

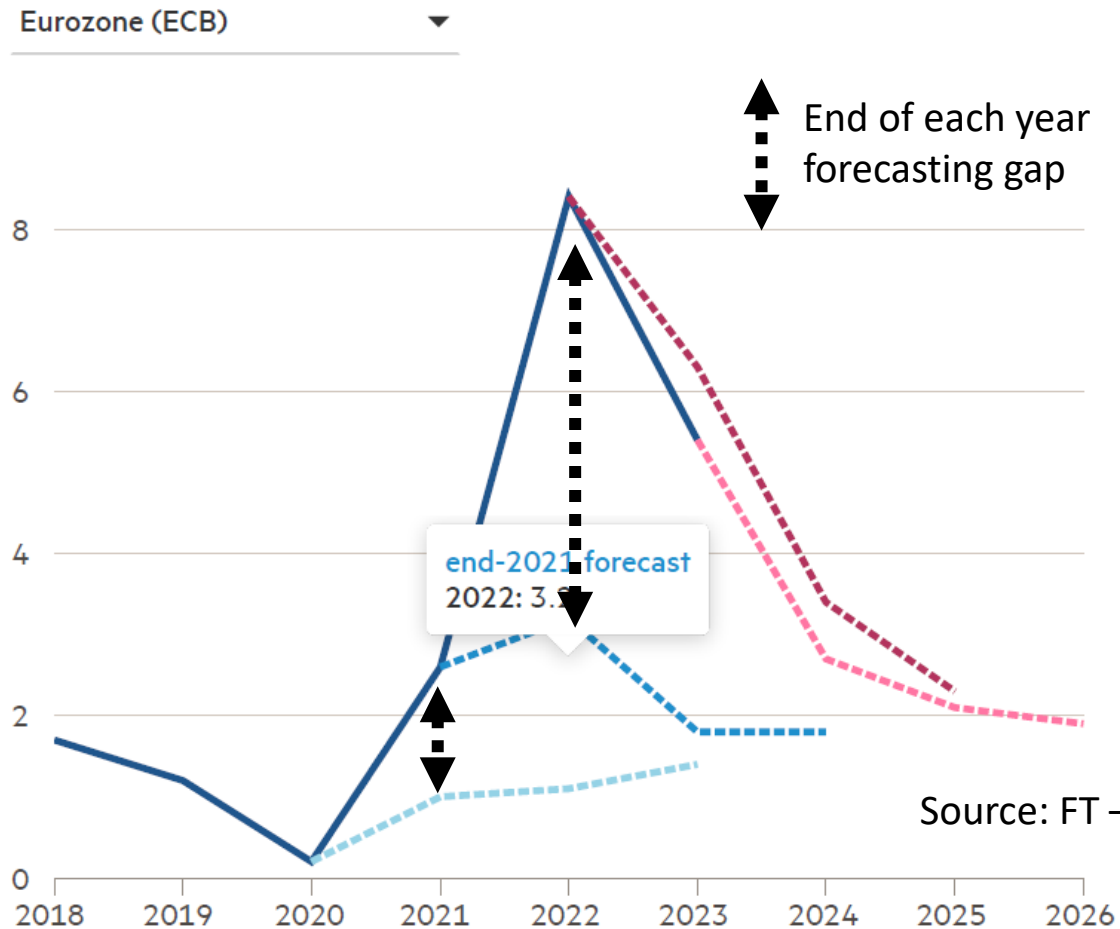
S 13: Debate – The on-going inflation surge since mid-2021

The 2021-2023 inflation surge

- After long period of below target (2%) inflation (Great Moderation), surge in unprecedented inflation began in mid-2021. Causes?
 - COVID-19 pandemic-related economic dislocation; faster than expected recovery in demand from the COVID-19 recession had by 2020 led to significant supply shortages
 - Supply chain disruptions after COVID and after 2022 Russian invasion of Ukraine's effect on global oil prices, natural gas, fertilizer, and food prices
 - Fiscal and monetary stimuli (excessive?) provided in 2020 and 2021 by governments and central banks around the world in response to COVID
 - Price and rent opportunistic extraction with record profits across many business (eg., oil cies) and consumer services economic sectors.

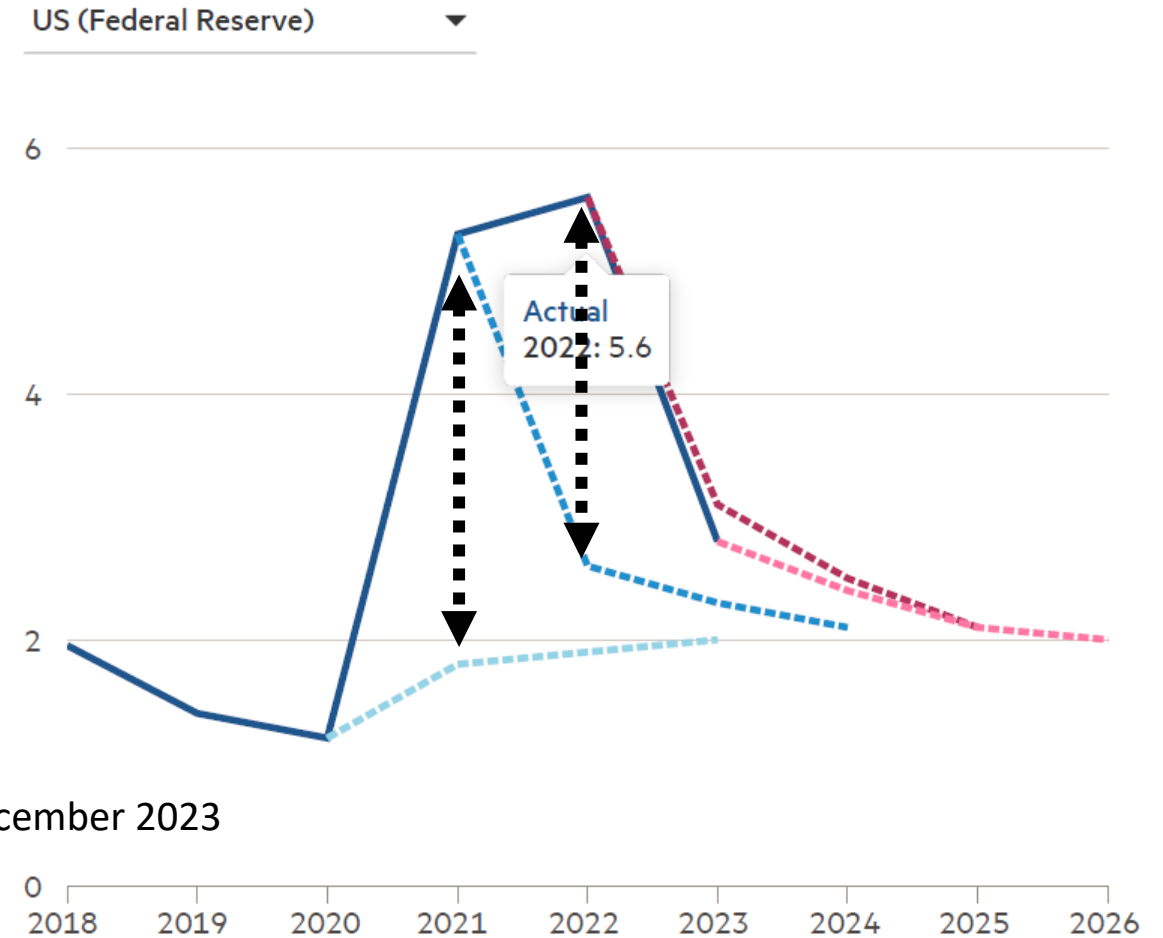
FED and ECB under-estimated inflation 21-22

Actual inflation (solid line), with successive end-year forecasts (dashed lines), %



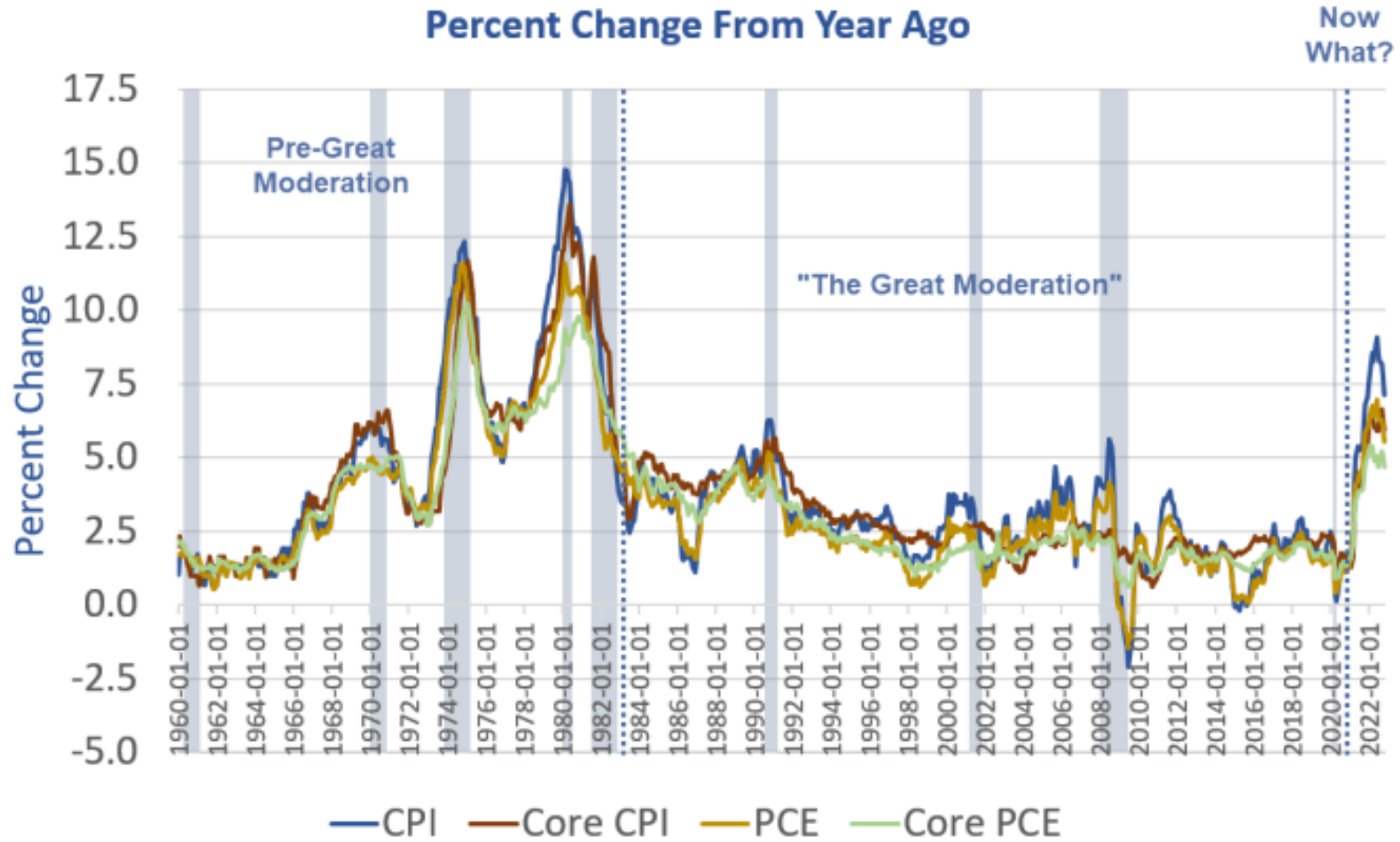
Source: FT – end December 2023

Actual inflation (solid line), with successive end-year forecasts (dashed lines), %



Four Measures of Inflation

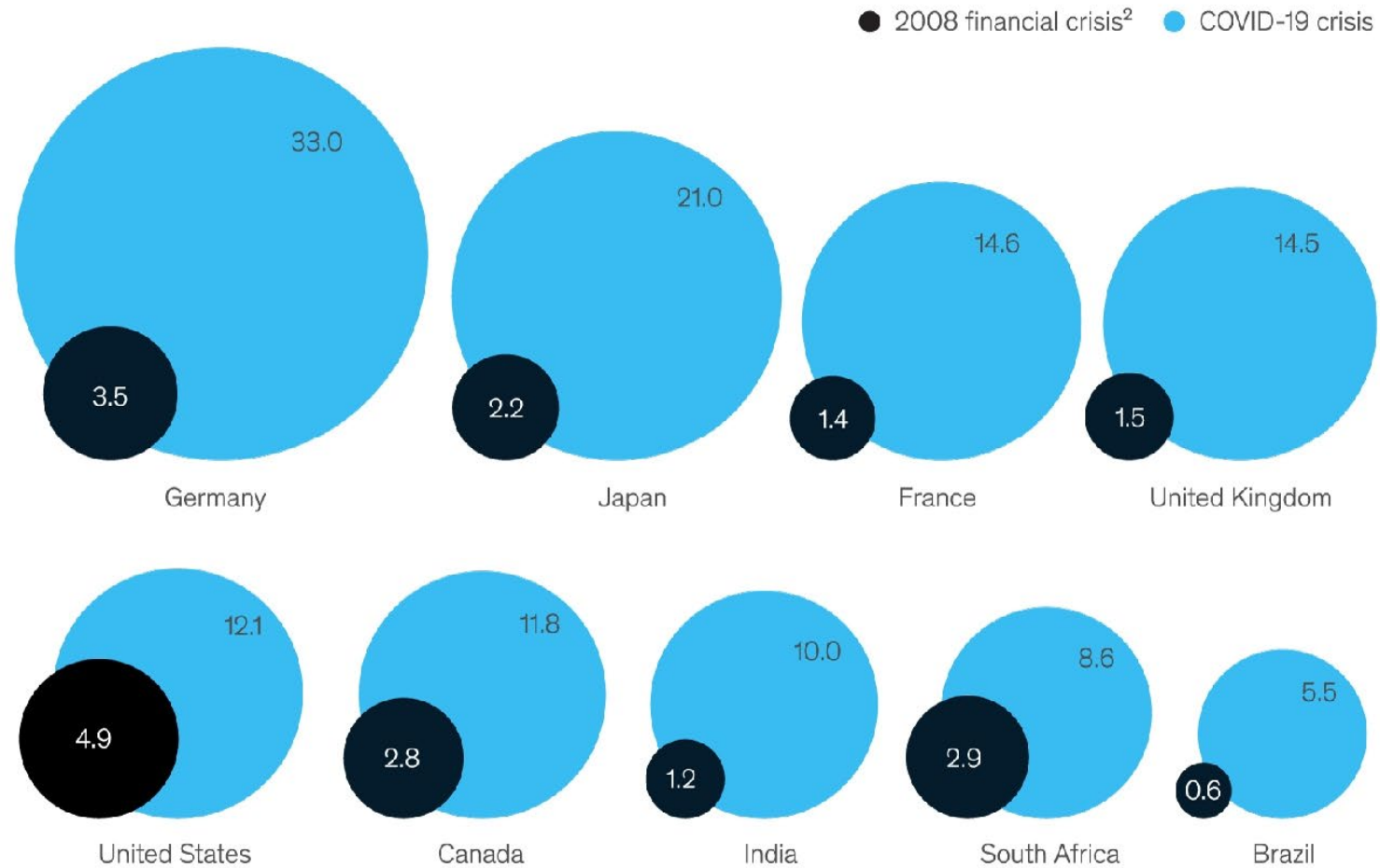
Percent Change From Year Ago



Source: FXStreet

MishTalk

Size of fiscal stimuli (% of GDP)

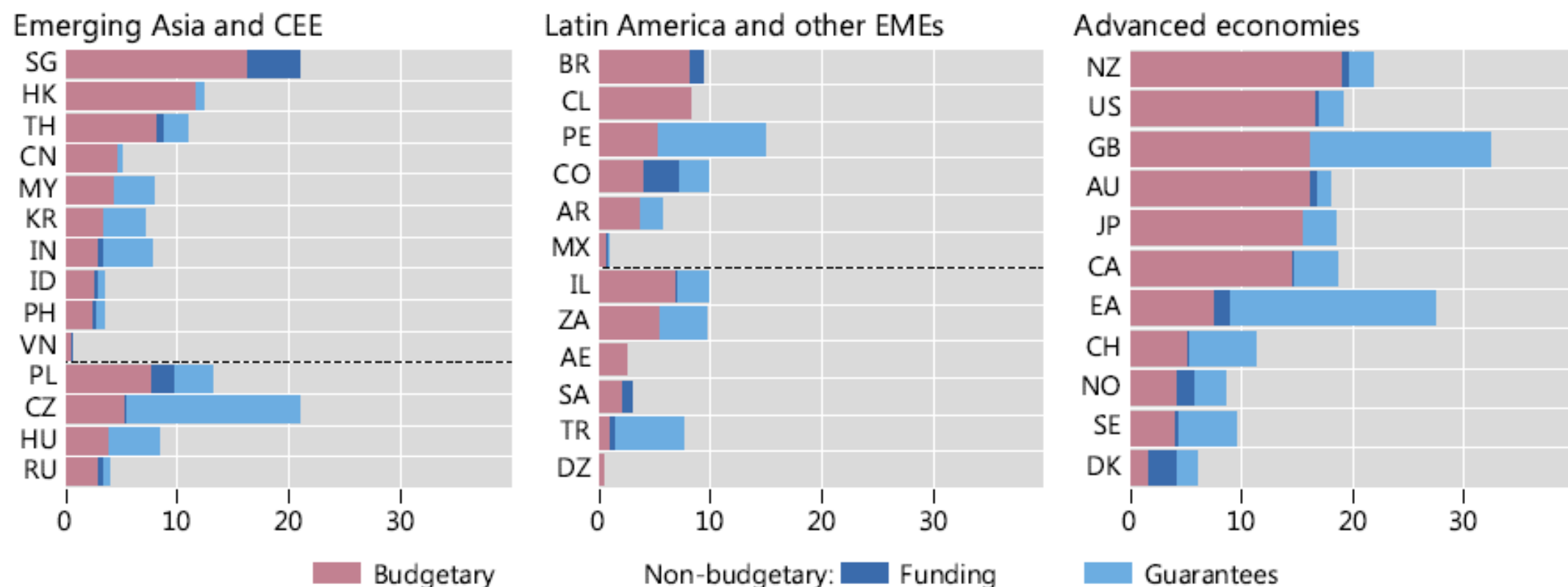


Source : McKinsey

EME's fiscal response to Covid-19: sizeable but smaller than that in AEs¹

As a percentage of GDP

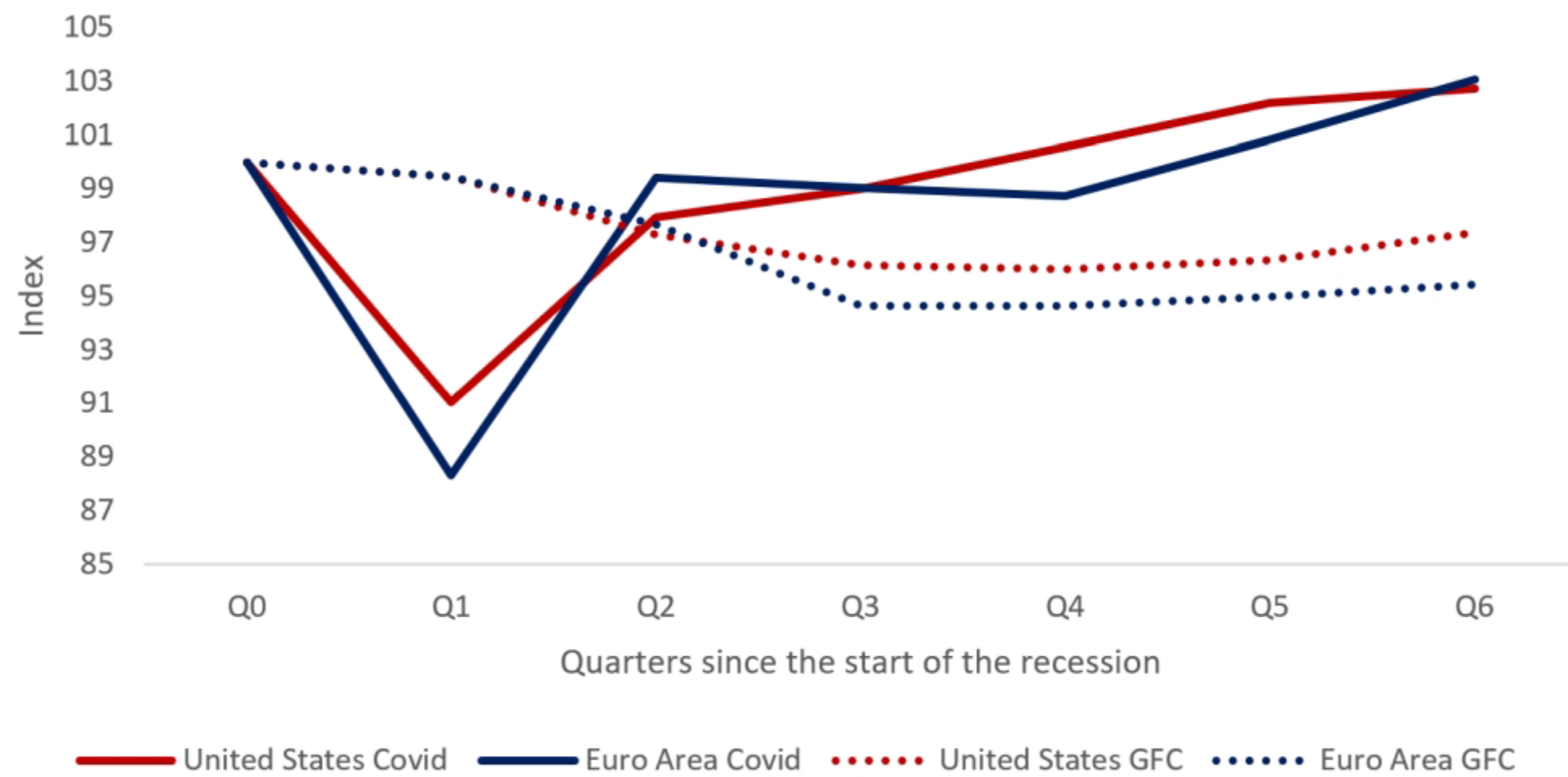
Graph 1



¹ 2020 response as estimated in the January 2021 IMF Fiscal Monitor update. Budgetary measures defined as any additional spending or foregone revenues. Funding measures defined as equity injections, loans, asset purchases or debt assumptions.

Sources: IMF, *Fiscal Monitor*, January 2021 update; BIS calculations.

Figure 1. Real GDP comparison: bouncing back to previous GDP levels



Source: FRED, quarterly, seasonally adjusted.

Note: Q0 is set at Q12020 for Covid-19 and Q22008 for the GFC.

Supply chain disruptions and transportation costs

Figure 2. Supply-Chain Disruptions By Sector

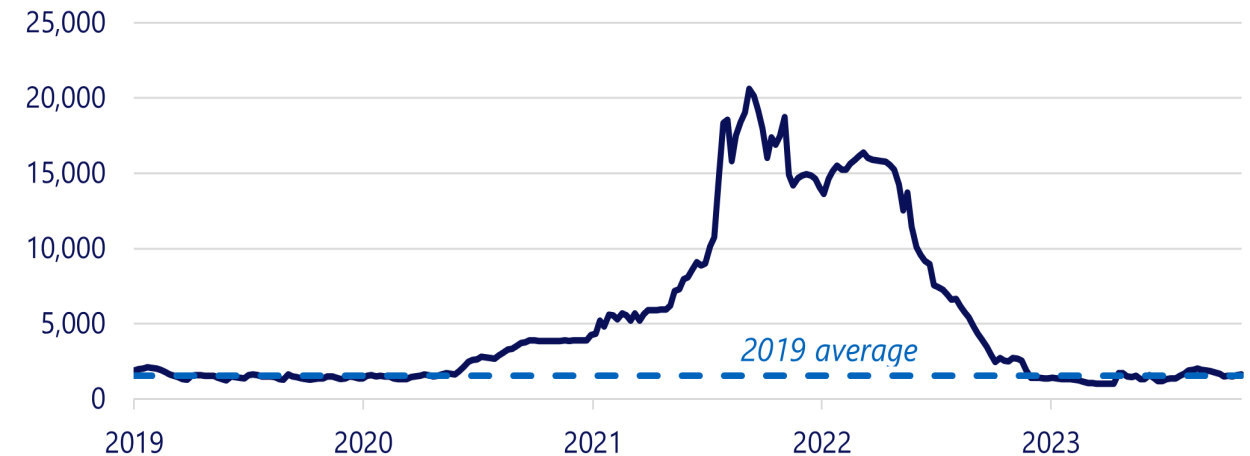
In the last week, did this business have domestic supplier delays? (percentage saying yes)



Sources: U.S. Census Bureau; CEA Calculations.

Figure 1. Spot shipping prices from China to U.S. West Coast ports

U.S. Dollars



Council of Economic Advisers

Source: Freightos, Bloomberg, CEA calculations.

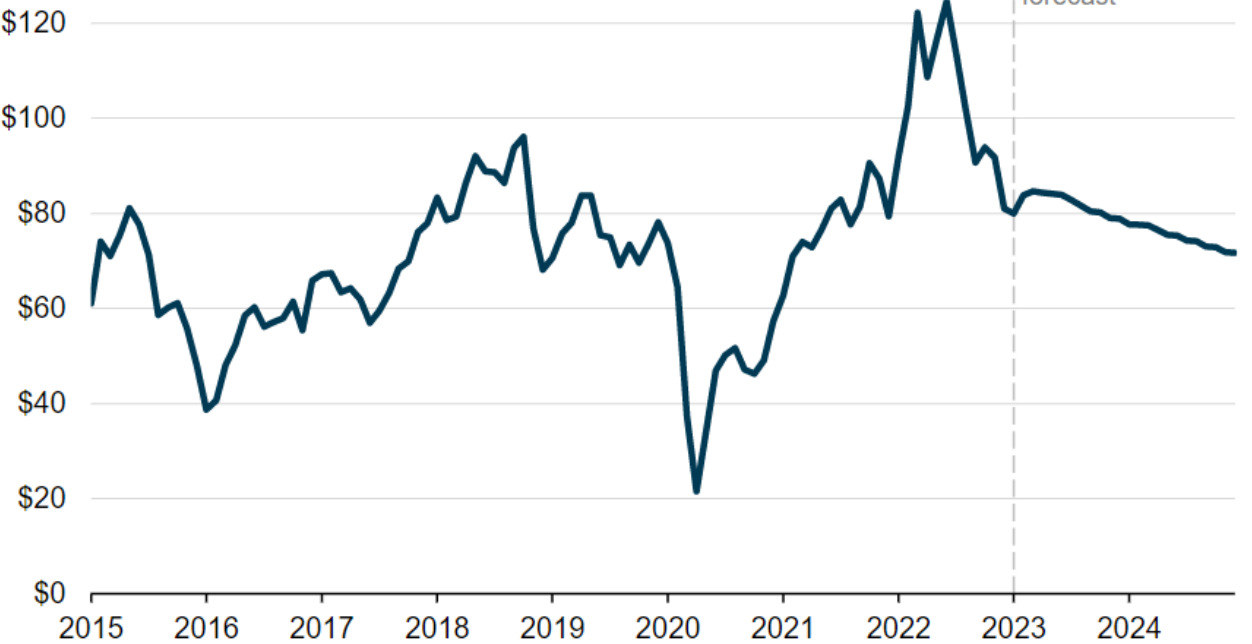
Note: Uses nominal dollars.

As of November 21, 2023 at 11:21 p.m.

Sources : The White House and CEA

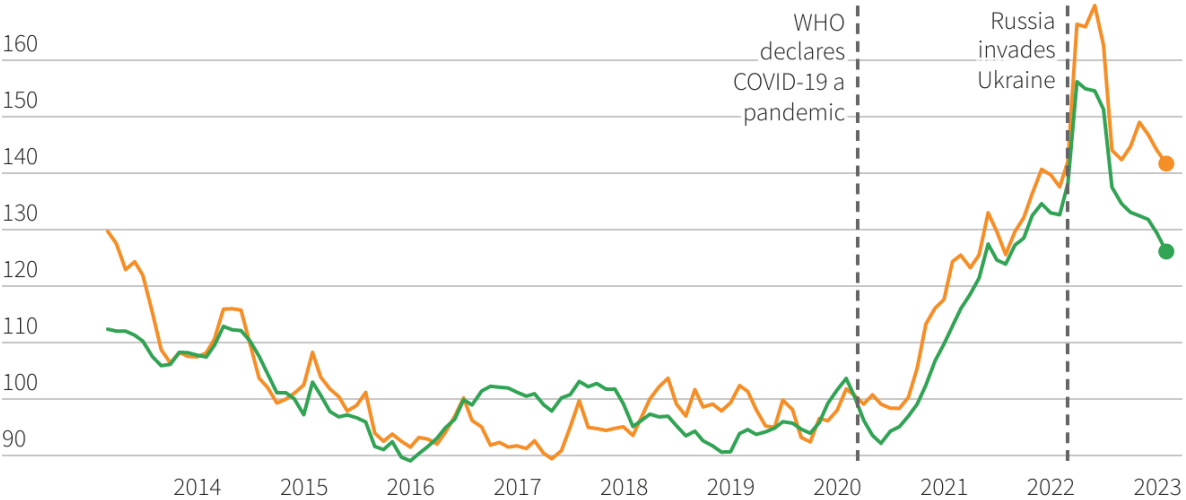
Real monthly average Brent crude oil price (Jan 2015–Dec 2024)

January 2023 dollars per barrel



World food prices off highs

FAO Food Price Index FAO Cereal Price Index



Source: Refinitiv Datastream | Reuters, Feb. 9, 2023 | By Vincent Flasseur

Sources : US Energy Information Agency

- A debate arose among economists early in 2021 as to whether inflation was a transitory effect of the world's emergence faster than expected from the Covid pandemic, or whether it would be persistent. Larry Summers and Olivier Blanchard warned of persistent inflation, while Paul Krugman and U.S. Treasury Secretary Janet Yellen argued it would be transitory

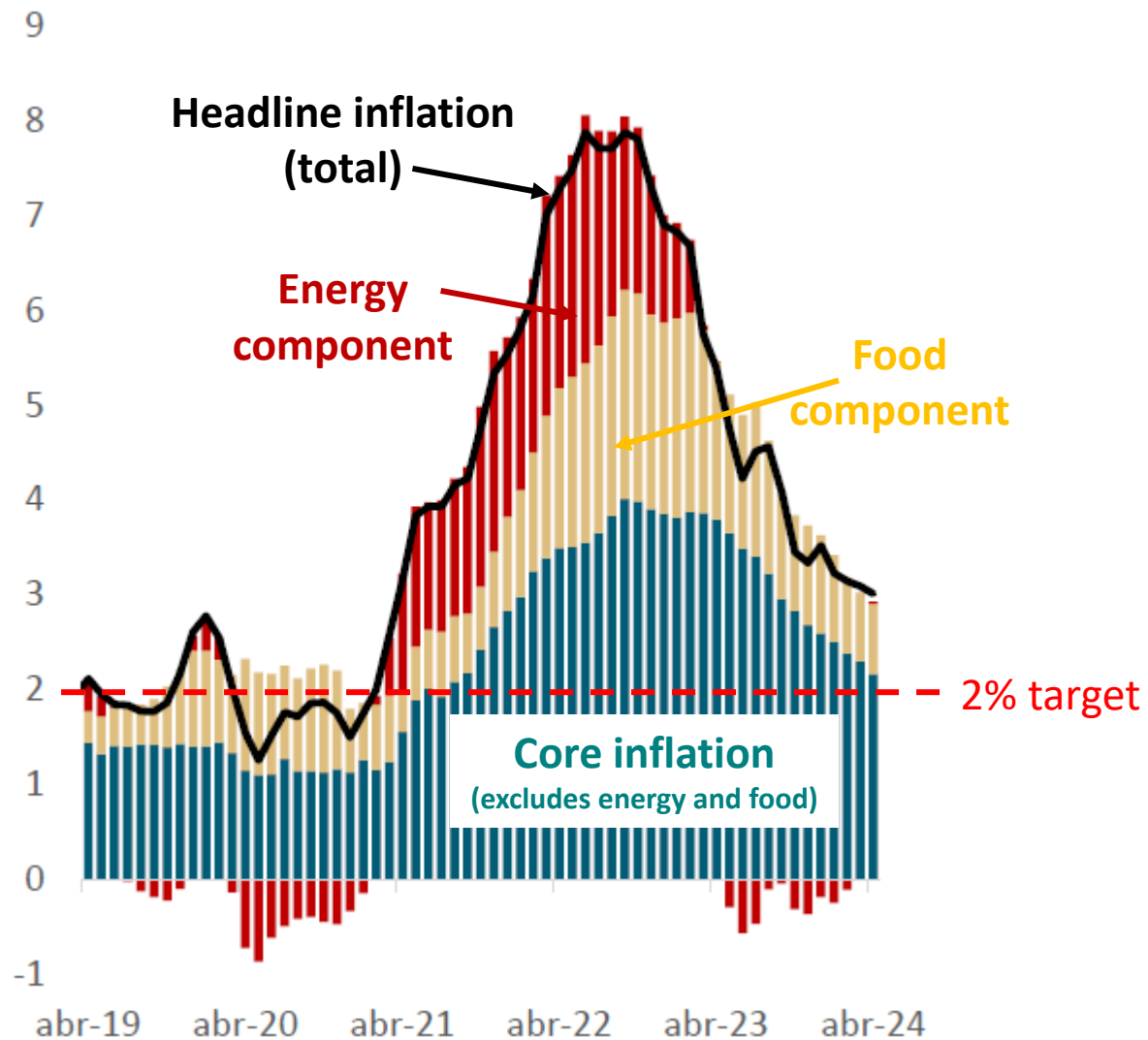
Country/Region	2020	2021	2022
Argentina	42.0%	48.4%	72.4%
Australia	0.9%	2.8%	6.6%
Brazil	3.2%	8.3%	9.3%
Canada	0.7%	3.4%	6.8%
China	2.5%	0.9%	1.9%
Japan	0.0%	-0.2%	2.5%
South Korea	0.5%	2.5%	5.1%
Turkey	12.3%	19.6%	72.3%
United Kingdom	0.9%	2.6%	9.1%
United States	1.3%	4.7%	8.0%
Europe and Central Asia	1.2%	3.3%	10.4%
European Union	0.5%	2.6%	8.8%
Latin America and Caribbean	1.0%	3.9%	7.7%
South Asia	5.7%	5.5%	7.7%
World	1.9%	3.5%	8.0%

Sources : IMF

The debate: transitory x permanent? Supply x demand shock?

- Key issue for policy response
- If 2021-2023 inflation purely a supply shock, wait-and-see its effect fade, “look through” and no need for hiking interest rates
- If, conversely, it is a demand shock, textbook response is to respond by hiking rates
- Debate lingered for quite a long time
 - EME Central Banks were quicker to act, experience with role of expectations
 - AE Central Banks started hiking later (and now issue is “the last mile”)

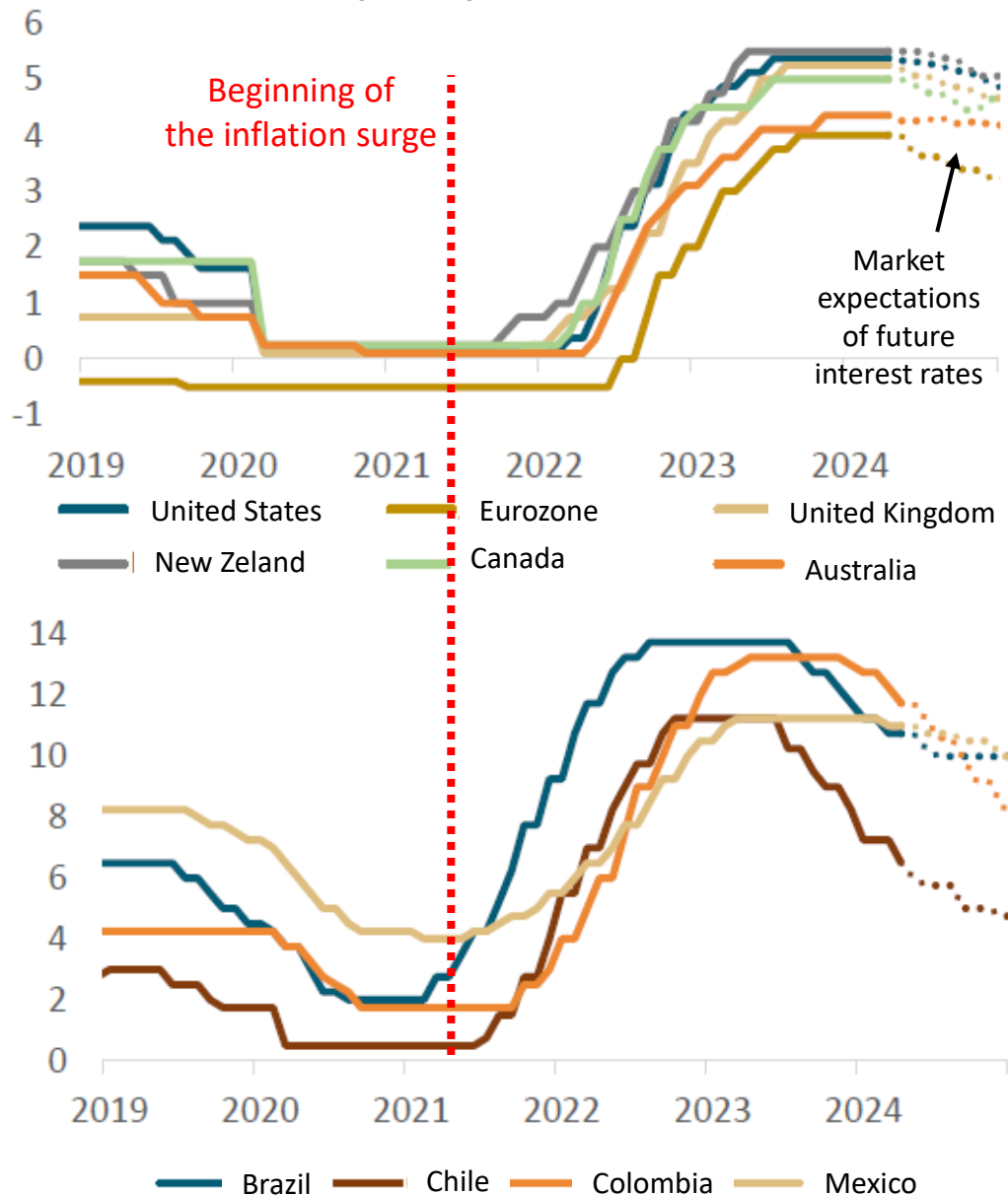
Global Inflation, % annual



Sources: Bloomberg, BCB

- After undershooting 2% inflation despite monetary-fiscal massive stimuli of GFC, Covid-19, inflation surged in mid-2021; war-related food & energy prices, faster recovery and supply bottlenecks.
- Surprised, CBs in AEs first saw mainly supply shocks that could fade; then other demand factors (wages in tight labor market service sectors) materialized; many underestimated inflation forecast occurred; dent on CB credibility.
- Inflation fell indeed, but remained “resilient”; problem of convergence to 2% target within expected timeframe (1-2 years) turned more difficult; called “last mile” issue for CB achieving their inflation target objective.

CB policy rates, % annual



Sources: Bloomberg, BCB

- Debate about “transitory” inflation or not, delayed policy response in developed CBs but not in developing countries CBs (the EME CBs started hiking interest rates much earlier).
- Late, “behind the curve”, then many developed CBs engaged into a fast and aggressive monetary policy tightening cycle early 2022.
- Inflation fell, but its “resilience” above 2% triggered “last mile” market uncertainty: “soft” or “hard” landing (i.e. need to affect more unemployment and activity? Recession or not to achieve target?).
- If and when, do CB start cutting interest rates? CB communication became challenging exercise for market expectations and volatility in financial markets.
- High rate for longer; more “hawkish” CBs?

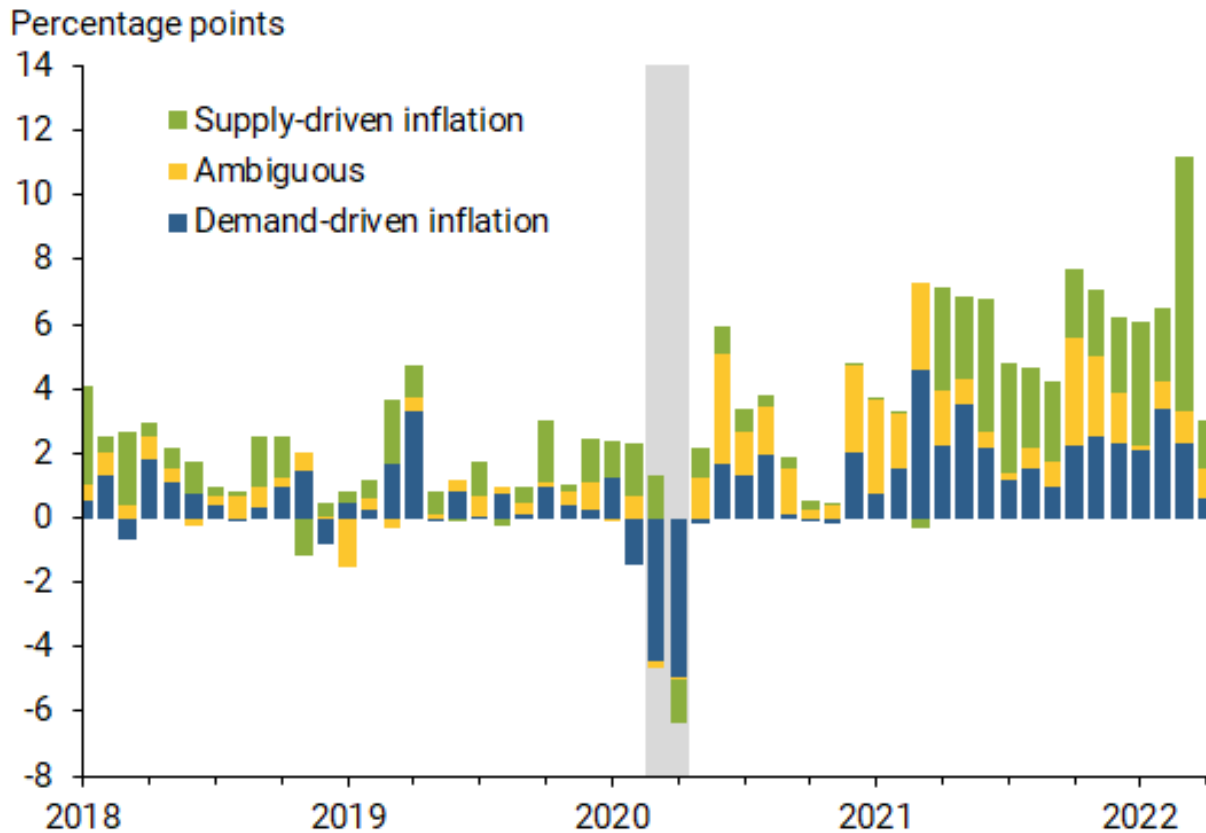
Extracting supply x demand driven components of inflation

- Run 10-year-window rolling regressions for both price and quantity for each item of price index. For example, start with first window or period PCE data are available at the detailed level, and ends after some 10 years. This generates predicted values for price and quantity for next month/quarter/year; then compare to the actual values of price and quantity in that same month /quarter/year. If the actual values of price and quantity are both above or both below their predicted values, the category is labeled as “demand-driven” in this next period. If the difference between the actual and predicted values are of opposite signs, the category is labeled as “supply-driven” in that period. If either of the actual values is close enough to its predicted value that the difference is statistically indistinguishable from zero, the category is labeled as “ambiguous” in that period.
- Then roll the data window forward one period and repeat the process. Iterate this process for each period until reaching the last window of available data.
- Categories that experience frequent **supply-driven price changes include food** and household products such as dishes, linens, and household paper items. Categories that experience frequent **demand-driven price changes include motor vehicle-related products, used cars, and electricity.**

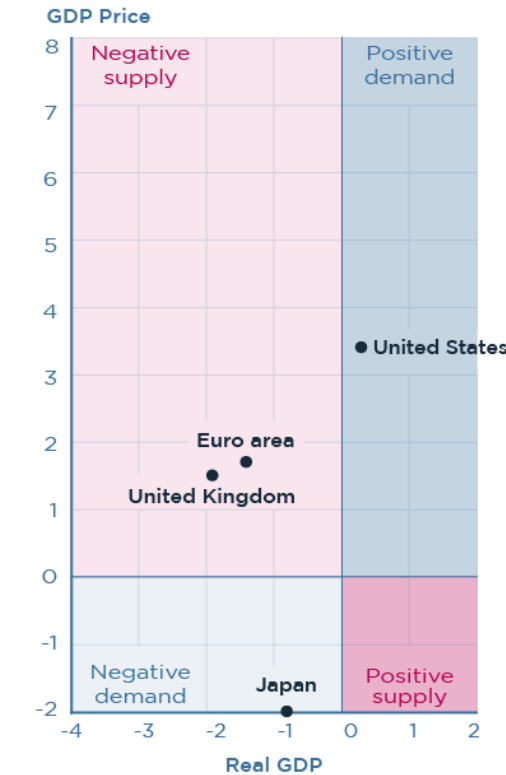
2021 mostly supply driven inflation but support from demand

Figure 2

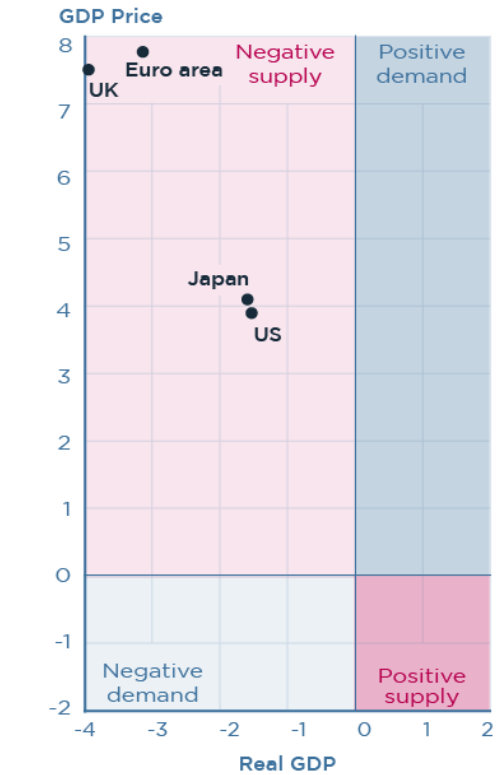
Shocks differ across major economies in 2020-21 and 2022-23



a. Percent deviations of 2021 Q4 outcomes from 2019 Q4 forecasts



b. Percent deviations of 2023 Q4 outcomes from 2021 Q4 forecasts



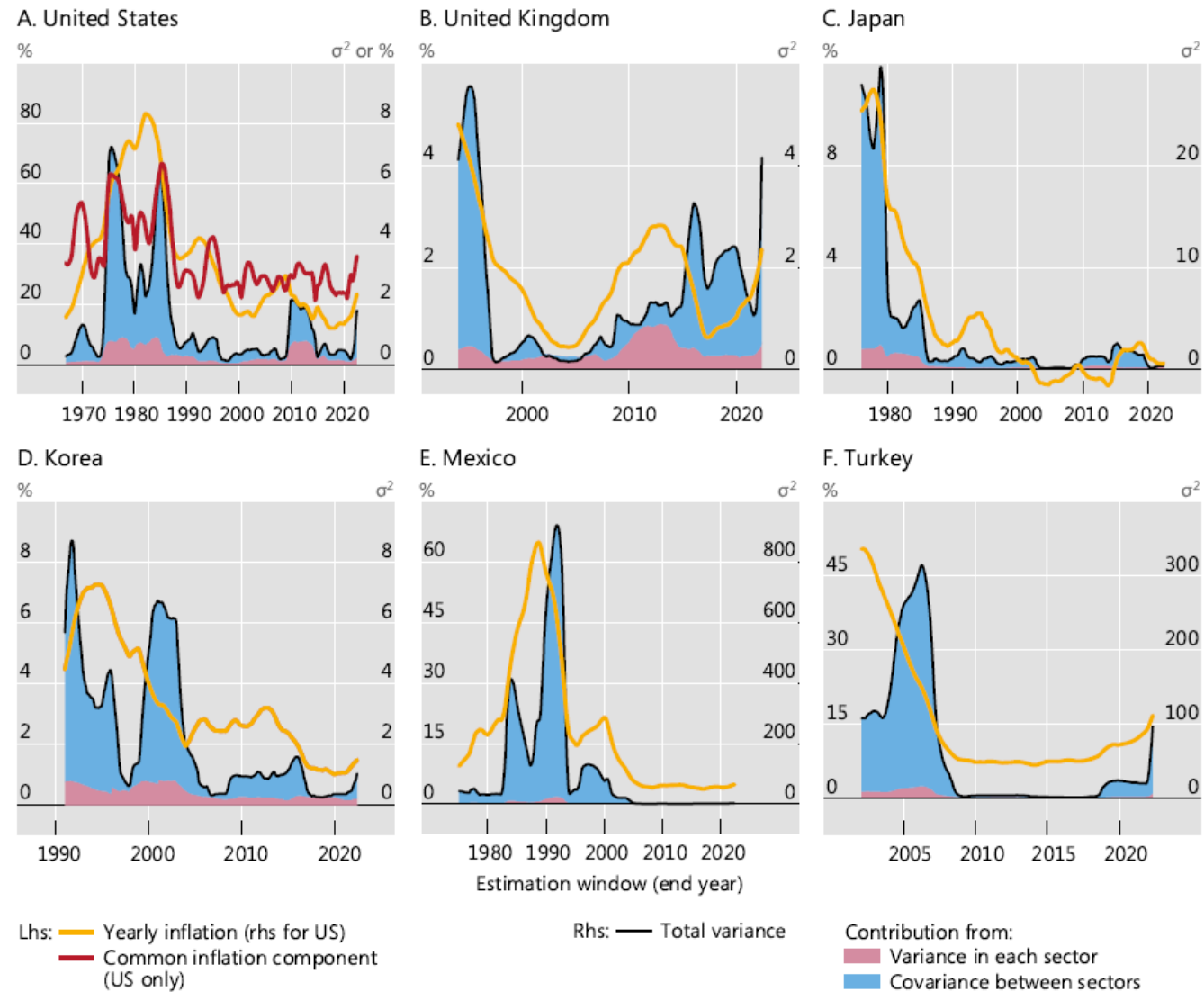
Notes: Panel a expected levels are based on projected growth rates from 2019 Q4. Panel b expected levels are based on projected growth rates from 2021 Q4.

Source: OECD Economic Outlook November 2019 and November 2021, US Bureau of Economic Analysis, Eurostat, Japan Cabinet Office, UK Office of National Statistics, and author's calculations.

Source: Shapiro (2022)

Inflation under the hood: transmission

- To better understand inflation, it is key to go beyond aggregate analysis of headline CPI in order to separate relative from generalised price changes and examine their joint dynamics.
- Periods of high and low inflation are very different, notably with respect to their self-stabilising properties and how firms and workers respond to relative price shifts.
- Preserving a low inflation environment is paramount and requires ensuring that relative price changes do not translate into entrenched inflation. Transitions from low- to high-inflation regimes are especially challenging because they tend to be self-reinforcing.
- Monetary policy has an essential role to play in ensuring the durability/credibility of a low-inflation regime through the features of its operating framework as well as through flexible and timely adjustments in the policy stance.



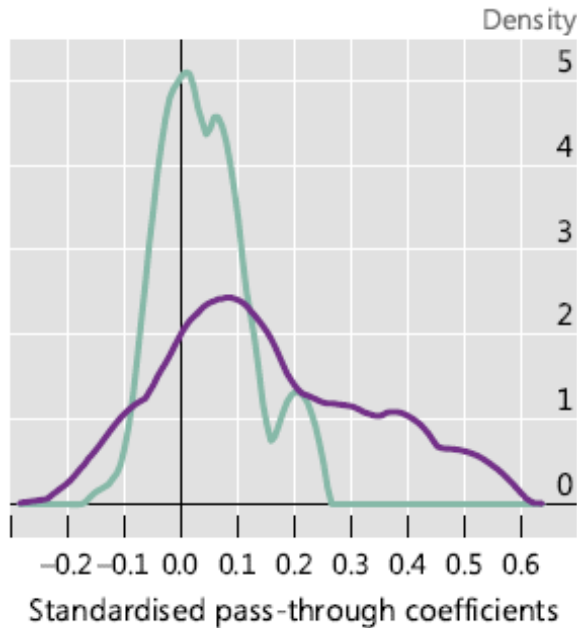
¹ Consumer price inflation, except US (personal consumption expenditure deflator). Calculated using sector-level data over a five-year rolling window. See technical annex for details.

Sources: CEIC; national data; BIS.

In low-inflation regimes the pass-through of outside price changes, oil price increases and FX depreciations to aggregate prices is dampened

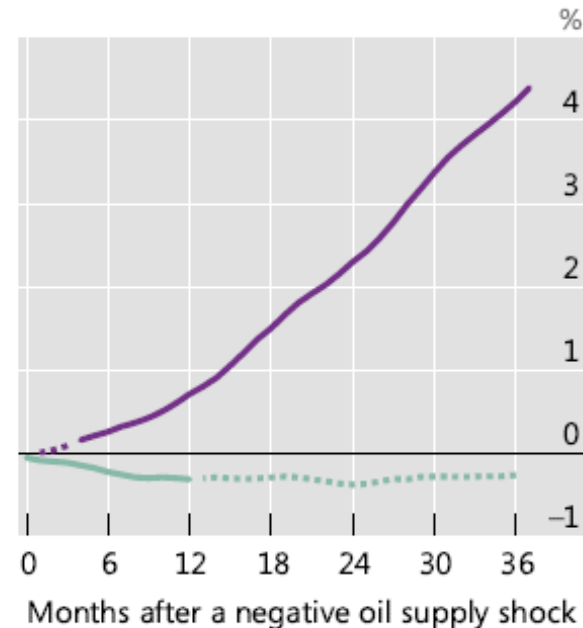
Graph 3

A. The pass-through of outside relative price increases to US core PCE inflation has declined¹



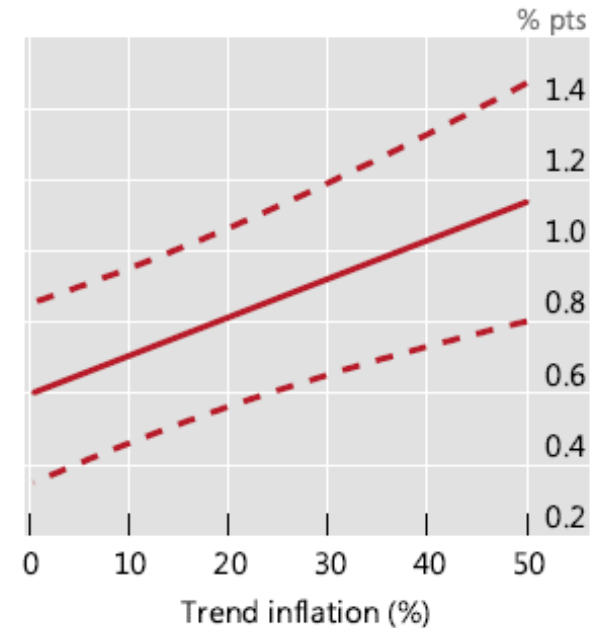
Sample period: — Jan 1960–Dec 1985
— Jan 1986–Dec 2019

B. Oil price increases transmit to consumer prices when inflation is high^{2, 3}



— High-inflation regime
— Low-inflation regime

C. The exchange rate pass-through depends on the level of inflation^{3, 4}



— Estimate
- - - 90% confidence interval

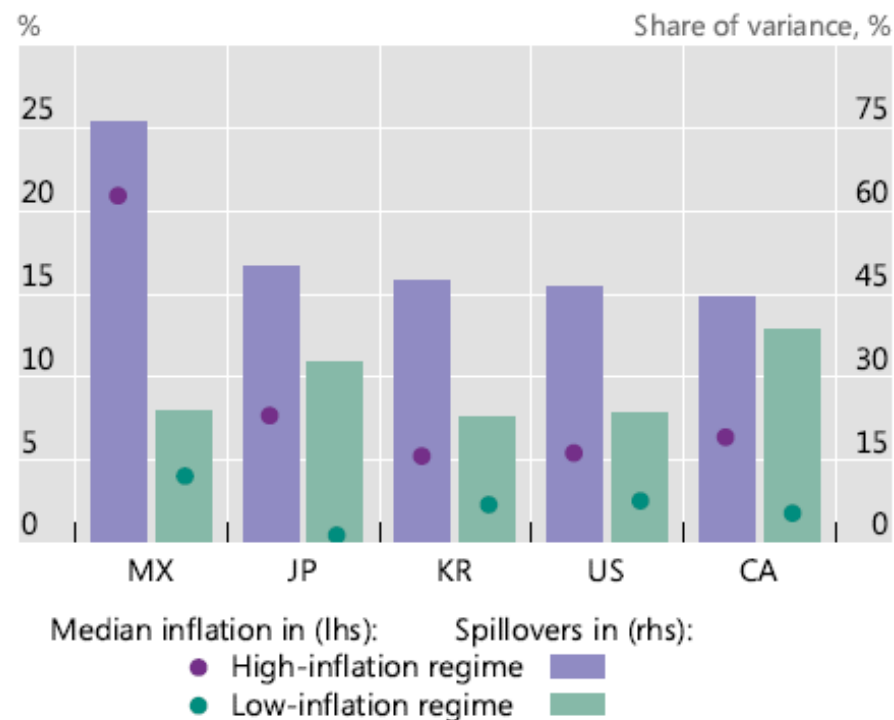
¹ Distribution of the impact of large relative price increases on core inflation. See Borio et al (2021) for details. ² The solid lines indicate portions of the response that are statistically significant at the 10% level. ³ See technical annex for details. ⁴ Effect on inflation from month $t-1$ to month $t+2$. For trend inflation, five-year moving average of annual headline inflation.

Sources: Baumeister and Hamilton (2019); Borio et al (2021); Federal Reserve Bank of St Louis, FRED; national data; BIS.

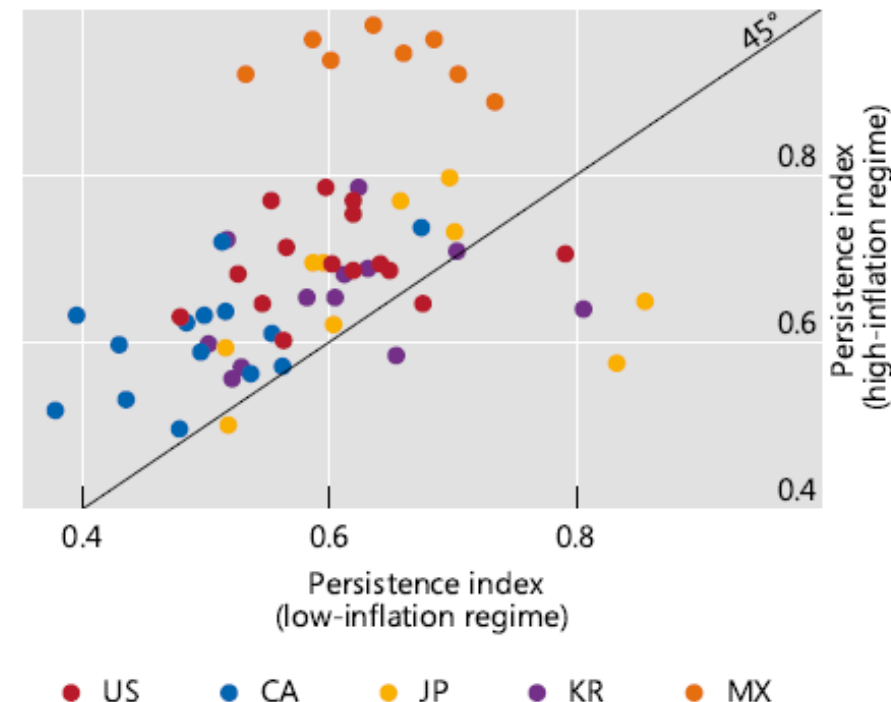
Inflation regimes affect the persistence and transmission of sectoral price changes¹

Graph 4

A. Sectoral price spillovers are more muted in low-inflation regimes²



B. Sectoral price changes are less persistent in low-inflation regimes³



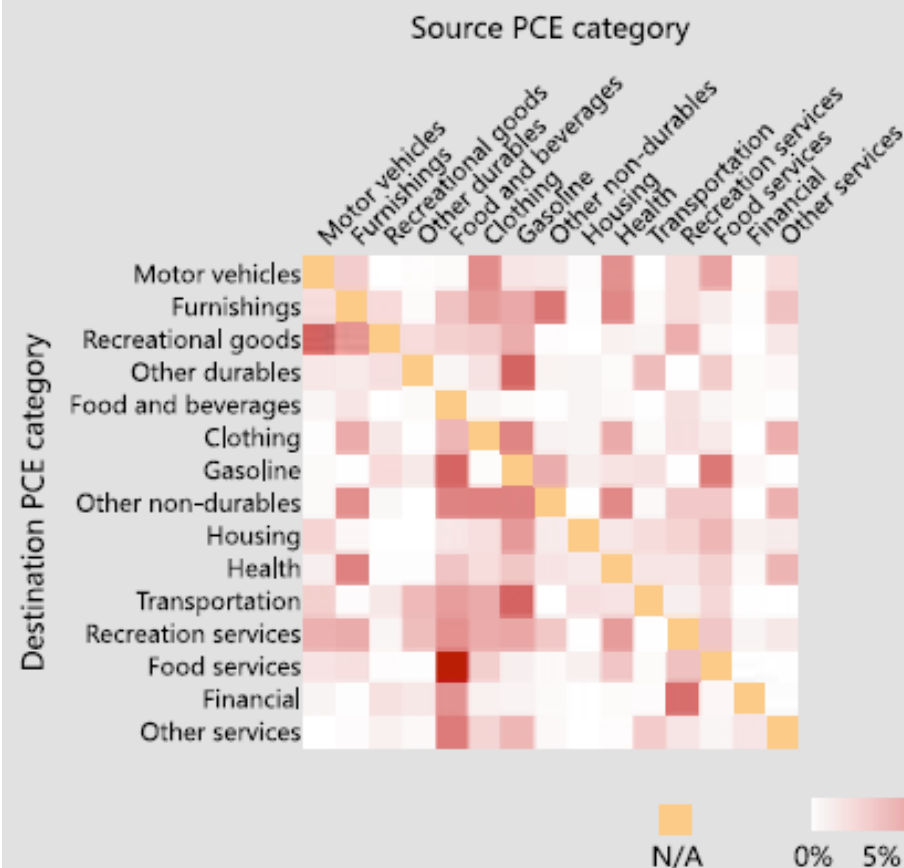
¹ See technical annex for details, including regime dates. ² Share of the variance of sectoral price changes explained by shocks to prices in other sectors over a horizon of one year. See Box A for details. ³ Persistence of one-month log price changes computed using sector-level data for the specified country.

Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of St Louis, FRED; OECD; World Bank; CEIC; Datastream; national data; BIS.

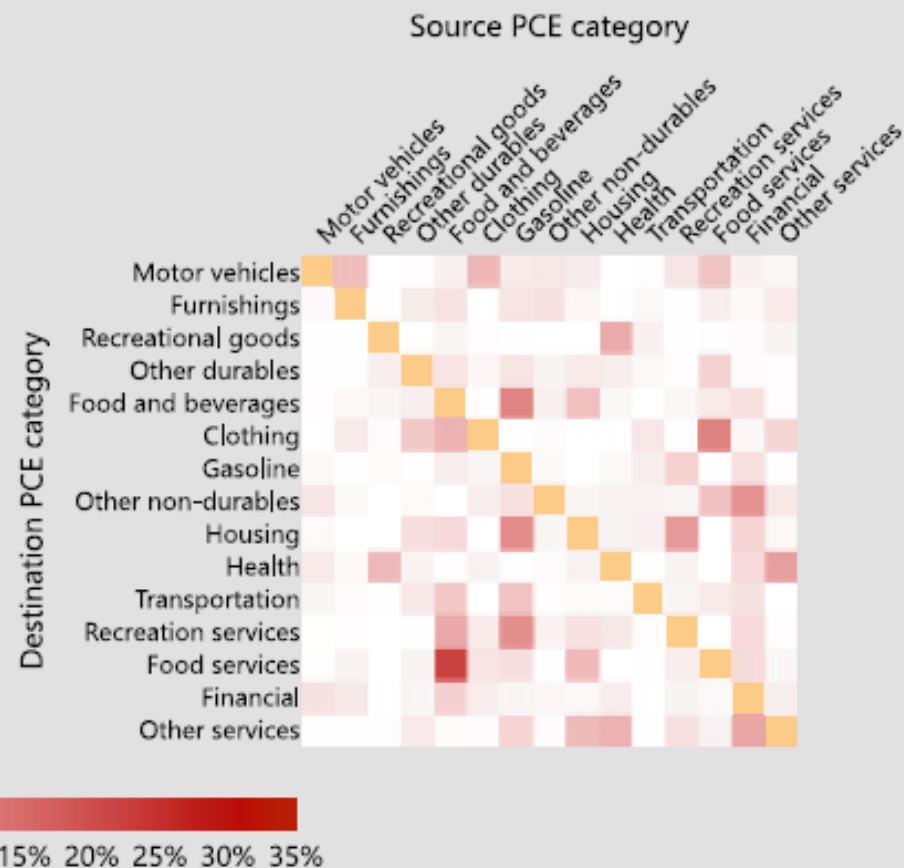
Bilateral price spillovers across US PCE categories¹

Graph A1

A. Sample period: January 1965–December 1985



B. Sample period: January 1986–December 2019



¹ Share of the variance of sectoral price changes explained by shocks to prices in other sectors over a horizon of 12 months.

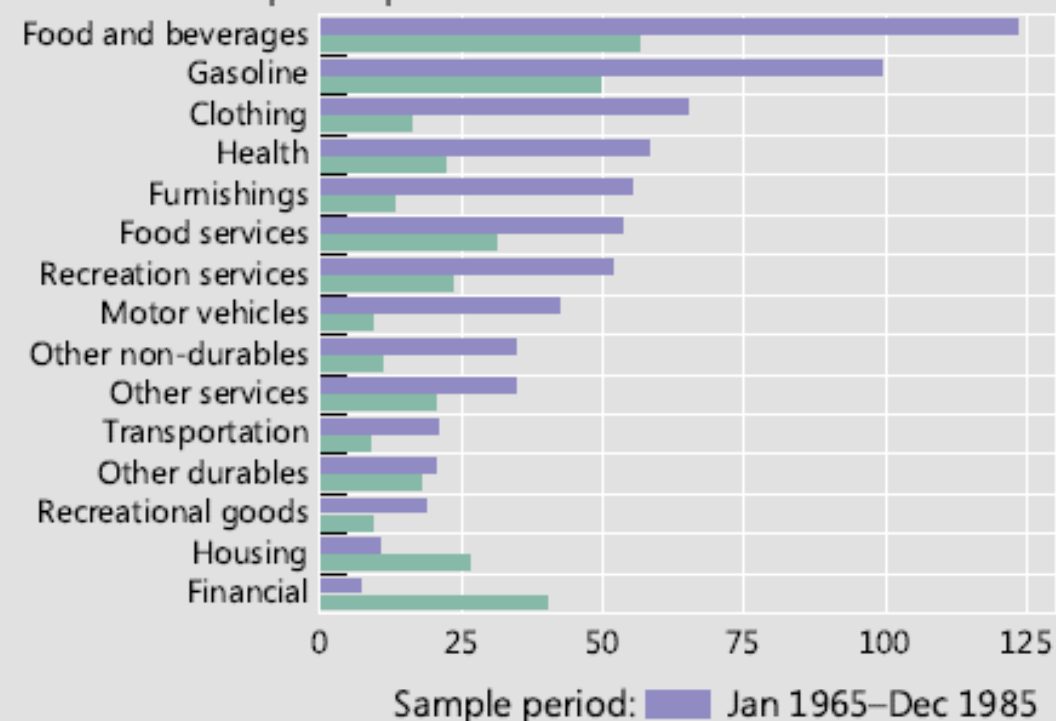
Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of St Louis, FRED; World Bank; Datastream; national data; BIS.

Directional price spillovers among main US PCE categories¹

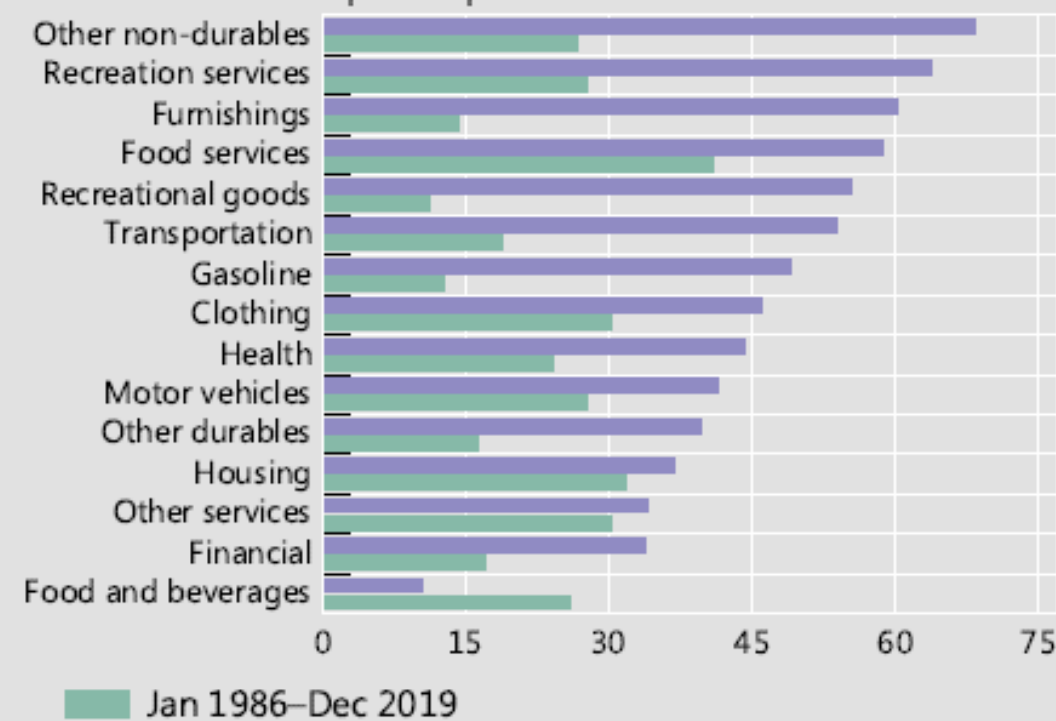
In per cent

Graph A2

A. Sources of price spillovers



B. Destinations of price spillovers



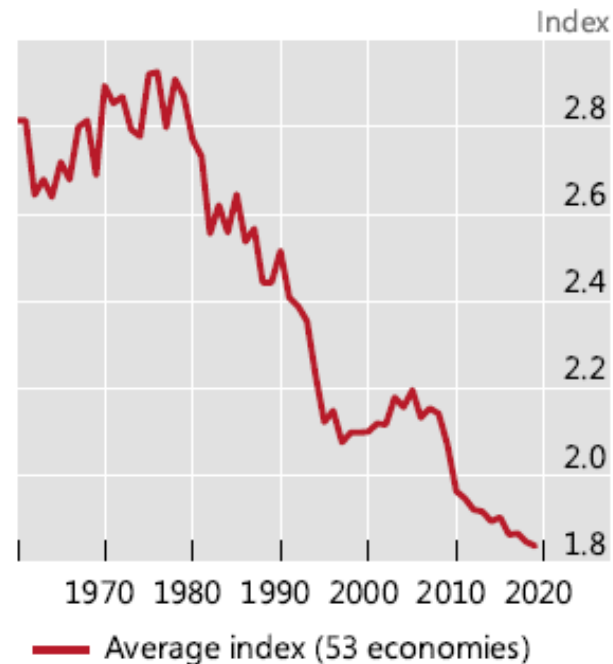
¹ Share of the variance of sectoral price changes explained by shocks to prices in other sectors over a horizon of 12 months.

Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of St Louis, FRED; World Bank; Datastream; national data; BIS.

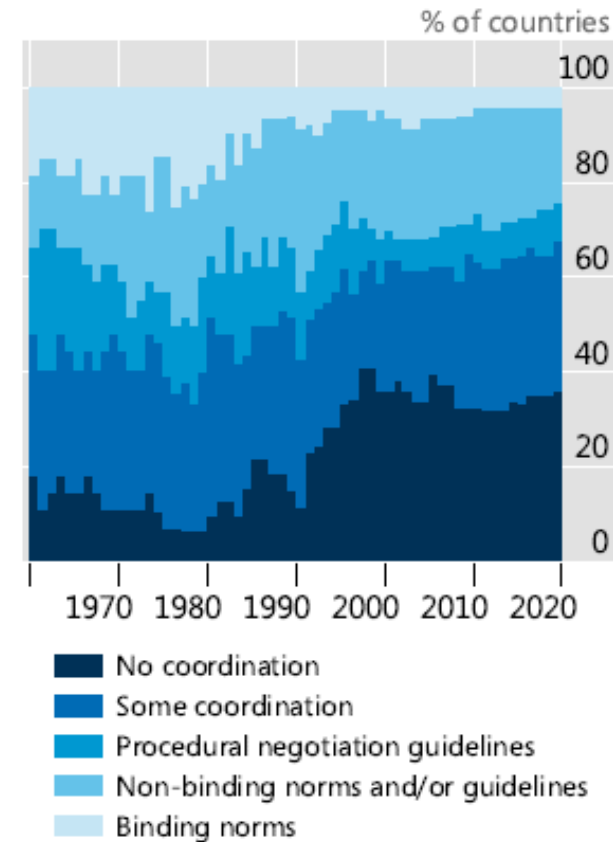
Institutional features play a key role in the wage-setting process¹

Graph 5

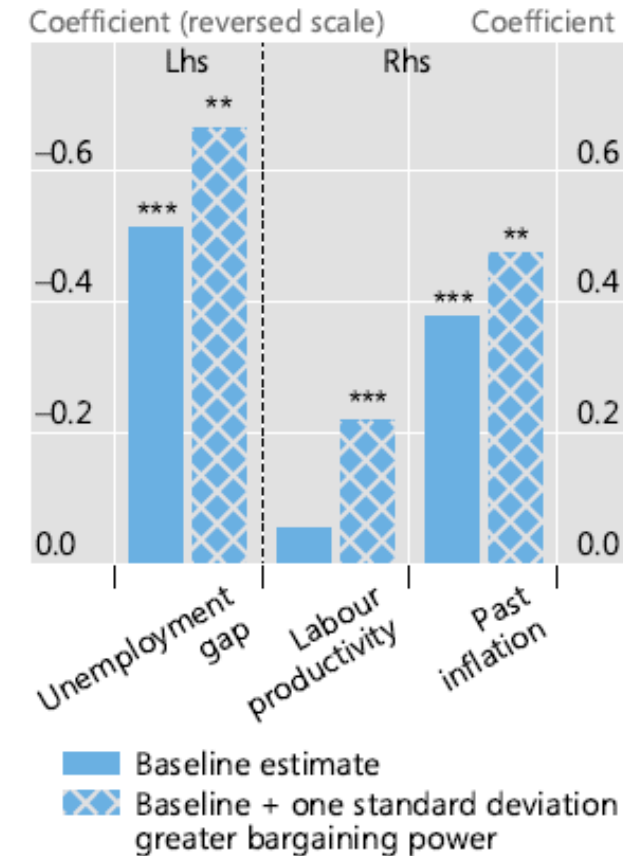
A. Centralisation of collective bargaining²



B. Coordination of wage-setting



C. Wage responsiveness increases with workers' bargaining power³



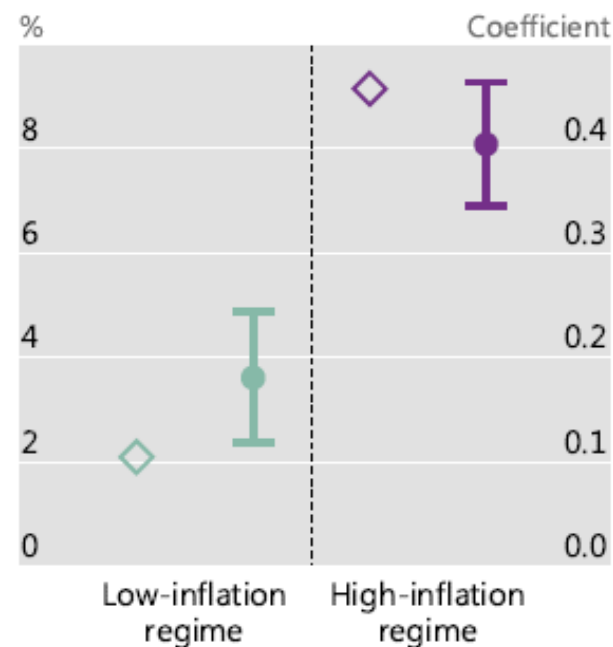
¹ See technical annex for details. ² Higher values indicate higher degree of centralisation. ³ ***/** indicates statistical significance at the 1%/5% level. For the cross-hatched bars, statistical significance refers to the incremental effect of a change in bargaining power.

Sources: OECD; OECD/AIAS ICTWSS database; BIS.

The pass-through of wages to inflation is weaker in low-inflation regimes

Graph 7

A. Sensitivity of inflation to past wage growth in AEs¹

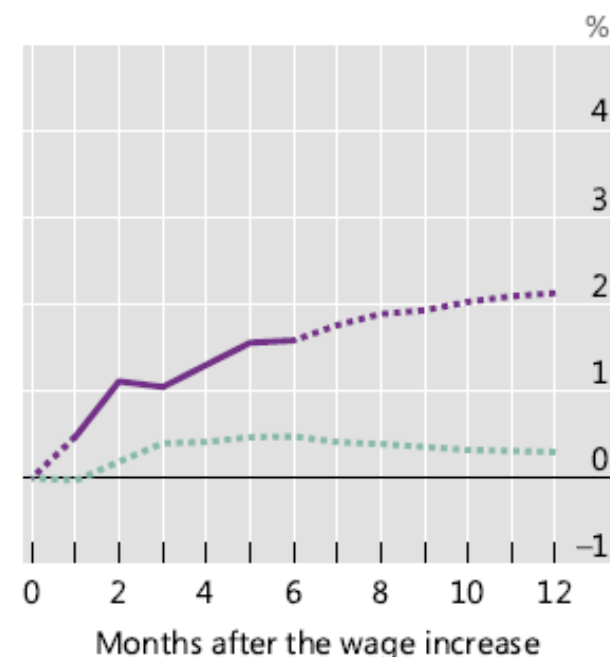


Lhs: ◇ / ◇ Average CPI yoy

Rhs: ● / ● Estimate

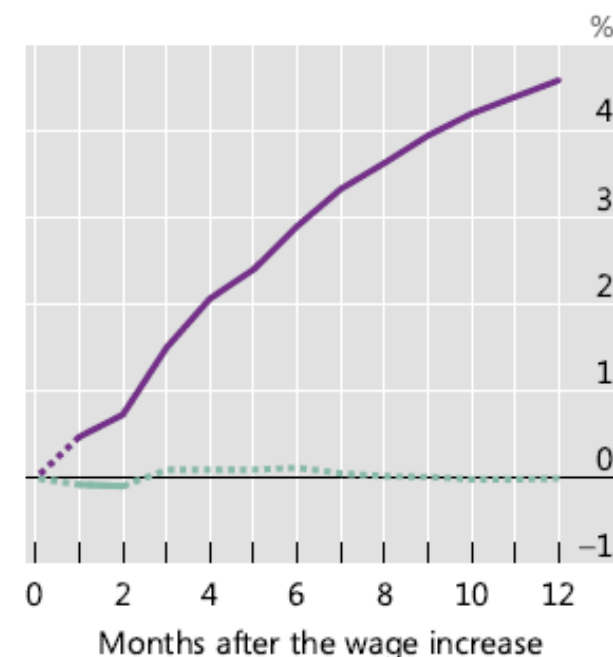
— / — 90% confidence interval

B. Response of US producer prices to a wage increase²



Sample period: — May 1964–Dec 1985

C. Response of US PCE prices to a wage increase²



— Jan 1986–Dec 2019

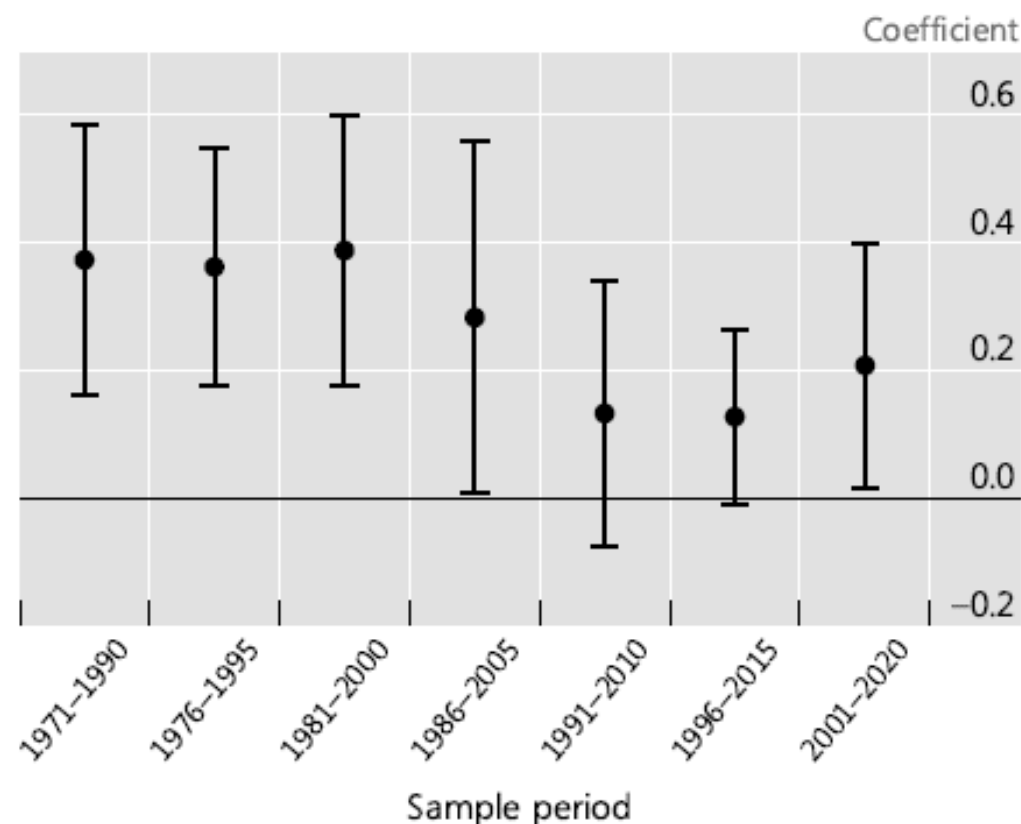
¹ See technical annex for details, including regime dates. ² The estimated impact of a 5% unanticipated increase in nominal wages in month 0 on the specified US price index. The solid lines indicate portions of the response that are statistically significant at the 10% level.

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

Wages have become less sensitive to inflation¹

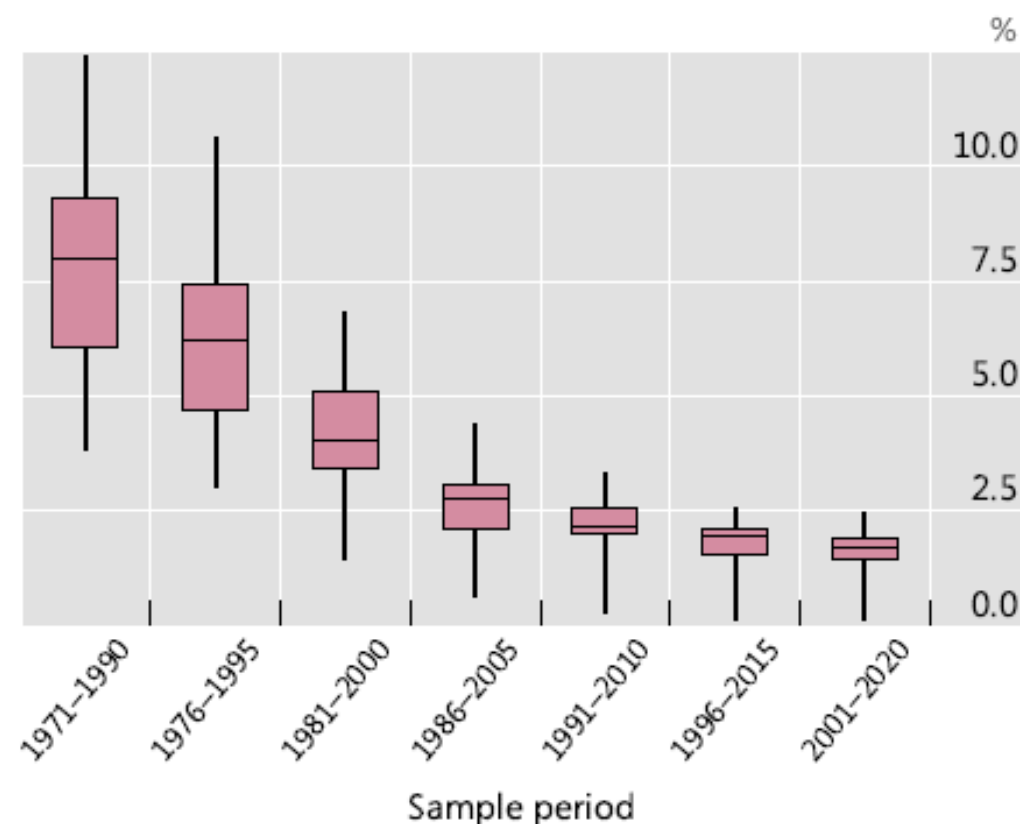
Graph 8

A. Sensitivity of wage growth to past inflation in AEs



● Estimate — 90% confidence interval

B. Distribution of inflation rates in AEs²



¹ See technical annex for details. ² Box plots show median, minimum, maximum and interquartile range of year-on-year headline inflation.

Sources: OECD; national data; BIS.

US monetary policy works mainly through the common component of inflation¹

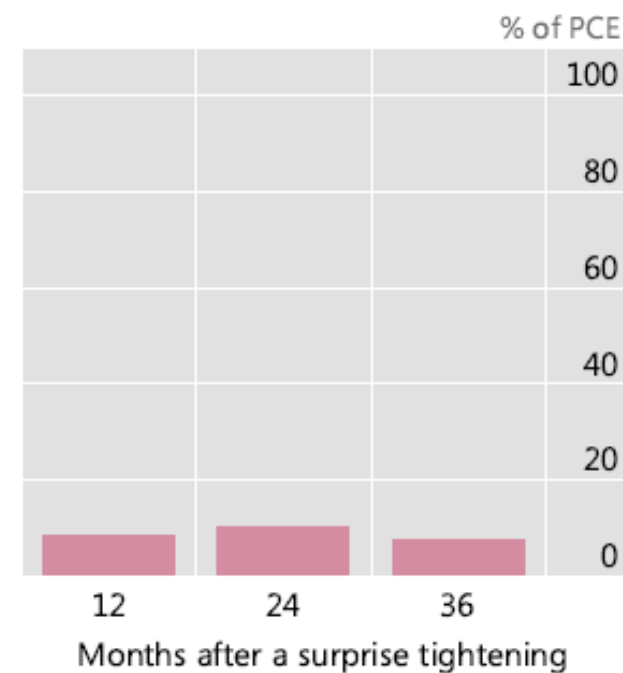
Graph 12

A. Response of the common component of PCE prices²

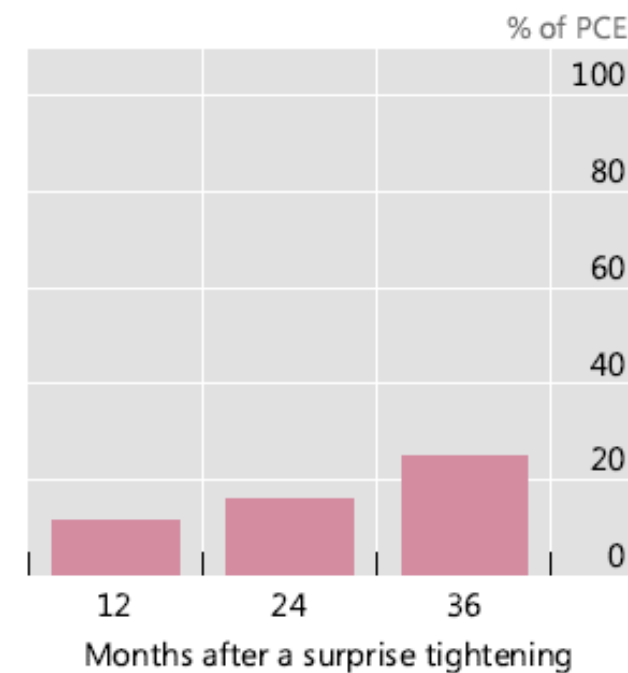


— Estimate
- - 90% confidence interval

B. Proportion of statistically significant idiosyncratic sectoral price responses³



C. Proportion of statistically significant sectoral price responses³



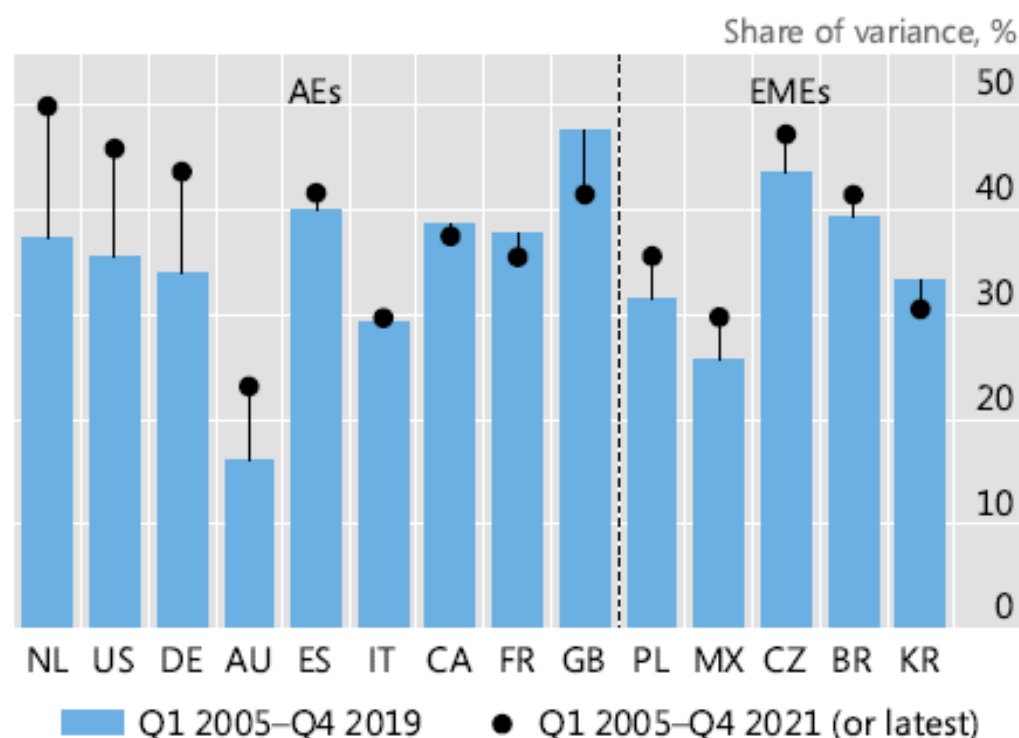
¹ Responses to a surprise policy tightening of 25 basis points. See technical annex for details. ² Including 131 narrowly defined personal consumption expenditure (PCE) sectors. ³ Significant at 10% level.

Sources: Board of Governors of the Federal Reserve System; national data; BIS.

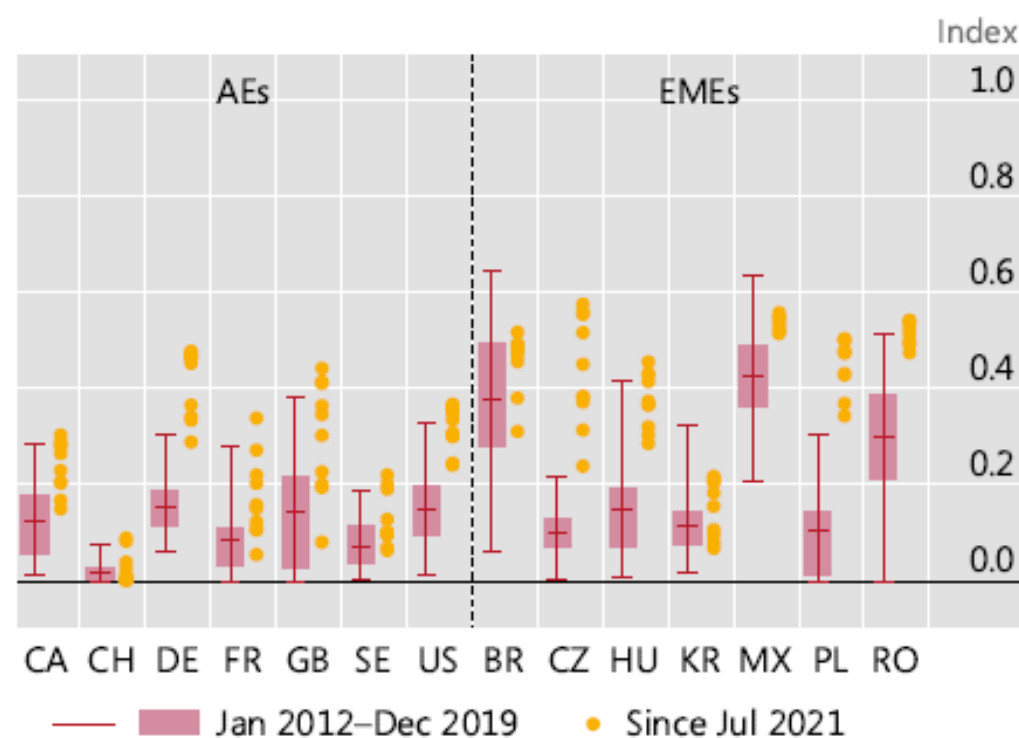
Signs of low-inflation regimes being tested

Graph 13

A. Sectoral price spillovers have generally increased...¹



B. ...and sectoral price changes have become more similar²



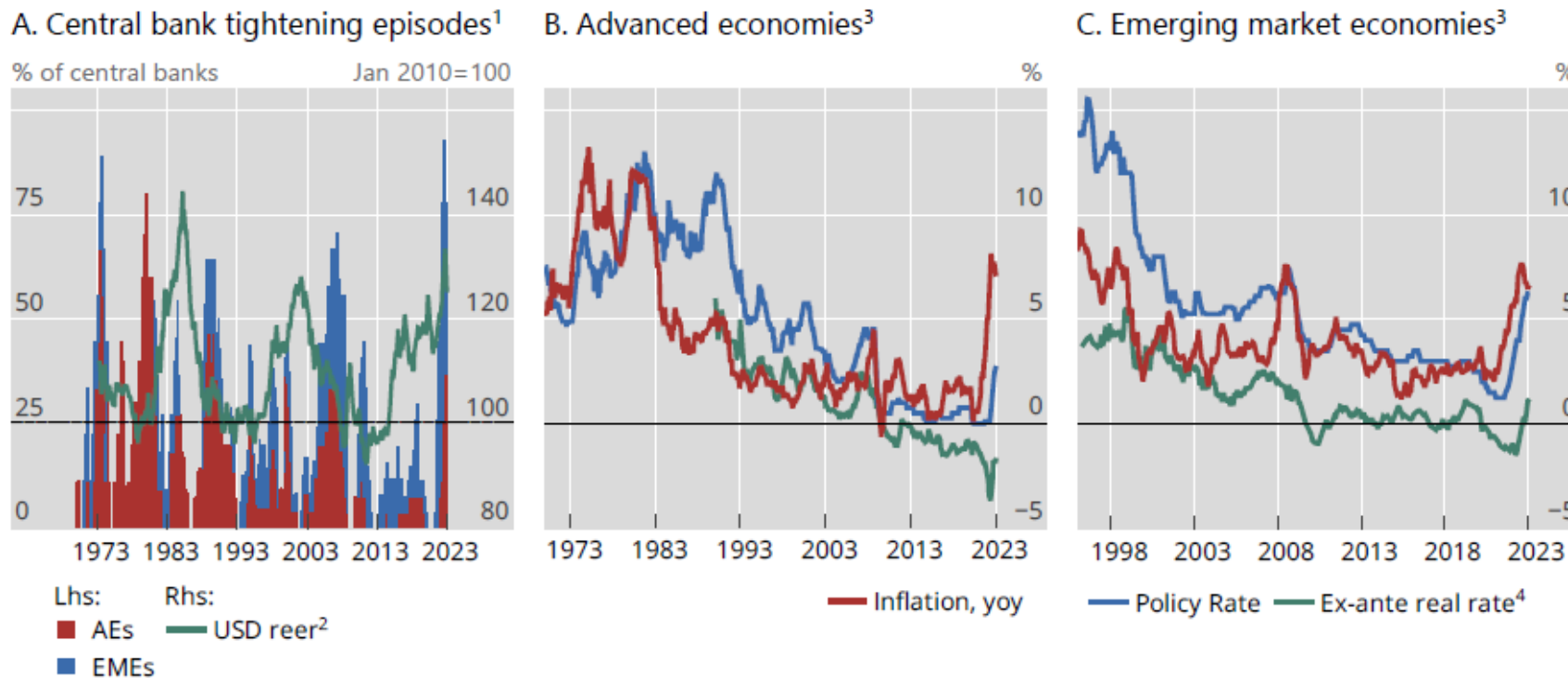
¹ Share of the variance of sectoral price changes explained by shocks to prices in other sectors over a horizon of 12 months. See Box A for details. ² Box plots show mean, minimum, maximum and interquartile range. See technical annex for details.

Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of St Louis, FRED; OECD; World Bank; CEIC; Datastream; national data; BIS.

Policy responses episode of 2021-23 inflation

Global monetary tightening episodes

Graph 3



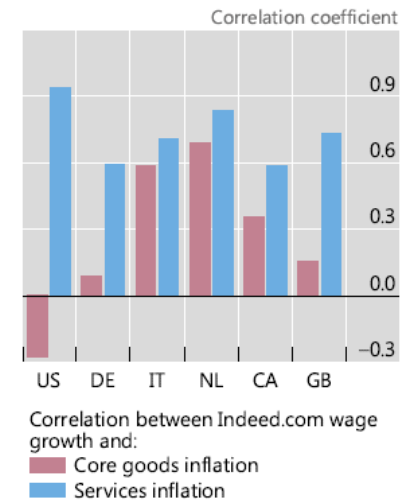
¹ For each country, tightening episodes are identified as months between the trough and peak in the policy rate around periods when the seven-month centred moving average of the policy rate is increasing. Tightening episodes in which the policy rate increases by less than 1 percentage point or more than 20 percentage points, or episodes that last less than six months or more than 48 months, are excluded from the analysis. Based on data from Jan 1970 to Jan 2023 (subject to country availability); 154 tightening episodes. ² Trade-weighted real broad dollar index; an increase indicates an appreciation of the USD. ³ Median based on monthly data for 11 AEs and 23 EMEs. ⁴ Policy rate deflated by the weighted average of the current and next year Consensus forecasts for year-on-year inflation.

Is it over?

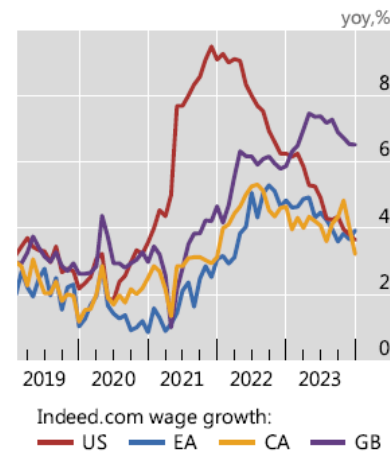
The behaviour of wages is more relevant for services inflation¹

Graph 6

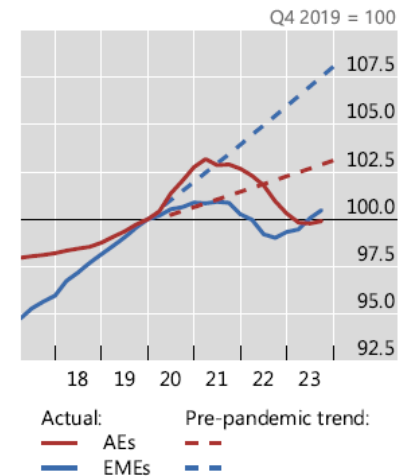
A. Wage growth correlates more strongly with subsequent services price growth



B. Nominal wage pressures remain elevated...



C. ...as real wages still have some way to go to catch up with pre-pandemic trends



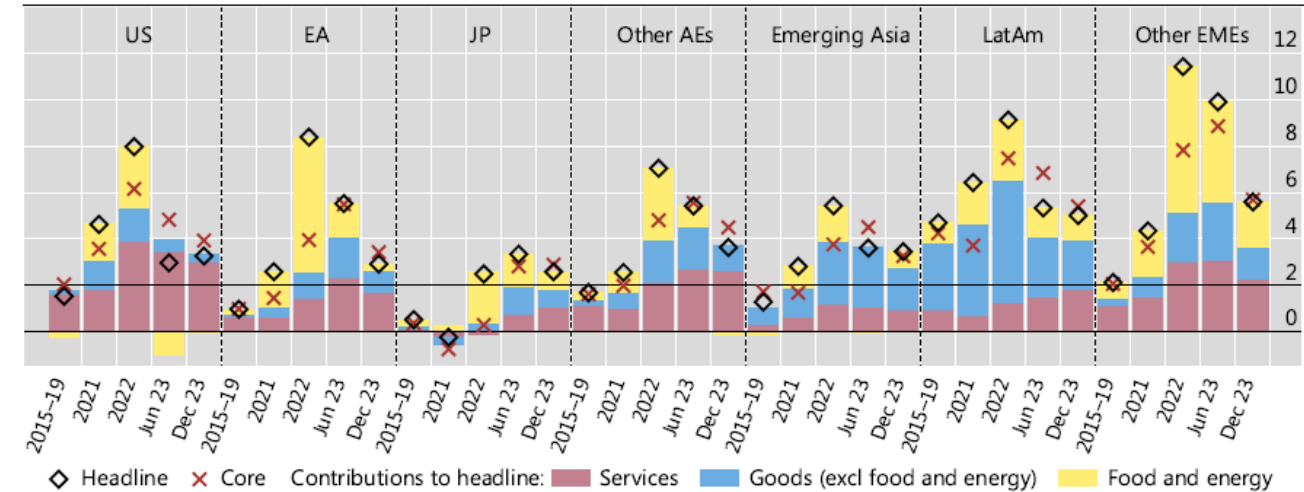
¹ See technical annex for details.

Sources: OECD; Github.com, Indeed Hiring Lab; Datastream; national data; authors' calculations.

Goods price growth has retreated, but services price growth has not retreated as much¹

Year-on-year changes, in per cent

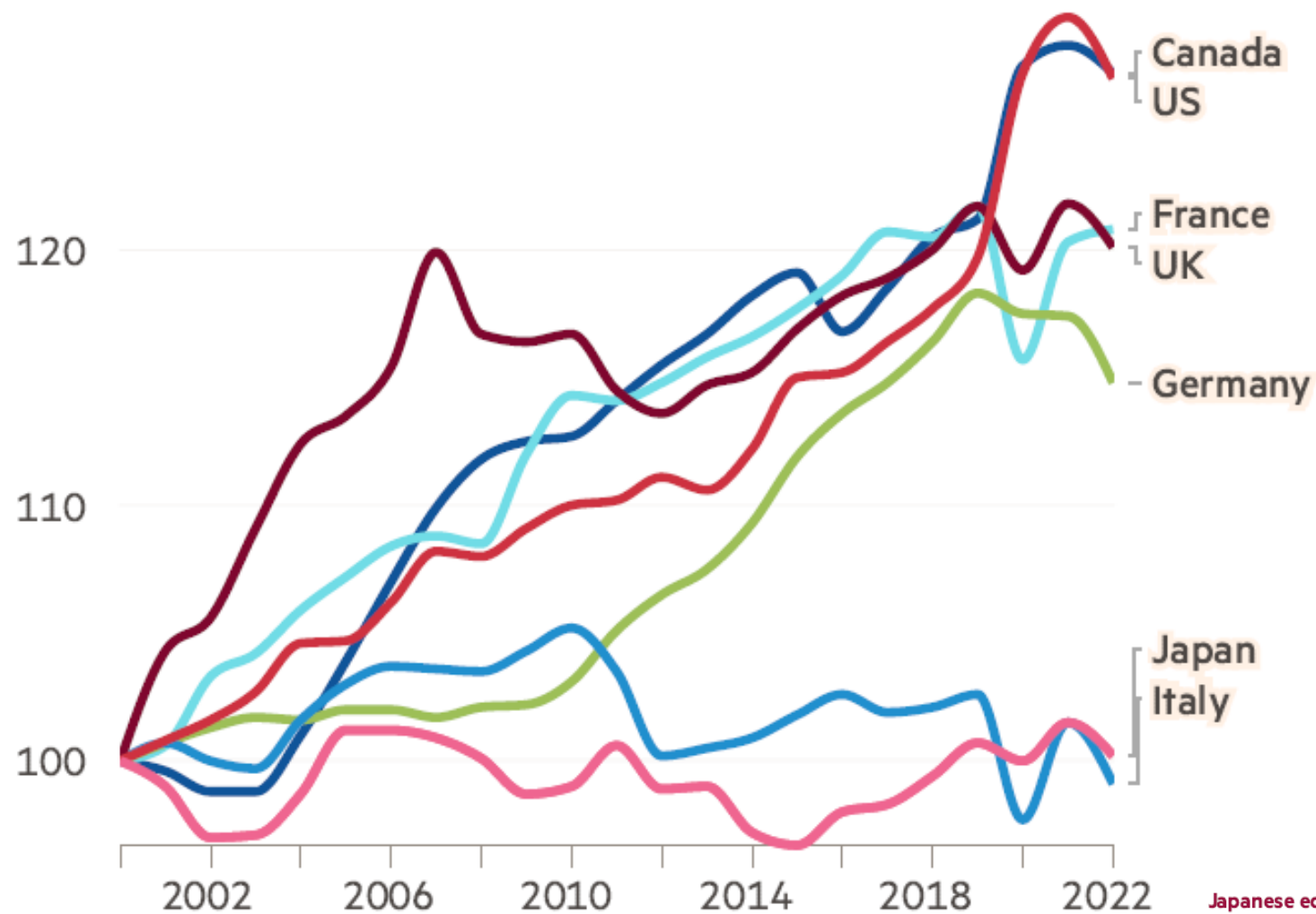
Graph 1



¹ See technical annex for details.

Sources: OECD; Datastream; national data; authors' calculations.

Average annual wages in 2022 constant prices and local currency, indexed to 2000

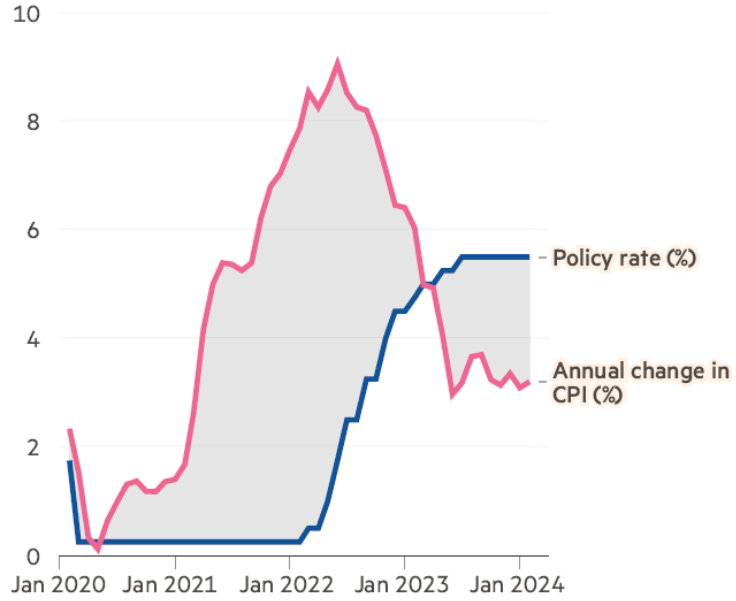


Source: FT

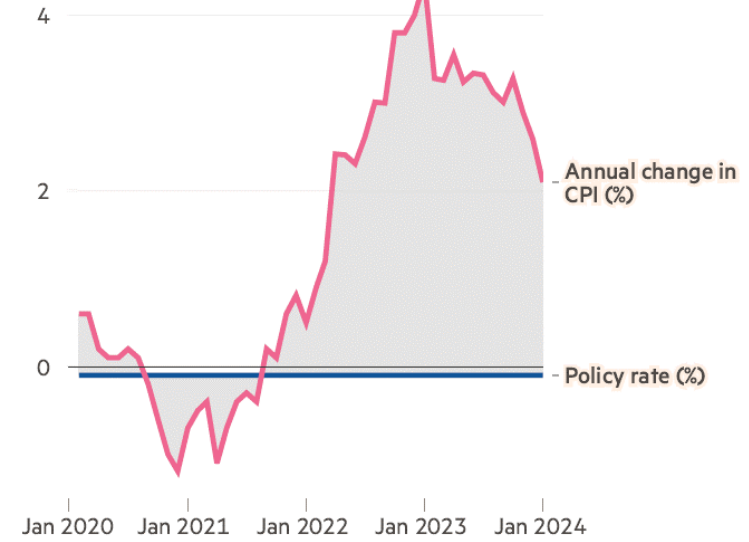
Japanese economy

Japanese workers secure biggest pay rise in three decades
Financial Times 13 March 2024

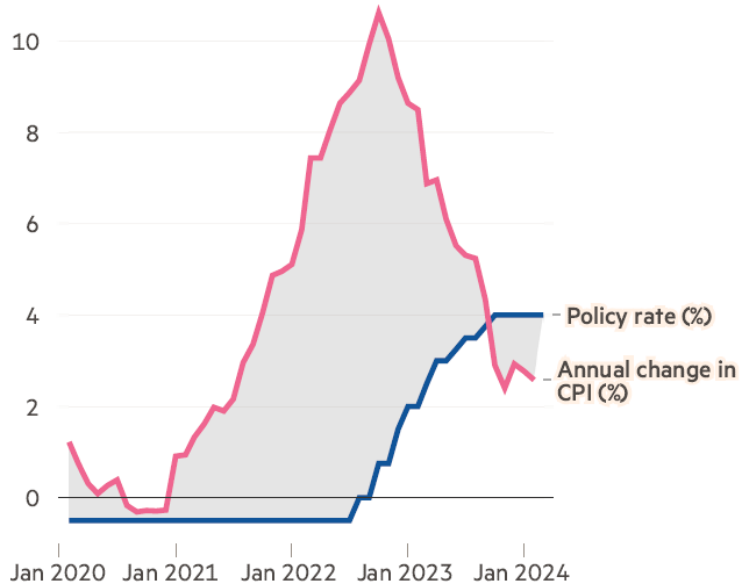
US



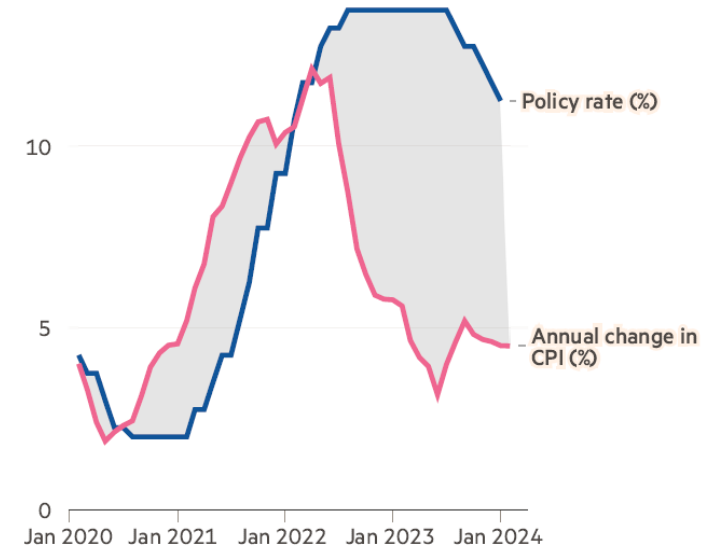
Japan



Eurozone



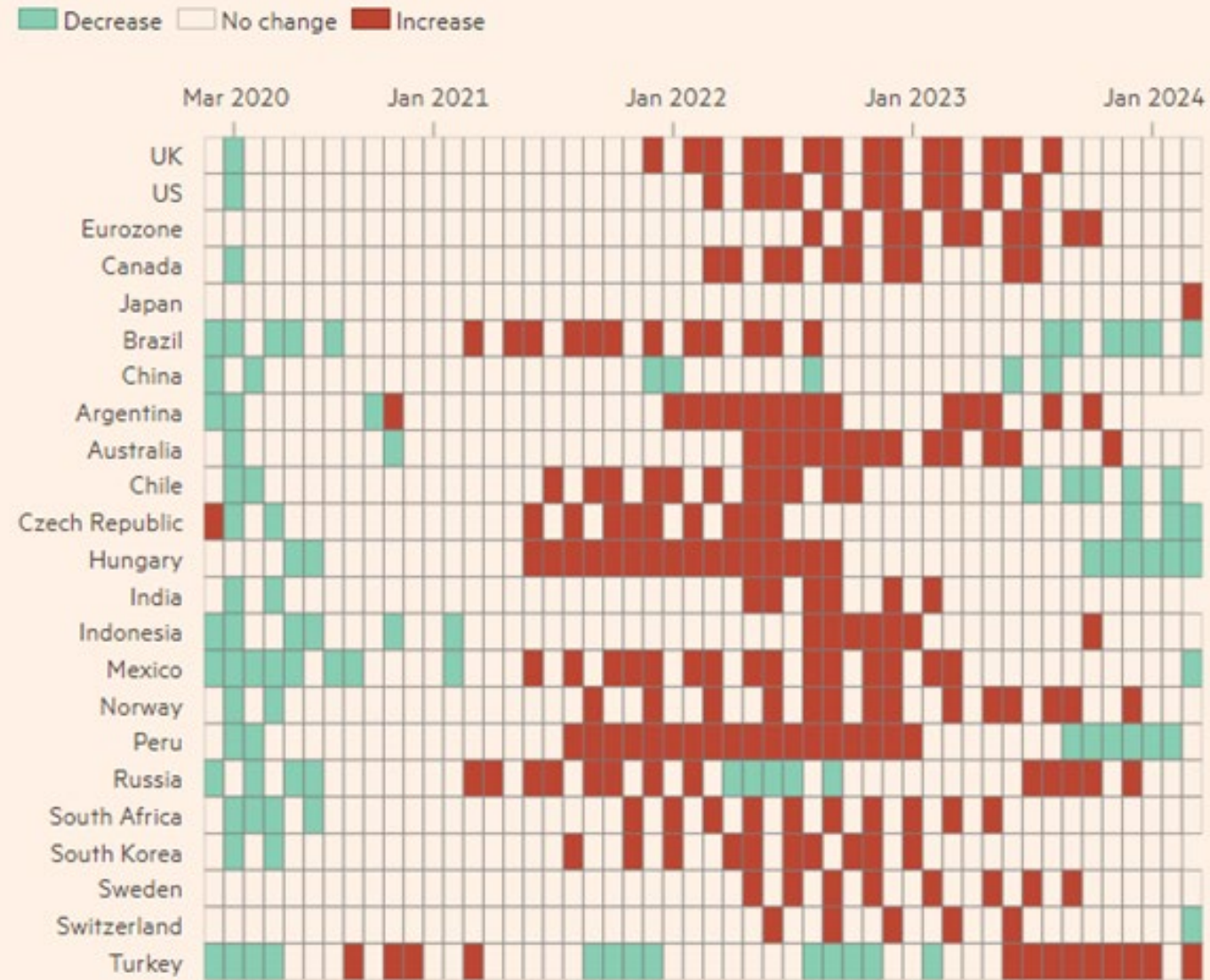
Brazil



Source: FT

- Policy rates since the Pandemic
- Red: increase
- Green: decrease
- Pink: no change

Stick or twist: policy rate decisions since the pandemic



Source: FT analysis of data compiled by LSEG