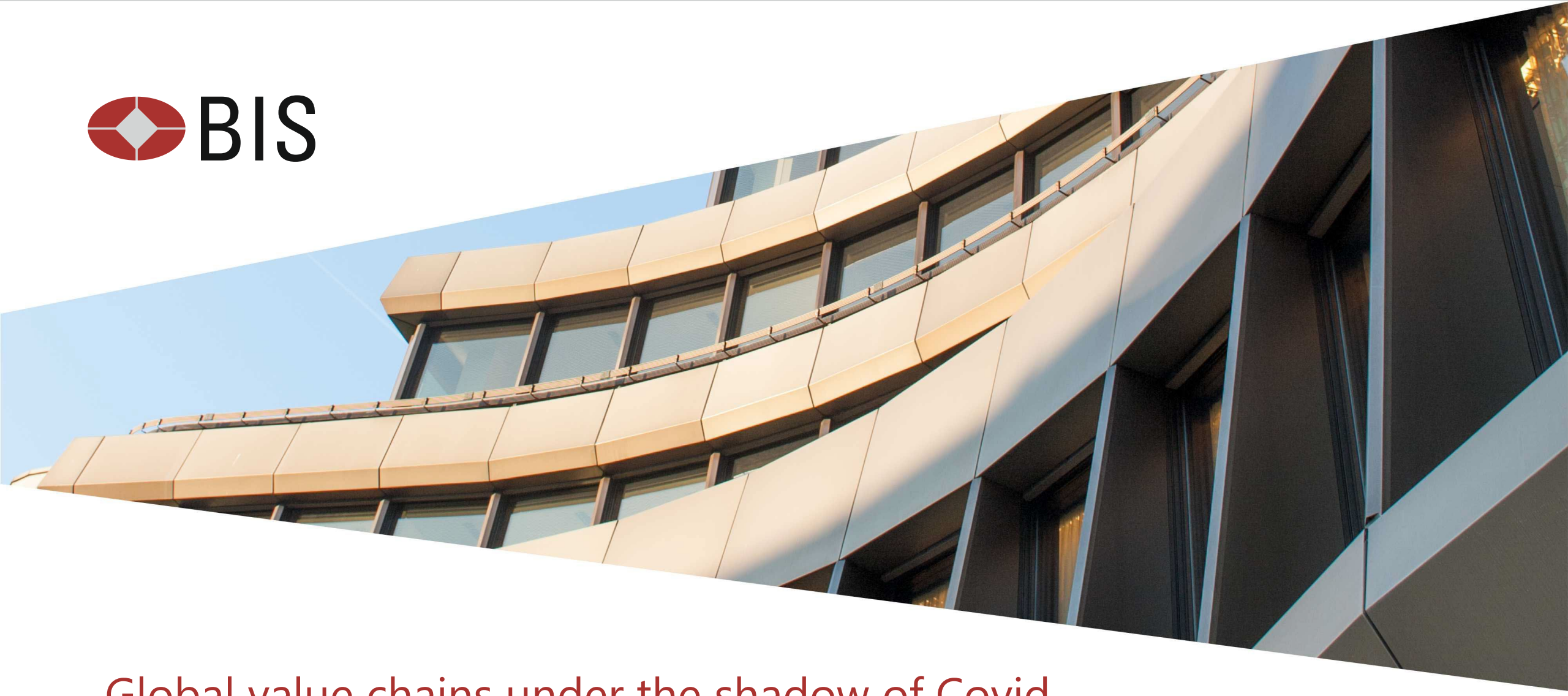


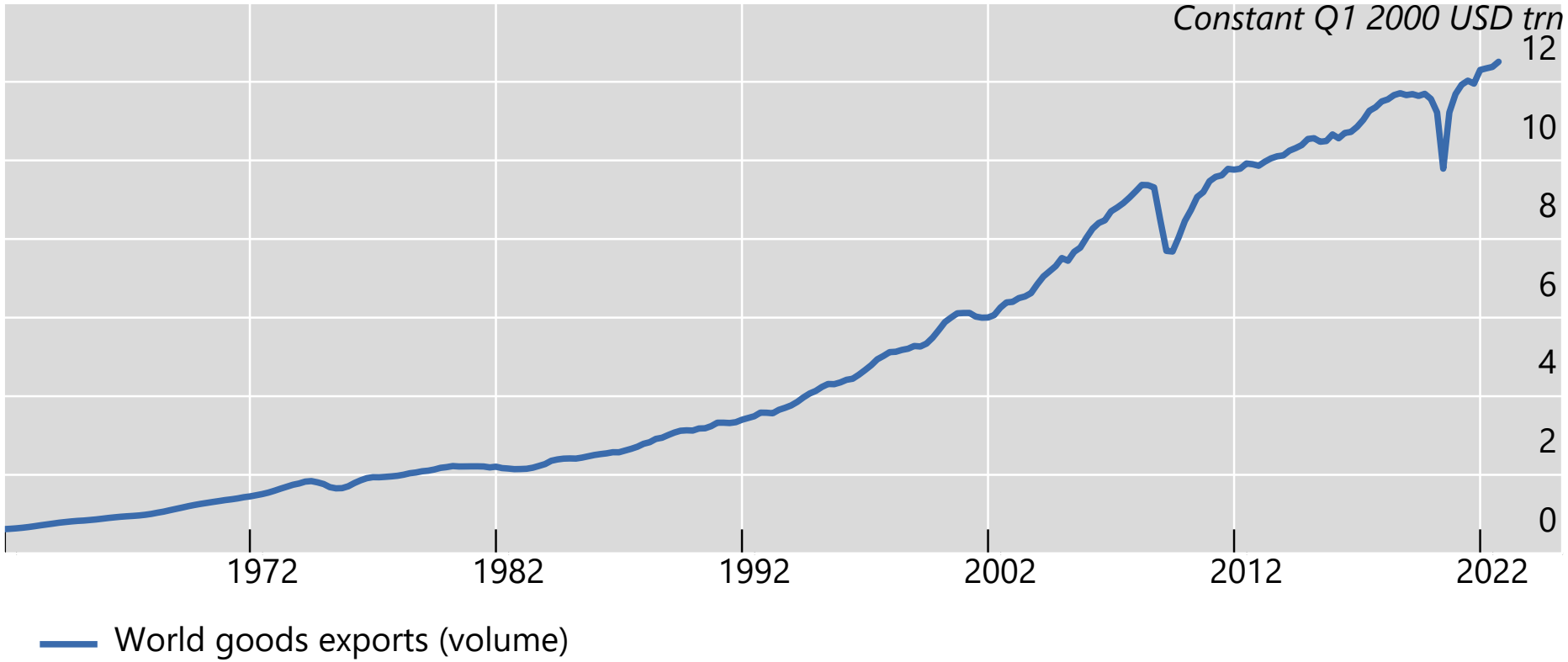
Global value chains under the shadow of Covid

Hyun Song Shin*, Economic Adviser and Head of Research, BIS

Columbia University CFM-PER Alternative Data Initiative virtual seminar, 16 February 2023

*The views expressed here are mine and not necessarily those of the Bank for International Settlements

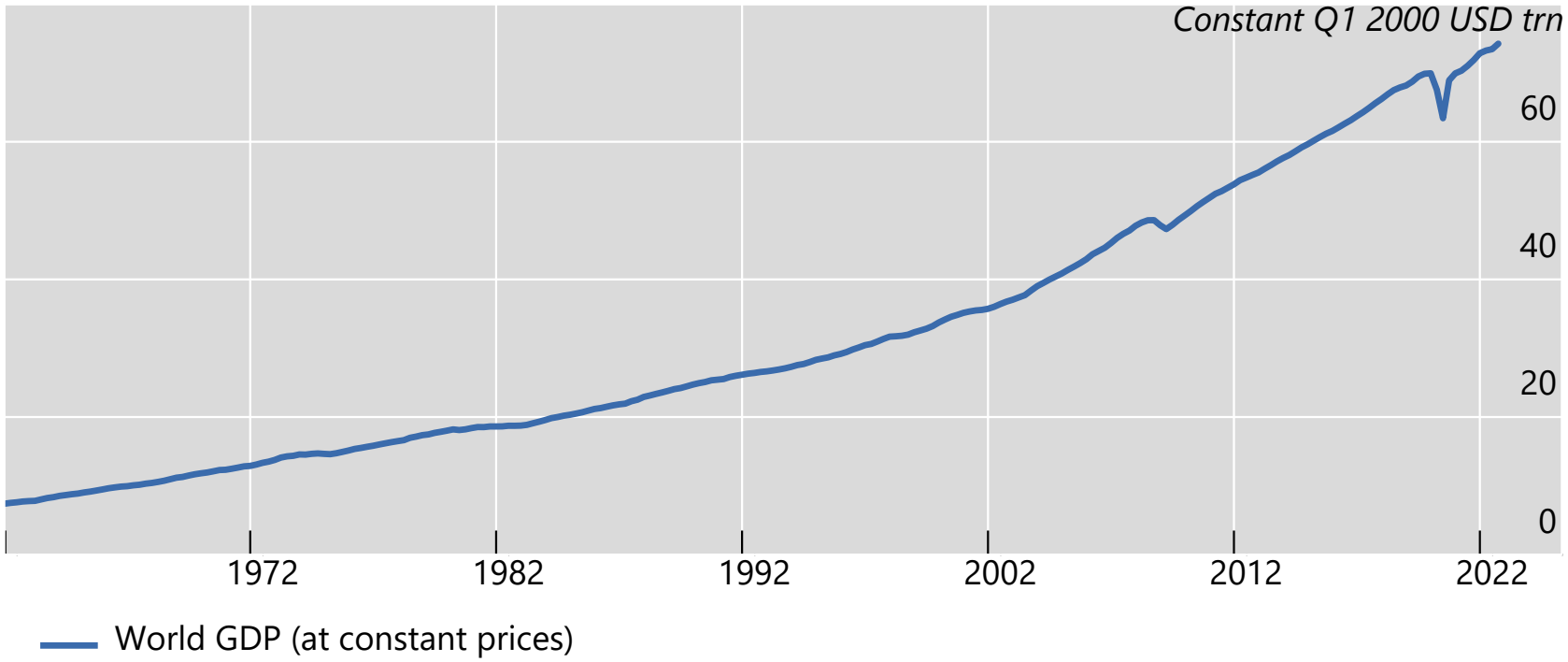
World trade (in real terms) has grown strongly in the age of globalisation, punctuated by disruptions during the 2008 crisis and the recent Covid shock



Annual world goods exports volume data interpolated to quarterly frequency using world goods exports value data (due to data constraints), based on Chow-Lin method for temporal disaggregation.

Sources: IMF; WTO; BIS.

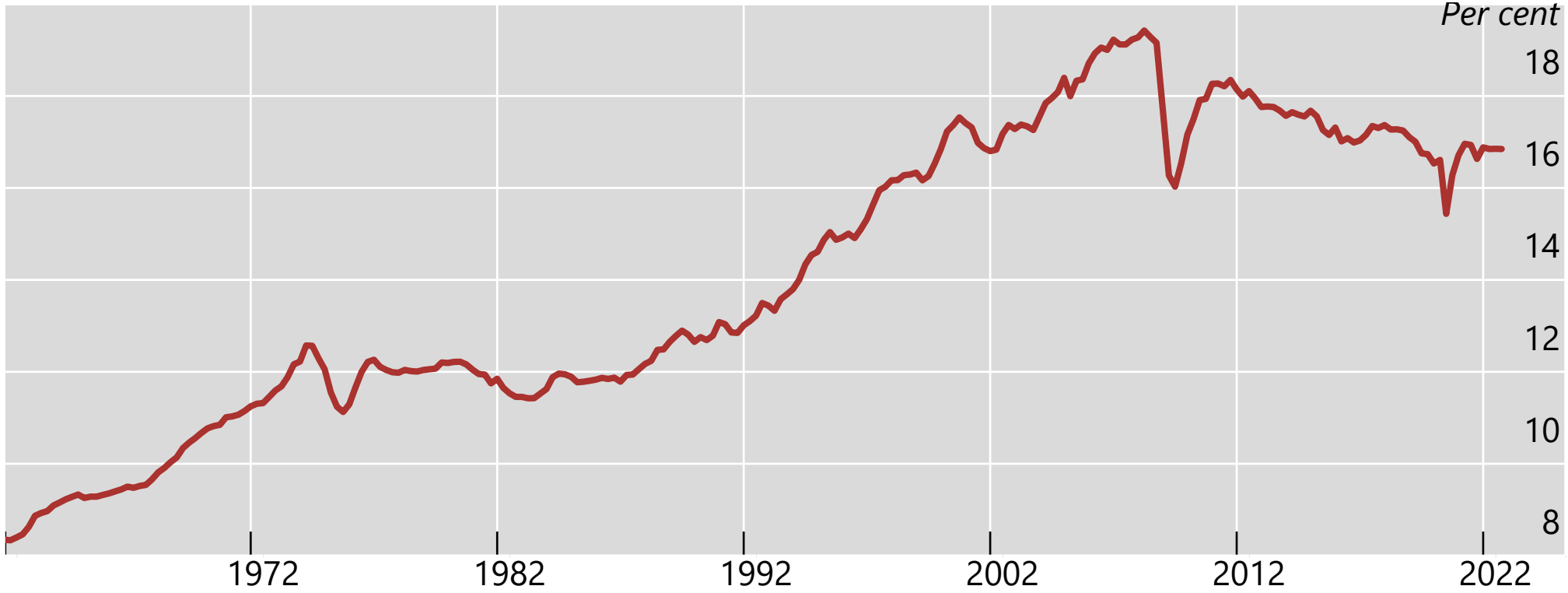
World GDP in real terms has also grown, but…



Annual world GDP data backdated and interpolated to quarterly frequency using a constructed quarterly world GDP aggregate for a smaller sample of economies (due to data constraints), based on Chow-Lin method for temporal disaggregation.

Sources: Jordà-Schularick-Taylor Macrohistory Database; IMF; World Bank; Global Financial Data; national data; BIS.

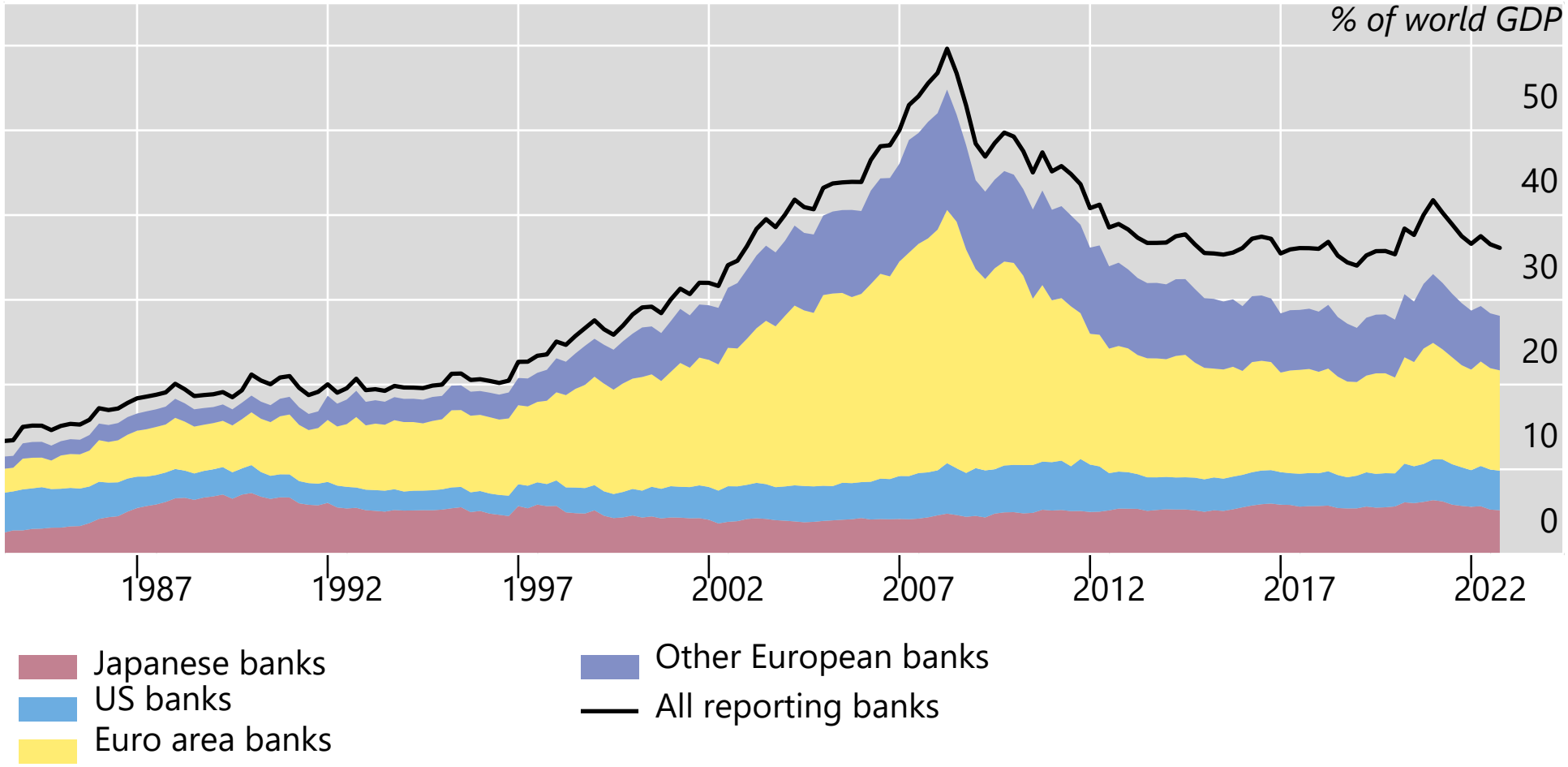
…as a proportion of world GDP, trade growth has stagnated since the Great Financial Crisis of 2008



Ratio of the world GDP to world goods exports, both in constant prices at Q1 2000 USD. Annual world GDP data backdated and interpolated to quarterly frequency using a constructed quarterly world GDP aggregate for a smaller sample of economies (due to data constraints). Annual world goods exports volume data interpolated to quarterly frequency using world goods exports value data (due to data constraints). Based on Chow-Lin method for temporal disaggregation.

Sources: Jordà-Schularick-Taylor Macrohistory Database; IMF; World Bank; WTO; Global Financial Data; national data; BIS.

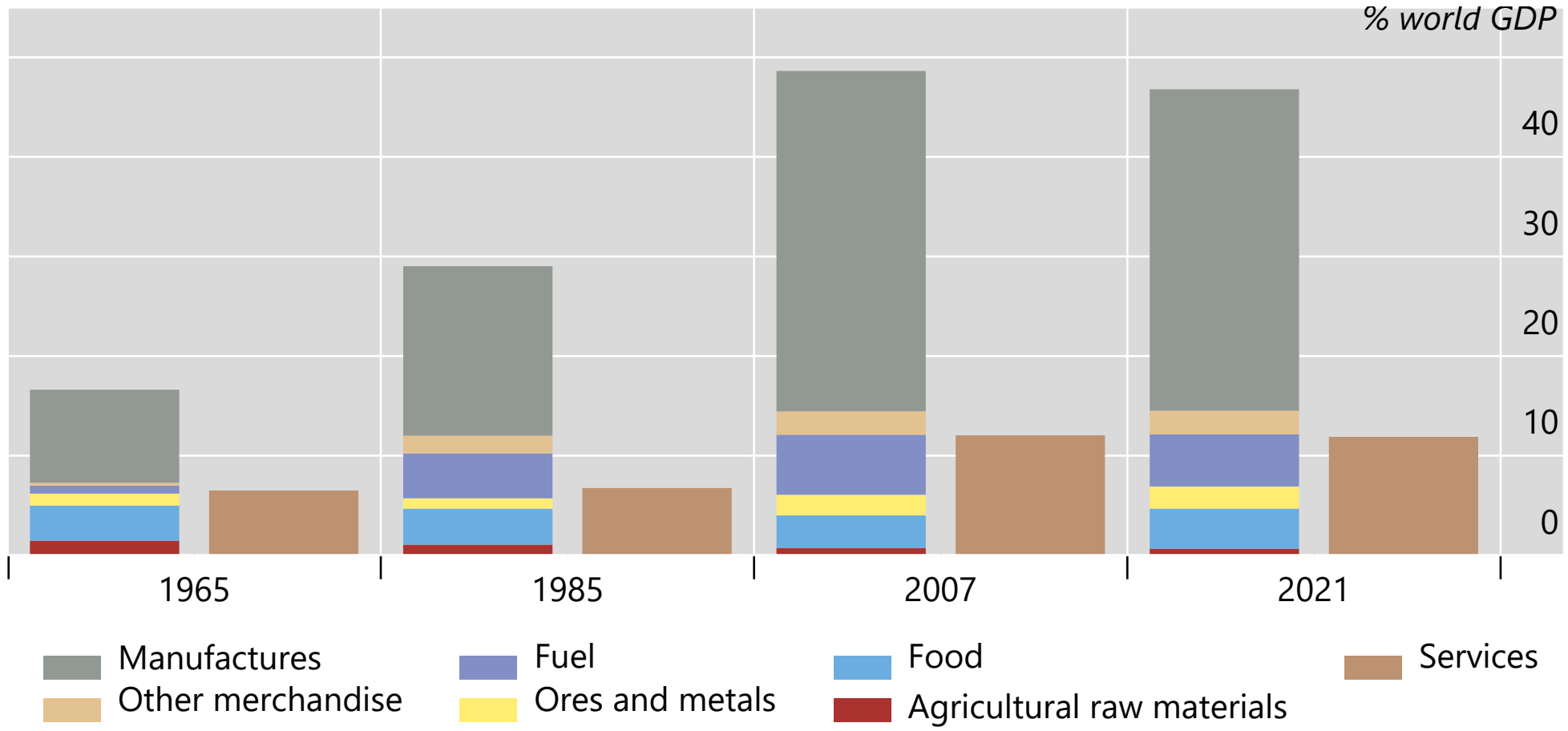
…mirroring the globalisation of *finance*, as seen by global cross-border bank lending relative to world GDP in BIS data



Sources: IMF, World Economic Outlook; BIS locational banking statistics.

Working capital approach to supply chains

Growth in world trade (relative to GDP) was powered by the rapid growth of trade in manufactured goods



Value imputed for services in 1965.

Sources: World Bank; BIS.

Global value chains were nurtured by high investment in working capital that bridged the timing gap between costs and cashflows; global value chains are highly finance-intensive

"When our grandfathers owned shops, inventory was what was in the back room. Now it is a box two hours away on a package car, or it might be hundreds more crossing the country by rail or jet, and you have thousands more crossing the ocean."

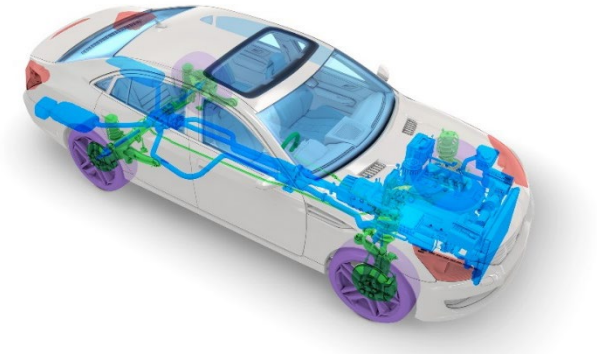
CEO of UPS, quoted by Tom Friedman in *The World Is Flat*" (2005, p. 174)

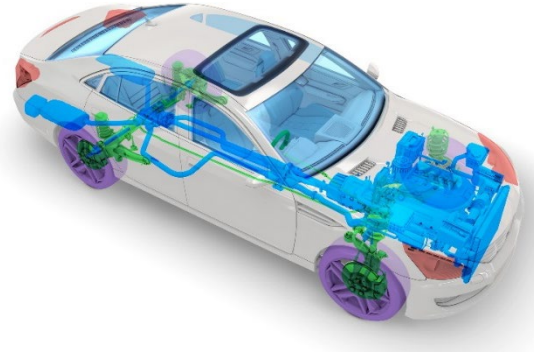
	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			

	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			

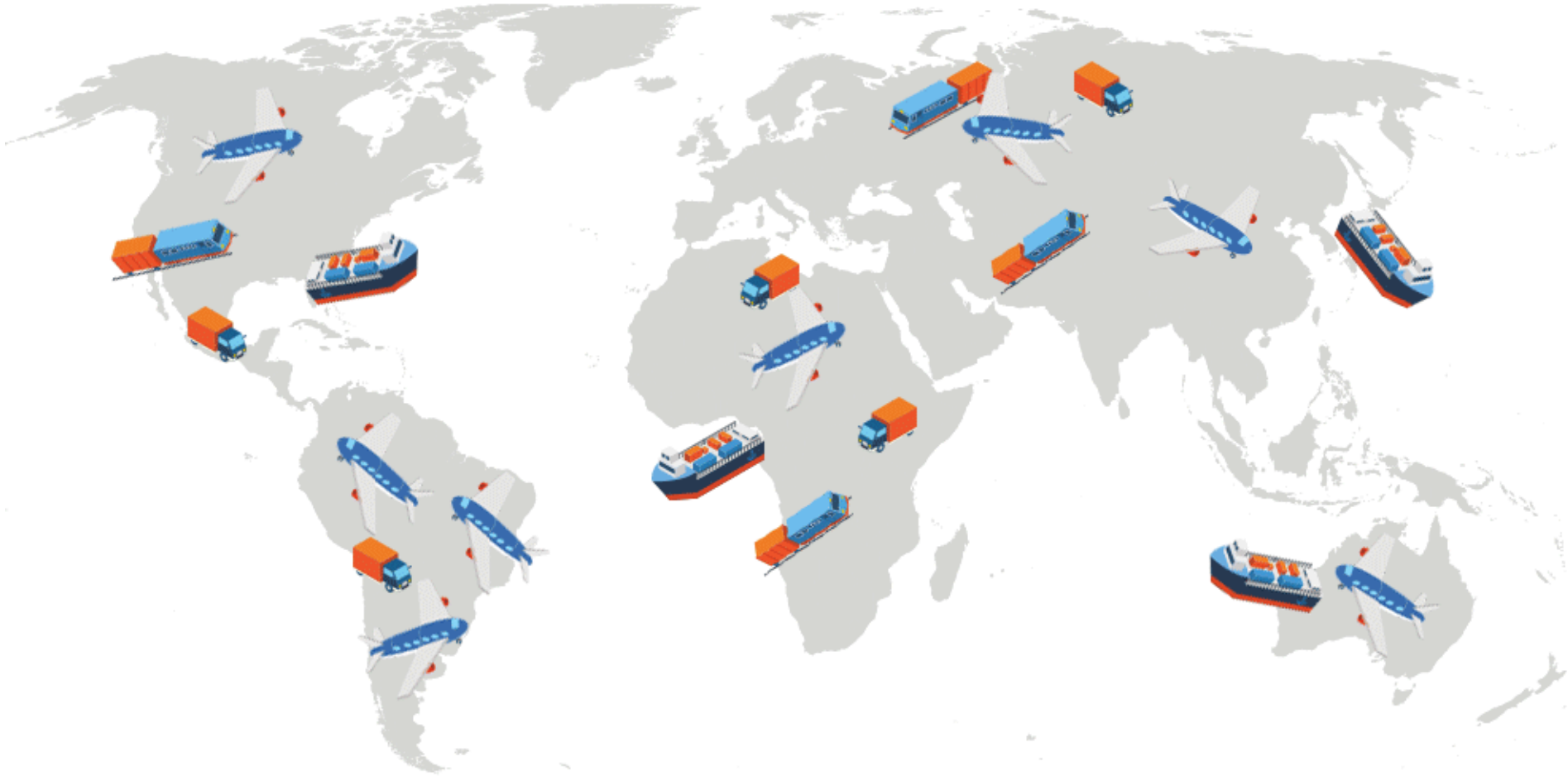
	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			

	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			



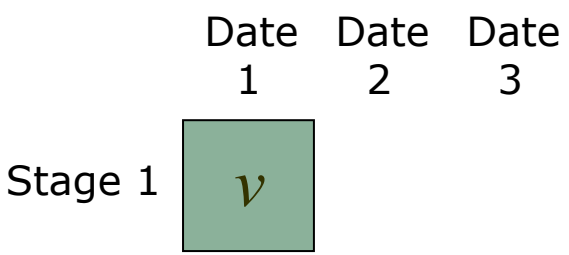
	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			

Inventories and trade

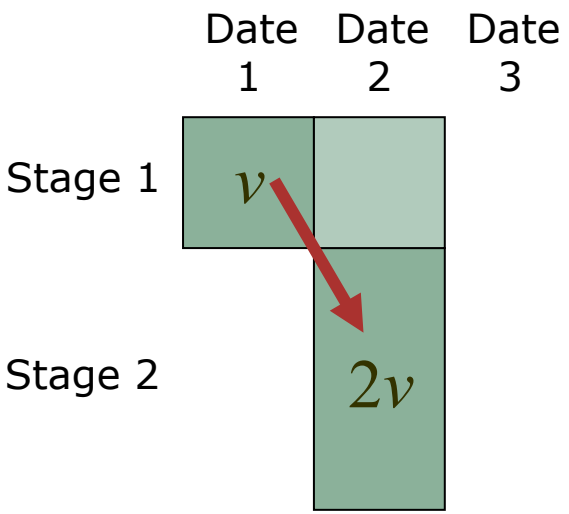


	Date 1	Date 2	Date 3
Stage 1			
Stage 2			
Stage 3			

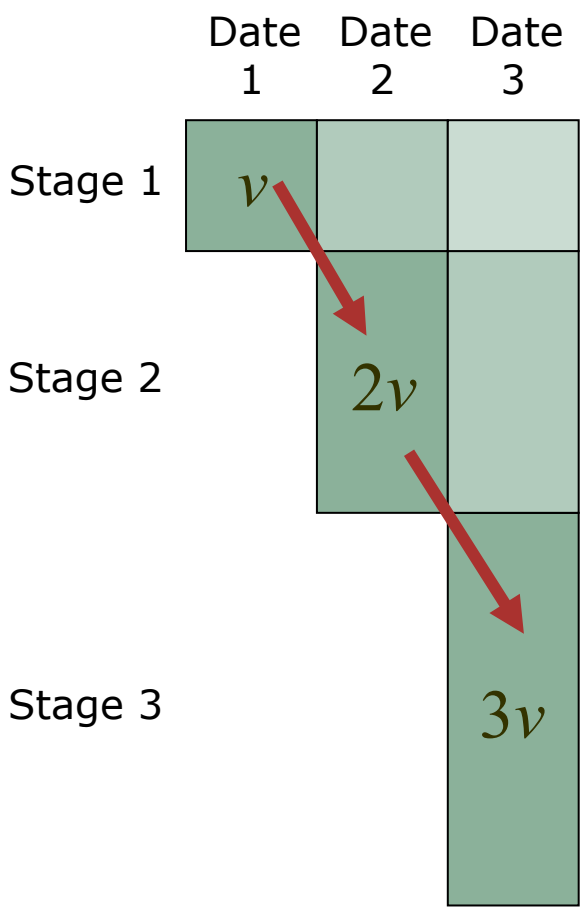
Assets	Liabilities
Cash	Equity
Receivables Long-term assets	Payables Long-term liabilities



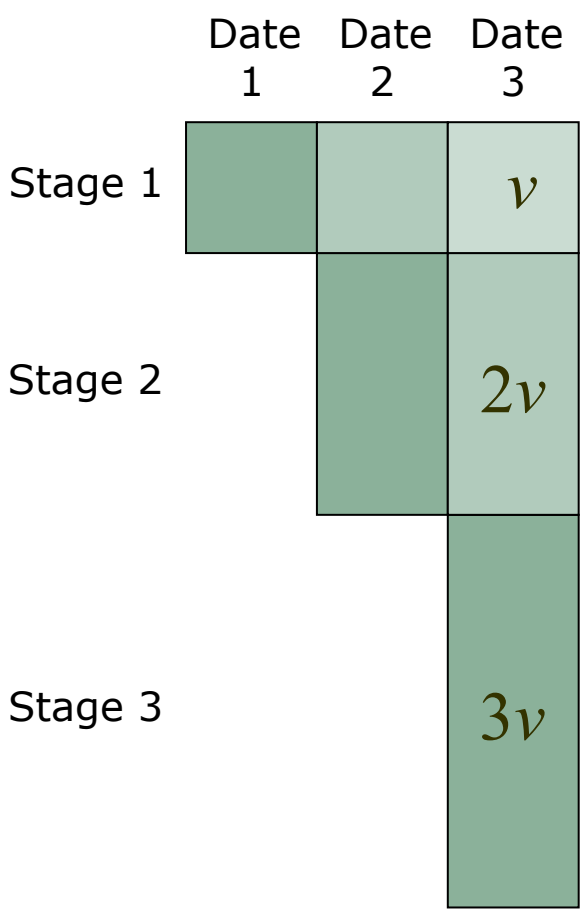
Assets	Liabilities
Cash	Equity
(1 period old) (=v)	Short-term debt
Receivables Long-term assets	Payables Long-term liabilities

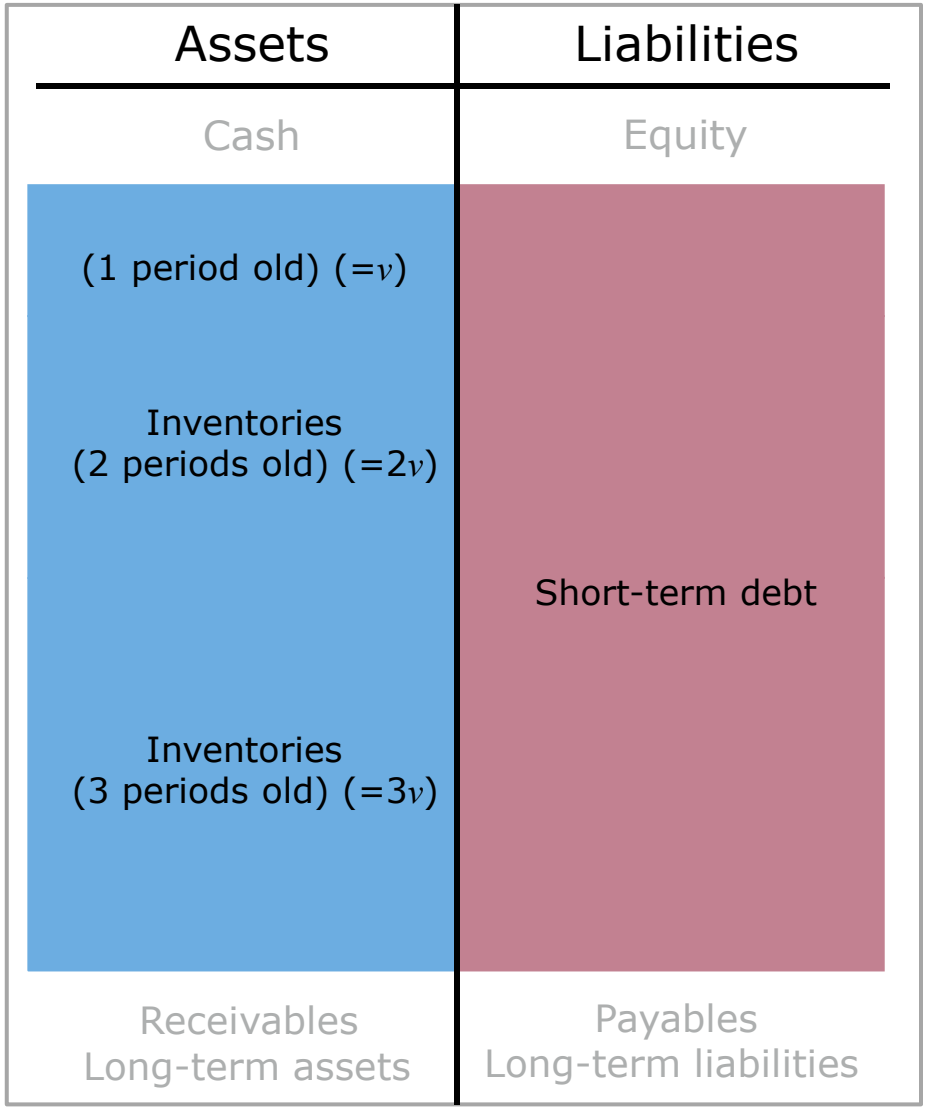


Assets	Liabilities
Cash	Equity
(1 period old) (=v) Inventories (2 periods old) (=$2v$)	Short-term debt
Receivables Long-term assets	Payables Long-term liabilities

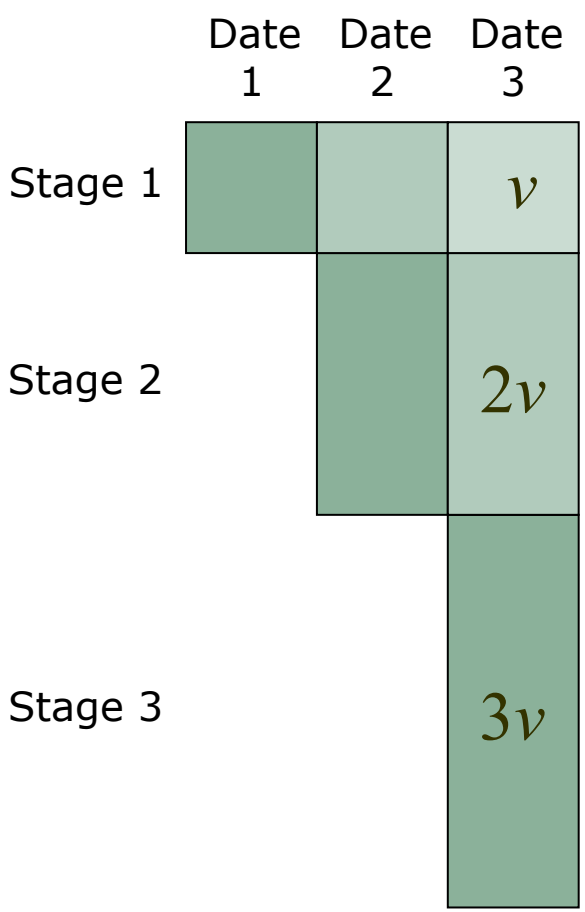


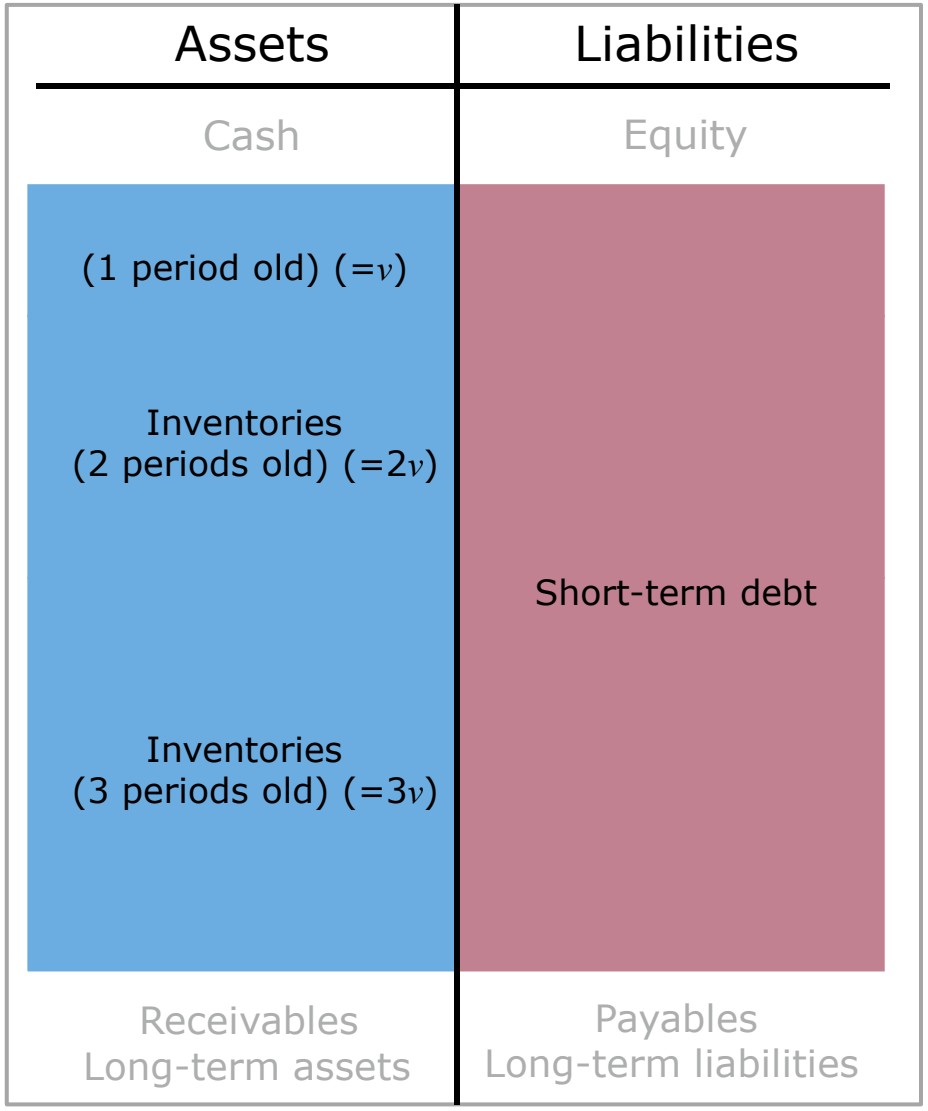
Assets	Liabilities
Cash	Equity
(1 period old) (=v) Inventories (2 periods old) (=$2v$) Inventories (3 periods old) (=$3v$)	Short-term debt
Receivables Long-term assets	Payables Long-term liabilities





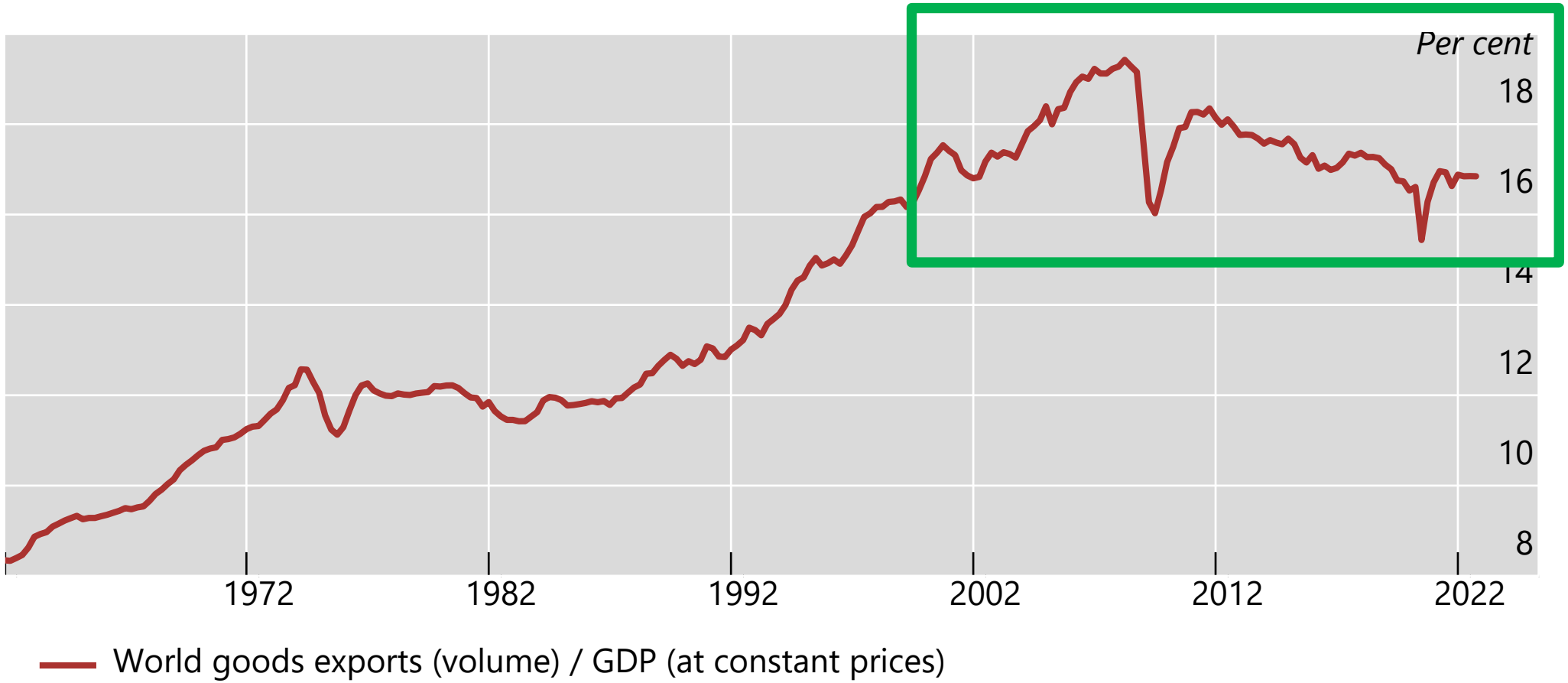
GVC of four links needs funding of 4v + 3v + 2v + v.
Funding need grows rapidly – at rate of **square** of length of GVC.





Kim and Shin (2023) "Theory of supply chains: a working capital approach"
https://www.bis.org/publ/work1070.htm

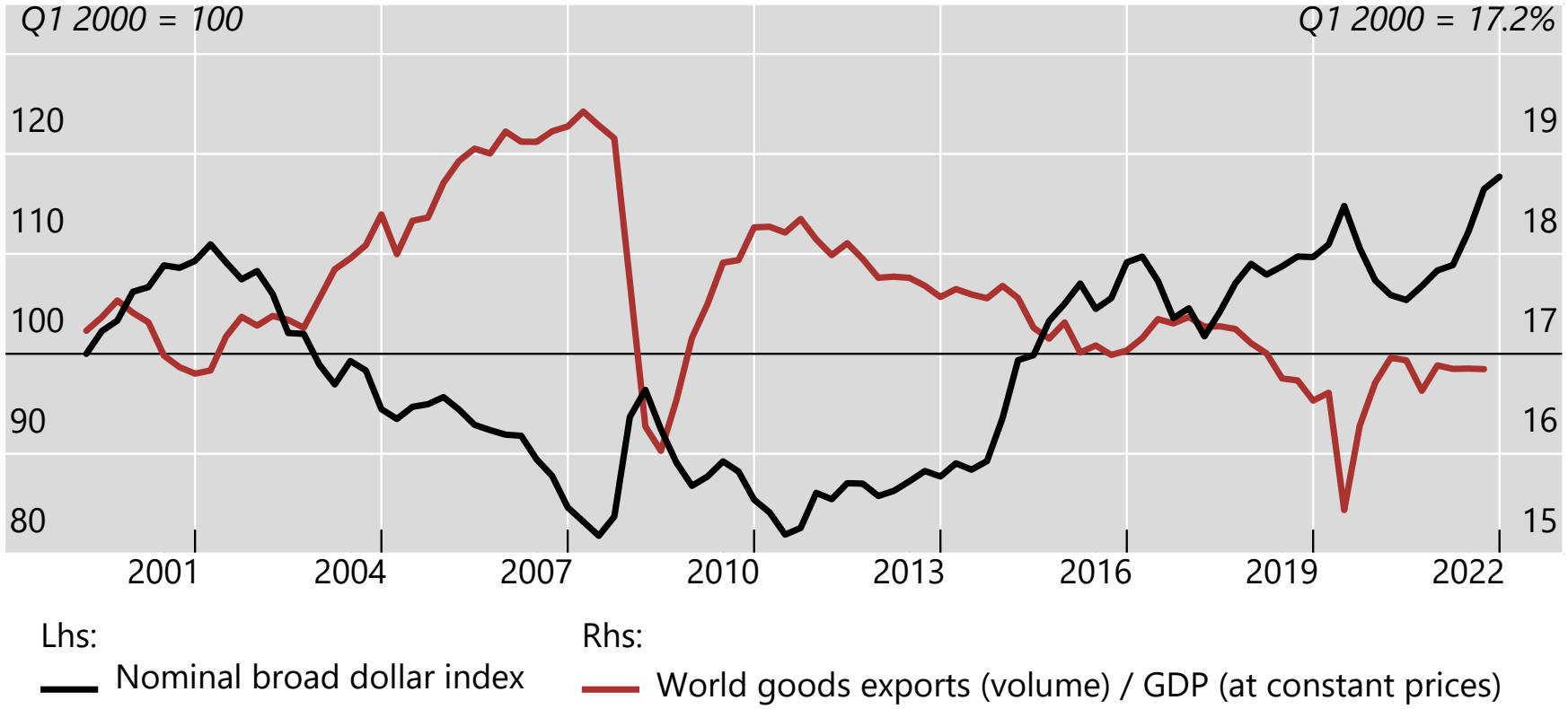
As a proportion of world GDP, trade growth has stagnated since the Great Financial Crisis of 2008; what is the connection with finance?



Ratio of the world GDP to world goods exports, both in constant prices at Q1 2000 USD. Annual world GDP data backdated and interpolated to quarterly frequency using a constructed quarterly world GDP aggregate for a smaller sample of economies (due to data constraints). Annual world goods exports volume data interpolated to quarterly frequency using world goods exports value data (due to data constraints). Based on Chow-Lin method for temporal disaggregation.

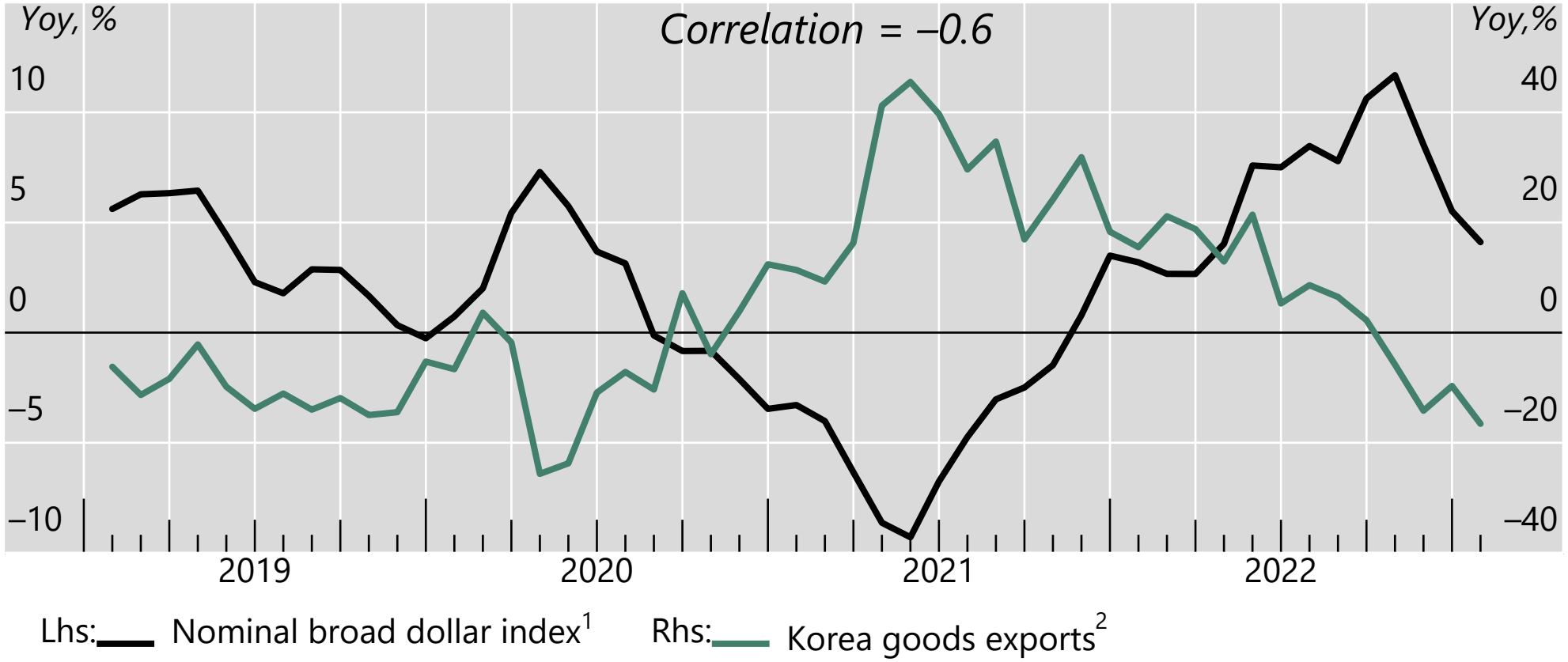
Sources: Jordà-Schularick-Taylor Macrohistory Database; IMF; World Bank; WTO; Global Financial Data; national data; BIS.

Global trade relative to GDP has fluctuated with financial conditions, as measured by the broad dollar index



Bruno and Shin (2020) "Dollar and exports" https://www.bis.org/publ/work819.htm

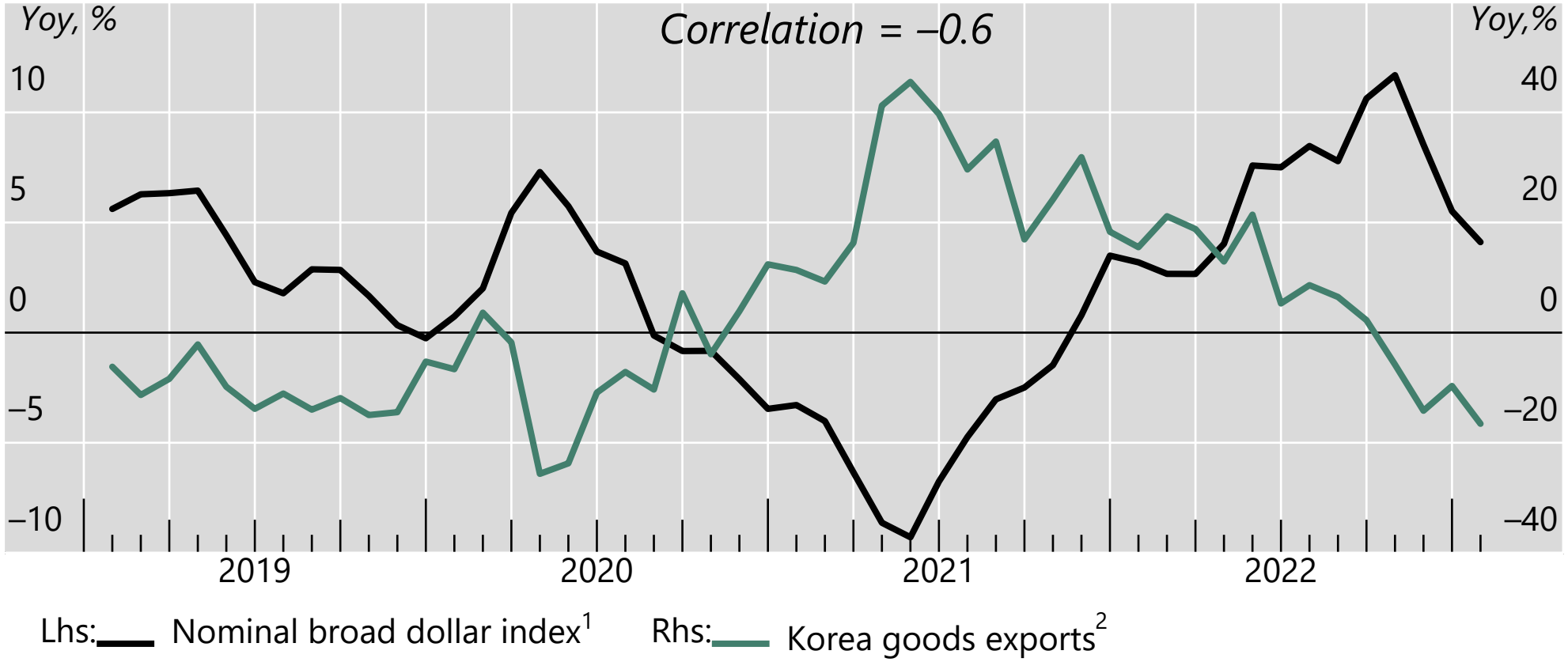
Sharp downturn in Korean goods exports conforms to the global pattern, and closely tracks the broad dollar index



[1] Federal Reserve Board trade-weighted nominal dollar index, broad group of major trading partners of the US ("broad"), based on trade in goods and services. An increase indicates appreciation of the US dollar. [2] In current prices.

Sources: Federal Reserve Bank of St Louis, FRED; Datastream; national data; BIS.

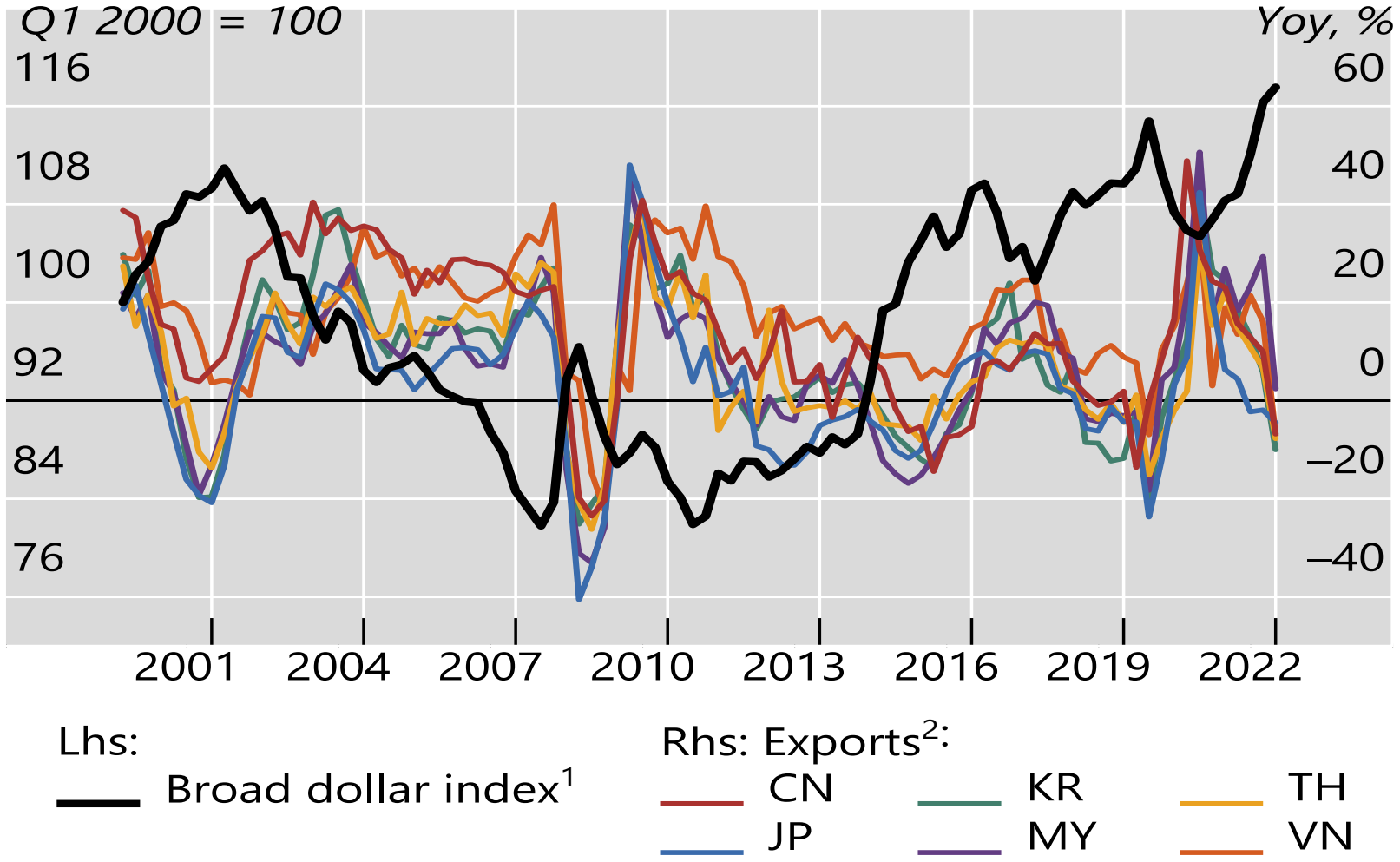
We are accustomed to thinking that a stronger dollar is better for Korean exports; in reality, a stronger dollar dampens Korean exports in the age of GVCs



[1] Federal Reserve Board trade-weighted nominal dollar index, broad group of major trading partners of the US ("broad"), based on trade in goods and services. An increase indicates appreciation of the US dollar. [2] In current prices.

Sources: Federal Reserve Bank of St Louis, FRED; Datastream; national data; BIS.

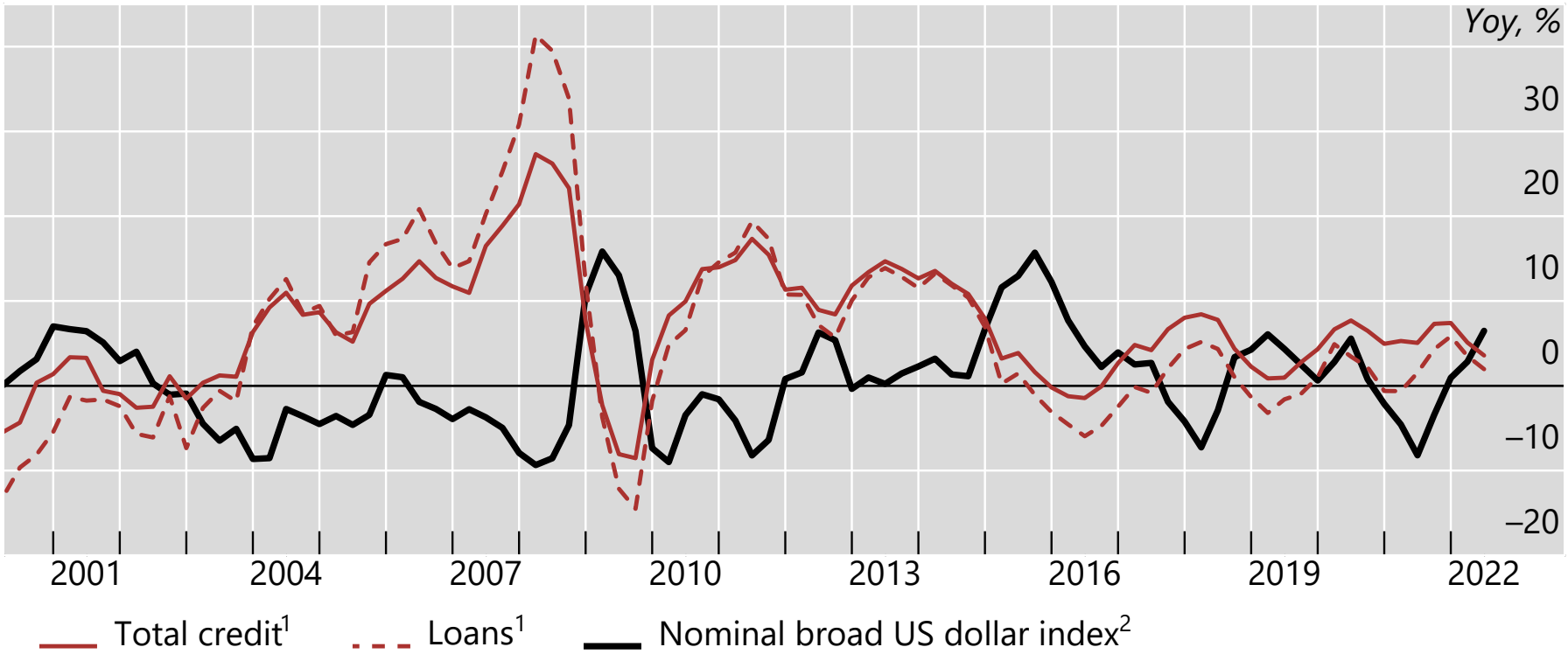
Pattern for Korea is not out of line with other Asian economies



[1] Federal Reserve Board trade-weighted nominal dollar index, broad group of major trading partners of the US ("broad"), based on trade in goods and services. An increase indicates appreciation of the US dollar. [2] Nominal amounts in USD.

Sources: Federal Reserve Bank of St Louis, FRED; Refinitiv Datastream; BIS.

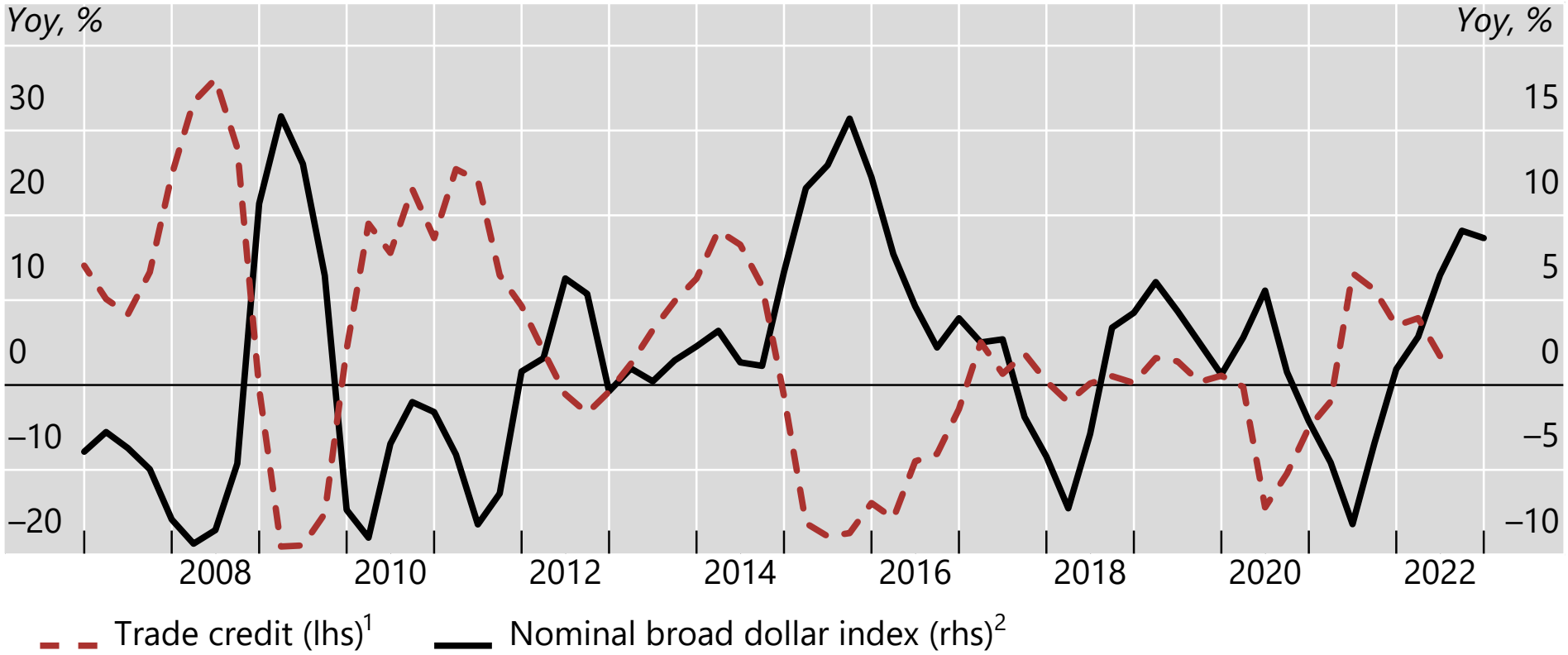
Broad dollar index is a barometer of global credit conditions in dollars; a stronger dollar goes hand in hand with weaker credit conditions



[1] Credit/loans to EME non-banks denominated in US dollars. [2] Federal Reserve Board trade-weighted nominal dollar index, broad group of major trading partners of the US ("broad"), based on trade in goods and services. An increase indicates appreciation of the US dollar.

Sources: Federal Reserve Bank of St Louis, FRED; BIS.

Annual growth of trade finance from banks follows closely the movements in the broad dollar index



[1] Total trade finance volume reported to the BIS by nine central banks. [2] Federal Reserve Board trade-weighted nominal dollar index, broad group of major trading partners of the US ("broad"), based on trade in goods and services. An increase indicates appreciation of the US dollar.

Sources: Federal Reserve Bank of St Louis, FRED; BIS.

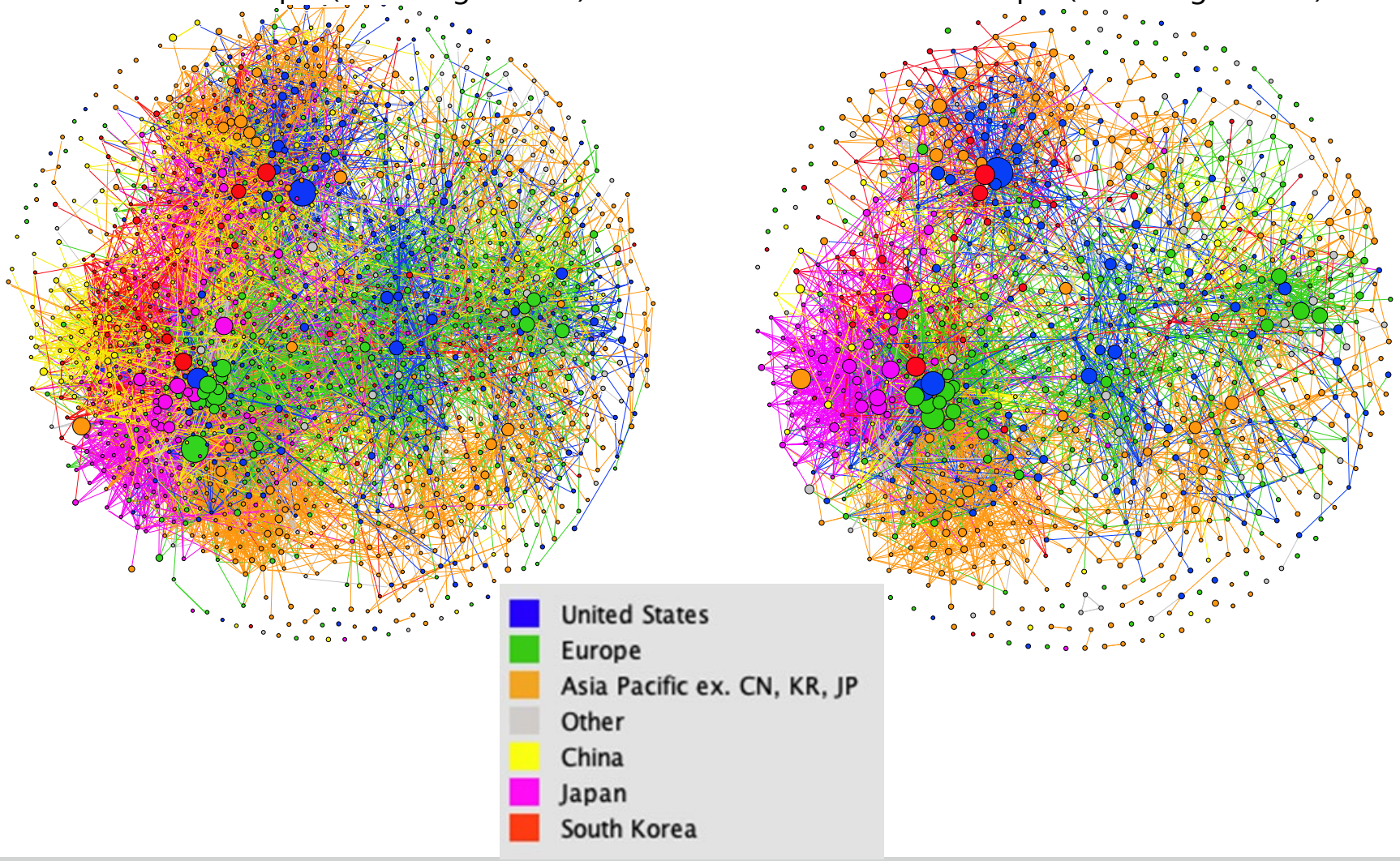
We are accustomed to seeing the global economy in terms of the “island economy model”

…but global trade is best seen through the lens of “interconnected balance sheets”

Global value chains are networks of balance sheets *across countries*:

Feb 2020 sample (node degree 15+)

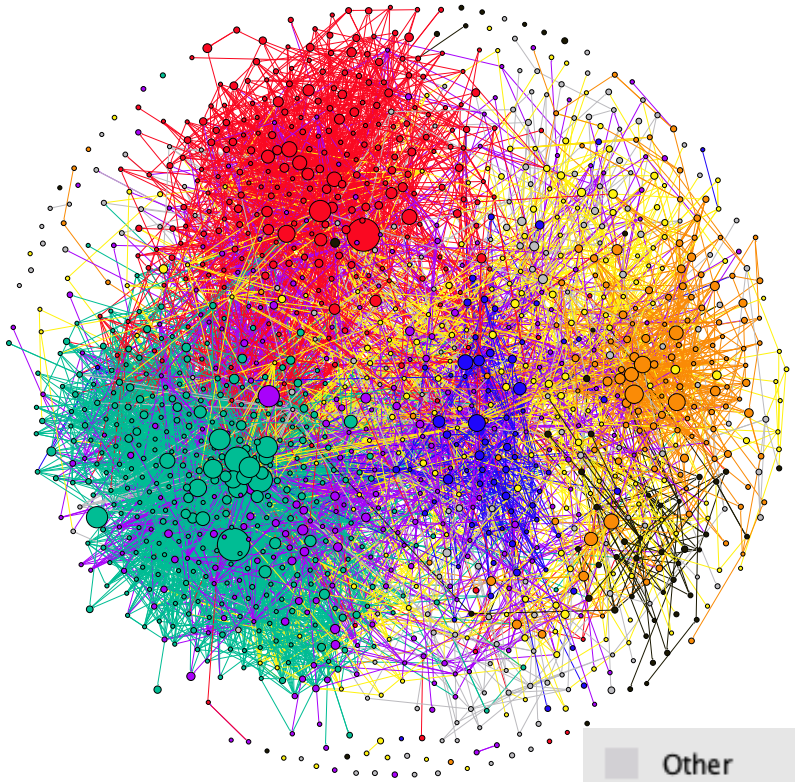
Dec 2021 sample (node degree 15+)



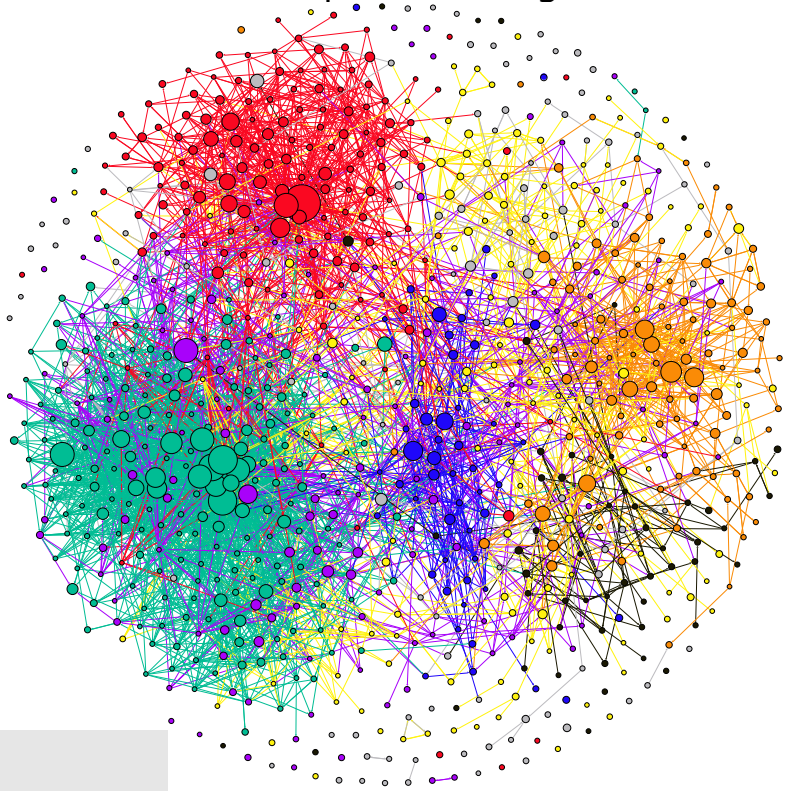
Source: BIS.

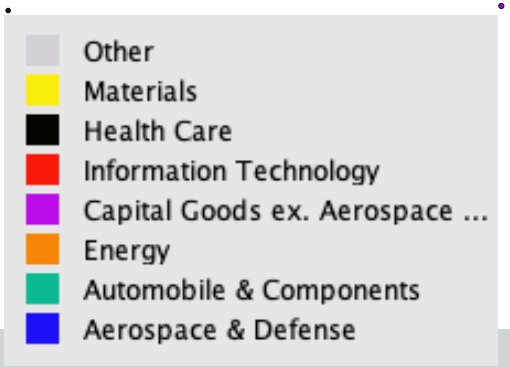
Global value chains are networks of balance sheets *across industries*:

Feb 2020 sample (node degree 15+)



Dec 2021 sample (node degree 15+)

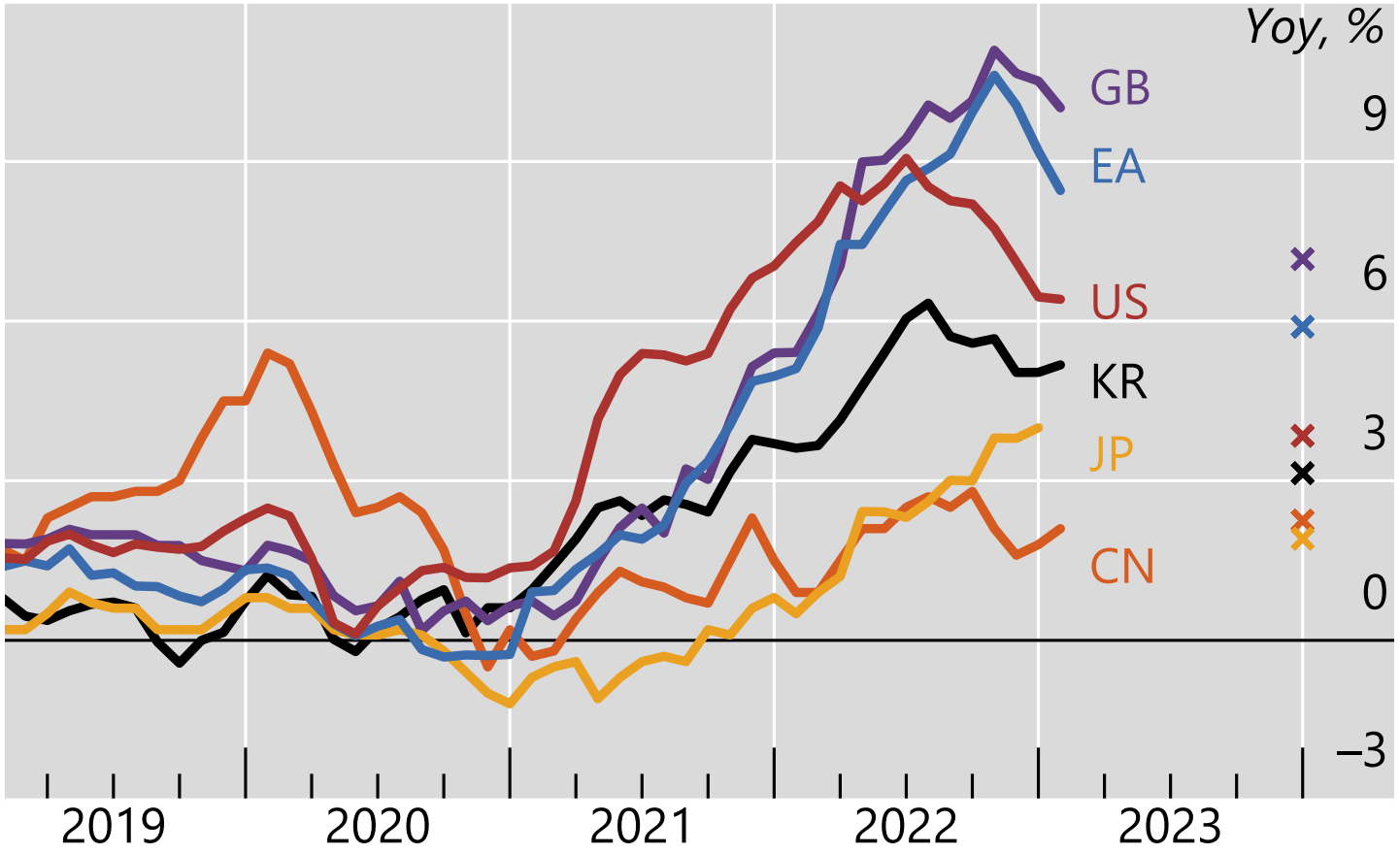




Source: BIS.

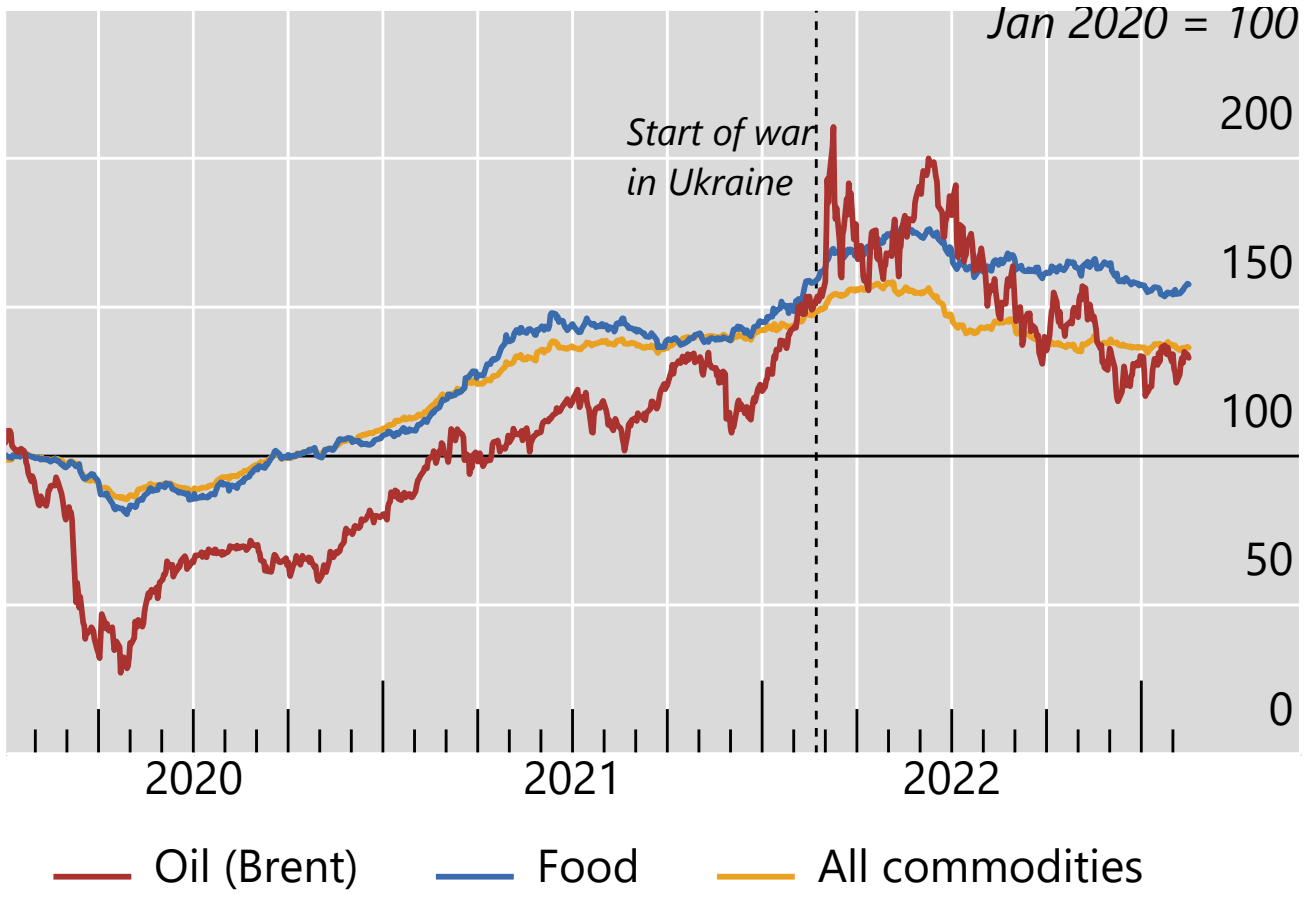
Looking ahead

Headline inflation reached a peak in 2022; there are tentative signs of a moderation



Sources: National data; BIS.

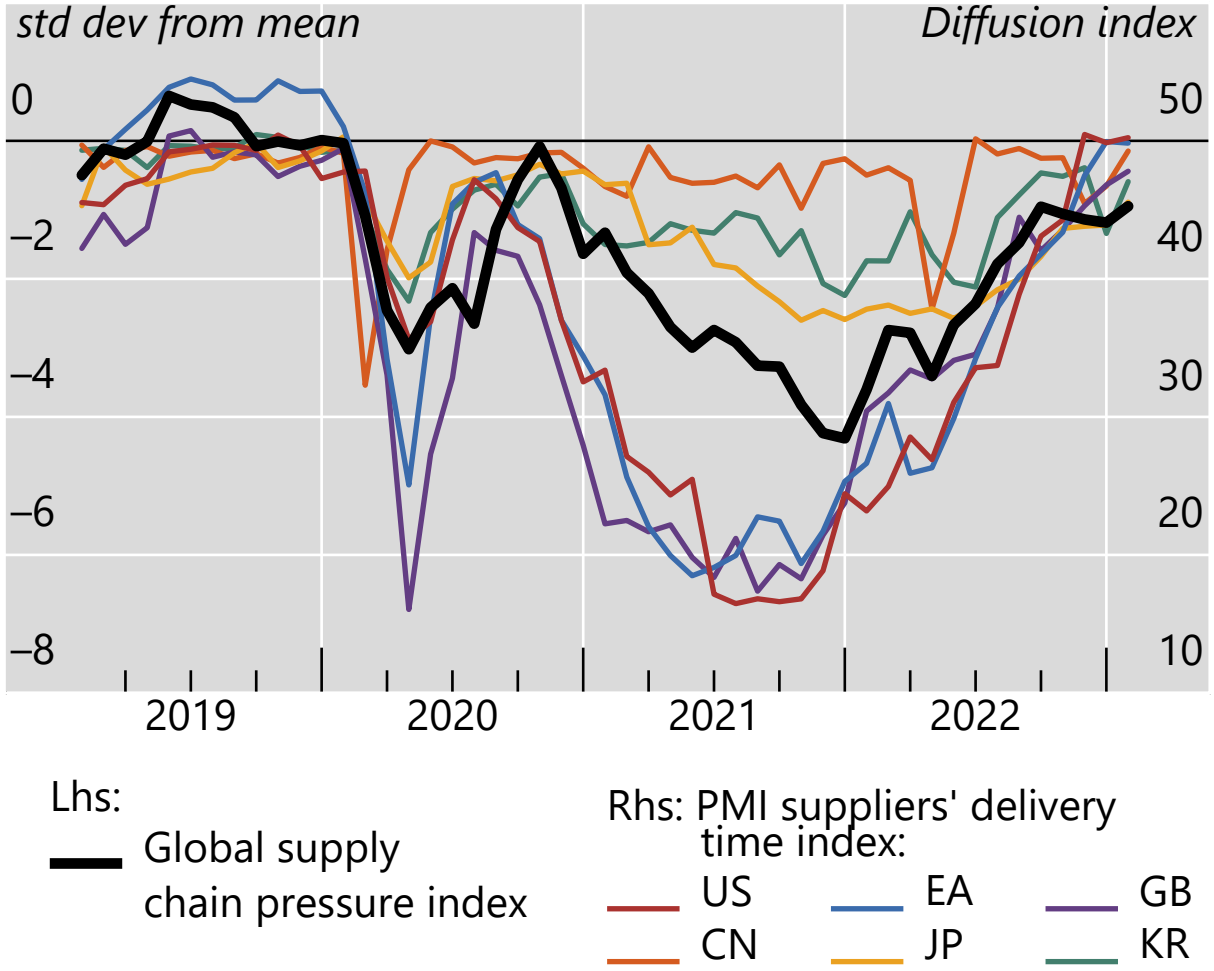
Commodity prices peaked after the Russian invasion of Ukraine in early 2022



Brent oil price in US dollars/barrel. Food price index measures price movements of butter, cocoa beans, corn, cottonseed oil, hogs, lard, steers, sugar and wheat.

Sources: Bloomberg; BIS.

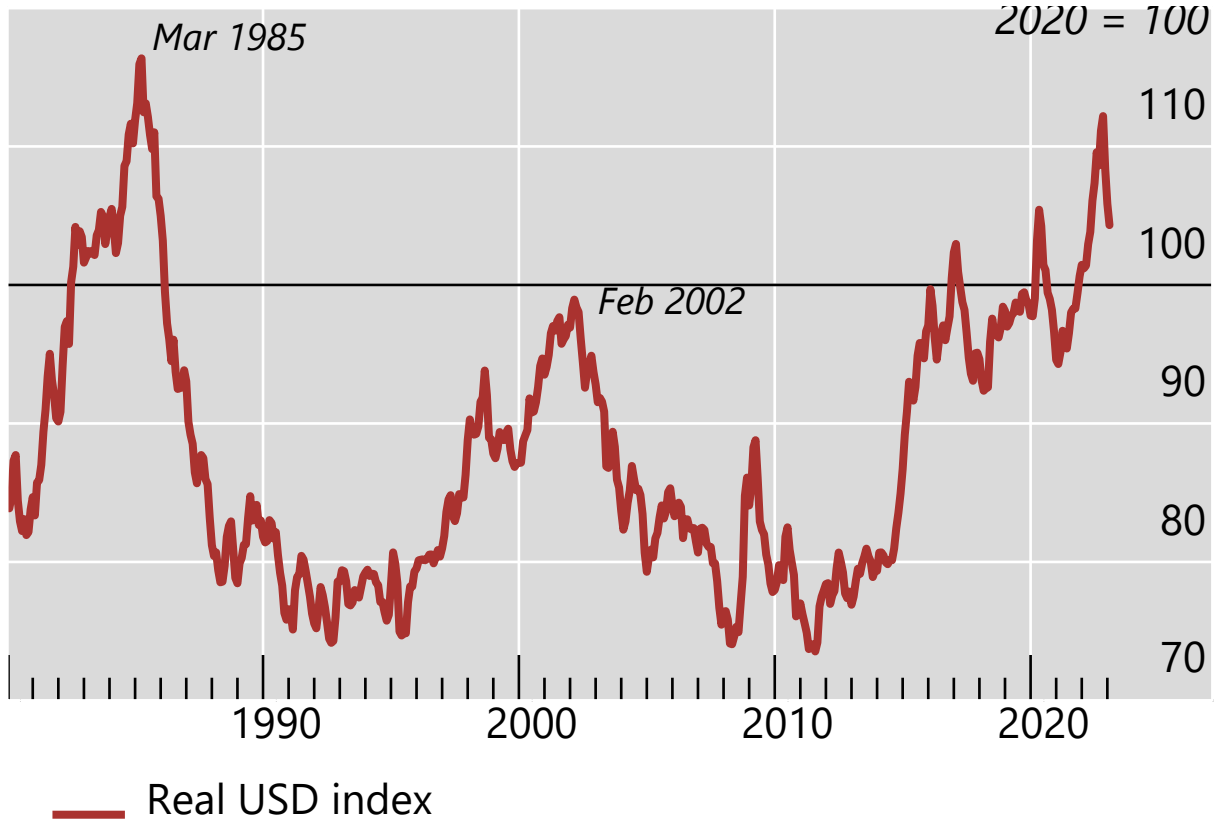
Supply chain indicators show signs of easing



For global supply chain pressure index, negative figures indicate higher supply constraints. For PMI suppliers' delivery time index, a value below 50 indicates delivery times lengthening.

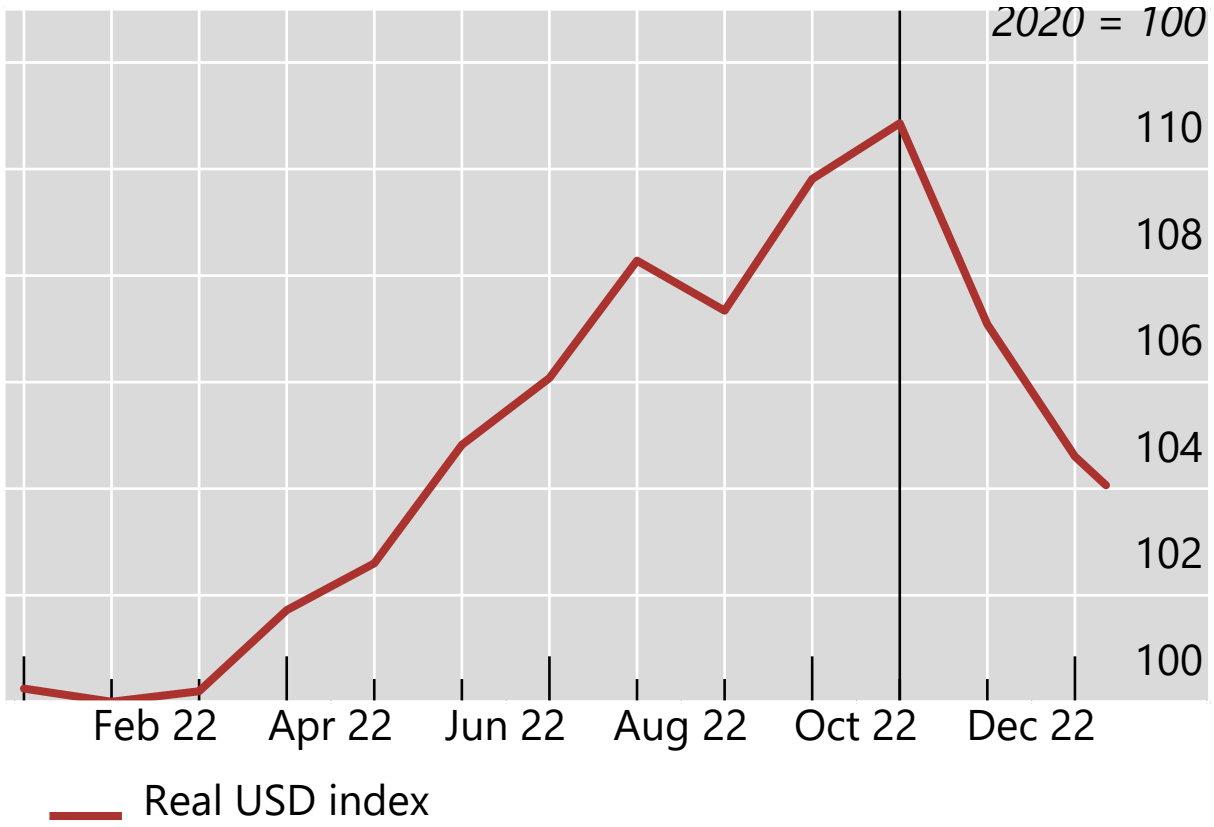
Sources: Federal Reserve Bank of New York; IHS Markit; BIS.

Real broad dollar index over the last 50 years have followed a "W" shaped pattern



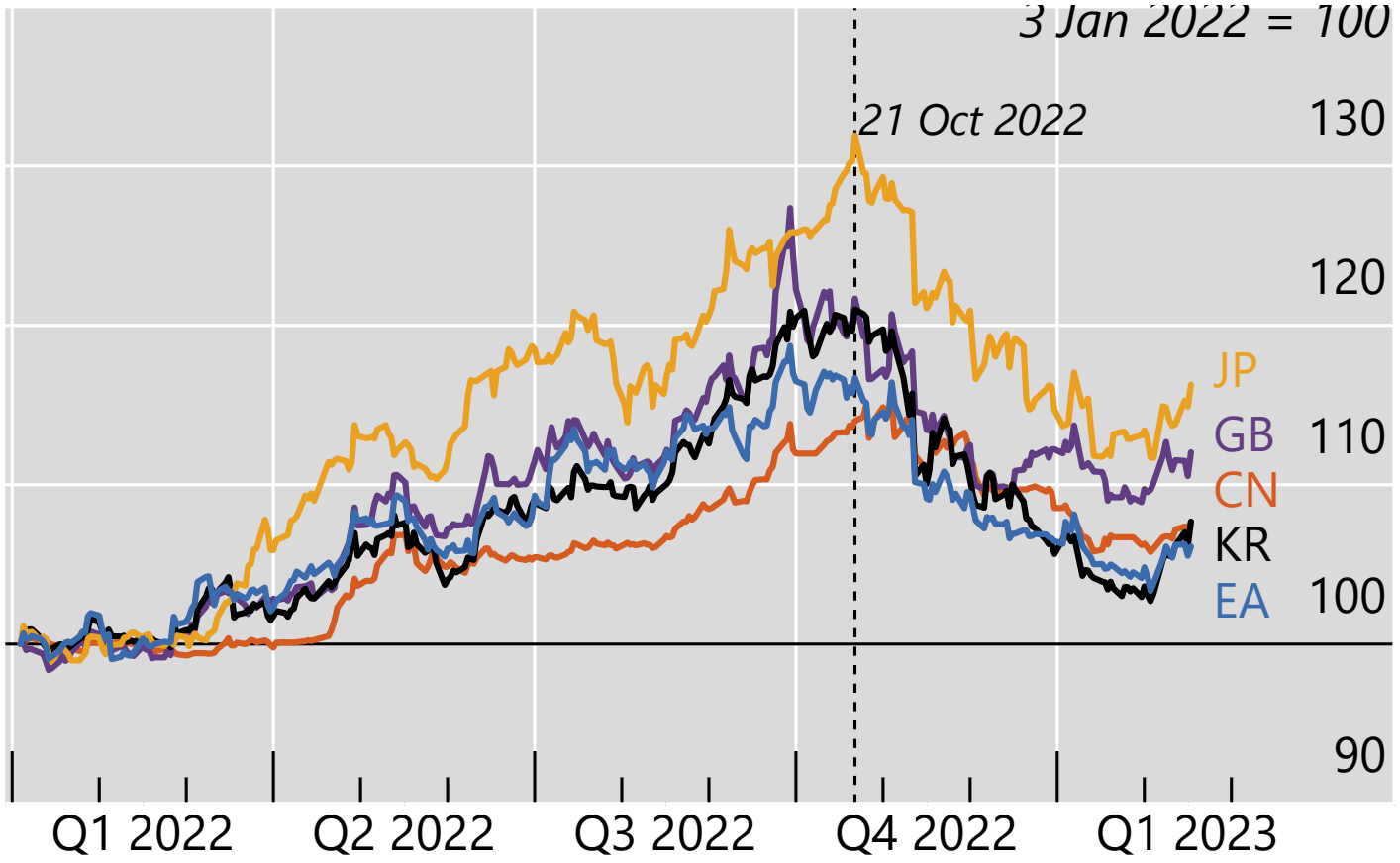
BIS Real effective exchange rate (REER). An increase indicates appreciation of the US dollar.
Source: BIS.

Real broad dollar index shows a decline after October 2022



BIS Real effective exchange rate (REER). An increase indicates appreciation of the US dollar.
Source: BIS.

Bilateral exchange rate of the dollar against major currencies peaked in the autumn of 2022



Bilateral exchange rates against the US dollar. An increase indicates stronger US dollar.
Sources: National data; BIS.