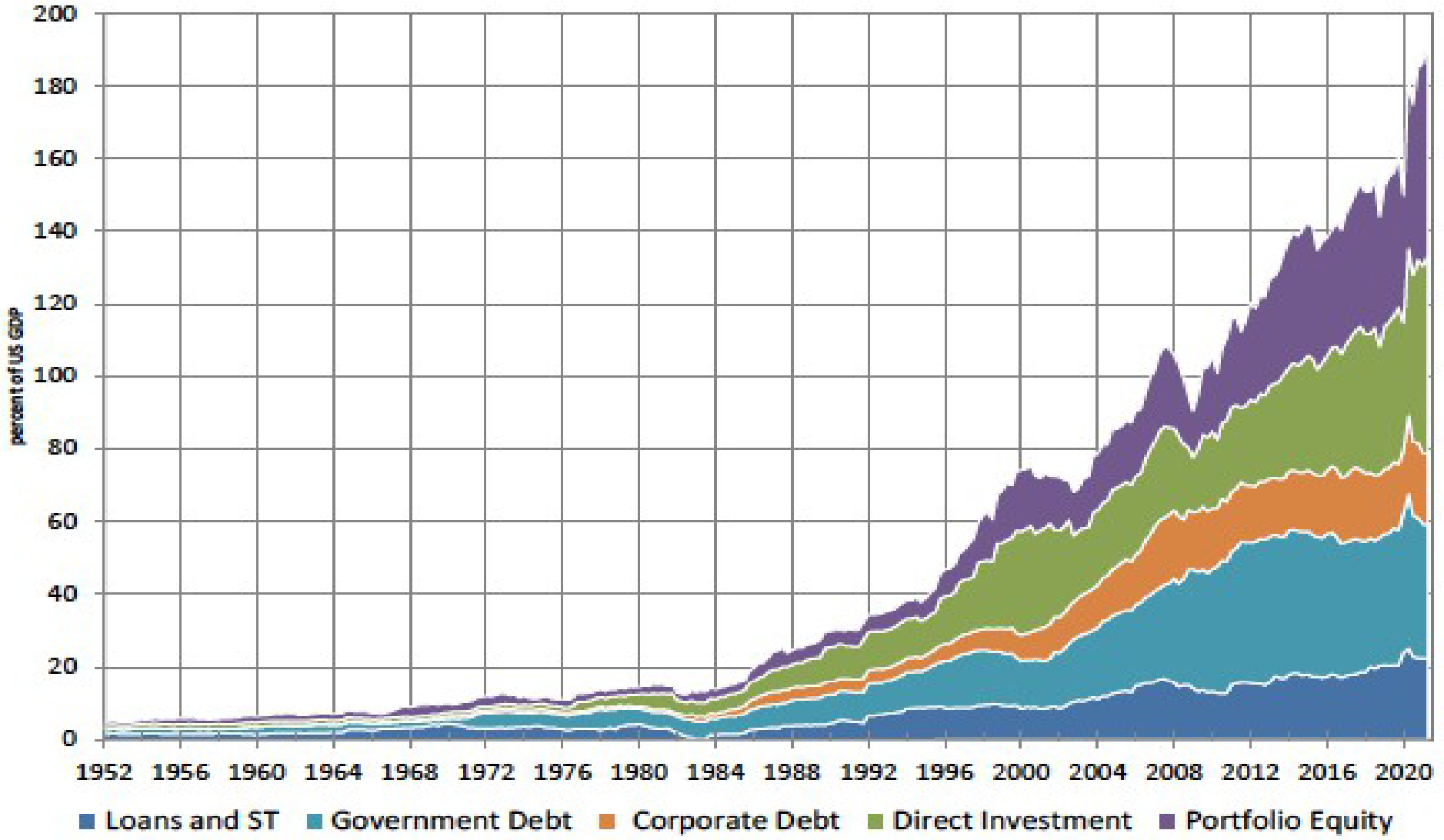
Source: ECB

US external assets: 1952-2022



Source: Gourinchas Rey and Sauzet (2020)

US external liabilities: 1952–2022



Source: Gourinchas Rey and Sauzet (2020)

A Special Role for US Monetary Policy

- **Dominance of the USD in International Monetary & Financial Systems**
  - **Anchor currency**
  - **International financial transactions and trade invoicing**
  - **Reserve currency and safe asset**
  - **US as world banker and insurer – Exorbitant Privilege**

Always some geopolitics

THE GLOBAL FINANCIAL CYCLE

Strong **co-movement of financial aggregates on a global scale**: asset prices, capital inflows and outflows, credit, leverage, risk appetite co-move.

Why does it matter?

- **Financial Stability:** Historically, and across countries, excessive credit and leverage growth are among the strongest predictor of financial crises
- **Global Growth:** Financial conditions matter for growth prospects, particularly the distribution of risks around expected growth
- **Dilemma vs Trilemma:** FX regimes alone may not be enough to insulate countries from foreign shocks if monetary policy of large Central Banks is transmitted globally through financial conditions
- Need for macroprudential policies opening some space for monetary policy

DIMENSIONS OF GFC: FRAMEWORK FOR CO-MOVEMENTS

– Common empirical framework: Dynamic Factor Model

$$y_{j,t} = \nu_j + \lambda_j^G f_t^G + \lambda_j^R f_t^R + \xi_{j,t}$$

$y_{j,t}$: risky asset prices & capital flows, private liquidity

f_t^G: GLOBAL FACTOR(s)

f_t^R: regional factors

1. **Asset Prices:**
   - Type: Risky asset prices: Eqy, Cmdy, Corp
   - Panel: Monthly from 1980:1 to 2019:4; n≈1K

2. **Capital Flows:**
   - Type: IFS Inflows & Outflows: FDI, Pf Equity, Pf Debt, Other
   - Panel: Quarterly from 1990:Q1 to 2019:Q2; n=82

Number of Global Factors Risky Asset Prices: 1

	Variance Share	IC_{p1}	IC_{p2}	IC_{p3}	Onatski Test
Asset Prices (F1)	24.1%	-0.184	-0.183	-0.189	0.049
Capital Flows (F1)					
Capital Flows (F2)					
Capital Flows (F3)					
Private Liquidity (F1)					
Private Liquidity (F2)					
Private Liquidity (F3)					

Notes: The first column of the table reports the share of variance explained by the estimated factors. The following three columns report the value of the ICp criteria in Bai and Ng (2002) and the last shows the p-value for the Onatski (2009) test where the null of $r-1$ common factors is tested against the alternative of r common factors.

- Asset Prices: **One** factor, 24% of variance

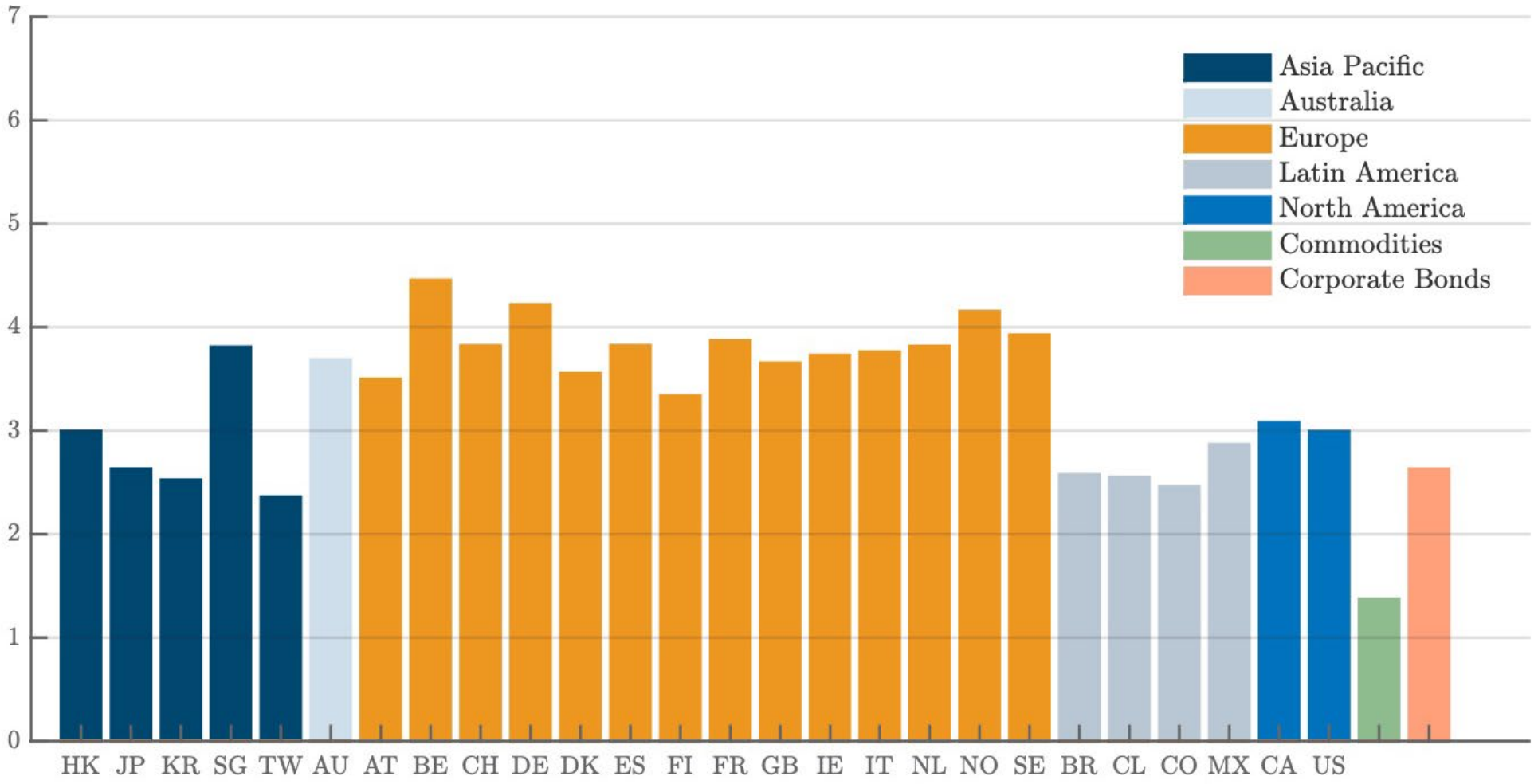
Global factor in asset prices goes down with risk aversion and volatility

CORRELATIONS #1

	Asset Prices	Capital Flows (F1)	Capital Flows (F2)	Private Liquidity	Credit (IMF)
Asset Prices (F)					
Capital Flows (F1)					
Capital Flows (F2)					
Private Liquidity (F)					
Total Credit (F IMF)					
VIX Index	-0.649				
VSTOXX Index	-0.695				
Risk Aversion (BEX)	-0.653				
Risk Aversion (BHD)	-0.645				
Risk Appetite (CBC)	0.748				
USD Exchange Rate	-0.413				
EUR Exchange Rate	0.231				
RMB Exchange Rate	-0.400				
Oil Price	0.335				
Commodity Price	0.240				
World Output (BH)	0.249				
World Output (NRB)	0.229				
World Trade	0.293				
World FCI	-0.600				
World Private Liq	0.116†				
US 1-Year Rate	0.456				
US 10-Year Rate	0.271				
GER 1-Year Rate	0.376				
GER 10-Year Rate	*0.125*				

Notes: Pairwise correlations, overlapping samples from 1990:01-2018-12. Variables in levels. Italic figures denote significance at 10% level, † is for not-significant correlations, all remaining entries are significant at least at the 5% level.

Most geographical units load similarly on the global factor



Notes: Average factor loadings (×100) across countries and asset classes. Estimation sample: 1980:2019.

Global Financial Cycle: Stylised Facts

Fact I: Risky asset prices

- **One global factor in world risky asset prices**
- **Correlated with global risk appetite**
- Explains about a quarter of the variance of risky asset prices traded globally

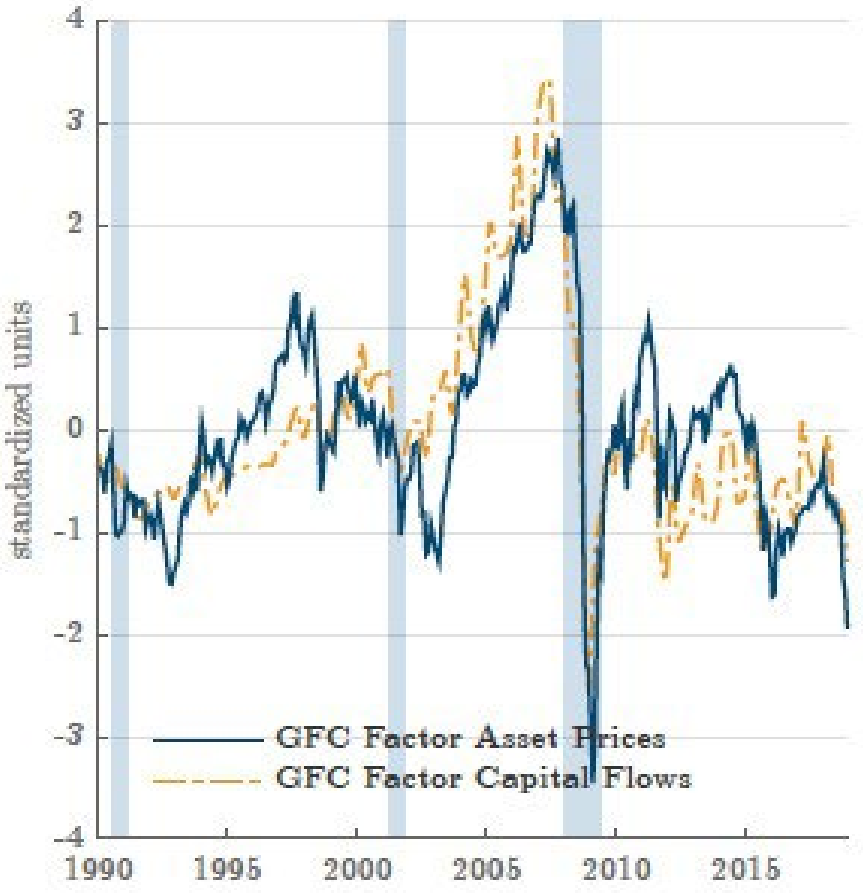
Number of Global Factors Capital Flows: 2

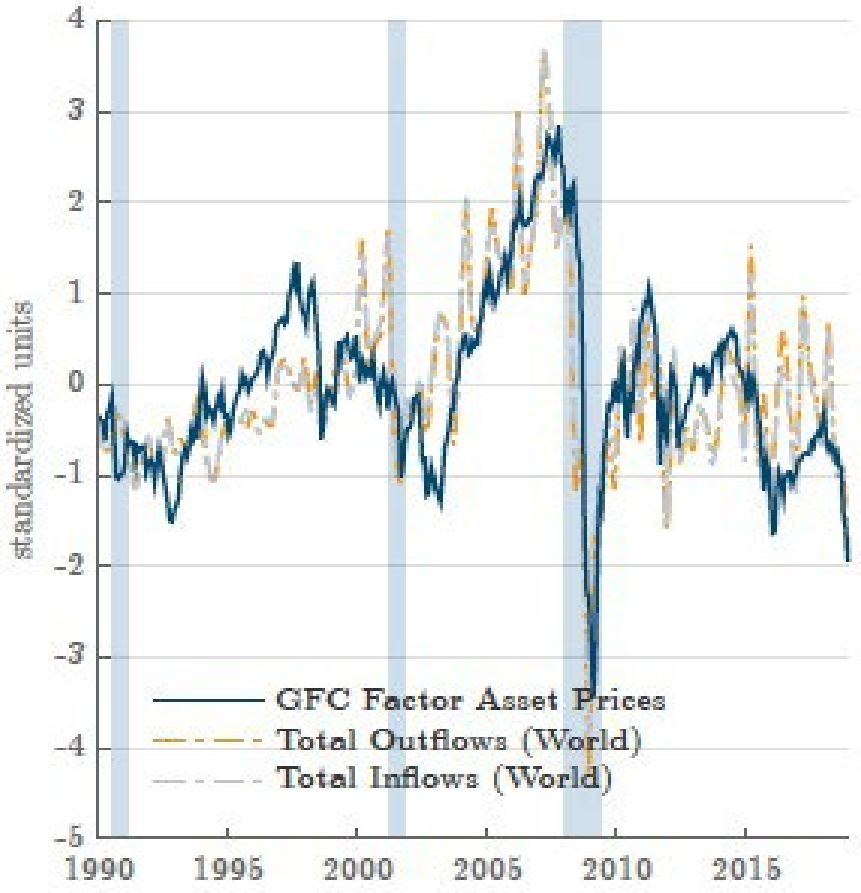
	Variance Share	IC_{p1}	IC_{p2}	IC_{p3}	Onatski Test
Asset Prices (F1)	24.1%	-0.184	-0.183	-0.189	0.049
Capital Flows (F1)	20.7%	-0.042	-0.040	-0.049	0.041
Capital Flows (F2)	14.5%	-0.051	-0.047	-0.065	0.007
Capital Flows (F3)	12.0%	-0.055	-0.049	-0.076	0.988
Private Liquidity (F1)					
Private Liquidity (F2)					
Private Liquidity (F3)					

Notes: The first column of the table reports the share of variance explained by the estimated factors. The following three columns report the value of the ICp criteria in Bai and Ng (2002) and the last shows the p-value for the Onatski (2009) test where the null of $r-1$ common factors is tested against the alternative of r common factors.

- Asset Prices: **One** factor, 24% of variance
- Capital Flows: **Two** factors, 35% of variance

Global factor in asset prices and First Global Factor in flows are highly correlated





Global Financial Cycle

Source:Miranda-Agrippino and Rey (2022)

CORRELATIONS #2

	Asset Prices	Capital Flows (F1)	Capital Flows (F2)	Private Liquidity	Credit (IMF)
Asset Prices (F)	1				
Capital Flows (F1)	0.815				
Capital Flows (F2)	0.410				
Private Liquidity (F)	*0.142*				
Total Credit (F IMF)	0.424				
VIX Index	-0.649	-0.476			
VSTOXX Index	-0.695	-0.496			
Risk Aversion (BEX)	-0.653	-0.472			
Risk Aversion (BHD)	-0.645	-0.458			
Risk Appetite (CBC)	0.748	0.706			
USD Exchange Rate	-0.413	-0.019†			
EUR Exchange Rate	0.231	0.020†			
RMB Exchange Rate	-0.400	-0.729			
Oil Price	0.335	-0.088			
Commodity Price	0.240	-0.205			
World Output (BH)	0.249	-0.174			
World Output (NRB)	0.229	-0.201			
World Trade	0.293	-0.104†			
World FCI	-0.600	-0.523			
World Private Liq	0.116†	-0.268			
US 1-Year Rate	0.456	0.681			
US 10-Year Rate	0.271	0.559			
GER 1-Year Rate	0.376	0.606			
GER 10-Year Rate	*0.125*	0.447			

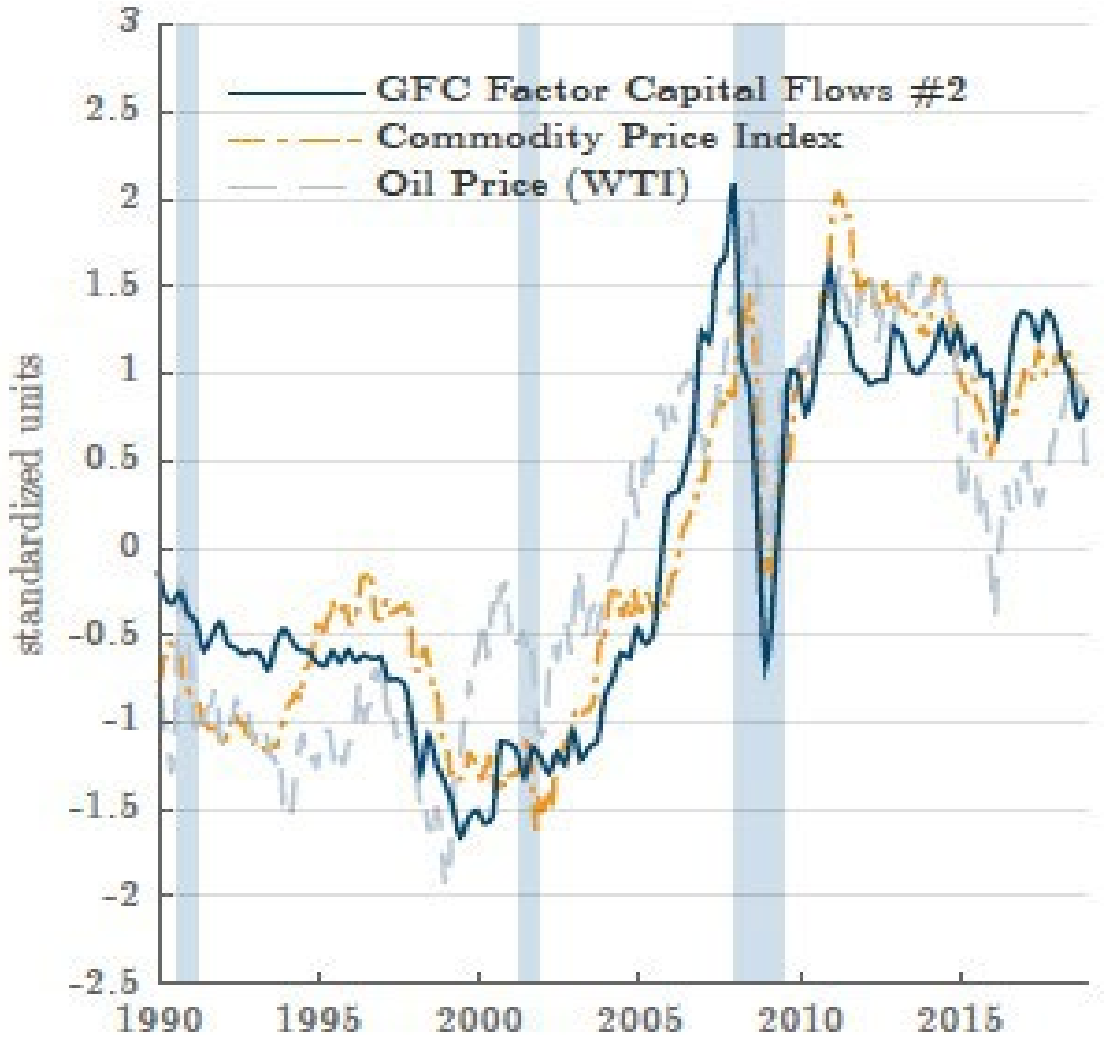
Notes: Pairwise correlations, overlapping samples from 1990:01-2018-12. Variables in levels. Italic figures denote significance at 10% level, † is for not-significant correlations, all remaining entries are significant at least at the 5% level.

Global Financial Cycle: Stylised Facts

Fact II: Capital Flows

- **Two global factors in gross capital flows**
- The two factors account for about 35% of the variance of the data
- **Factor Flow 1 is highly correlated with the global factor in asset prices**
- ***Global Financial Cycle: Asset prices, capital flows, aggregate time-varying risk-aversion comove.***

Second Global Factor in Capital Flows



Correlated with commodity prices and trade

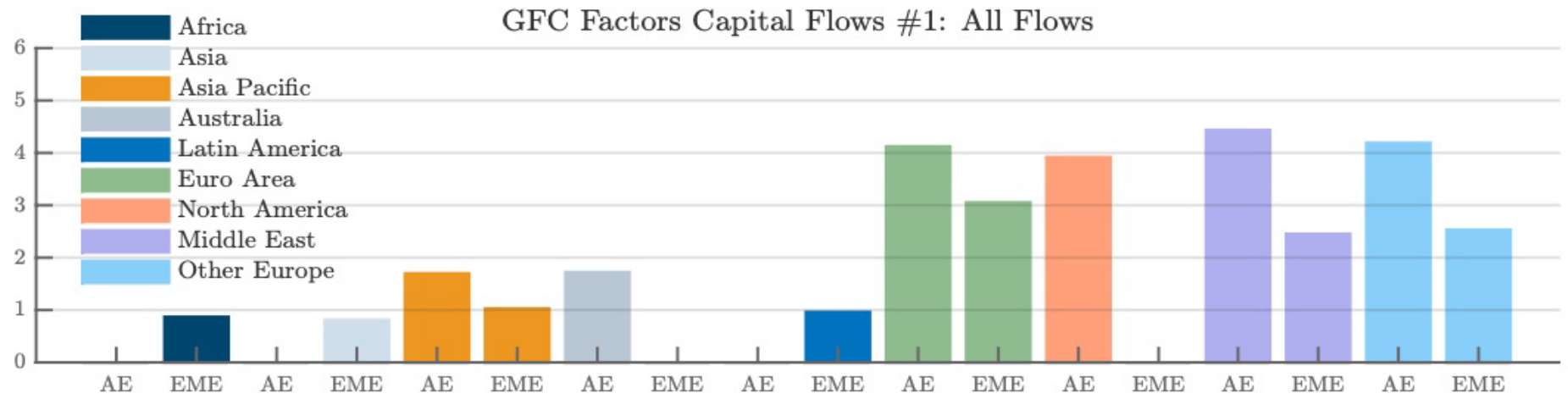
Source:Miranda-Agrippino and Rey (2022)

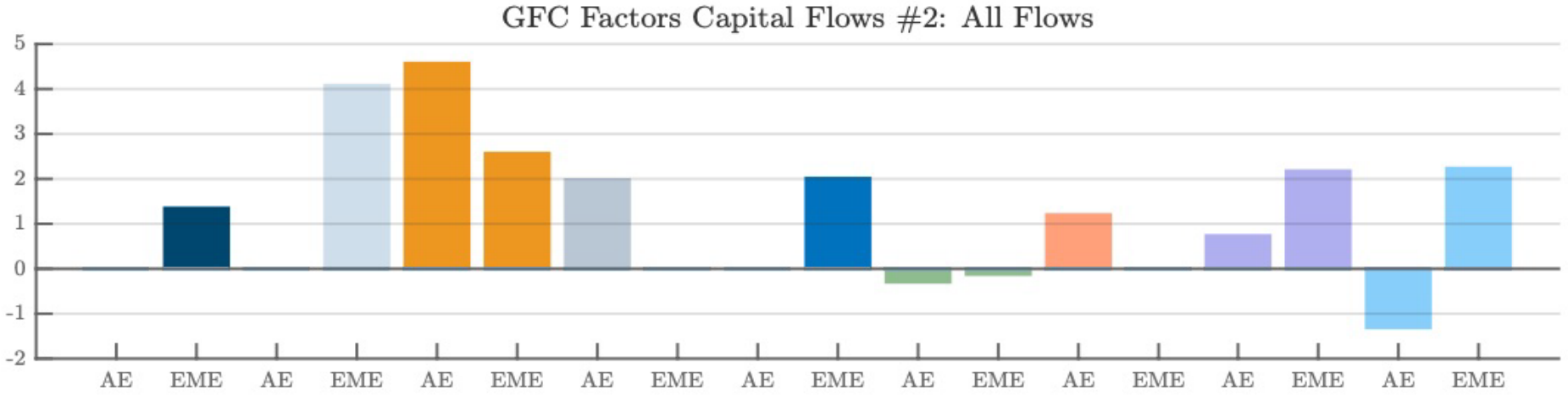
Correlations II

	Asset Prices	Capital Flows (F1)	Capital Flows (F2)	Private Liquidity	Credit (IMF)
Asset Prices (F)	1				
Capital Flows (F1)	0.815	1			
Capital Flows (F2)	0.410	0.020†	1		
Private Liquidity (F)	*0.142*	-0.225	0.844	1	
Total Credit (F IMF)	0.424	0.472	0.366	0.419	1
VIX Index	-0.649	-0.476	-0.261	-0.063†	-0.147
VSTOXX Index	-0.695	-0.496	-0.284	-0.052†	-0.158
Risk Aversion (BEX)	-0.653	-0.472	-0.189	-0.023†	-0.079†
Risk Aversion (BHD)	-0.645	-0.458	-0.226	-0.048†	-0.119†
Risk Appetite (CBC)	0.748	0.706	0.011†	-0.311	0.041†
USD Exchange Rate	-0.413	-0.019†	-0.826	-0.866	-0.398
EUR Exchange Rate	0.231	0.020†	0.727	0.788	0.553
RMB Exchange Rate	-0.400	-0.729	0.430	0.379	-0.447
Oil Price	0.335	-0.088	0.913	0.854	0.313
Commodity Price	0.240	-0.205	0.934	0.902	0.217
World Output (BH)	0.249	-0.174	0.944	0.818	0.186
World Output (NRB)	0.229	-0.201	0.922	0.779	0.122
World Trade	0.293	-0.104†	0.945	0.804	0.250
World FCI	-0.600	-0.523	-0.326	0.009†	-0.264
World Private Liq	0.116†	-0.268	0.909	0.890	0.267
US 1-Year Rate	0.456	0.681	-0.439	-0.654	0.020†
US 10-Year Rate	0.271	0.559	-0.650	-0.702	-0.010†
GER 1-Year Rate	0.376	0.606	-0.489	-0.577	0.139
GER 10-Year Rate	*0.125*	0.447	-0.686	-0.597	0.121

Notes: Pairwise correlations, overlapping samples from 1990:01-2018-12. Variables in levels. Italic figures denote significance at 10% level, † is for not-significant correlations, all remaining entries are significant at least at the 5% level.

First factor loads on all AEs and Middle East and Europe EMs esp. Second Factor loads on EMs mostly (esp. Asia, LatAm, M.East, EU, Africa)





Notes: Average loadings (×100) for the two factors in capital flows across countries. Distinction between Advanced and Developing/Emerging Market Economies. Sample 1990-2018.

Global Trade and Commodity Cycle: Stylised Facts

Fact III

- **The second factor in capital flows is highly correlated with commodity price indices** and with international trade and world output
- ***Global Trade and Commodity Cycle: capital flows, private liquidity, global commodities and trade***

What drives the Global Financial Cycle and the Commodity-Trade Cycle?

– US monetary policy is a key driver of « **global risk appetite** » and the global financial cycle (Miranda-Agrippino and Rey (2020))

– US monetary policy affects **leverage** of US broker dealers *and* of global banks.

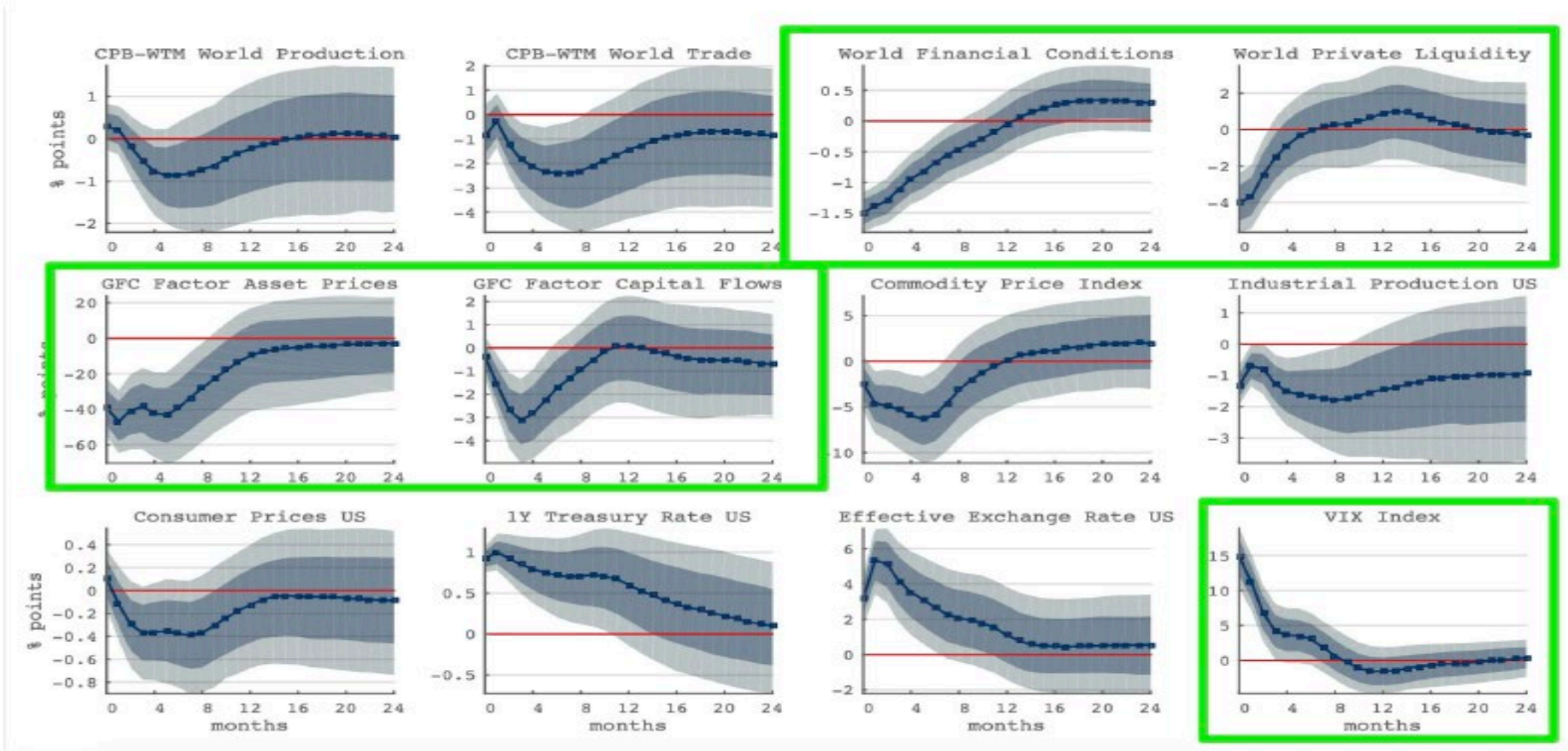
– When the Federal Funds rate (US monetary policy rate) goes down, the **VIX falls**, banks' leverage goes up.

Econometric analysis

– Impulse Response Functions (IRFs) trace the impact of a *shock* on economic variables: the shock corresponds to a 1% (100 basis points) increase in the Fed Funds rate.

– The horizontal axis shows the number of months after the shock.

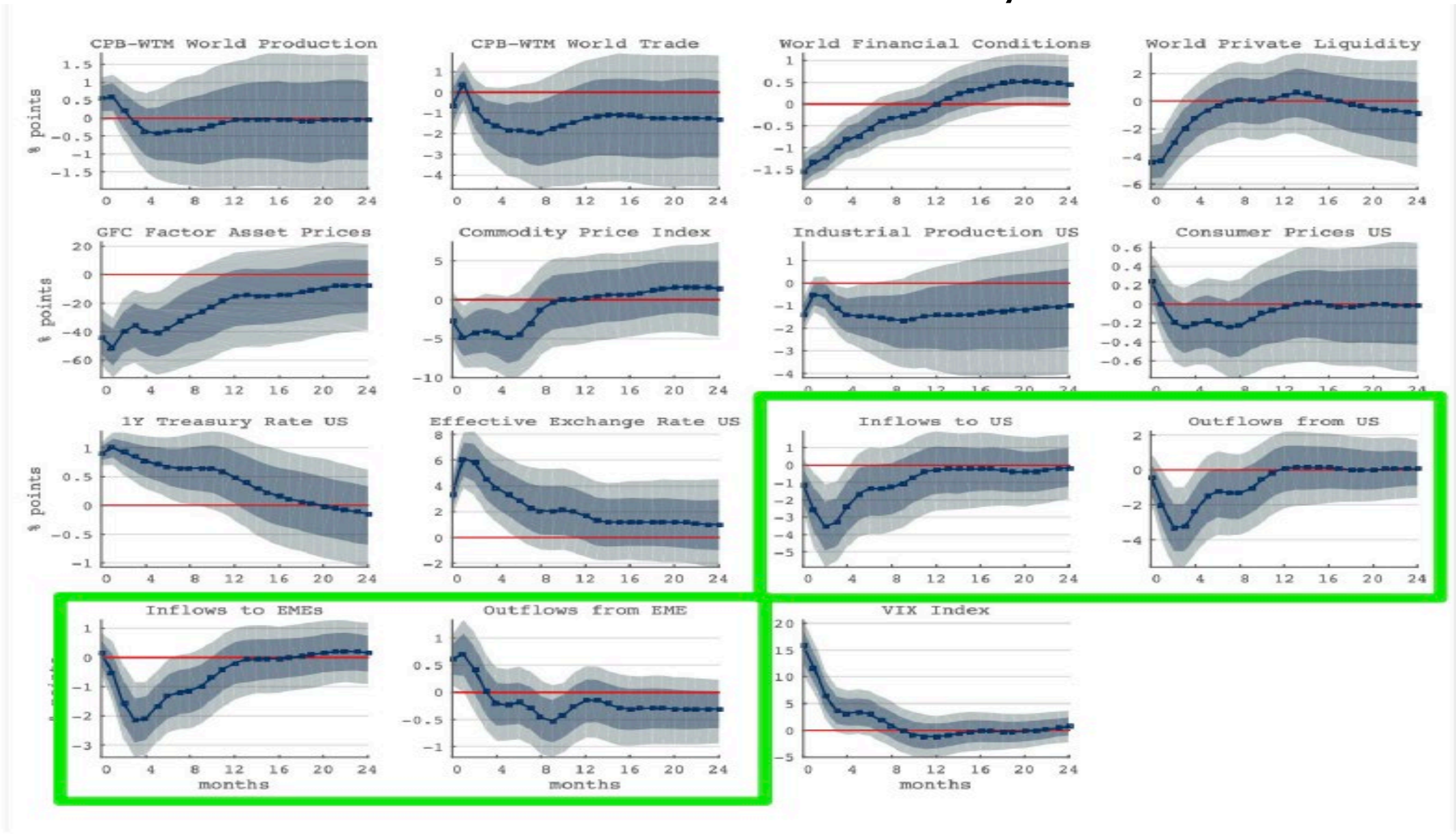
Fed style international transmission



100 bp tightening of the Fed

Miranda-Agrippino, Nenova, Rey (2020)

Fed style international transmission



100 bp tightening of the Fed

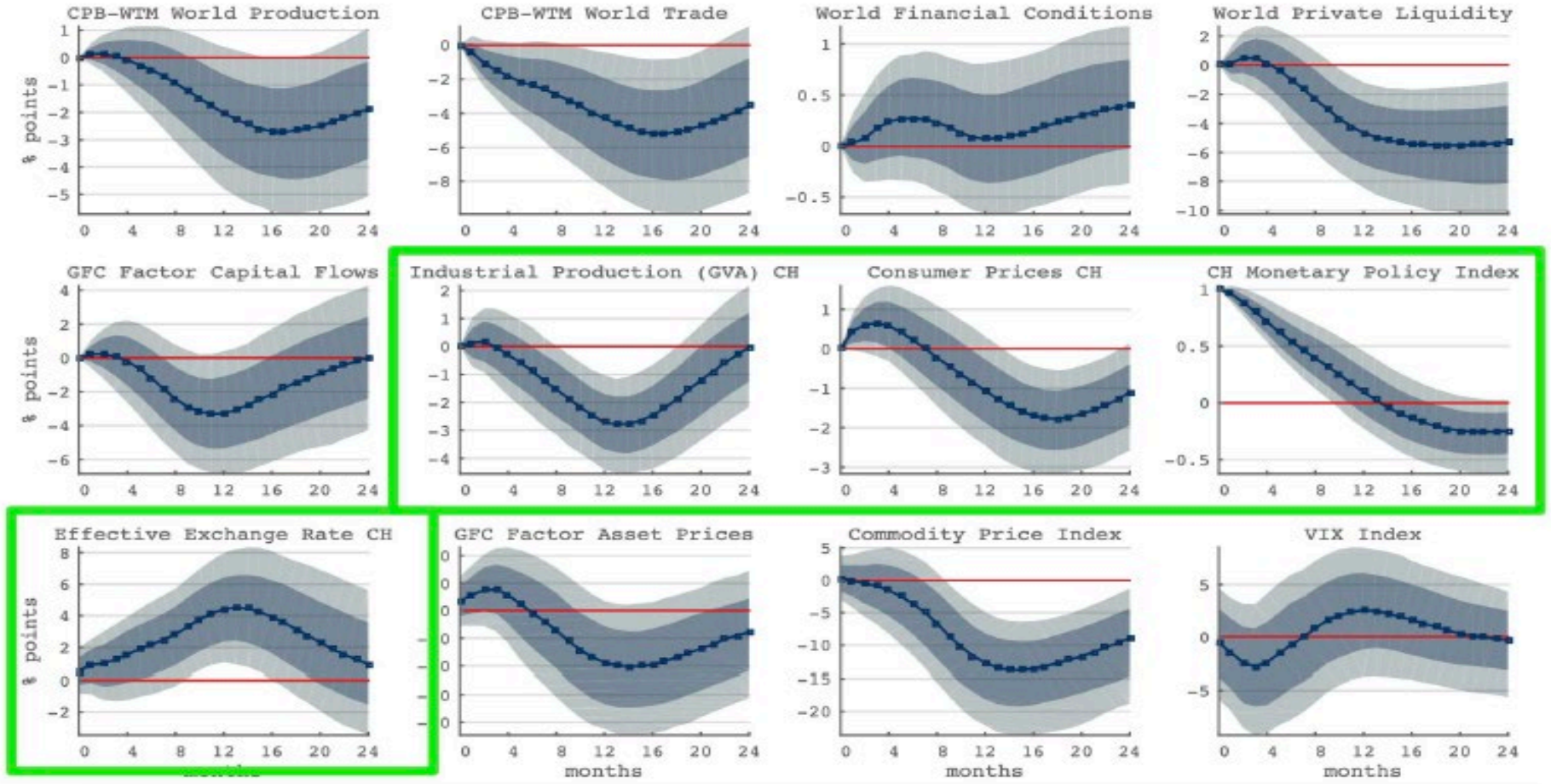
Miranda-Agrippino, Nenova, Rey (2020)

Stylised Facts: US Monetary Policy Spillovers

Fact VI: Federal reserve is a driver of the GFC

- **The US Federal Reserve plays an important role in driving the Global Financial Cycle**
- Influences global asset prices, capital flows, measures of risk aversion, financial conditions, spreads and credit
- It also influences commodity prices and trade

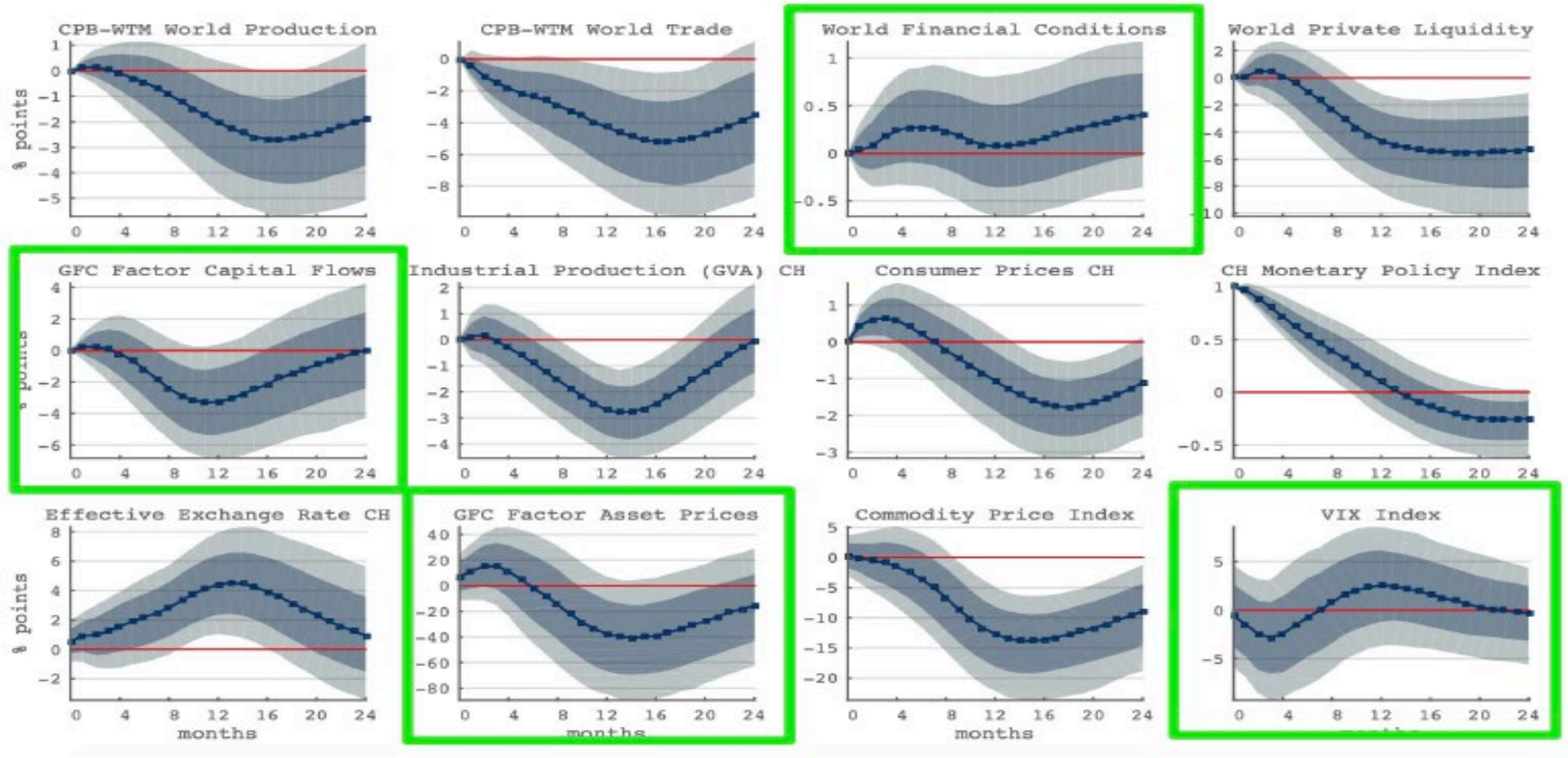
PBoC domestic transmission



Preliminary Results

Miranda-Agrippino, Nenova and Rey (2019)

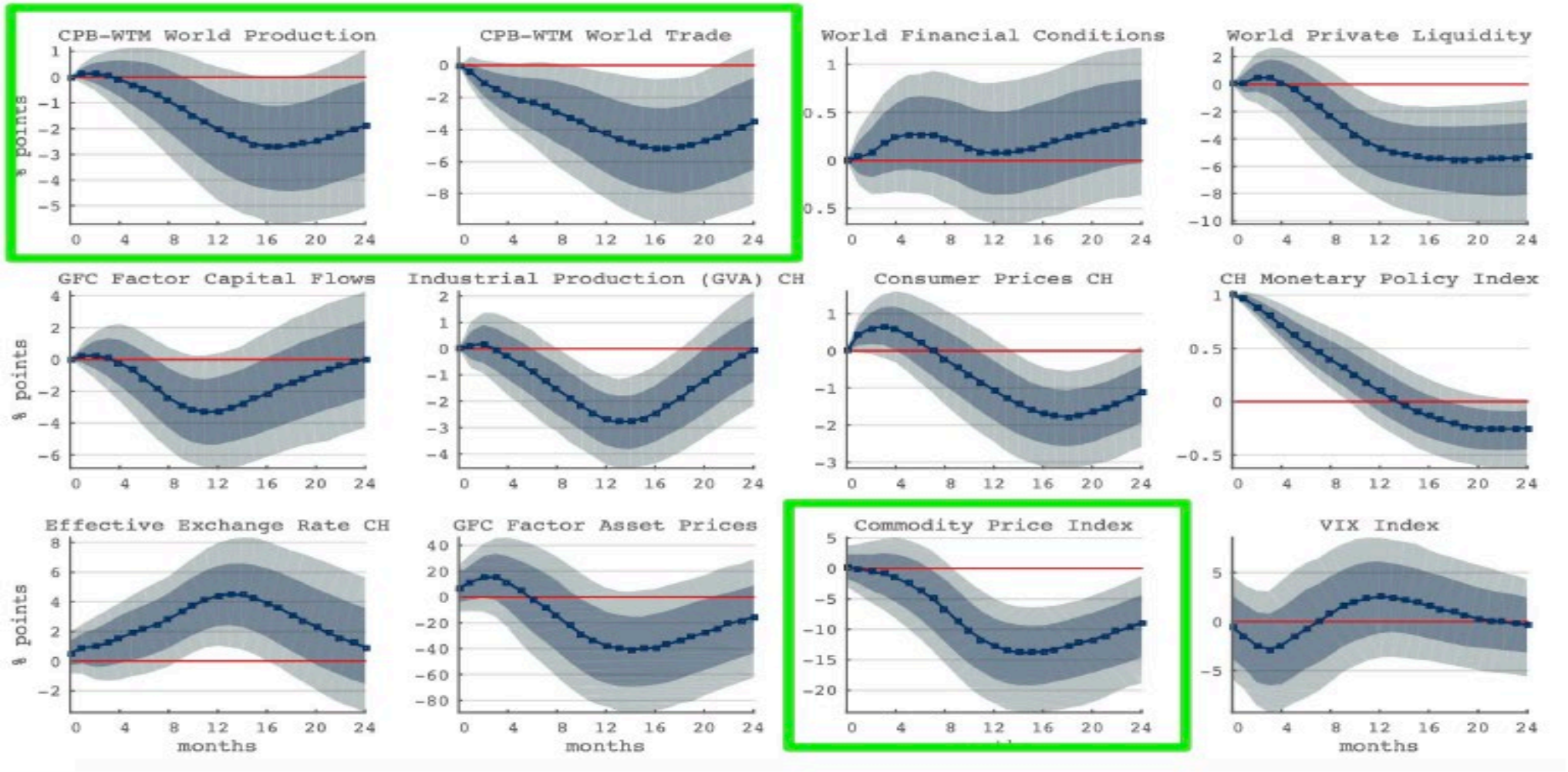
PBoC style international transmission



Preliminary Results Tightening of the PBoC

Miranda-Agrippino, Nenova, Rey (2020)

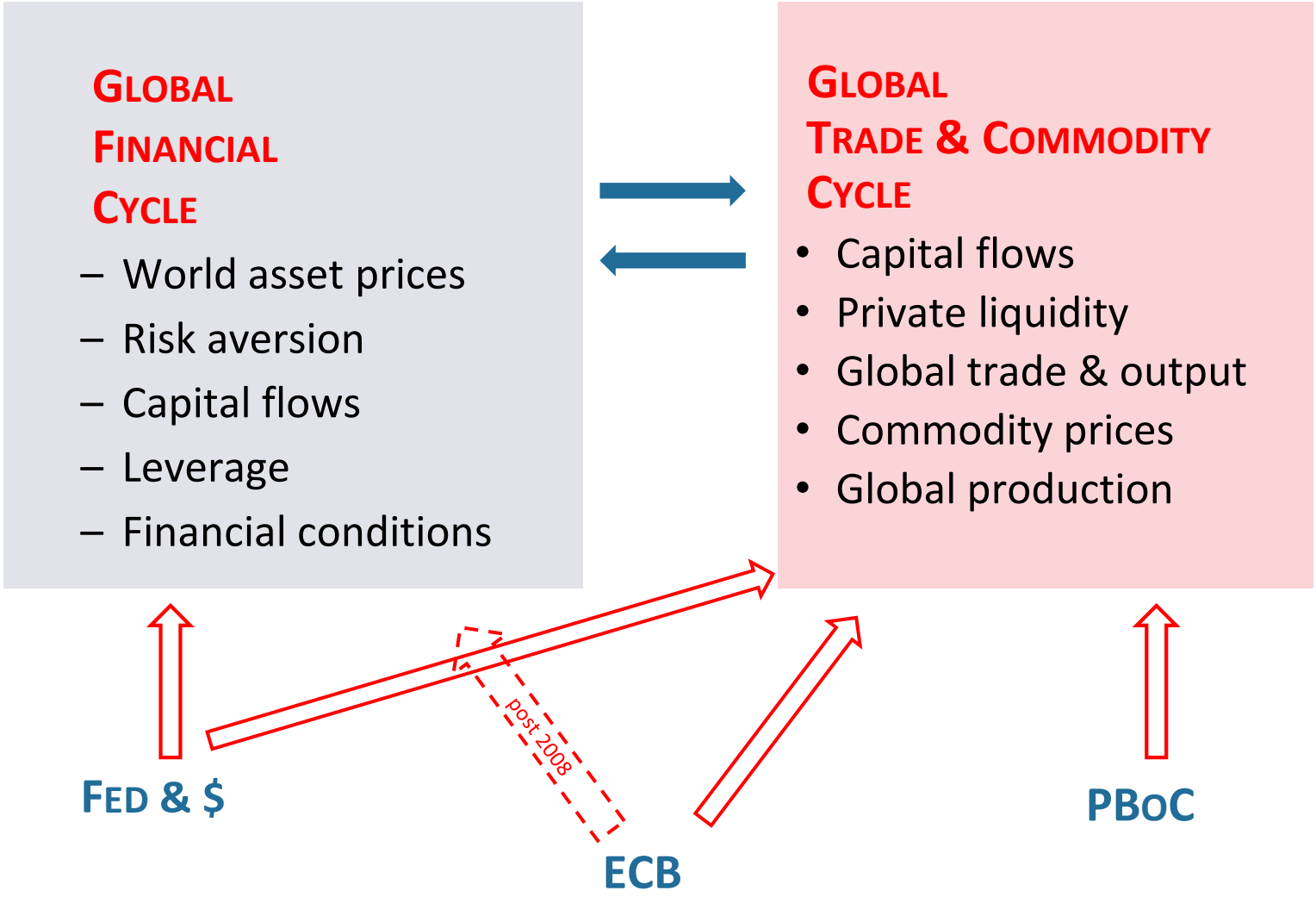
PBoC style international transmission



Preliminary Results

Tightening of the PBoC

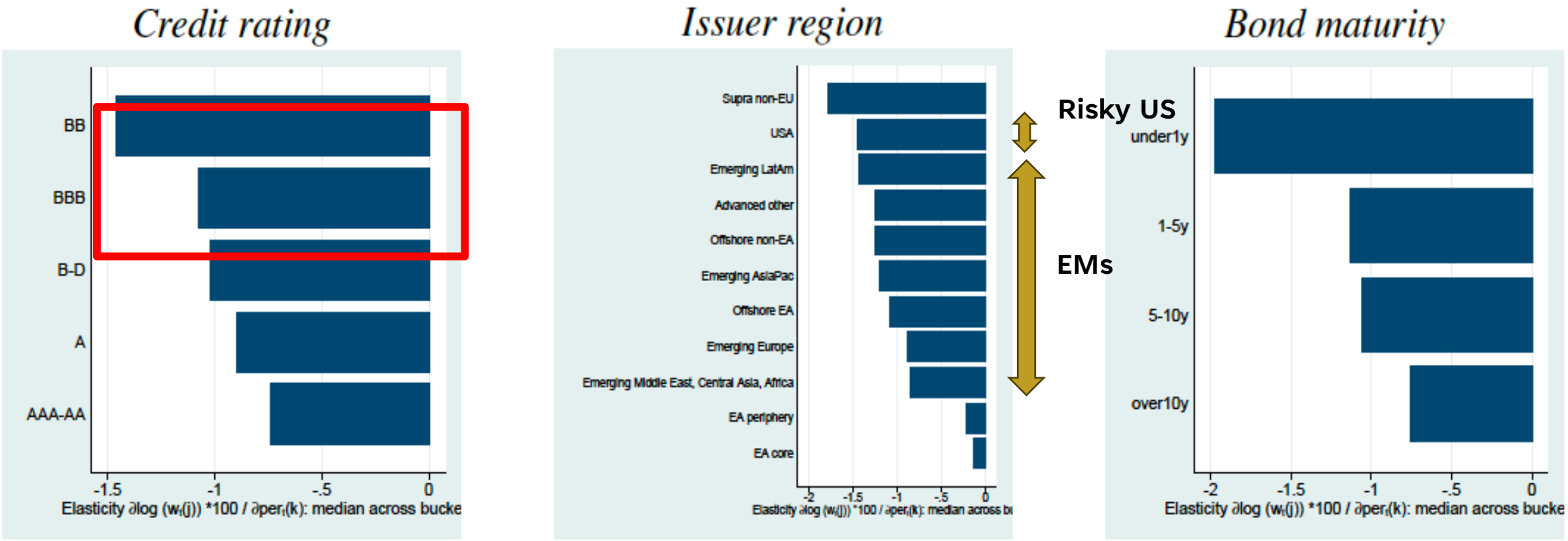
CENTRAL BANKS HAVE DIFFERENT GLOBAL FOOTPRINTS: DIFFERENT NETWORKS-SEGMENTATION



Miranda-Agrippino, Nenova and Rey (2020)

A more Granular look at segmentation

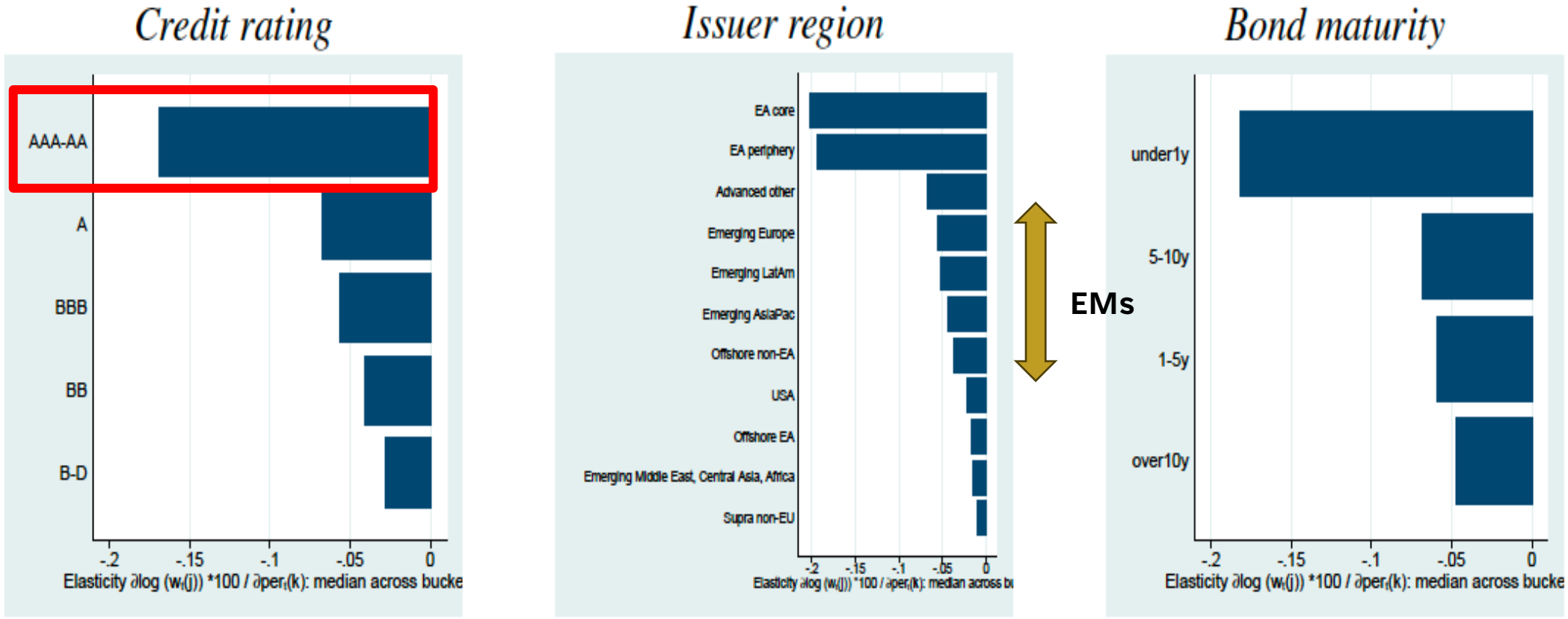
Spillovers: Patterns of substitution. US T-bill return goes up: Funds sell risky US and EMs



EMs esp. LatAm is substituted out in Funds portfolios when US T-bill return more attractive

Source: Nenova (2023): Global or Regional Safe Assets: Evidence from Bond Substitution Patterns

Spillovers: Patterns of substitution. Germany's T bill return goes up: Funds sell euro area



Euro area is substituted out in Funds portfolios when German T-bill return more attractive

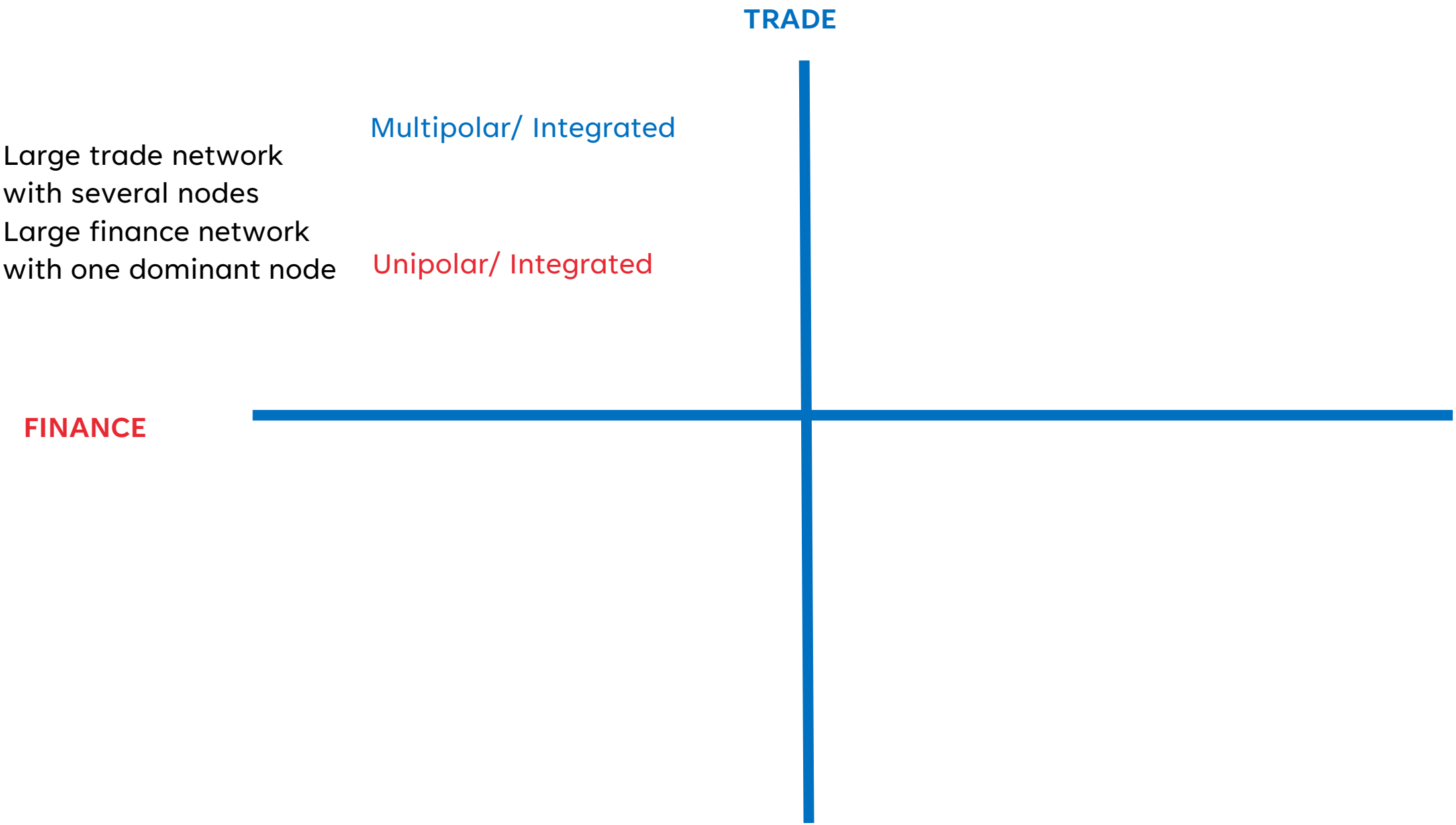
Source: Nenova (2023): Global or Regional Safe Assets: Evidence from Bond Substitution Patterns

Global versus Regional safe assets

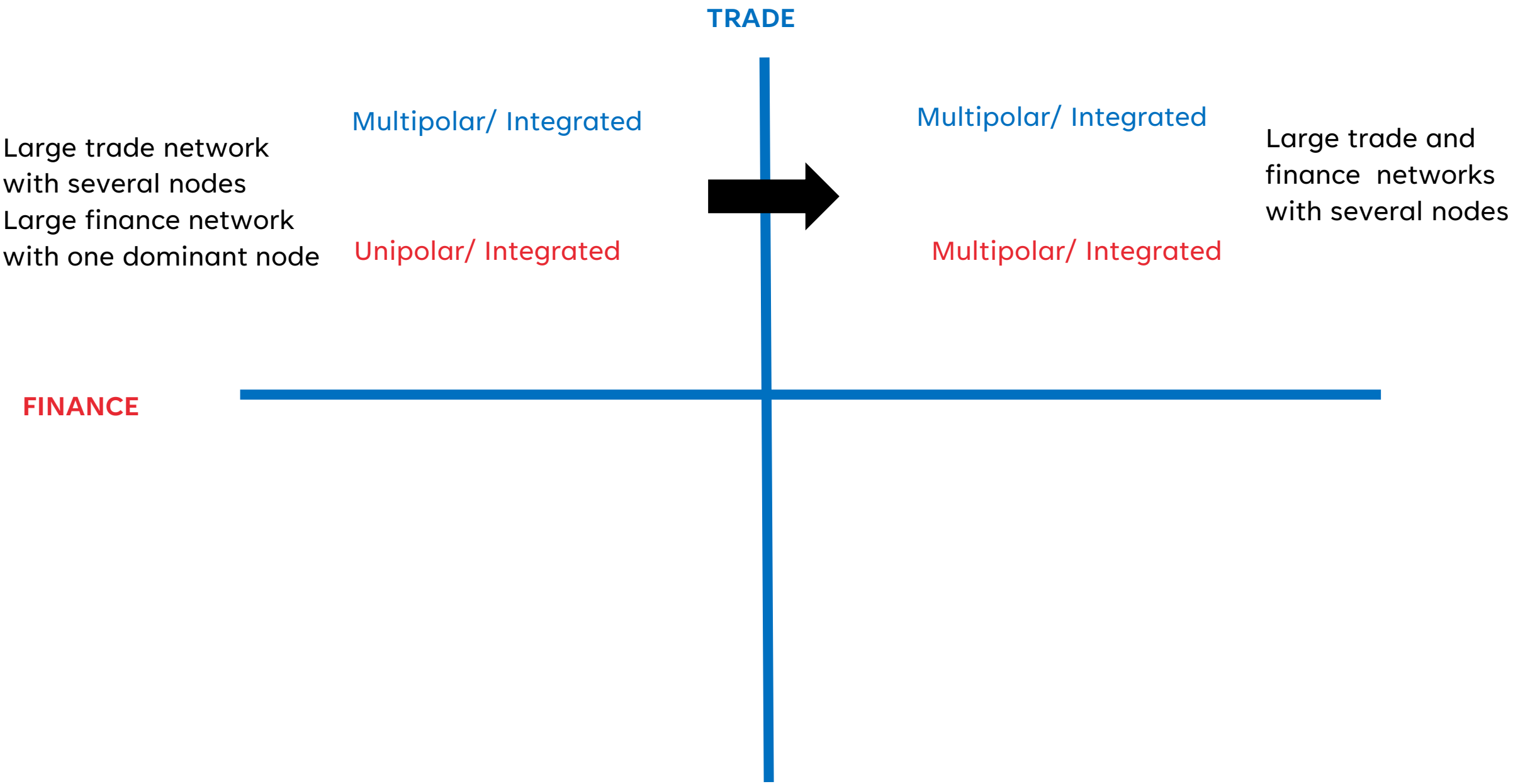
- US Tbill Global safe asset
- German « T bill » Regional safe asset
- Evidence of market segmentation
- Evidence of time variation in market segmentation
- Segmentation of markets: Important for transmission of monetary policies, for transmission of shocks

DIFFERENT TYPES OF MULTIPOLARITY

Multipolarity and Fragmentation: Scenarios



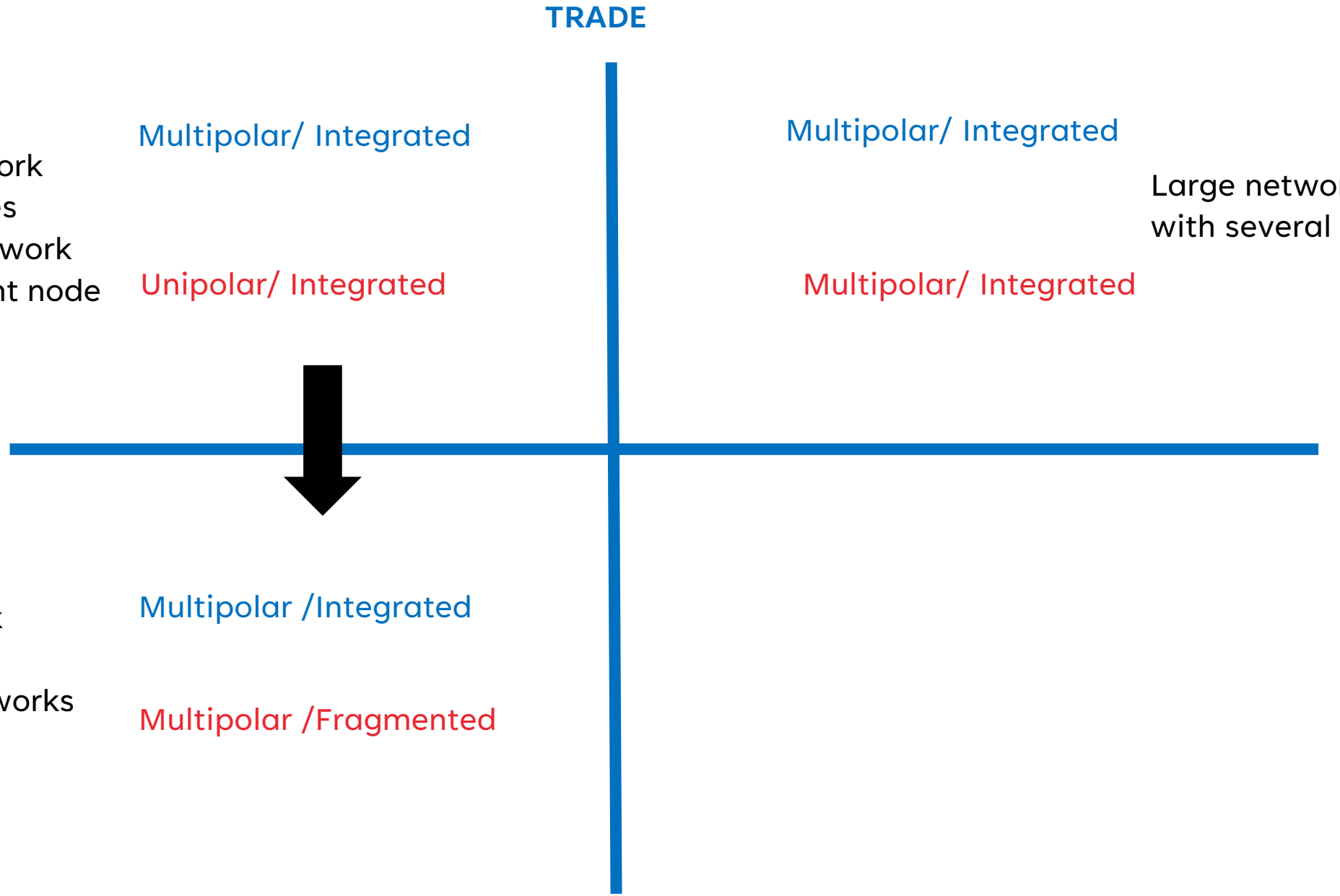
Multipolarity and Fragmentation: Scenarios



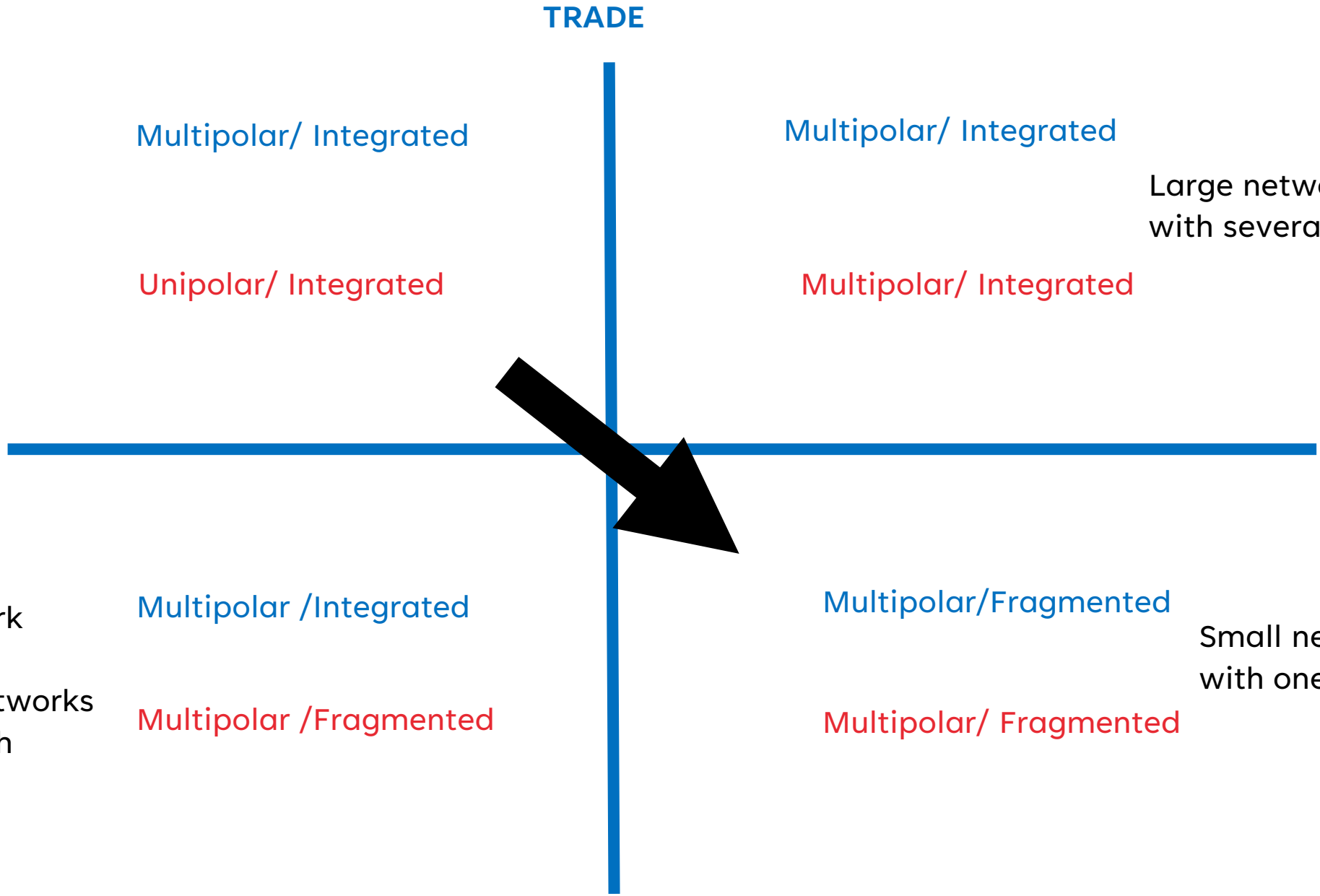
IMF Role

- More substitutability across currencies and assets in portfolios
- Reinforce macroprudential policies.
- IMF: Liquidity management with several international/regional currencies needed. Organization and coordination of swap lines in multiple currencies. Interconnections of payment systems.
- How to insure a level playing field when more competition across reserve currencies? (race to bottom in financial regulation, offshore centers and tax evasion)

Multipolarity and Fragmentation: Scenarios



Multipolarity and Fragmentation: Scenarios



IMF Role

- If multipolar and fragmented in finance (distinct currency area payment, clearing and messaging systems, currency areas pegs, commodity markets in different currencies, different safe assets, reserves, capital controls, different regulations):

- Less efficient system. IMF role to build bridges. Interconnections of payment systems. Lending facilities to all qualifying parties. Regional swap lines.

- IMF has to push for delivery of global public goods: prevent arbitrage across areas – for example tax evasion.

World fragmentation

Multipolarity in international finance may mean:

(i) more substitutability within an integrated world

(large network with several nodes)

(i) more regionalisation and segmentation

(small networks with few links between them)

If (i) then propagation of shocks may increase as more substitutability of assets of different areas in portfolios. Lender of last resort policies complex.

If (ii) then more inefficiencies. Geography of trade key.

Conclusions: Taking stock

1. World looks different through the lenses of different networks

2. Global Financial Cycle: asset prices and capital flows co-move.
Other global factor in flows co-moves with commodities & trade

4. Heterogeneous Global Footprints of Monetary Policies of the Fed,
the ECB, the PBoC. Heterogeneous spillovers (bond substitution patterns)

5. World fragmentation: inefficiencies and instabilities from an economic
point of view. Geopolitics plays a key role.