

London
Business
School

Risks in the Financial System

ESRI International Conference 2022
Tokyo

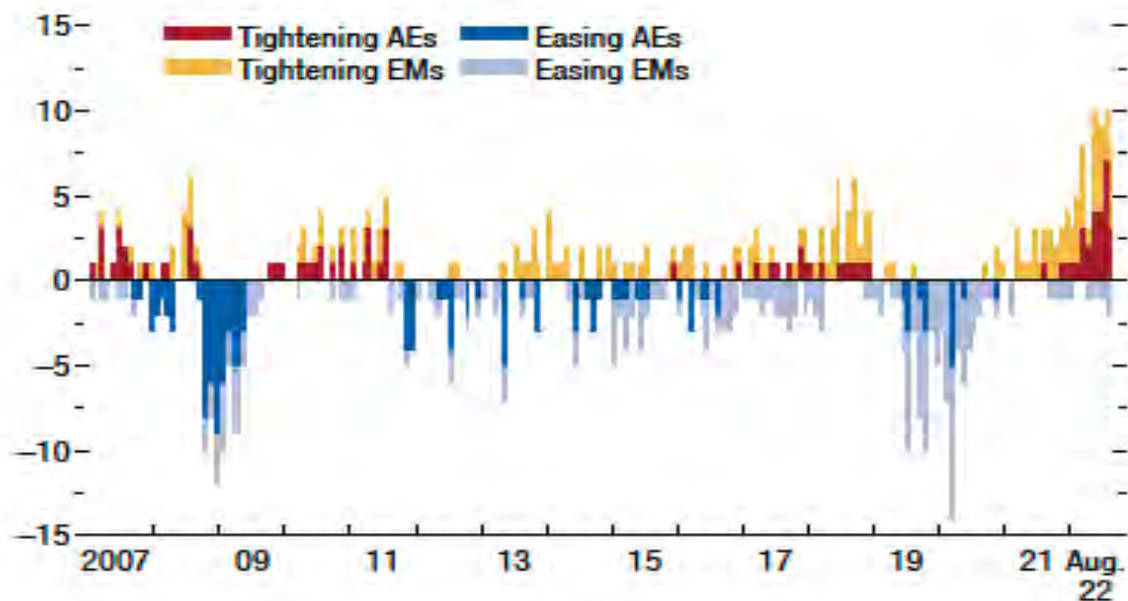
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London Business School

1. Monetary Policy Tightening and Valuations
2. EMs, LICs, Euro area
3. Climate and Biodiversity Risks
4. Cyber Risk

Monetary policy tightening and balance sheets

Figure 1.2. Change in Monetary Policy Cycle among G20 Economies

(Number of increases and cuts in policy rates)

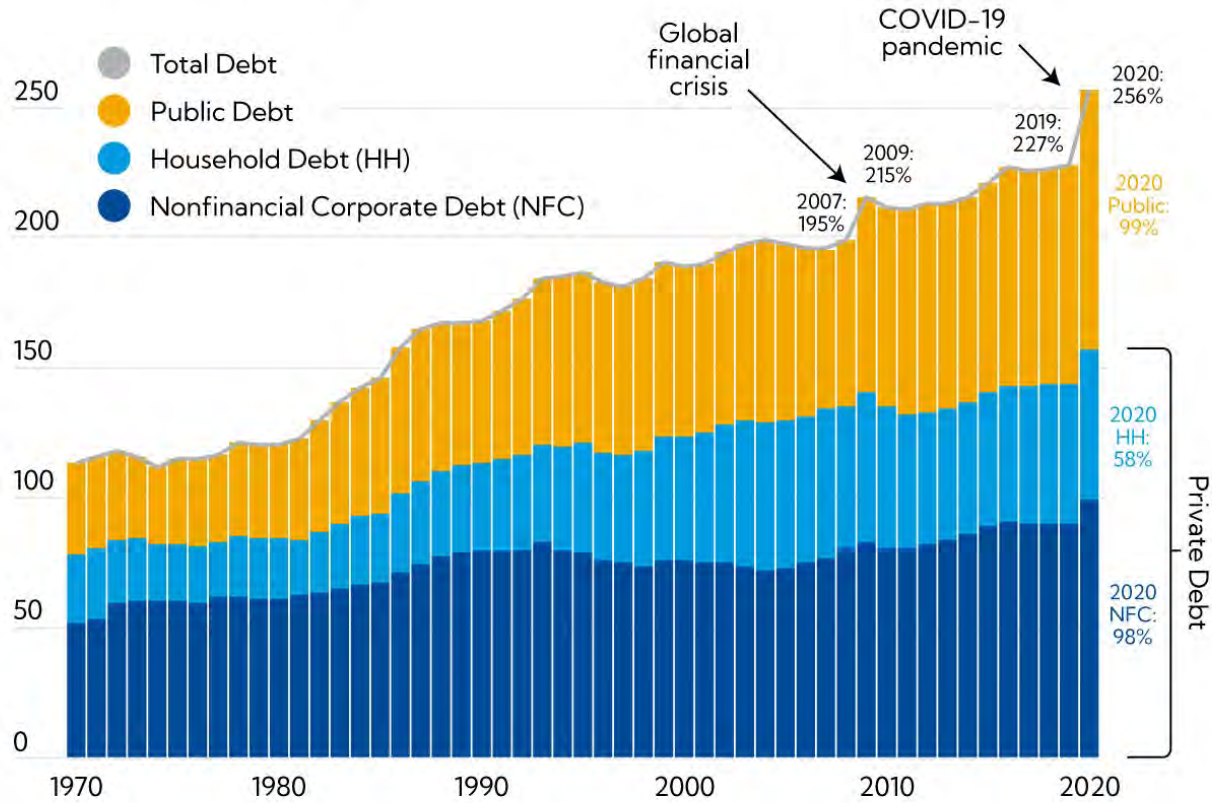


Sources: Bloomberg Finance L.P.; and IMF staff calculations.

Note: AEs = advanced economies; EMs = emerging market economies.

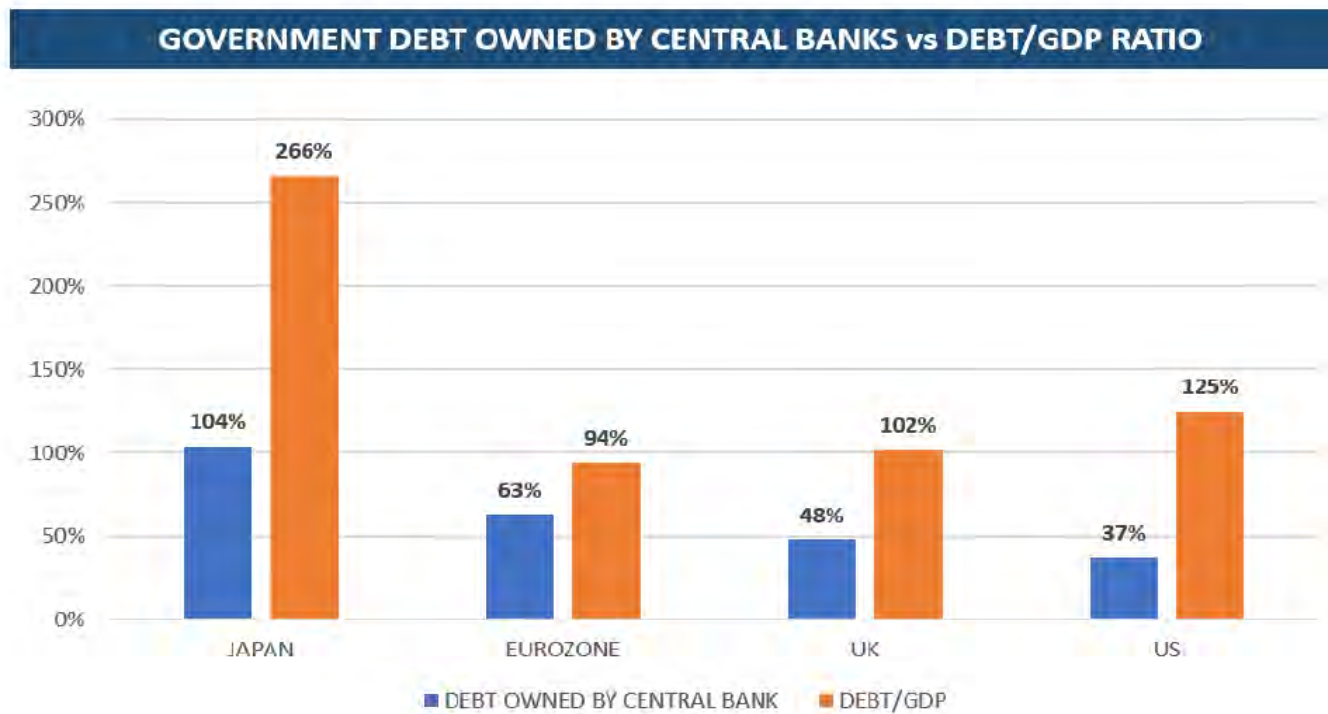
Historic highs

In 2020, global debt experienced the largest surge in 50 years.
(debt as a percent of GDP)



Sources: IMF Global Debt Database and IMF staff calculations.

Note: The estimated ratios of global debt to GDP are weighted by each country's GDP in US dollars.



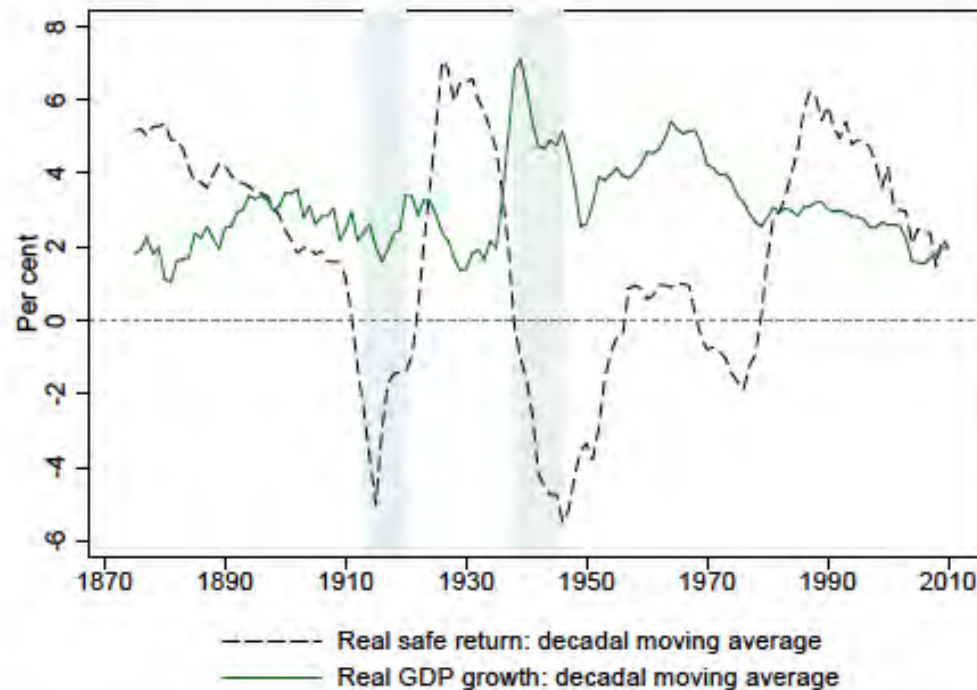
Source: Fed, Eurostat, BoE, BOJ

QE had positive effect on assets valuation (especially far out future cash flows)

Source: Kronawitter (2022)

GDP growth g versus safe real rate r , 1870-2015

16 countries



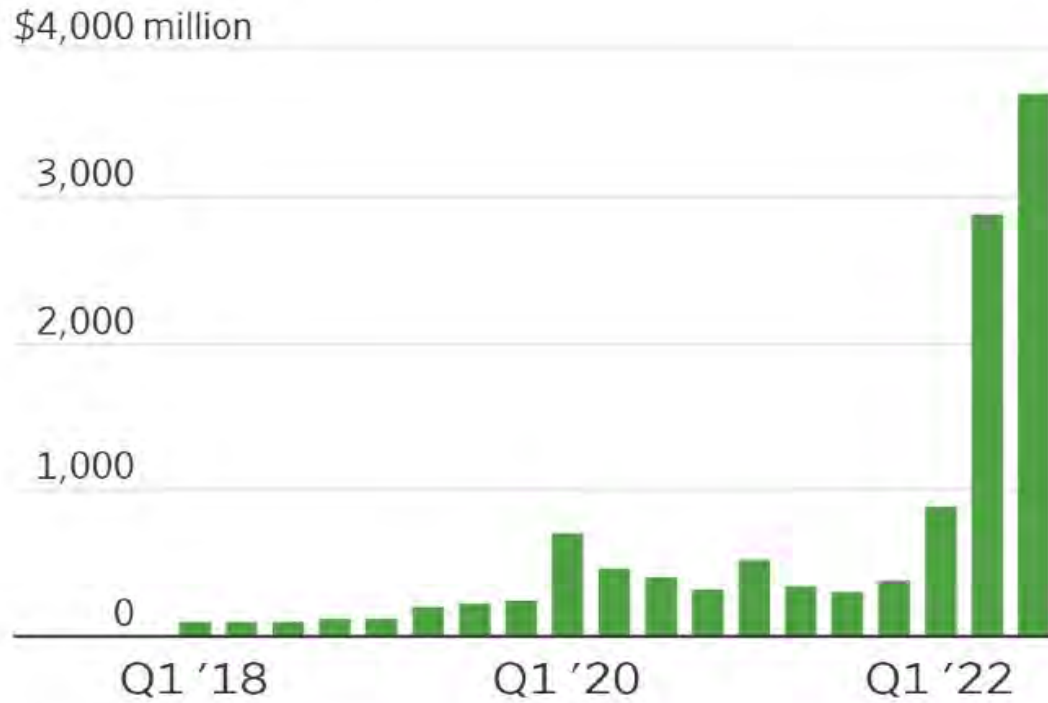
Note: Mean returns and GDP growth for 16 countries, weighted by real GDP. Decadal moving averages. The safe rate of return is an arithmetic average of bonds and bills.

Sustainability of debt: easier when $r << g$ as after WW2.

Canaries in the Coal mine?

- The UK pension funds « incident » (abrupt change in valuations caught leveraged entities off guard: margin calls)
- Redemption of Real Estate Investment Trusts (Blackstone: \$125 bn real estate fund ...). Non traded REITS saw \$3.7 bn in redemption in Q3. Not marked to market. Maturity mismatch. Opened to High Worth Individuals.
- Danger if redemption leads to fire sales.
- How many more of those?

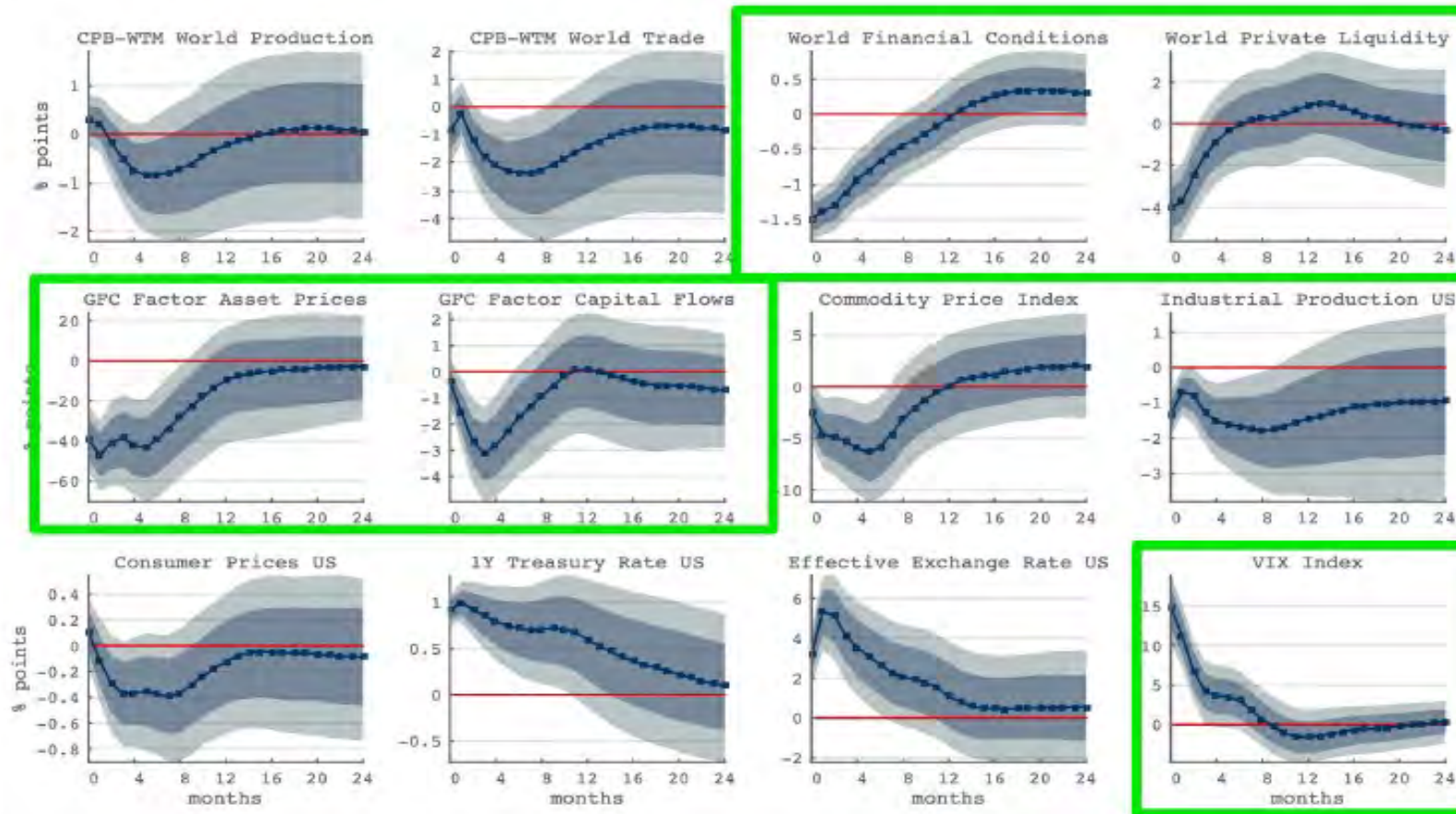
Withdrawals from nontraded REITs



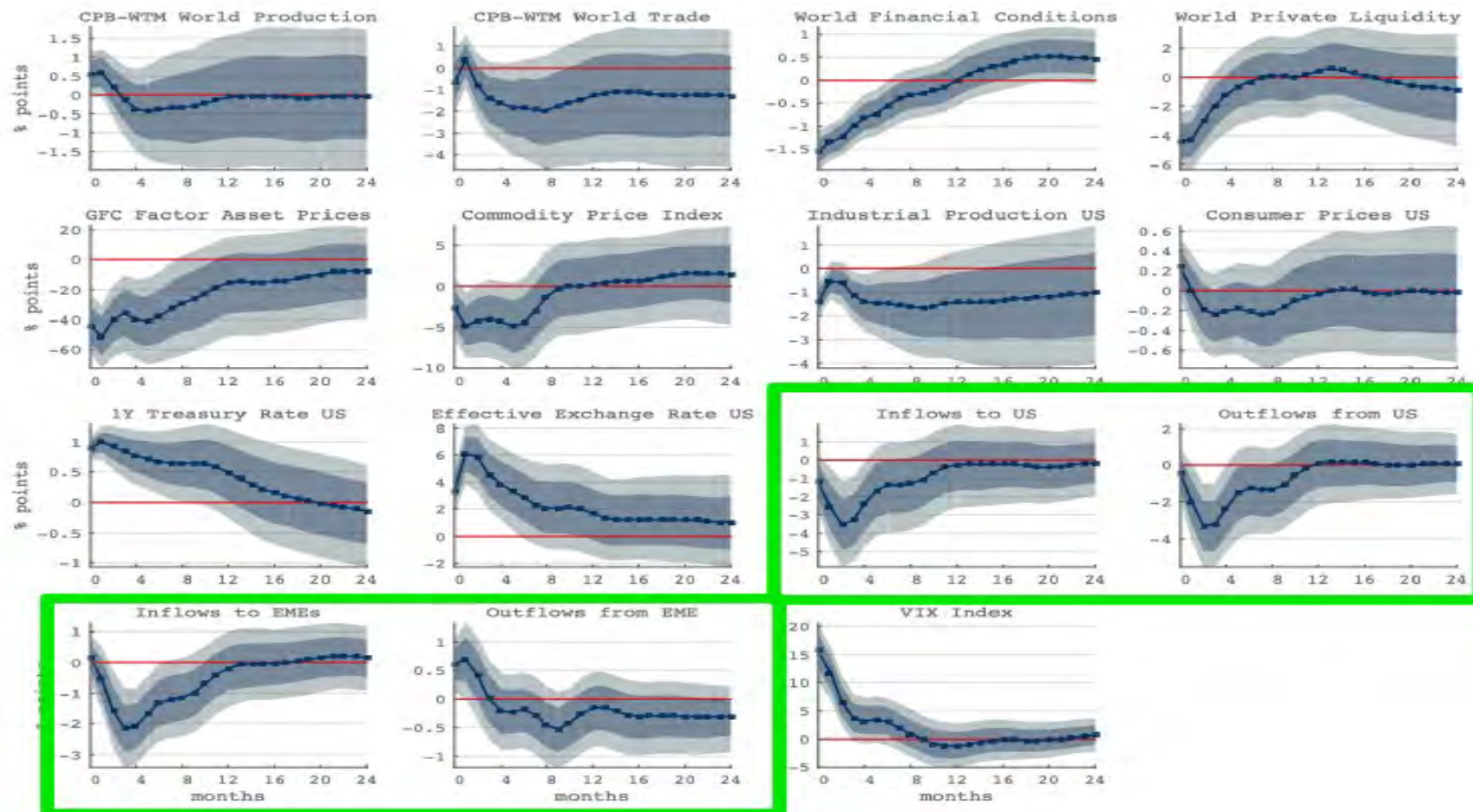
Source: Robert A. Stanger & Co.

- If levered loans (private equity) go bankrupt, who is exposed to the risk?
- US institutional investors, European and Japanese insurance? Pension funds? Any banks?
- As volatility goes up, liquidity dries up. Repeat of March 2020 incident in many corners of the market is possible.

100 bp hike of the Fed: Global Financial Cycle



100 bp hike of the Fed: Flows



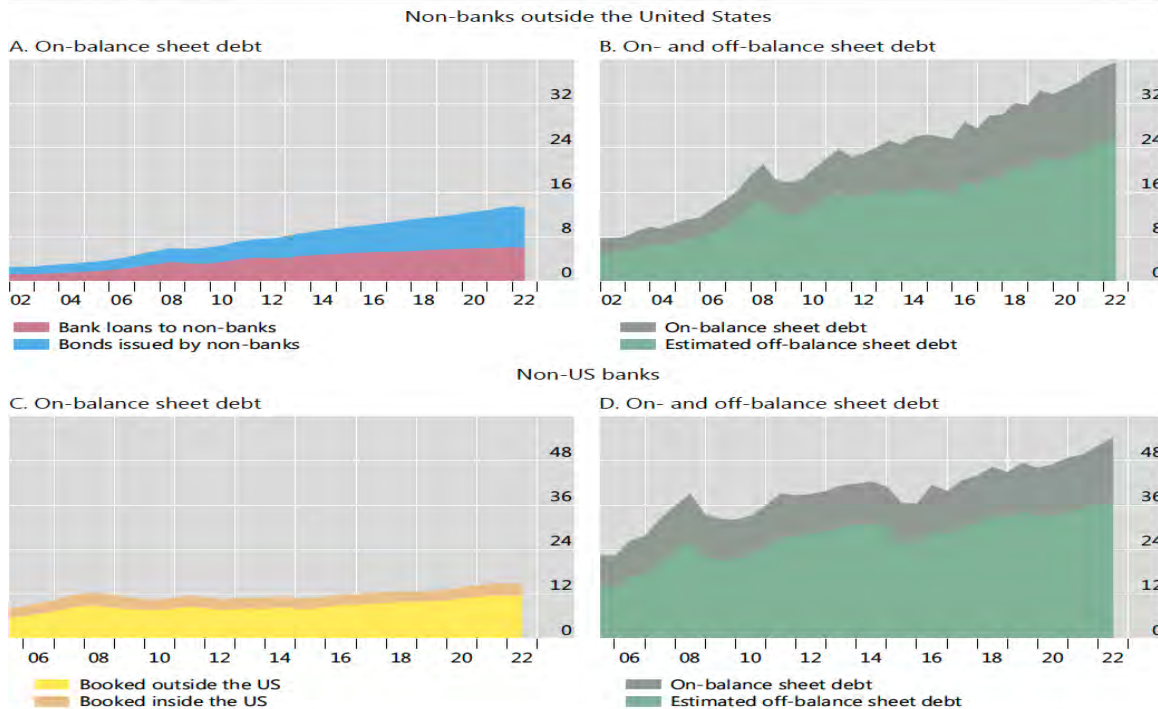
US \$ Rollover risk

- Dollar funding squeeze? Off balance sheet dollar liabilities (BIS 2022)

US dollar-denominated debt¹

In trillions of US dollars

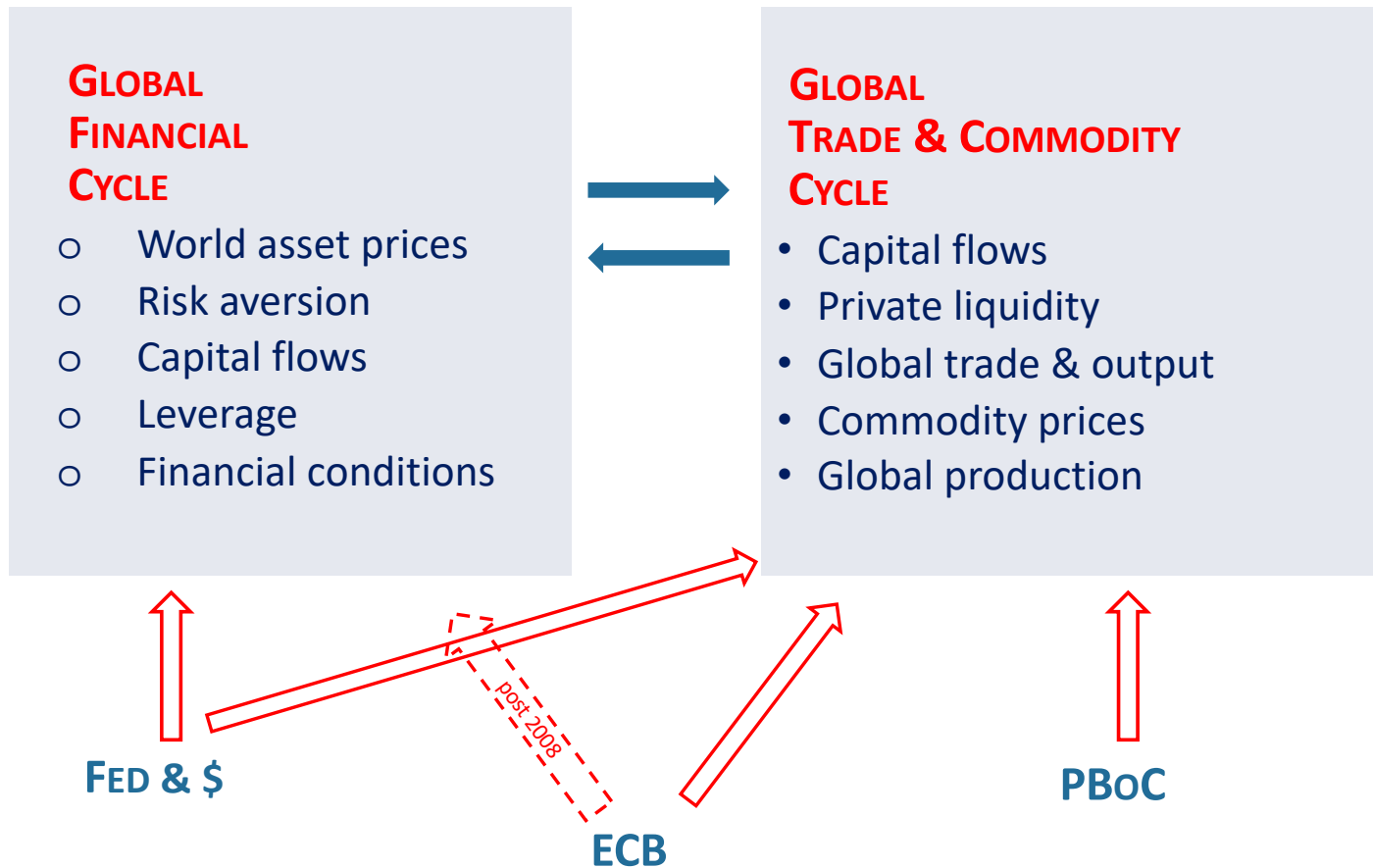
Graph 2



¹ See technical annex for details.

Sources: US Office of the Comptroller of the Currency (OCC); Dealogic; Euroclear; Thomson Reuters; Xtrakter; national data; BIS consolidated banking statistics (CBS); BIS locational banking statistics (LBS); BIS OTC derivatives statistics (OTCD).

GLOBAL LIQUIDITY PROVISION BY MAIN CENTRAL BANKS



Central Banks

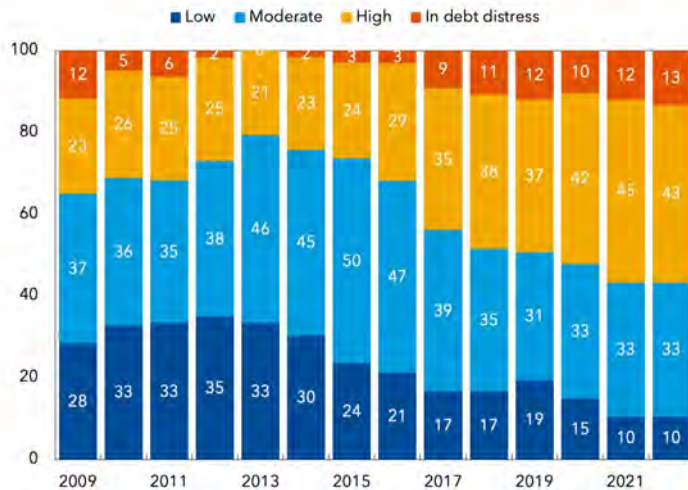
- Federal Reserve tightening leads to a widening of the spreads, increase in financing costs, decrease in leverage and capital flows.
- Also leads to a decrease in trade, output and commodity prices. But the People's Bank of China has a large effect on those as well. And Commodity prices shocks dominated by the supply side (war in Ukraine etc...)
- ECB QT will have an effect on asset prices, leverage but also on trade and capital flows.

Tensions in LICs

- Increases in rates and dollar appreciation tighten financing constraints.
- Increases in energy and food price deteriorates external accounts

Rising debt risks

The proportion of countries in debt distress, or at high risk of debt distress, has doubled to 60 percent from 2015 levels.
(percent of DSSI countries with LIC DSAs)

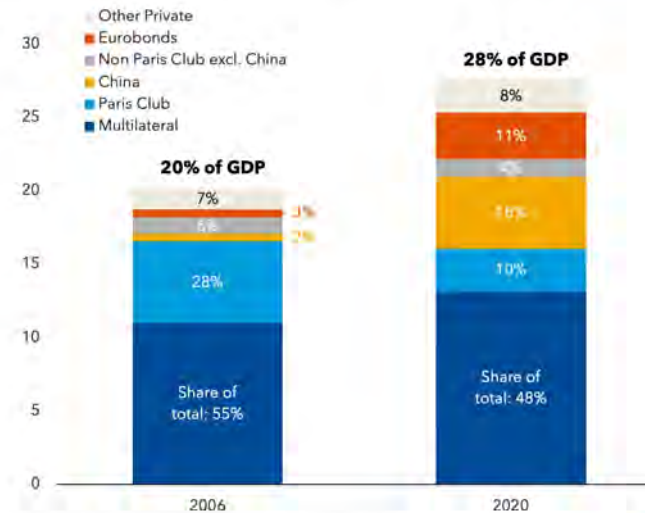


Source: LIC DSA database.
Note: DSSI=Debt service suspension initiative. LIC=Low-income countries.
DSAs=Debt sustainability analyses. As of March 31, 2022.



New creditors

For DSSI countries, the composition of external obligations has changed significantly as borrowing levels increased.
(external debt in percent of GDP)



Source: World Bank IDS, IMF WEO, and staff calculations.



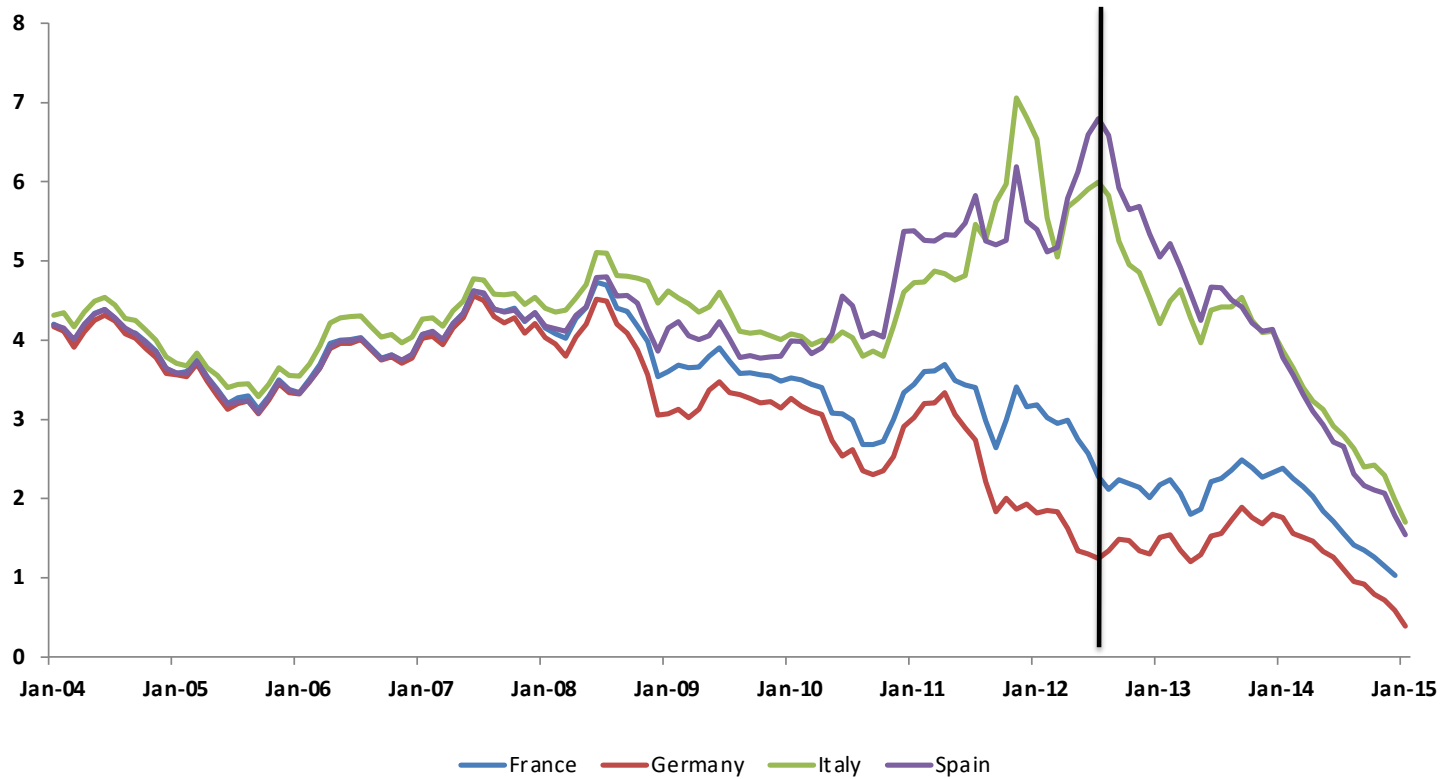
Debt service suspension initiative:
Chad, Ethiopia, Somalia, Zambia in distress.

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Not systemic

- Very exposed to war in Ukraine
- Large negative terms of trade shock
- Large legacy debt from Covid and shields against energy shocks
- ECB needs to tighten monetary policy to counter inflation without causing excess widening in spreads
- OMT instrument (2012) was designed for this (conditional lending). Politically « unacceptable » in Italy.
- New instrument TPI: Transmission Protection Instrument: « anti fragmentation tool ». Untested.

“Whatever it takes” (Mario Draghi, July 2012)



Climate and biodiversity Risks

- Interactions between carbon pricing policy and monetary policy.
- Predictability of carbon pricing: effect on inflation, effect on investment in green and brown capital) and potential output
- Physical and transition risks for the financial system



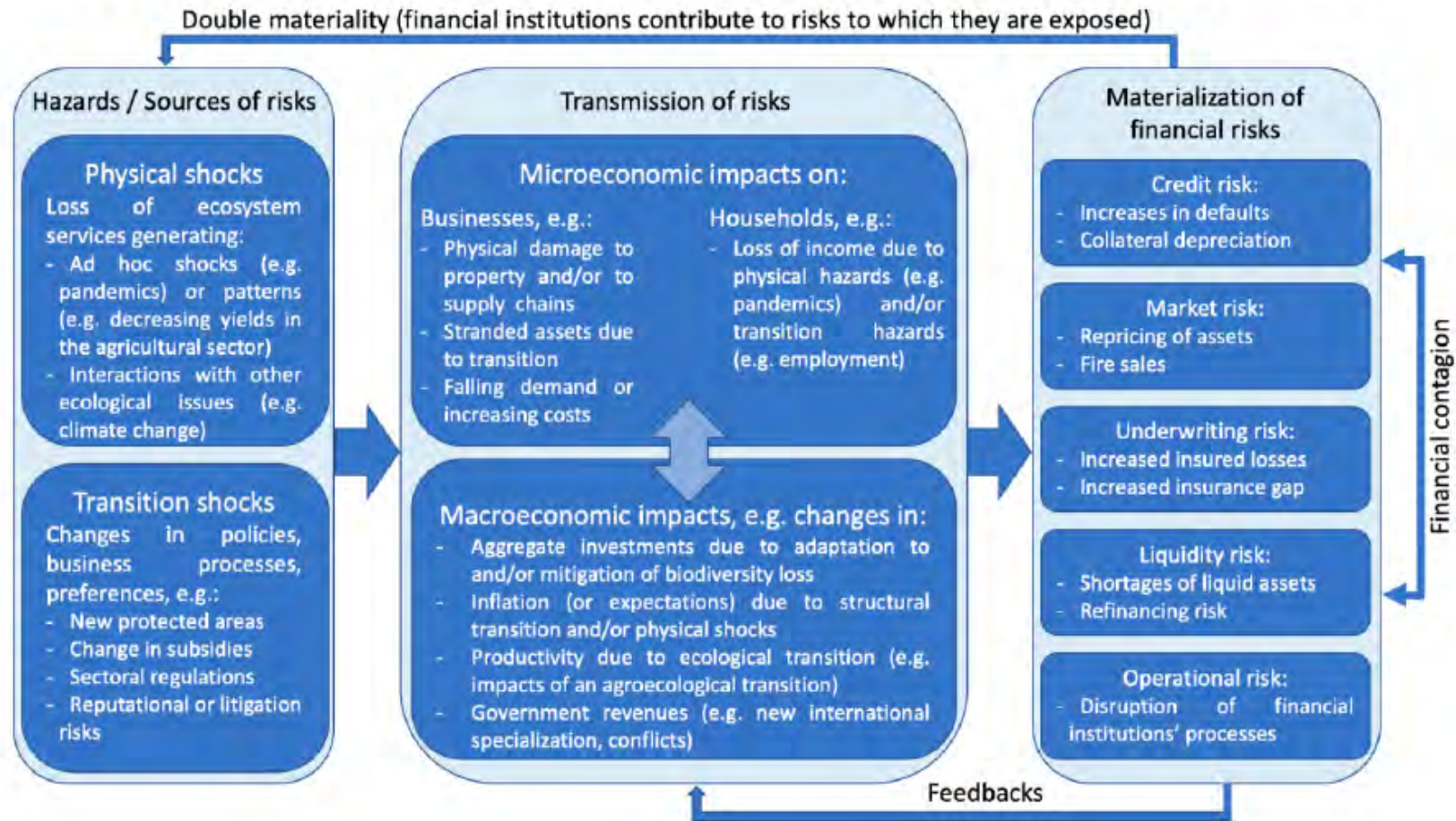
Climate and biodiversity Risks

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Biodiversity Loss

- The IPBES is the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. It can be considered to be for biodiversity what the IPCC (Intergovernmental Panel on Climate Change) is for climate change.
- Biodiversity covers not only all ecosystems and life forms (plants, animals, fungi, bacteria, and so on), but also all the relationships and interactions (such as cooperation, predation and symbiosis) that exist between the multiple organisms that populate the biosphere and between these organisms and their living environments.
- Ecosystem service flows can be seen as the 'dividends' that society receives from biodiversity
- Biodiversity, a characteristic of natural capital, is conceived as an enabling asset, i.e. an asset that gives value to natural capital. Indeed, biodiversity underpins the capacity of natural capital to deliver ecosystem services, as it affects the productivity, resilience and adaptability of ecosystems (Dasgupta, 2021).

Figure 3 – An analytical framework to explore biodiversity-related financial risks (BRFR)



Study by Banque de France finds that 42% of the market value of securities held by French financial institutions are highly or very highly dependent on at least one ecosystem service.

Accumulated terrestrial biodiversity footprint of these securities is comparable to the loss of at least 130,000 km² of “pristine” nature, which corresponds to the complete artificialization of 24% of the area of metropolitan France.

IPBES: “around one million species of an estimated 8 million animal and plant species are already threatened with extinction [...] The global rate of species extinction is already at least tens to hundreds of times higher than the average rate over the past 10 million years and is accelerating”

Merkel blames Russia for 'outrageous' cyberattack on German parliament

German chancellor says that 2015 hacking attack negatively affects relations with Moscow.

WannaCry cyber-attack cost the NHS £92m after 19,000 appointments were cancelled

Chinese military hackers charged with Equifax cyber attack that hit 15m Britons

Members of People's Liberation Army's hacking unit face US charges over 2017 hack

US Treasury department officials subject to hacking campaign

Department confirms breach as attorney-general says Russia likely culprit behind attack

General election 2019: Labour Party hit by second cyber-attack

12 November 2019

More than one in four UK cyber attacks related to Covid-19

National centre's findings come days after US warned of threat to hospitals from hackers

Vaccines for sale on dark web as criminals target pandemic profits

Cyber attacks on vaccine infrastructure have been widely documented, with theft and fraud expected to rise

Pfizer/BioNTech say EMA breach exposed vaccine documents

Companies say records related to regulatory submission 'unlawfully accessed' on EU regulator's server

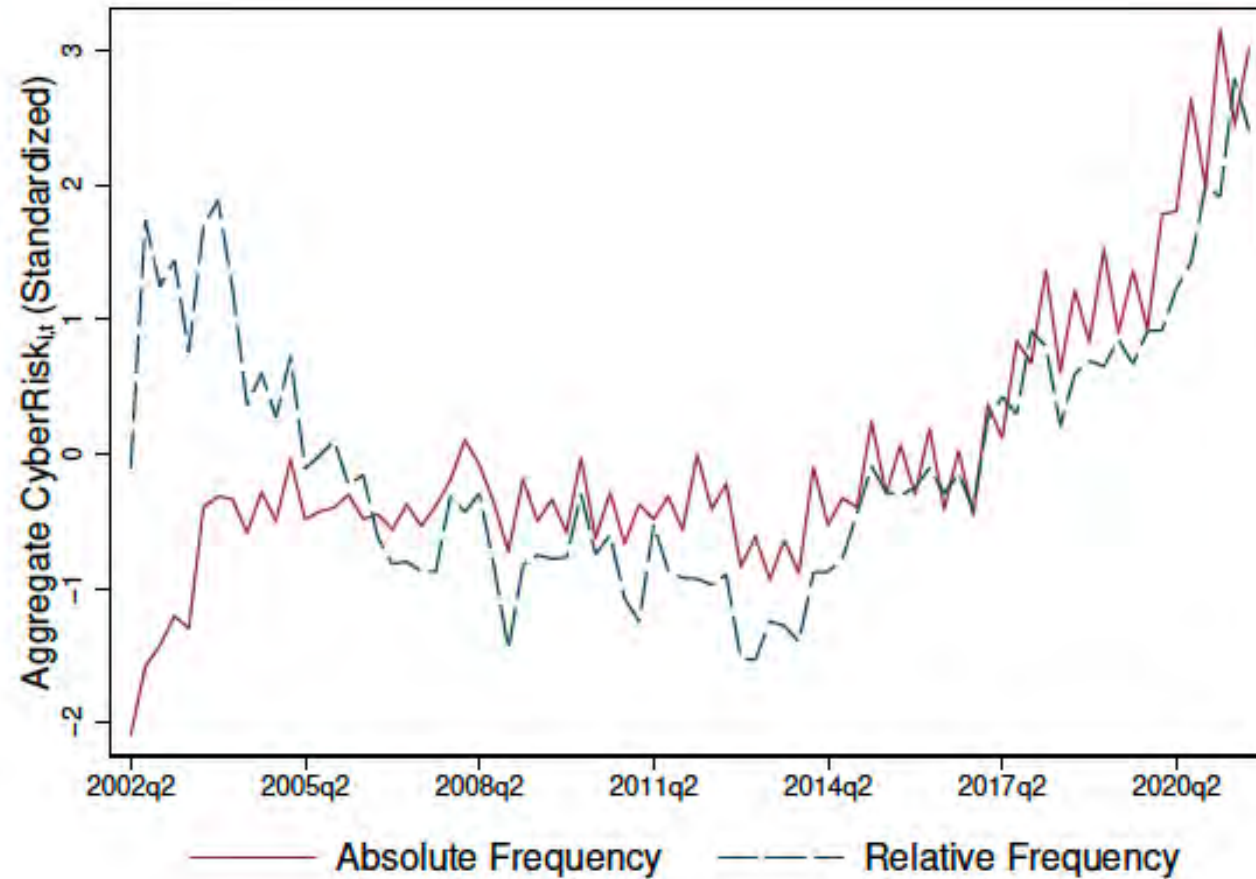
▶ **Earnings calls:** Thomson Reuters StreetEvents

- 348,393 English-language transcripts of firms listed in the U.S.
- Typically 1 transcript per quarter, 45 minute duration, ca. 8,000 words
- Structure: speech by management, Q&A session with financial analysts
- Common firm identifier (Global Company Key, GVKEY)

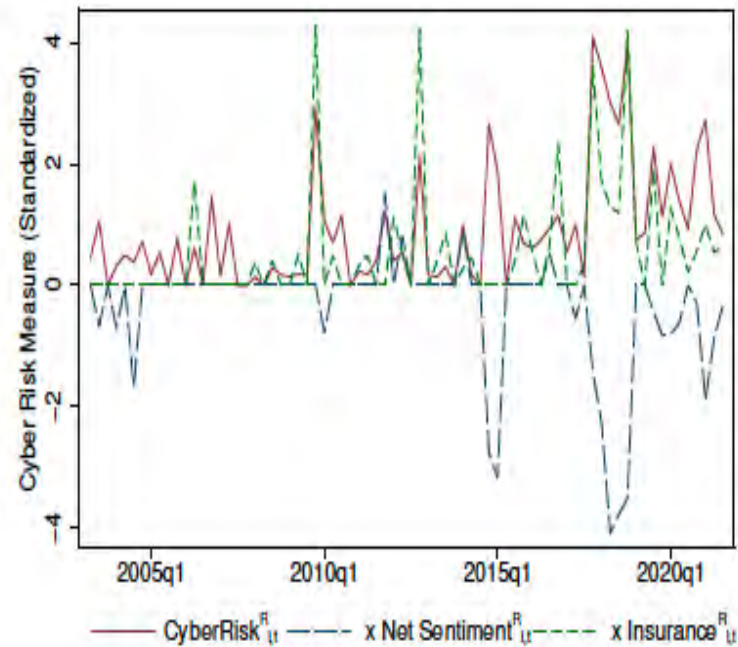
▶ **Advantages:**

- Cyberattacks are under-reported; our focus on *exposure* is less prone to selection issues
- Earnings calls are forward-looking and have active Q&A sessions
- Can capture “soft” signals and analyst attention

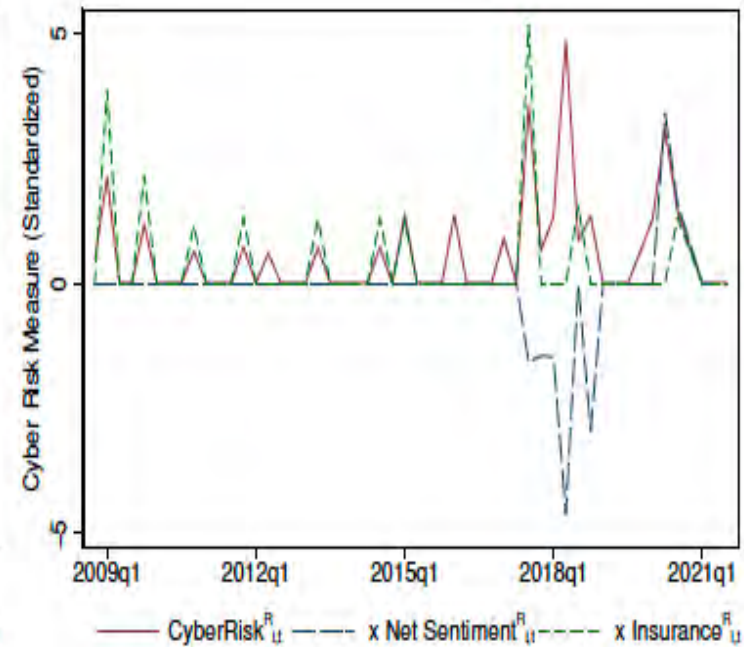
Global cyber risk exposure has risen 3-fold over 2015-2022



Examples of of Cyber attacks

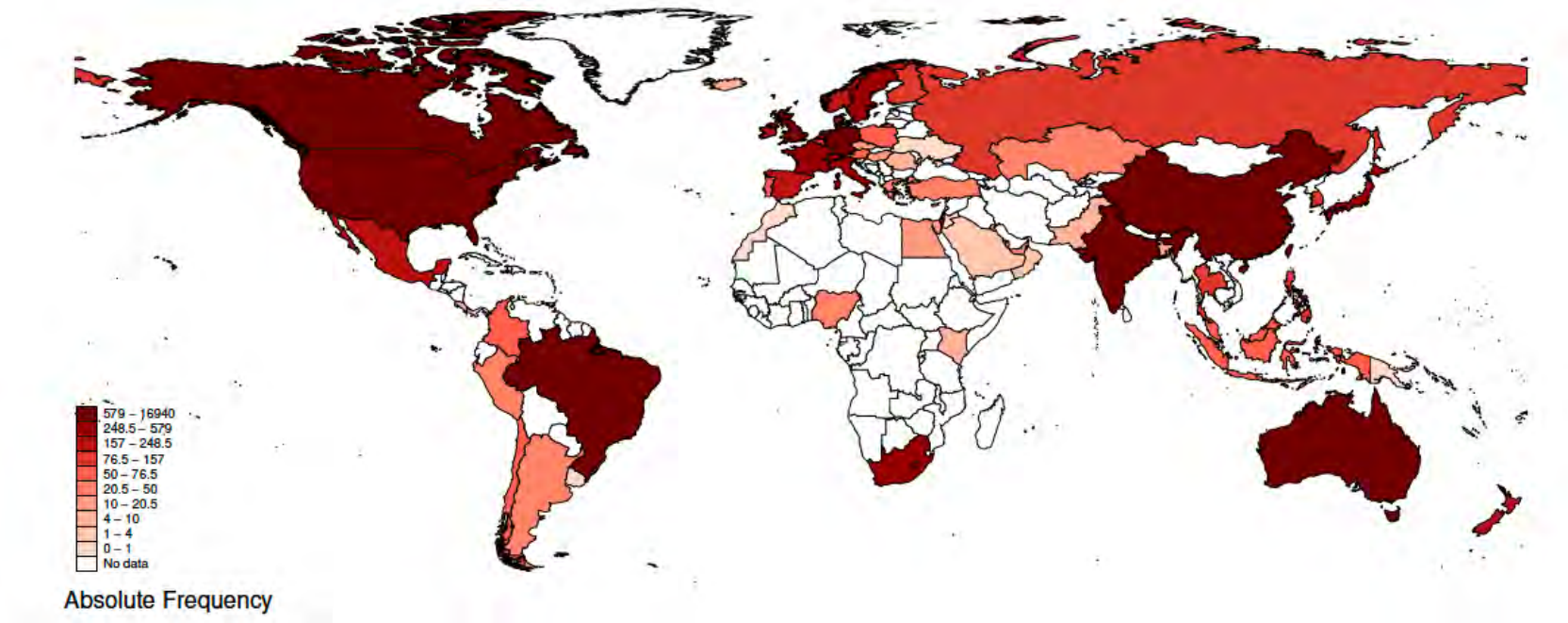


(A) Equifax

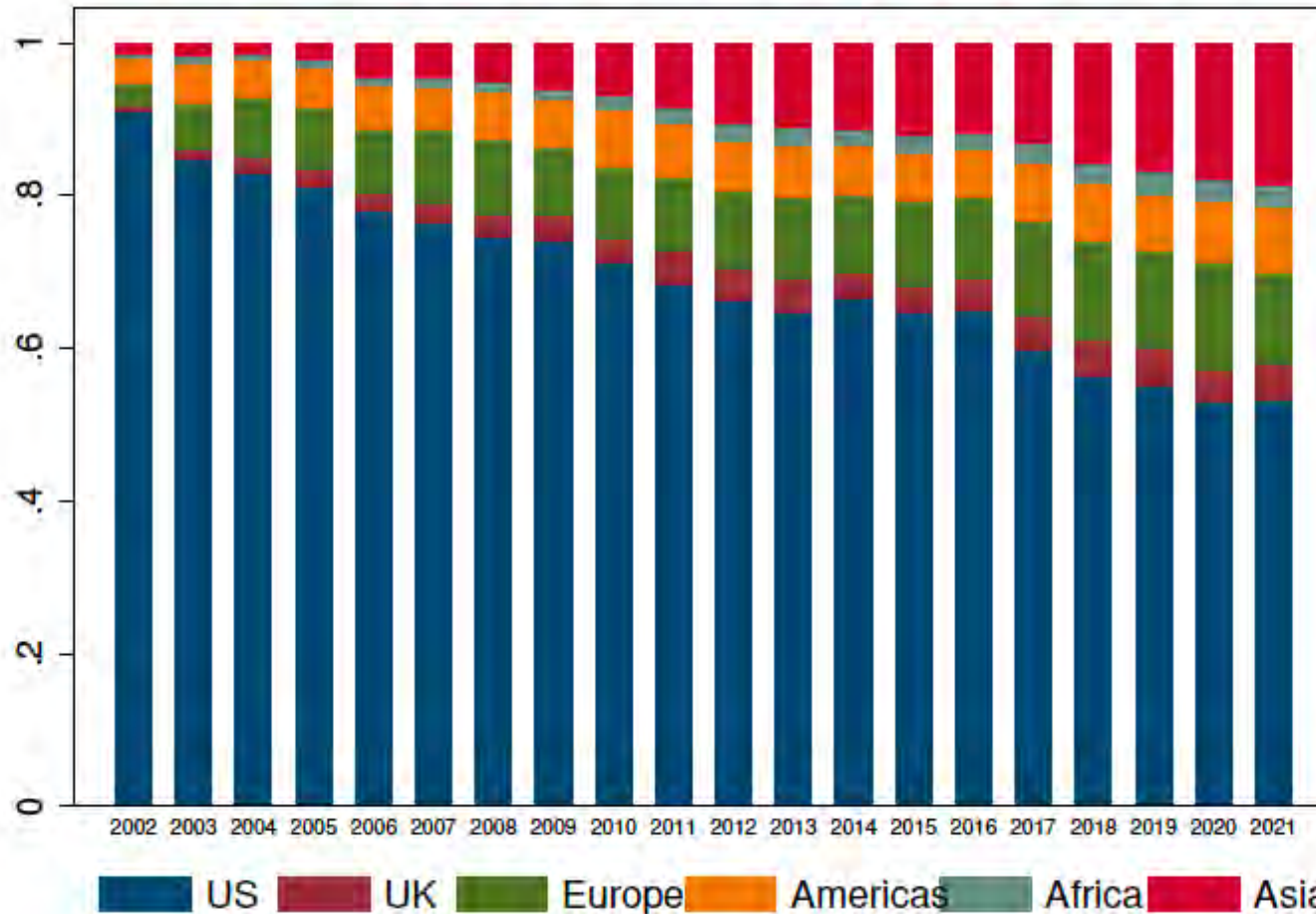


(B) Bank of Montreal

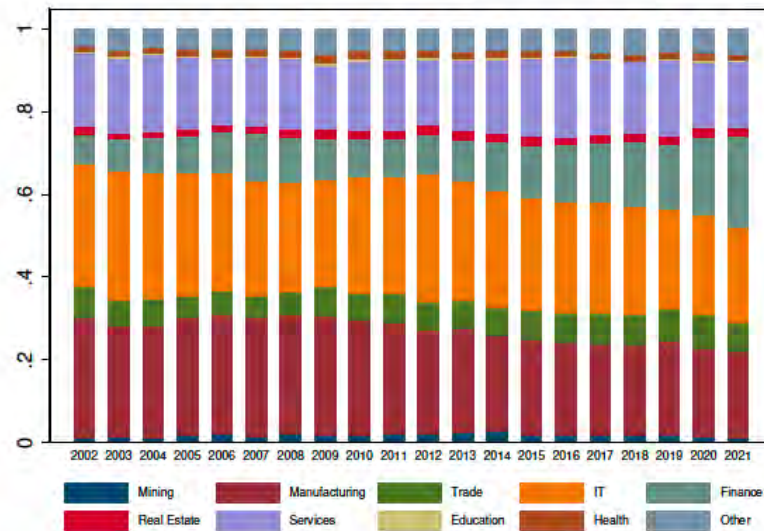
Regional Decomposition of Cyber risk exposure



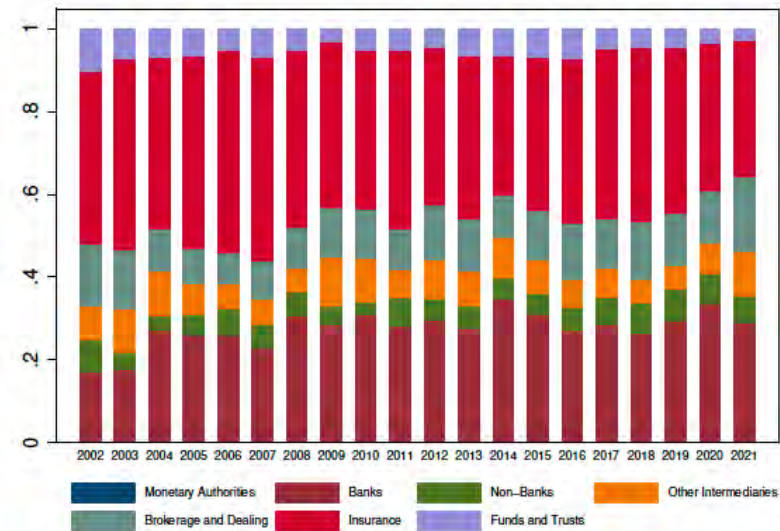
Structural shift away from the U.S. towards Asia and Europe



Industrial composition



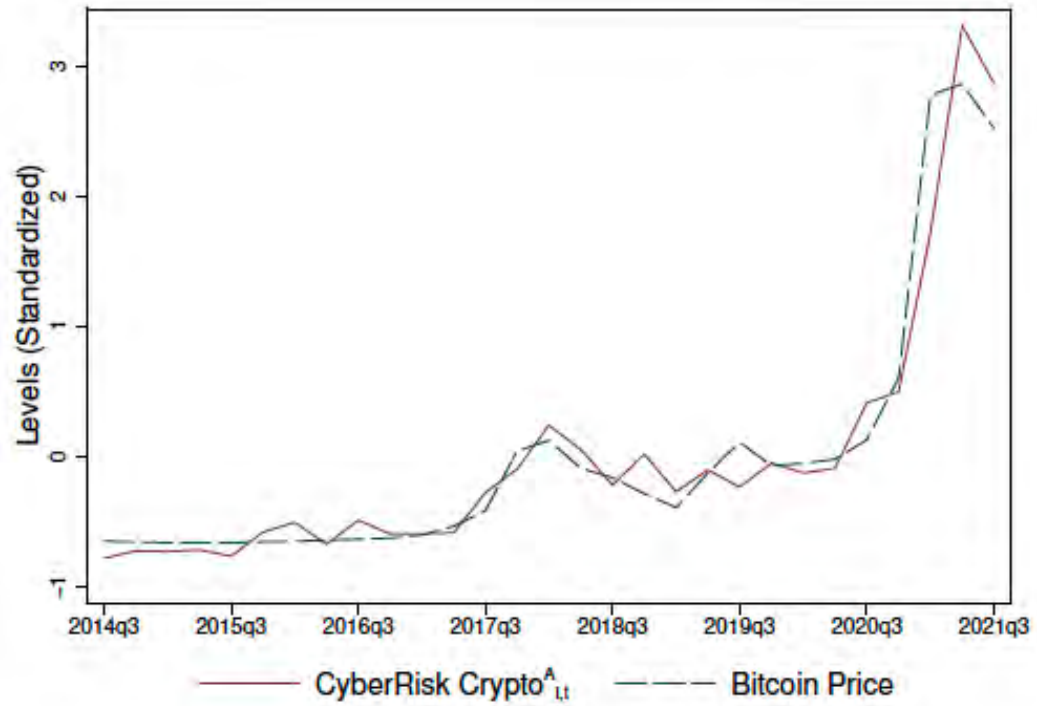
(A) All Industries



(B) Finance Sub-Sectors

- ▶ Most affected industries in 2021: IT, manufacturing, finance, services, trade
- ▶ Fast growth of exposure in Finance
- ▶ Finance sub-sectors in 2021: 45% banks, 30% insurance, 20% broker-dealers, 5% funds

Cyber risk and Bitcoin price



- 1 std ↑ in CyberRisk lowers future RoA by or 0.11%
- ▶ The average firm in our sample has assets of about \$25, 572M
- ▶ This yields a loss of income for the average firm of \$28M
- We also find evidence of spillovers to firms in the same country, same industry.
- Systemic?

Summary

1. Traditional financial risks (debt, leverage,...) are on the rise
2. New risks are emerging and becoming pressing (climate, biodiversity, cyber)