



EUROPEAN CENTRAL BANK

EUROSYSTEM

Europe and the world economy

17th FIW Research Conference on
“International Economics”, Vienna

21 February 2025



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Member of the Executive Board

- Internal analytics: joint dynamics of twenty euro area member countries
- External analytics: euro area as a region in the world economy
- Linkages: trade and financial
- Global firms and global networks (global value chains, etc.)
- Technology, data and information
- Demographics and migration

Inter-temporal trade

- Trade specialisation patterns
- Vertical integration: supply chains
- Structural trends and structural breaks (fragmentation, etc.)

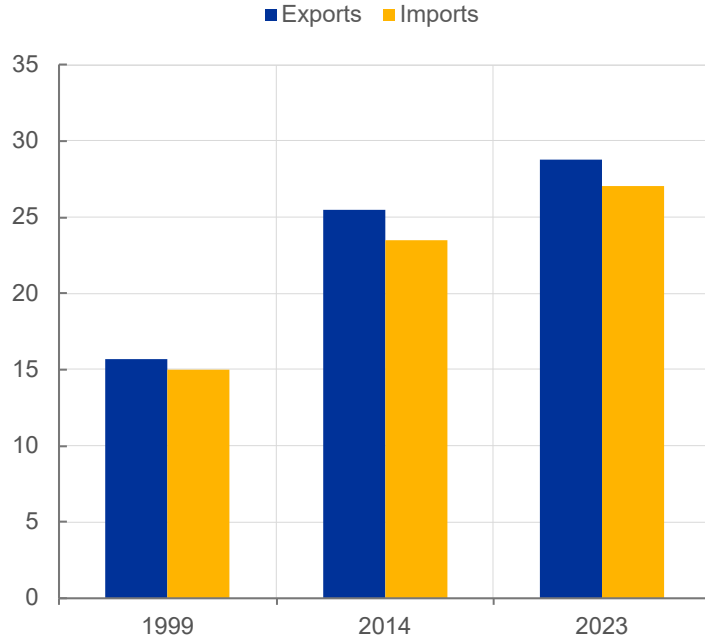
Intra-temporal trade

- Trade balance, current account, net international investment position (NIIP)
- Expenditure versus production; expenditure versus income
- NIIP as a state variable; exchange rate trends

- Income levels, income distribution and volatility
- Business cycle: shocks (real, nominal and financial); transmission of shocks
- Monetary policy: international transmission; policy spillovers
- Policy trilemmas: international monetary trilemma; international financial stability trilemma; international political economy trilemma

Euro area trade in euro area GDP

(percent)

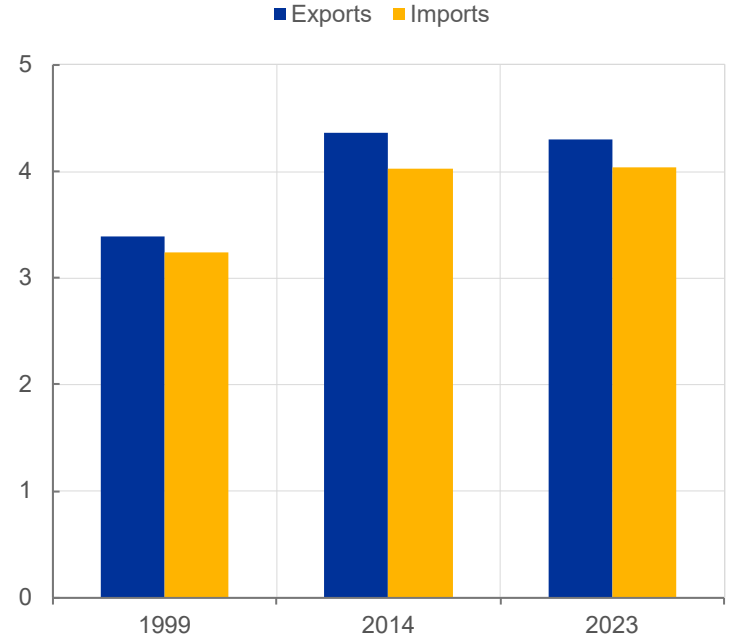


Sources: IMF, BoP and ECB staff calculation.

Note: The chart refers to extra euro area exports and imports.

Euro area trade in global GDP

(percent)

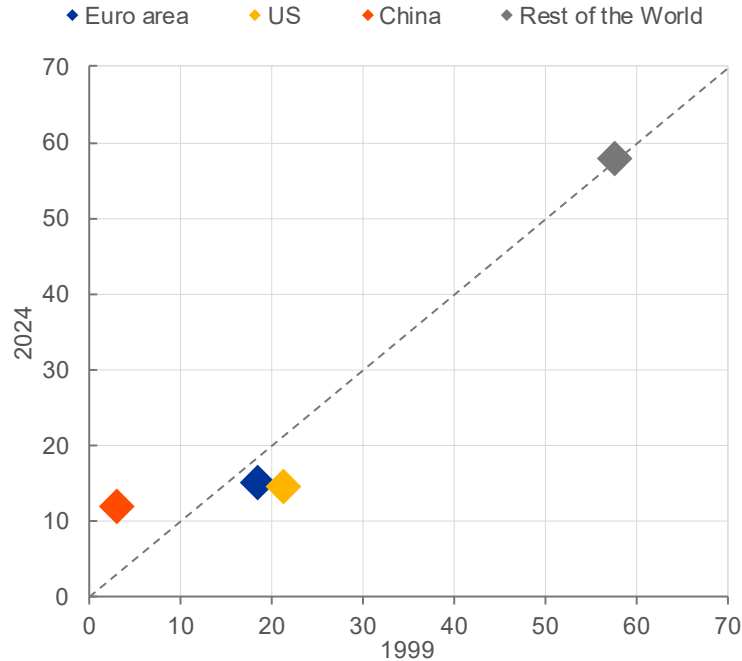


Sources: IMF, BoP and ECB staff calculations.

Note: The chart refers to extra euro area exports and imports.

Import and export shares

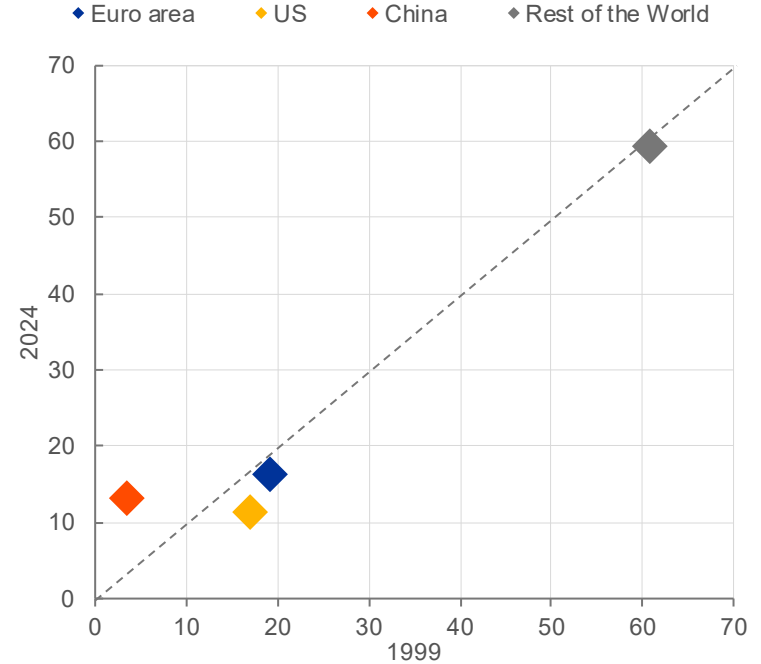
Imports of goods and services (shares in global imports of goods and services)



Sources: IMF and ECB staff calculations.

Notes: For the euro area extra euro area imports are used to calculate shares in global aggregates. For the year 2024, the 2023 value of euro area imports is used to approximate not yet available data.

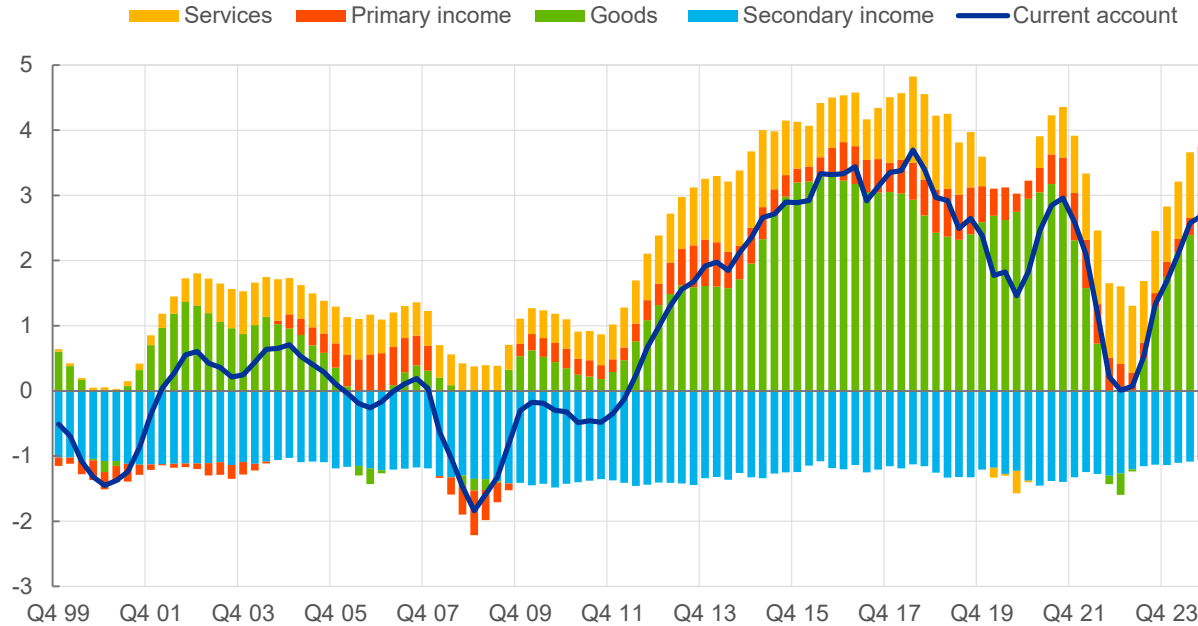
Exports of goods and services (shares in global exports of goods and services)



Sources: IMF and ECB staff calculations.

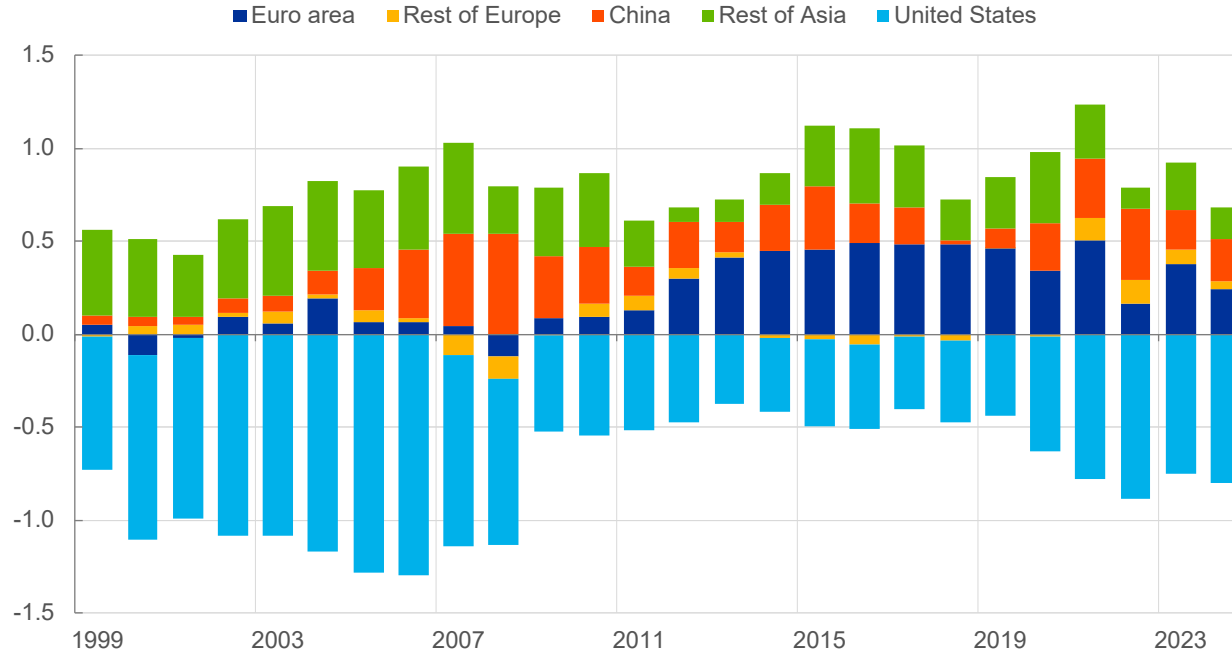
Notes: For the euro area, only extra euro area exports are used to calculate shares in global aggregates. For the year 2024, the 2023 value of euro area exports is used to approximate not yet available data.

Current account decomposition by category (percentage of GDP; 4-quarters moving sum)



Sources: ECB (BoP) and Eurostat (National accounts).
Note: The latest observations are for the third quarter of 2024.

Current account decomposition by country group (percentage of global GDP)



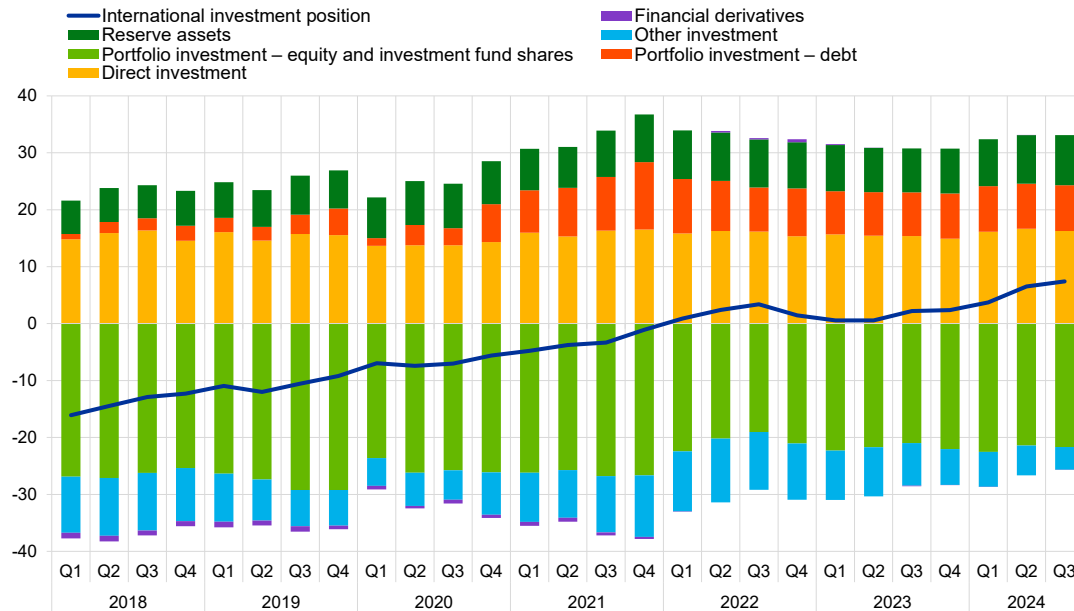
Source: External Wealth of Nations Database.

Notes: Rest of Europe includes Bulgaria, Czech Republic, Denmark, Hungary, Poland, Romania, Sweden, Albania, Bosnia and Herzegovina, Iceland, Kosovo, Moldova, Montenegro, North Macedonia, Norway, Serbia, Switzerland, United Kingdom. The latest observations are for September 2024.

Euro area net international investment position

Net international investment position of the euro area

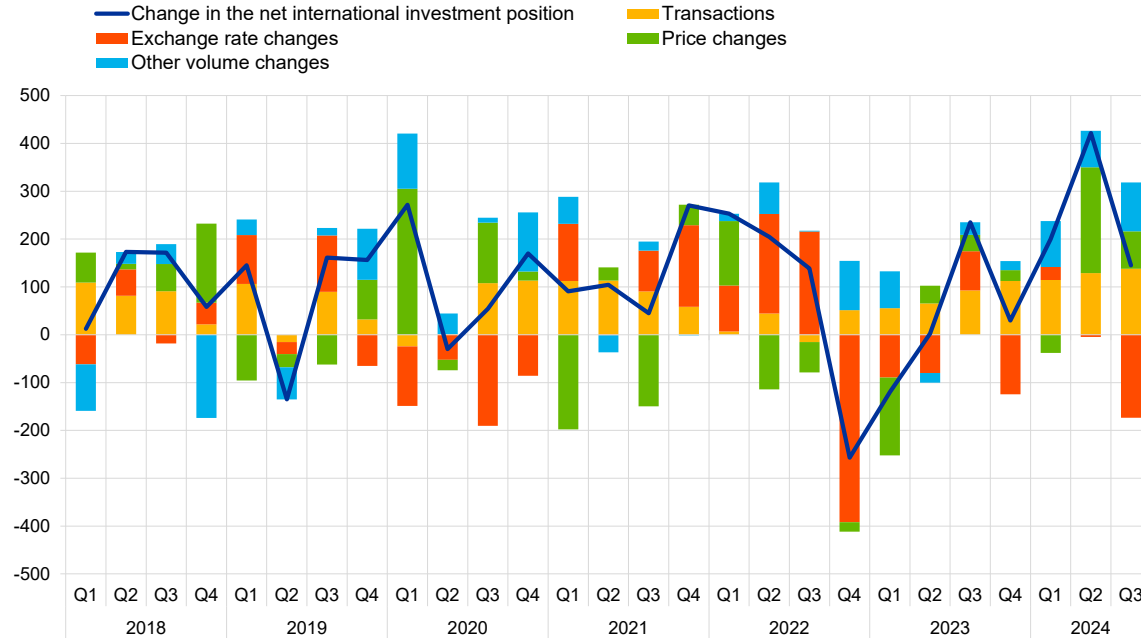
(net amounts outstanding at the end of the period as a percentage of four-quarter moving sums of GDP)



Source: ECB.

Note: The latest observations are for the third quarter of 2024.

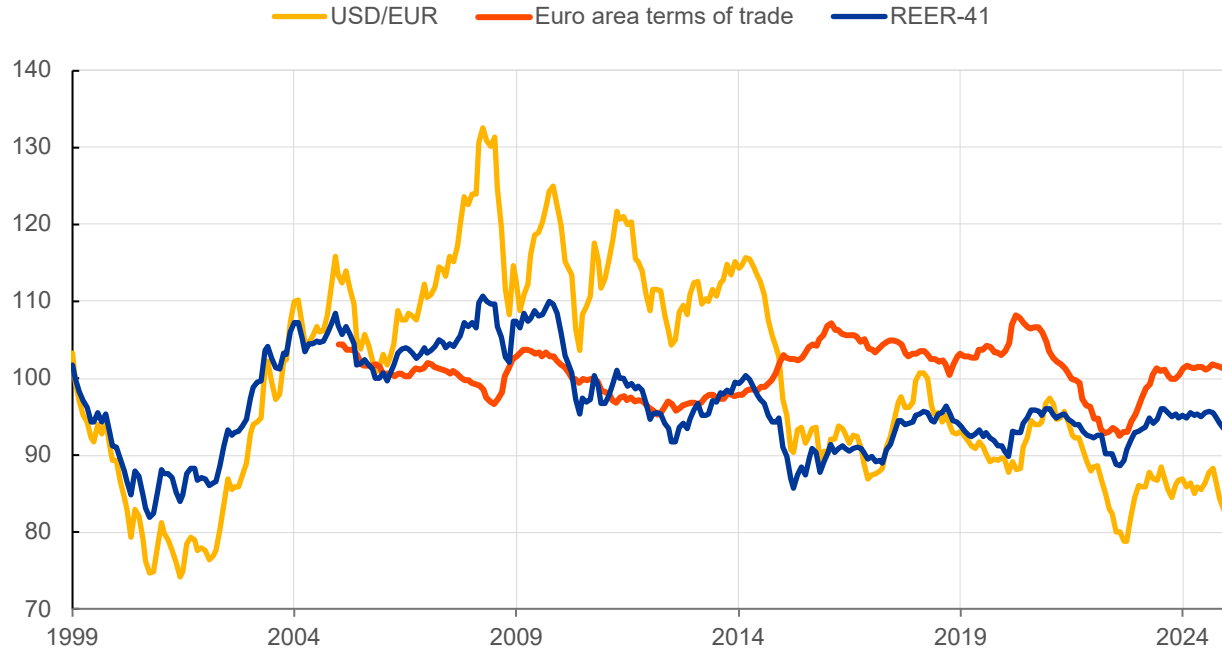
Changes in the net international investment position of the euro area (EUR billions)



Source: ECB.

Note: The latest observations are for the third quarter of 2024.

Euro real exchange rates (index, 1999Q1=100)



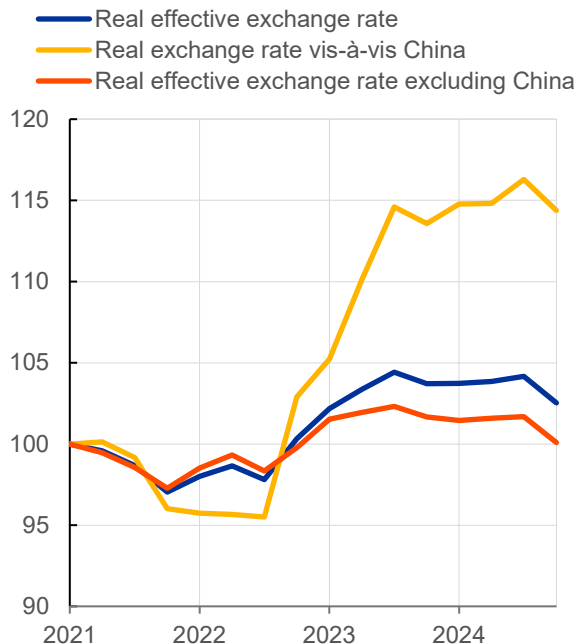
Source: Eurostat

Notes: Both real exchange rates are CPI-deflated. The latest observations are for December 2024.

Real exchange rates – the role of China

Euro area real exchange rates

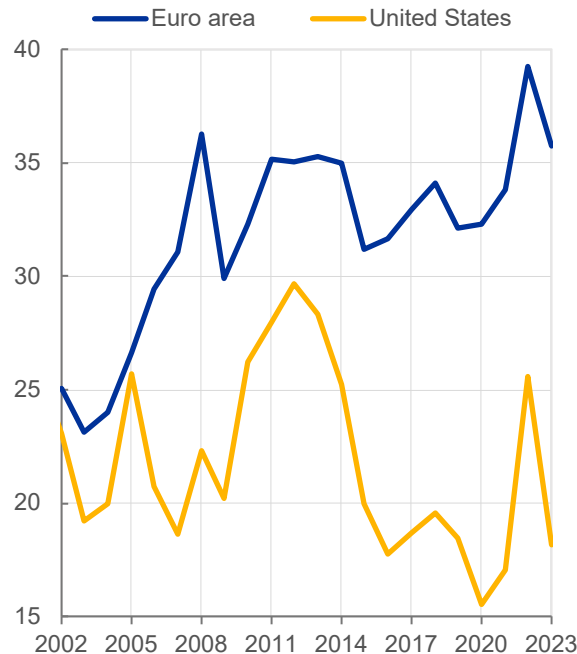
(index, 2021Q1=100, increase=worsening price competitiveness)



Source: ECB.
Notes: China share in manufacturing trade is used as weight to exclude China from the real effective exchange rate. The latest observations are for the fourth quarter of 2024.

Euro area similarity in revealed comparative advantage with China

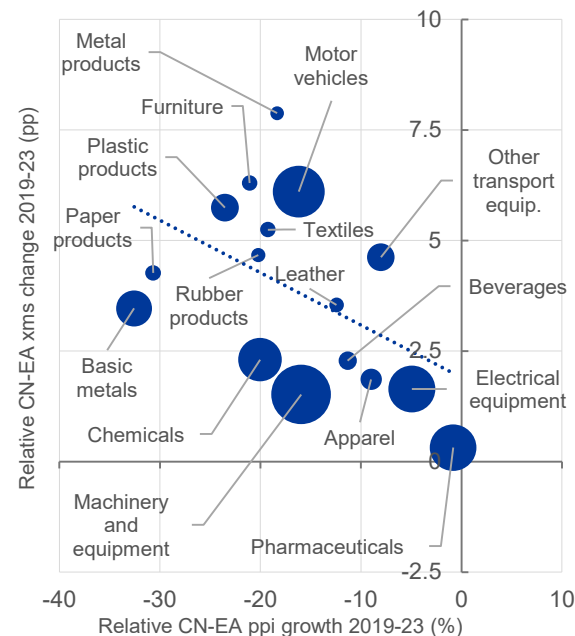
(share of sectors with RCA>1)



Sources: UNCTAD and ECB staff calculations. Notes: Percentage of sectors with revealed comparative advantage (RCA) >1 in both EA and CN (blue), and in both US and CN (yellow) as a share of number of sectors in which the EA and the US have RCA>1, respectively. In total, 259 sectors are being considered for each year. EA aggregate computed as a weighted average based on export value weights. The latest observations are for 2023.

Euro area vs China: relative prices and export market share

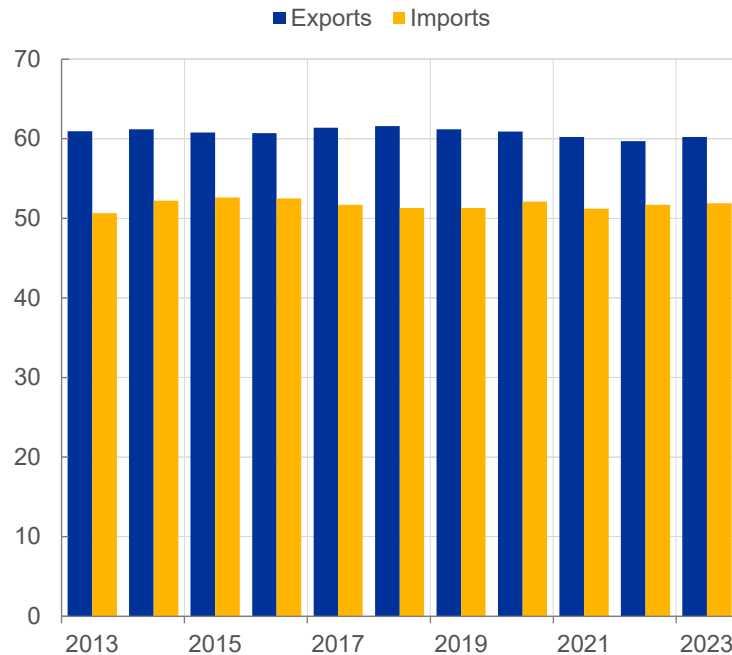
(x-axis: percentages; y-axis: percentage points)



Sources: Haver, TDM and ECB staff calculations.
Notes: Nominal export market shares. The sectors food and wood are excluded from the scatterplot. Size of bubbles based on share of each sector in total extra euro area exports in 2023.

Share of the euro in invoicing of extra-euro area trade in goods

(percentages)

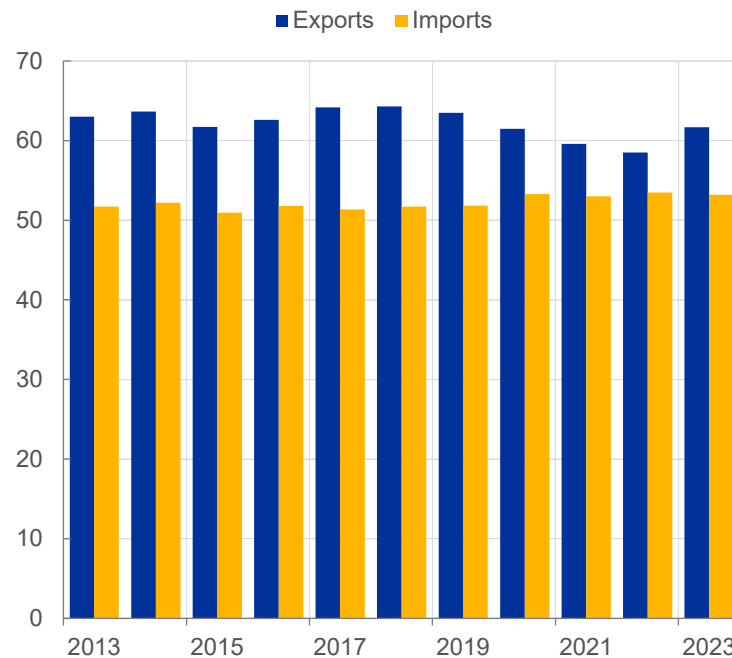


Sources: National central banks and ECB calculations.

Note: The computation of the euro area aggregate is based on the latest observation reported by each Member State.

Share of the euro in invoicing of extra-euro area trade in services

(percentages)

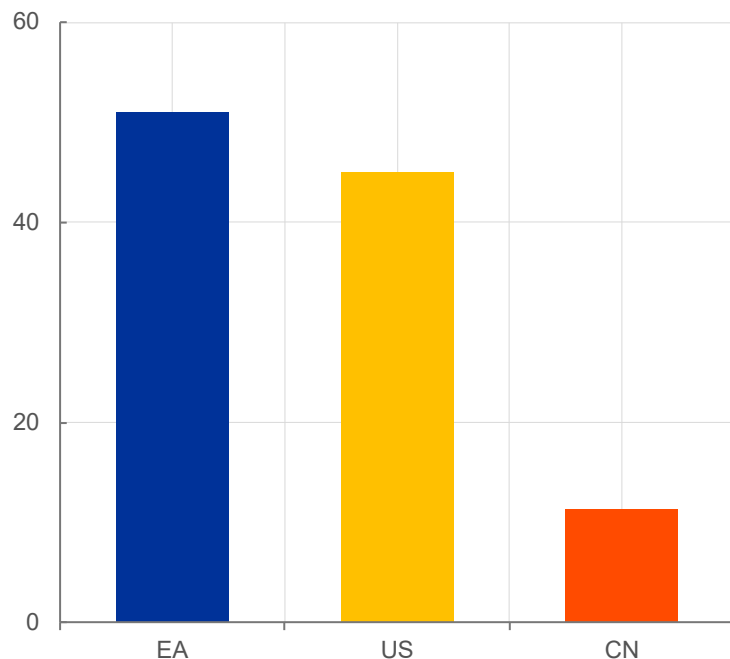


Sources: National central banks and ECB calculations.

Note: The computation of the euro area aggregate is based on the latest observation reported by each Member State.

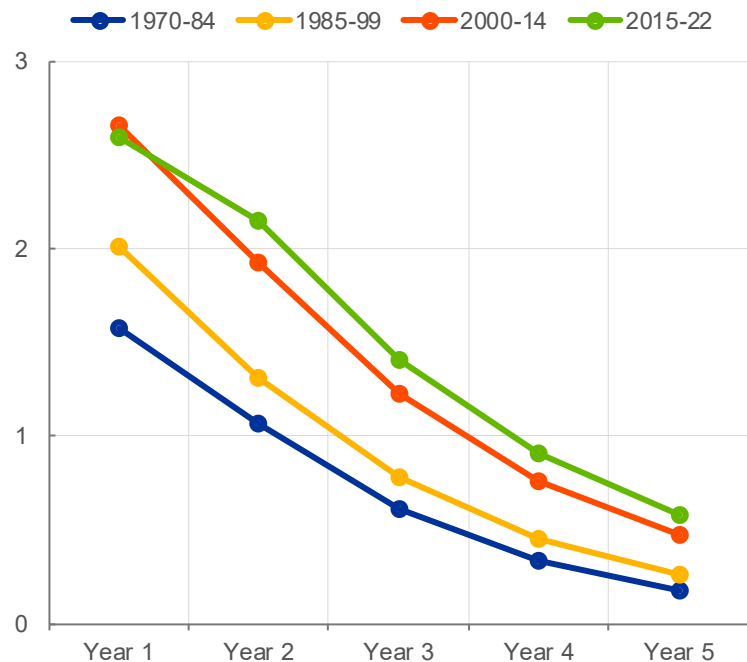
Contribution of global shocks to output variation

Output variation due to global shocks (shares in variance)



Sources: WIOD, ADB, Boeckelmann et al. (2024) and ECB staff calculations.
Notes: The chart reports variance decompositions of quarterly output growth (2006-2022) into different sources of shocks. Global shocks refer to multi-country supply shocks such as the Covid pandemic. Derived from a structural factor model accounting for multi-country and country common shocks as well as idiosyncratic sector shocks that propagate through supply chains - Boeckelmann et al. (2024).

Impact of foreign sector shocks on euro area output (percentage deviation from the baseline level)

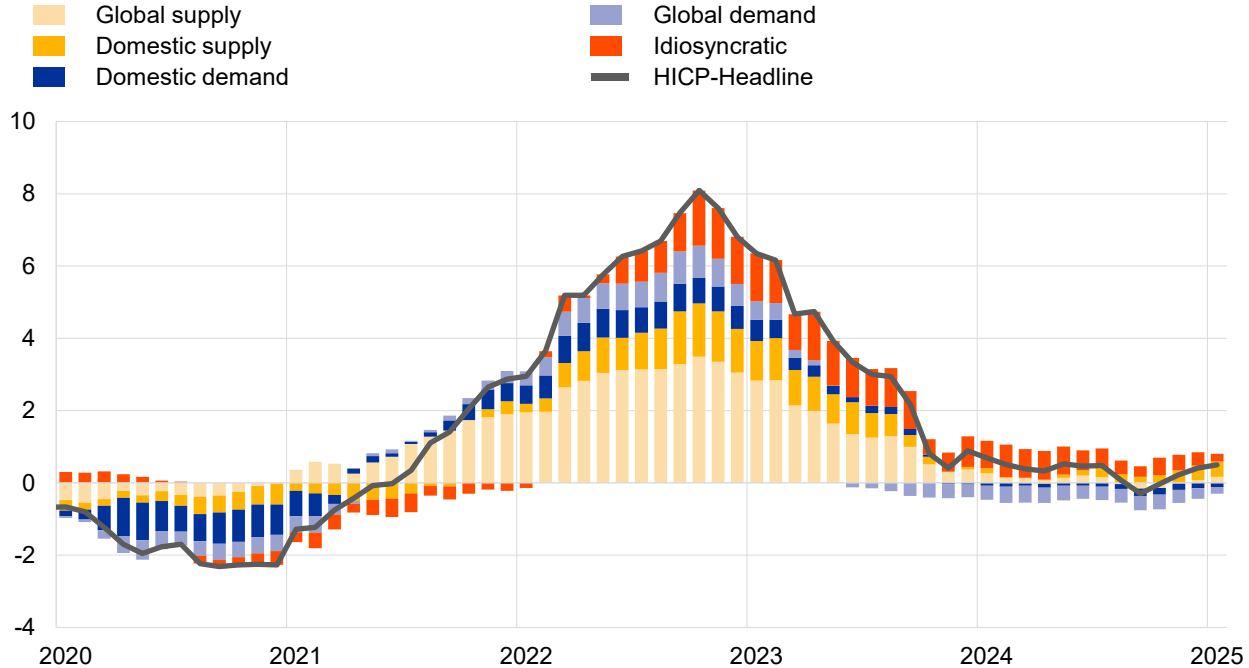


Sources: WIOD, ADB, Boeckelmann et al. (2024) and ECB staff calculations.
Notes: The charts show impulse response functions for euro area output growth in reaction to a set of foreign (non-EA) TFP shocks that increase foreign sectoral output by 10%. The impulse responses reflect final trade between countries and domestic and international sectoral production linkages in intermediate and capital goods. The IRFs are derived using the dynamic multi-country multi-sector model in Boeckelmann et al. (2024).

Decomposition of euro area headline inflation

Headline inflation

(annual percentage changes and percentage change contributions: deviations from mean)



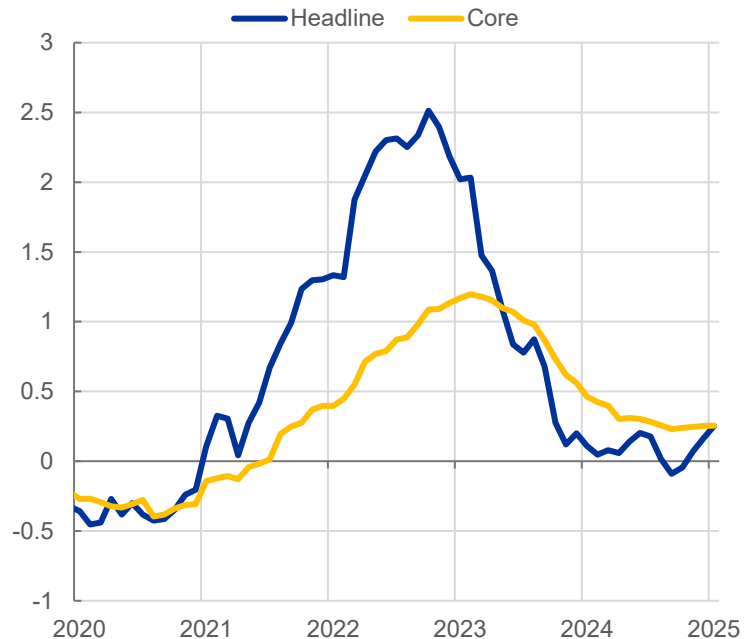
Sources: Eurostat and ECB staff calculations.

Notes: historical decomposition based on a large BVAR model accounting for a rich set of inflation drivers, identified with zero and sign restrictions, see Bańbura, Bobeica, Martínez Hernández (2023), "What drives core inflation? The role of supply shocks", ECB Working Paper No. 2875. The latest observations are for January 2025.

Contributions of energy and supply bottlenecks shocks to inflation

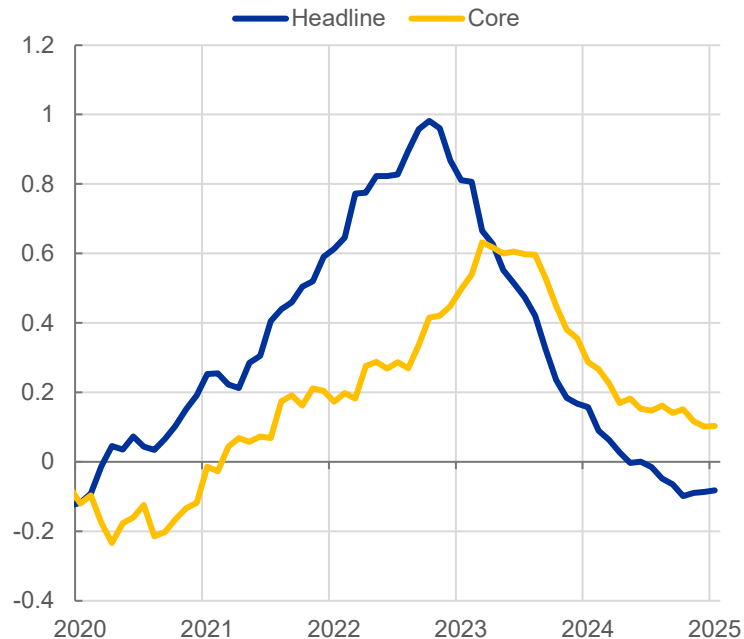
Energy shocks

(contributions expressed in percentage points, deviations from mean)



Supply bottlenecks shocks

(contributions expressed in percentage points, deviations from mean)



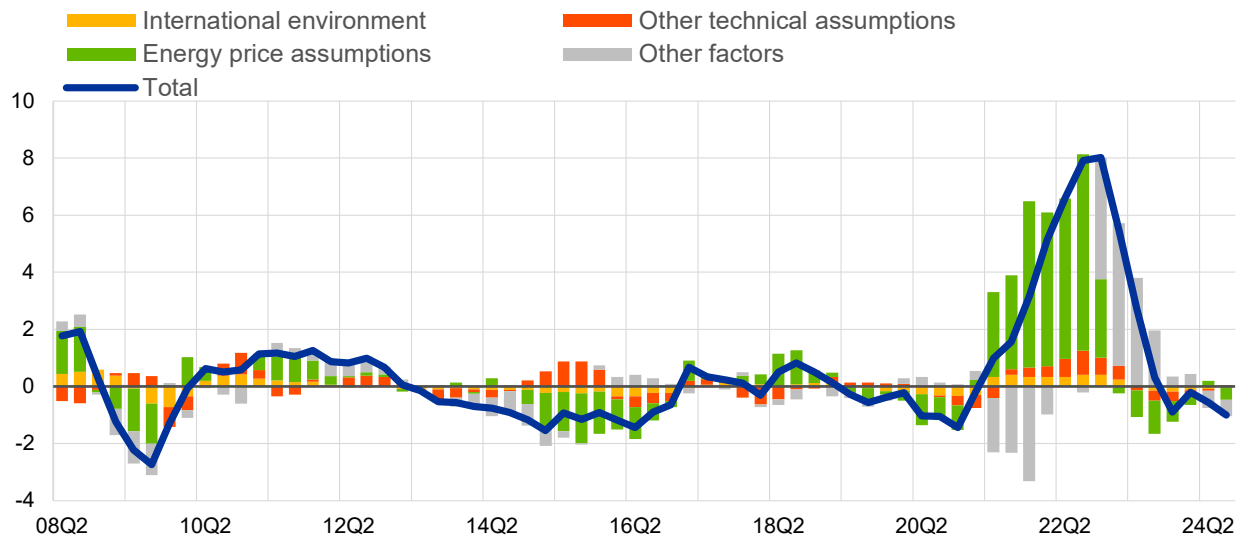
Source: ECB staff calculations.

Notes: Contributions derived based on updated Bańbura, Bobeica, Martínez Hernández (2023), "What drives core inflation? The role of supply shocks", ECB Working Paper No. 2875.

Energy shocks are the sum of oil supply, oil specific demand and gas shocks. The latest observations are for January 2025.

The role of external factors in one-year ahead staff projection errors for inflation

(percentage points contribution to errors in annual rates of change)

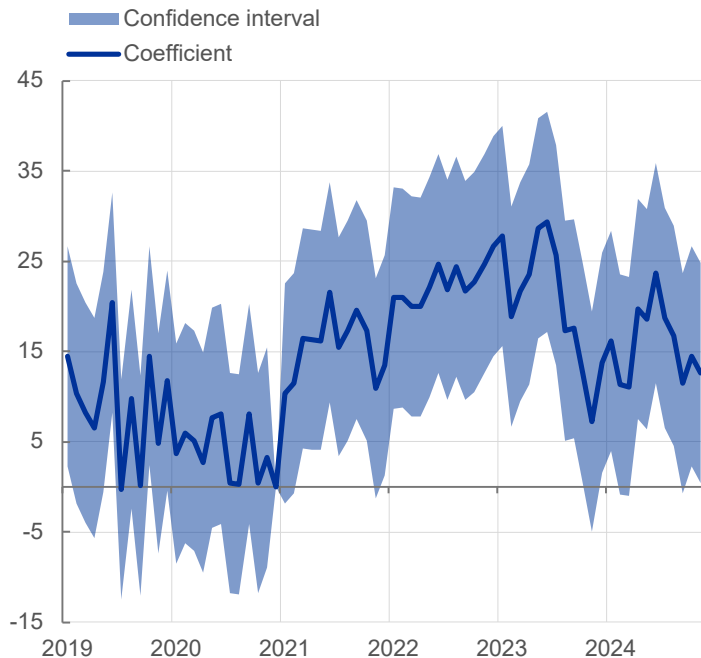


Source: ECB calculations.

Notes: "Total" refers to the outcome for HICP inflation minus the projection. The labels on the horizontal axis indicate the quarter in which the projections were published (i.e. "20Q1" denotes projections for the first quarter of 2021 that were published in the first quarter of 2020). Contributions are based on the elasticities derived from Eurosystem staff macroeconomic models. "Other technical assumptions" relates to assumptions for short and long-term interest rates, stock market prices, food prices and the exchange rate.

Export prices and volumes in energy-intensive sectors

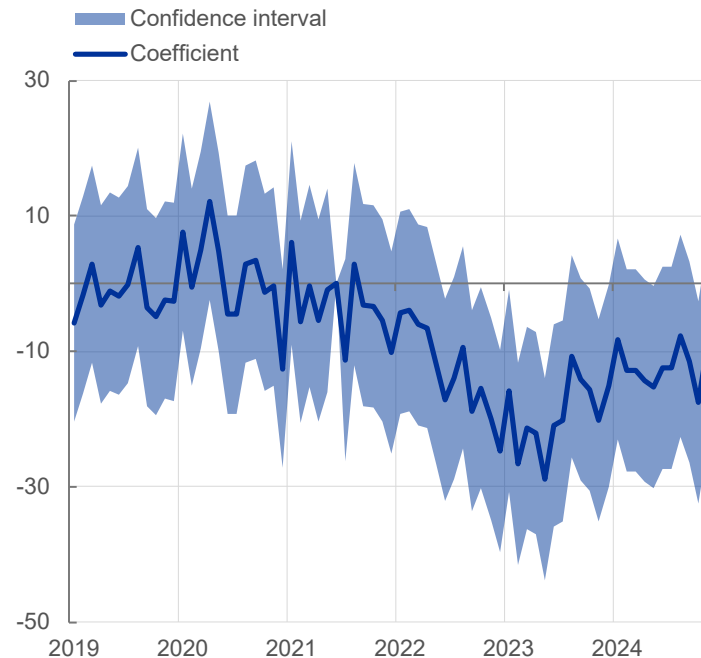
Export prices of energy-intensive sectors (percentage difference from non-energy-intensive sectors)



Sources: TDM and ECB staff calculations.

Notes: Event study comparing export prices in 20 euro area countries and 17 sectors, excluding energy. The chart shows the estimated β_j of the following econometric specification: The chart shows the estimated β_j of the following econometric specification: $\ln(Y)_{sct} = \sum_{j=1}^{36} \beta_j I[j = t] * HighIntensiveSector_{sct} + \ln(IP_{sct}) + FE_{sct} + FE_{ct} + \varepsilon_{it}$.

Export volumes of energy-intensive sectors (percentage difference from non-energy-intensive sectors)



Sources: TDM and ECB staff calculations.

Notes: Event study comparing export volumes in 20 euro area countries and 17 sectors, excluding energy. The chart shows the estimated β_j of the following econometric specification: $\ln export volume_{sct} = \sum_{k=-17}^{18} \beta_k time dummy_{kt} \times energy\ intensive\ sector_{sct} + industrial\ production_{sct} + FE_{sct} + FE_{ct} + \varepsilon_{sct}$.

Role of trade uncertainty

Euro area exports and global investment

(year-on-year percentage changes; share of GDP)

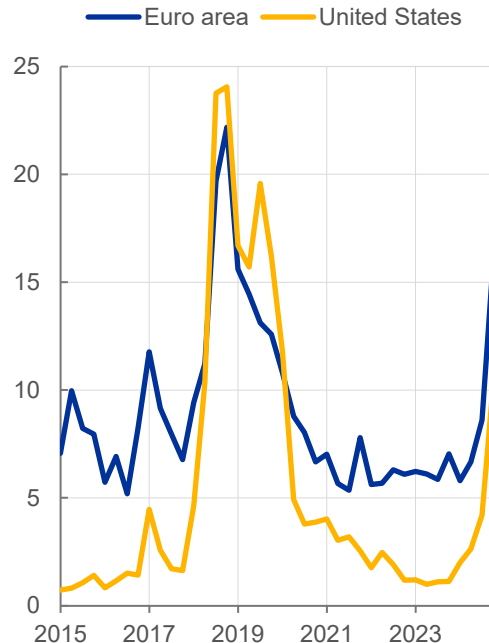


Sources: Eurostat (External trade), Haver/IMF and ECB staff calculations.

Notes: The stacked bar chart shows year-on-year percentage changes on three-months moving average exports by goods composition for the euro area. The dots show the year-on-year percentage changes in world investment as a share of world GDP. Dots in 2024 and beyond are projections.

Worries of companies about trade uncertainty

(share of companies mentioning the keywords in their earning calls)

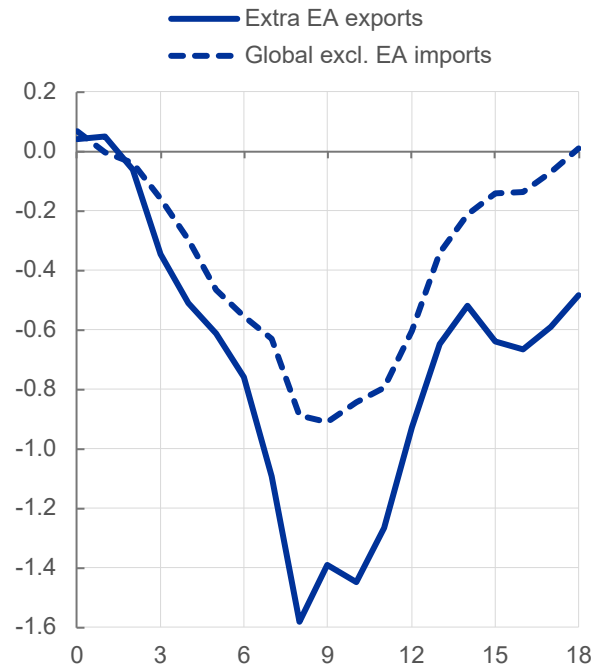


Sources: NL Analytics and ECB staff calculations.

Notes: Quarterly data; Keywords used: Tariffs and Trade Policy. The latest observations are for the fourth quarter of 2024.

Response to trade policy uncertainty

(percentage response)

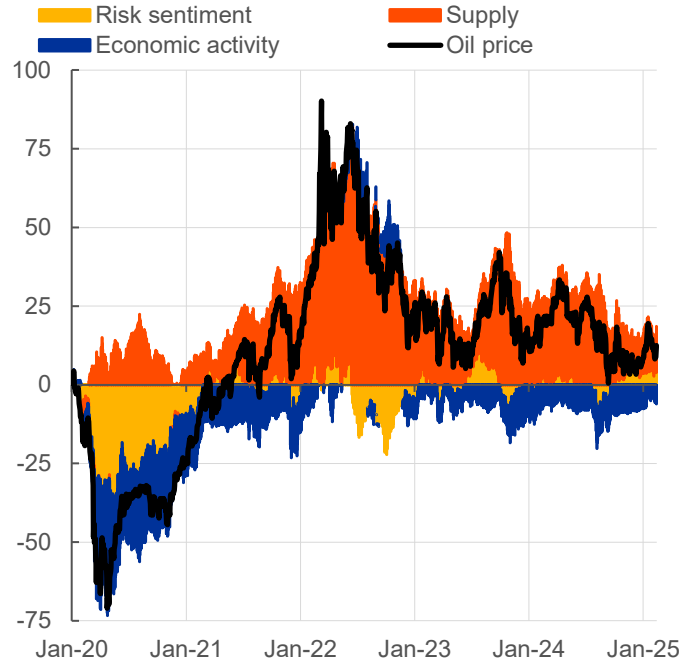


Sources: Eurostat, CPB, ECB staff calculations, Baker, Bloom, and Davis (2016).

Notes: The chart also reports impulse responses to a one standard deviation shock in trade policy uncertainty (TPU).

Oil price decomposition

(daily cumulative percentage change since 2020)

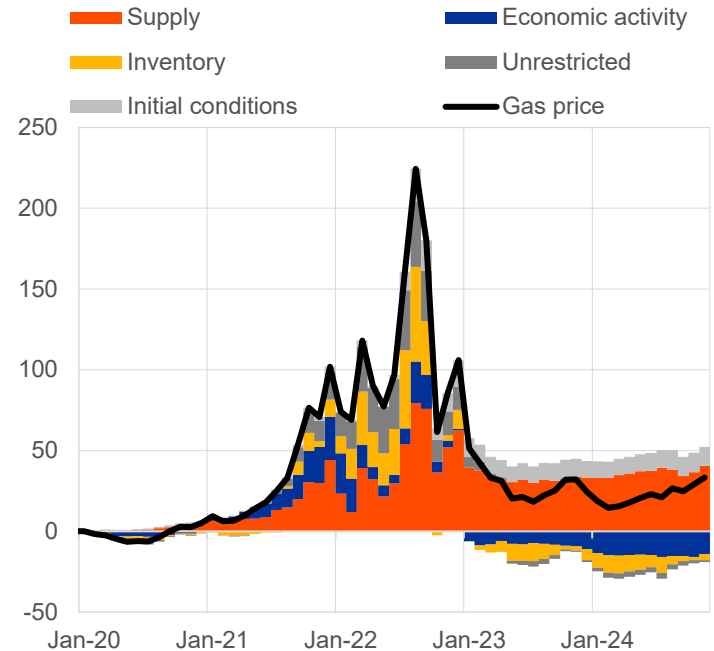


Sources: LSEG and ECB staff calculations.

Notes: Structural shocks are estimated using the one-month future, twelve-month to one-month futures spread, market expectations on oil price volatility and the stock price index, following a BVAR based on Gazzani et al. (2024). The latest observation is for 12 February 2025.

Gas price decomposition

(monthly cumulative changes in EUR/MWh since 2020)



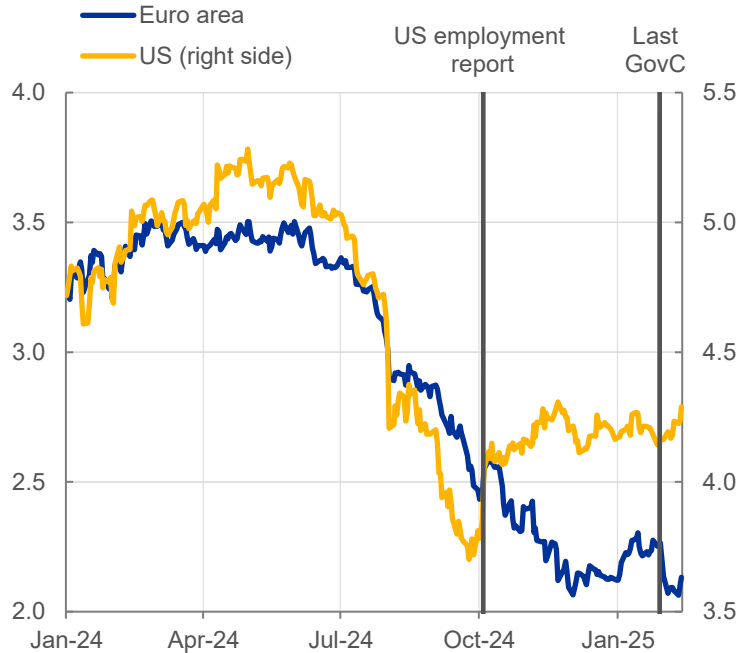
Sources: SEG, Bloomberg, IEA and ECB staff calculations.

Notes: The decomposition is based on a four variables Bayesian VAR, where shocks are identified with sign restrictions, including a euro area gas quantity proxy (defined as imports + domestic production - exports), gas price, gas inventories and euro area industrial production. The last two observations for gas quantity and industrial production have been nowcasted. The latest observation is for November 2024.

US spillovers to the euro area – drivers of short-term nominal yields

US and euro area one-year OIS rates

(percent)

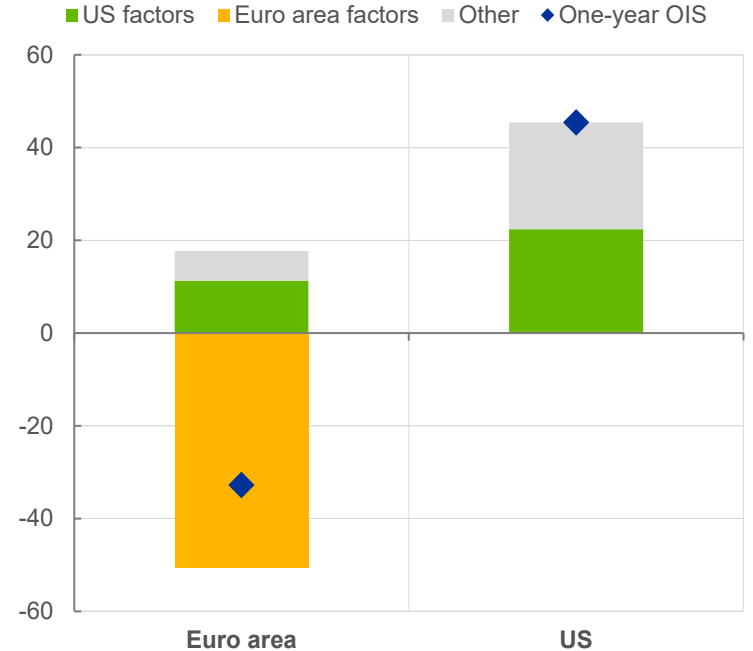


Source: ECB staff calculations.

Notes: "US employment report" as at 4 October 2024. The latest observations are for 12 February 2025.

Drivers of euro area and US one-year OIS rates

(basis points)

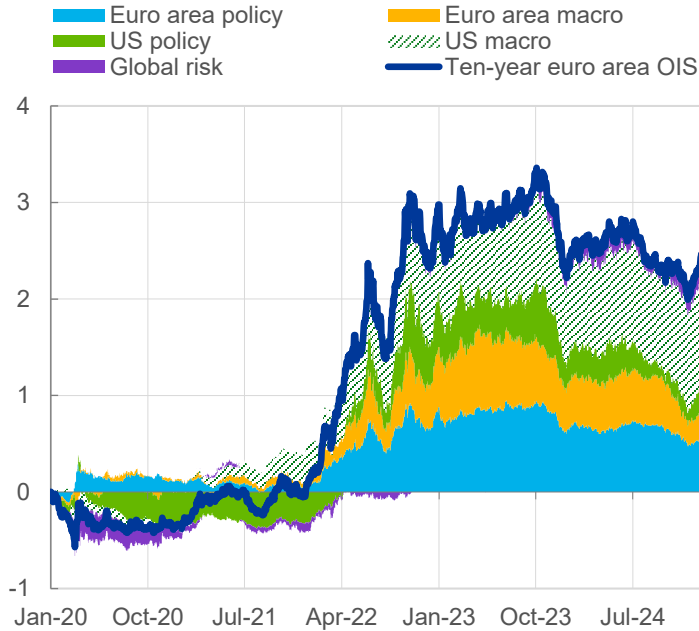


Sources: Bloomberg, LSEG and ECB staff calculations.

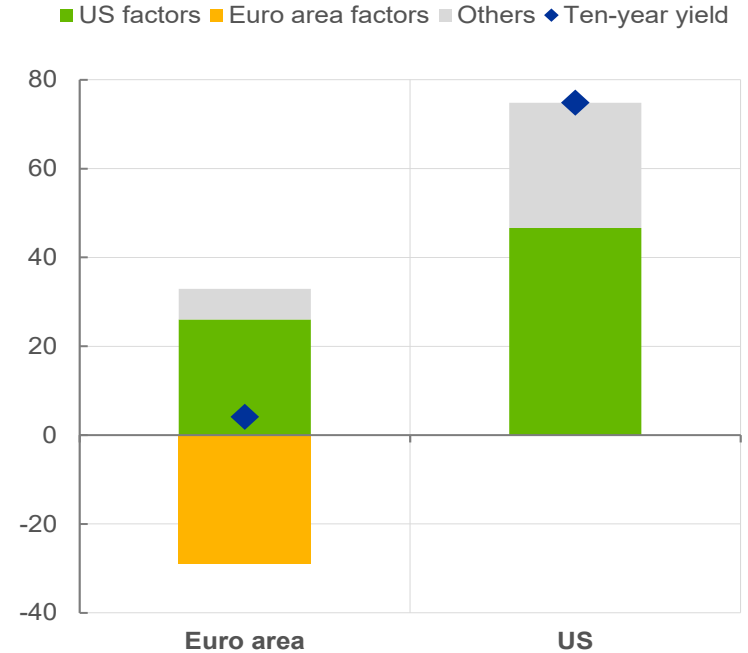
Notes: Model is a two-country BVAR including euro area and US stock prices, EUR/USD and one-year EA OIS-US Treasury spread. Identified using sign restrictions at impact and estimated using daily data since 2007. "US (euro area) factors" include US (euro area) macro and policy shocks. "Other" encompasses global risk for the euro area and external factors and global risk for the United States. The latest observations are for 12 February 2025.

US spillovers to the euro area – drivers of long-term nominal yields

Euro area ten-year OIS historical decomposition (percent)



Drivers of euro area and US ten-year yields (basis points)



Sources: Bloomberg, LSEG and ECB staff calculations.

Notes: Model is a 2-country BVAR including euro area and US stock prices, EUR/USD and ten-year euro area OIS-US Treasury spread. Identified using sign restrictions at impact and estimated using daily data since 2007. The latest observations are for 12 February 2025.

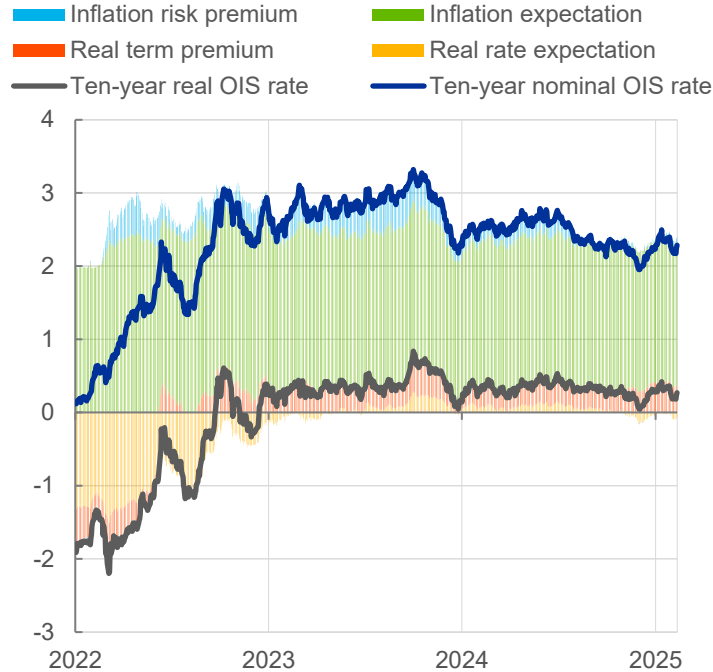
Sources: Bloomberg, LSEG and ECB staff calculations.

Notes: Model is a 2-country BVAR including euro area and US stock prices, EUR/USD and 10-year euro area OIS-US Treasury spread. It is identified using sign restrictions on impact and is estimated using daily data in the period since 2007. "US (euro area) factors" include US (euro area) macro and policy shocks. "Other" encompasses global risk for the euro area and external factors and global risk for the United States. The latest observations are for 12 February 2025.

Euro area nominal risk-free rates and covariance with US Treasury yields

Decomposition of the nominal ten-year euro area OIS rate into expectations and premia

(percentages per annum, basis points)

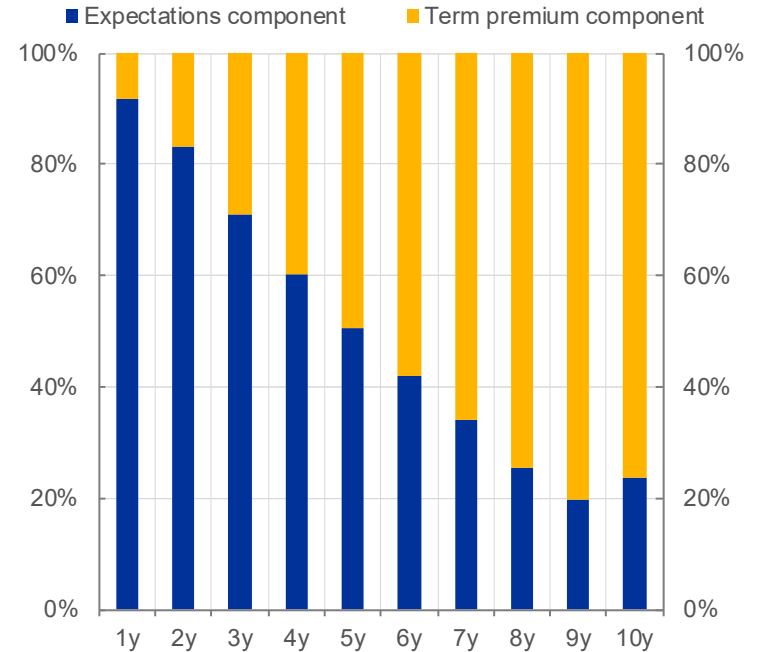


Sources: Bloomberg, LSEG, and ECB calculations.

Notes: The real rate is found by subtracting the ILS rate from the nominal OIS rate. The 10-year spot OIS rate is broken down into nominal expected rates and term premia using two affine term structure models, including one with survey data, and a lower bound model with survey data following Geiger and Schupp (2018). The real counterpart is obtained by subtracting expected inflation and inflation risk premia from the 10-year ILS rate decomposition, as detailed in Burban et al. (2021), ECB Economic Bulletin Issue 8, 2021. The latest observations are for 10 February 2025.

Relative contribution to euro area-US rate covariance, expectations vs term premia

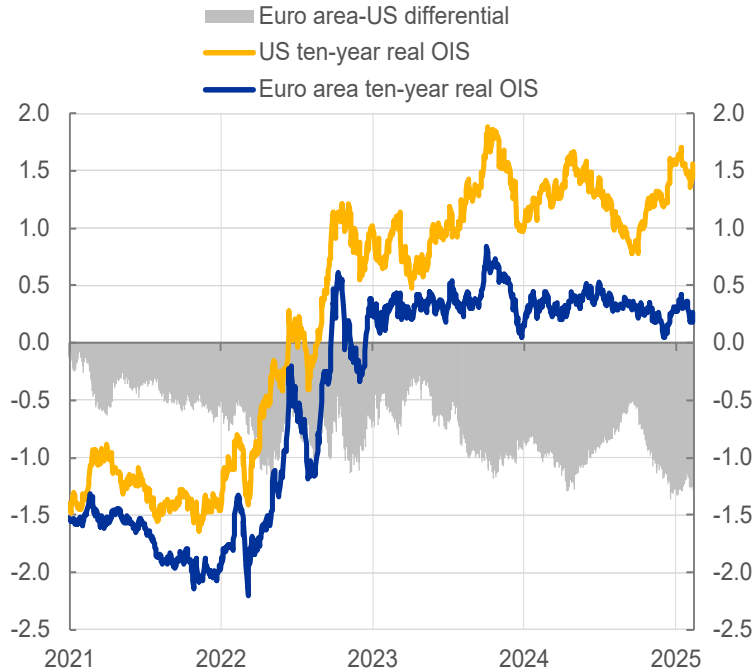
(percentages)



Sources: Bloomberg, LSEG, and ECB calculations. Notes: The chart shows, for a given maturity, the contributions to (partial) covariance between euro area and US rates, based on a sample starting in 2005. For the expectations component, the relative contribution is the covariance between the euro area and US expectations component, divided by the sum of itself and the covariance between the euro area and US term premium component. The relative contribution from the term premium component is then defined as one minus the relative contribution from the expectations component. The latest observations are for 10 February 2025.

Euro area and US real interest rates and the exchange rate

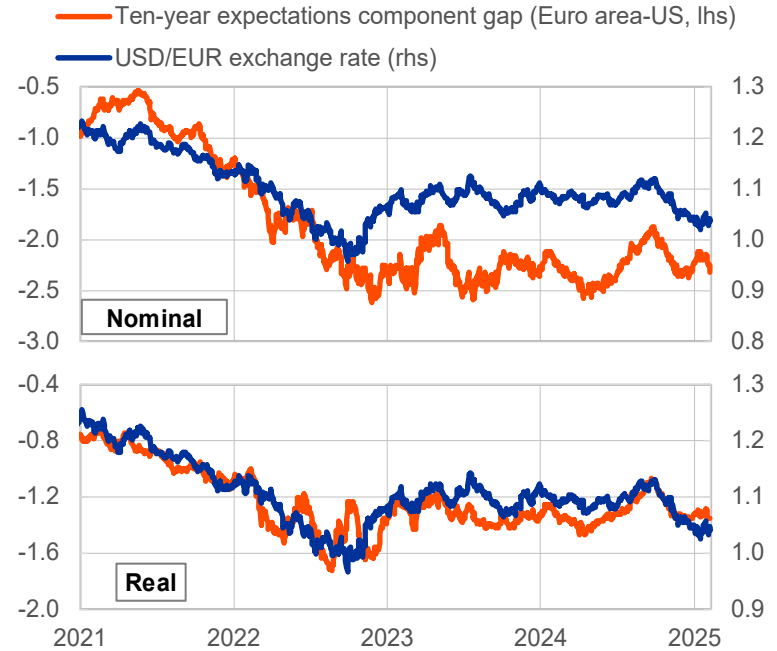
Euro area and US real interest rates (percentages per annum)



Sources: LSEG, Bloomberg and ECB calculations.

Notes: The euro area real rate is calculated by subtracting the inflation-linked swap rate from the nominal OIS rate. For the US, it is calculated by subtracting the break-even inflation rate from the nominal OIS rate. The latest observations are for 12 February 2025.

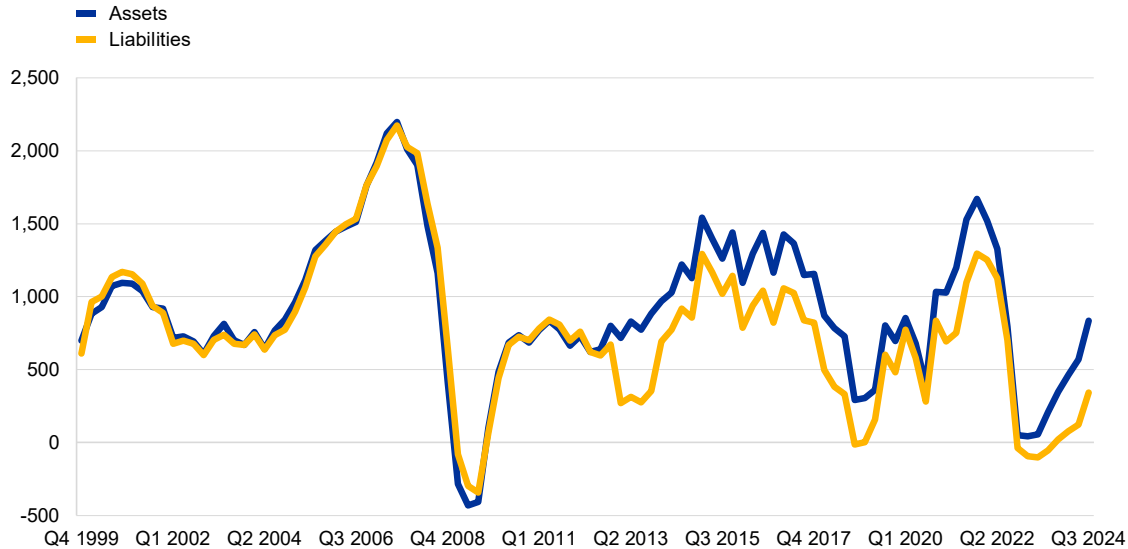
Euro area-US interest rate gap vs exchange rate (percentage points)



Sources: Bloomberg, LSEG and ECB calculations.

Notes: The expectation components are derived from term structure models for the nominal euro area OIS rates, euro area inflation-linked swap rates, US treasury yields and US TIPS yields. The latest observations are for 11 February 2025.

Euro area financial account (four-quarter moving sums, EUR billions)

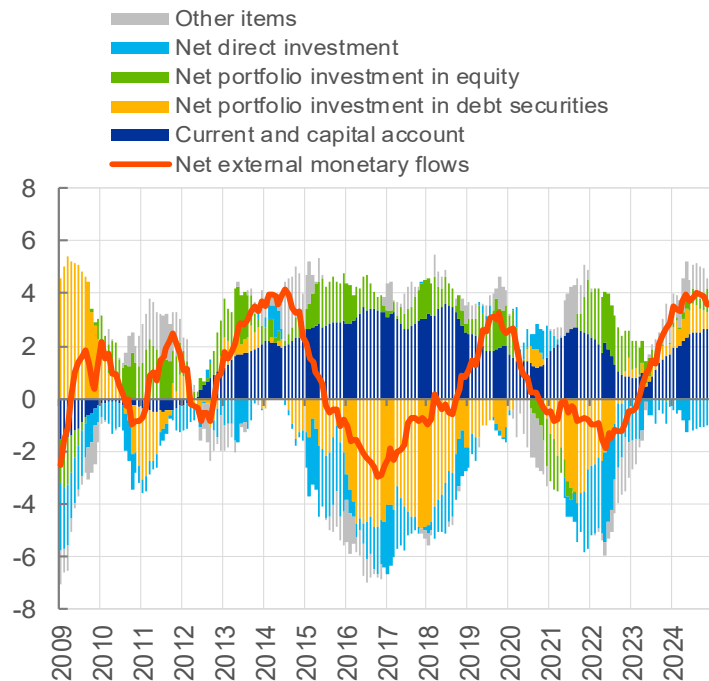


Source: ECB.

Notes: A positive (negative) number indicates cross-border net purchases (sales). Net financial derivatives are reported under assets. The latest observations are for the third quarter of 2024.

The monetary presentation of the b.o.p. (sources of net external monetary flows)

(percentage point contributions to the annual growth rate of M3)

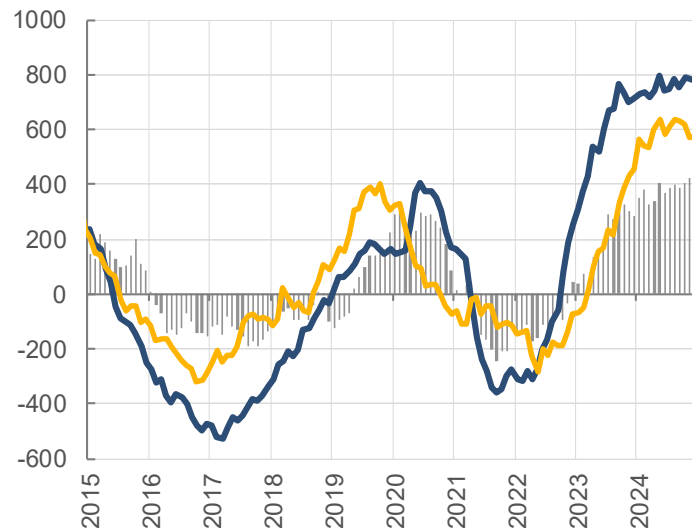


Net supply of and foreign demand for EA bonds

(12-month flows in EUR billions)

Legend:

- Net purchases of government securities by non-euro area residents
- Net supply of euro area government securities
- Net external monetary flows



Sources: ECB and ECB calculations.

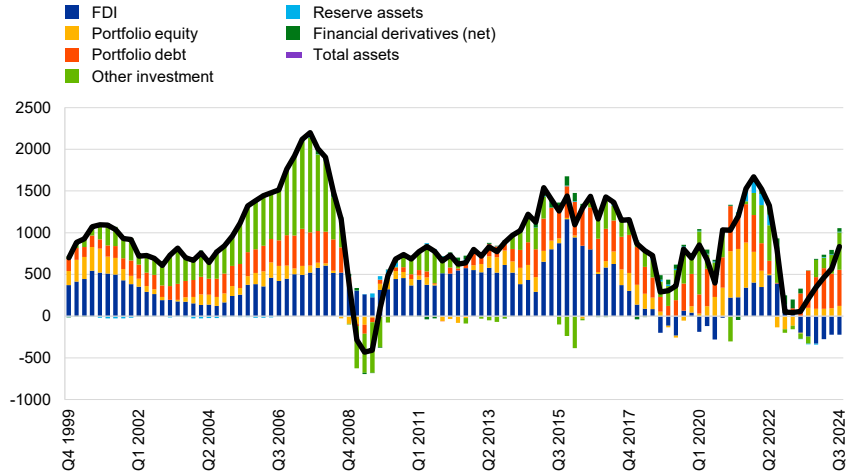
Notes: The monetary presentation of the balance of payments (b.o.p.) excludes the contribution of the domestic MFI sector to the euro area balance of payments. Financial account items with inverted sign. The latest observations are for December 2024.

Sources: ECB and ECB calculations.

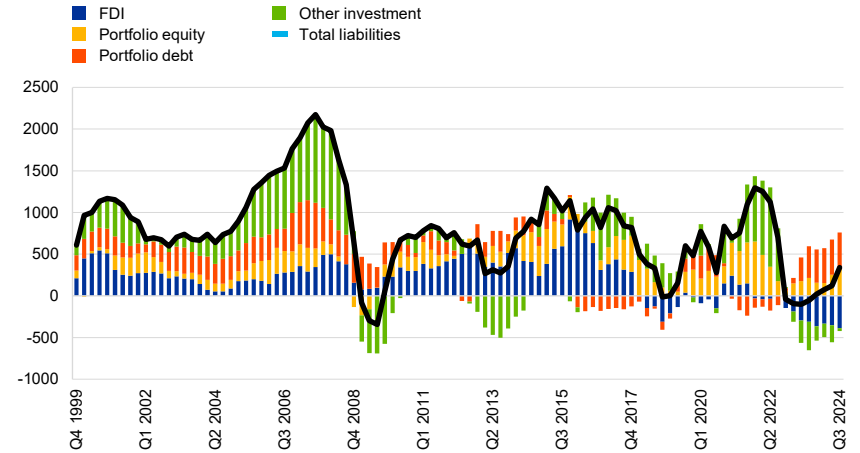
Notes: Supply of [euro area] government securities is the net issuance minus Eurosystem net purchases. The latest observations are for December 2024.

Euro area financial account (four-quarter moving sums, EUR billions)

Assets



Liabilities

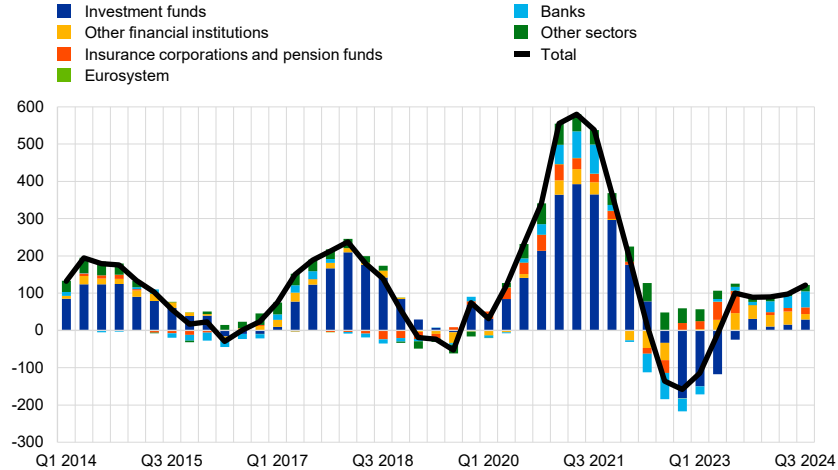


Source: ECB.

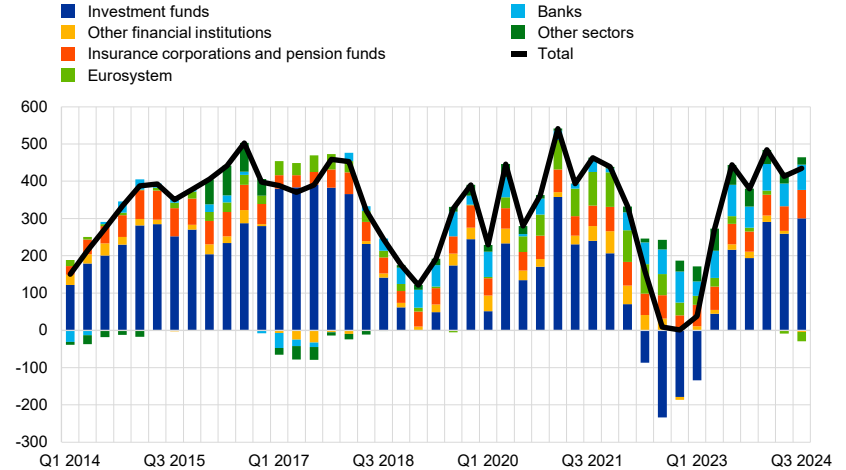
Notes: FDI stands for foreign direct investment. For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. The latest observations are for the third quarter of 2024.

Euro area portfolio investment assets by resident sector (transactions; four-quarter moving sums, EUR billions)

Equity



Debt

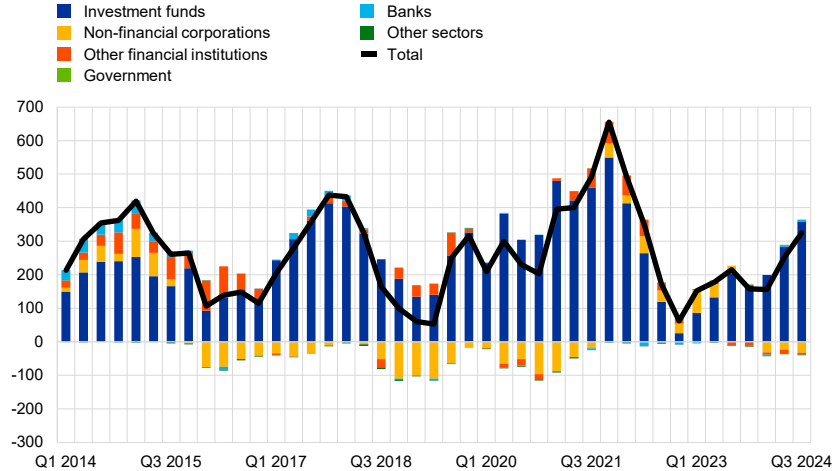


Source: ECB.

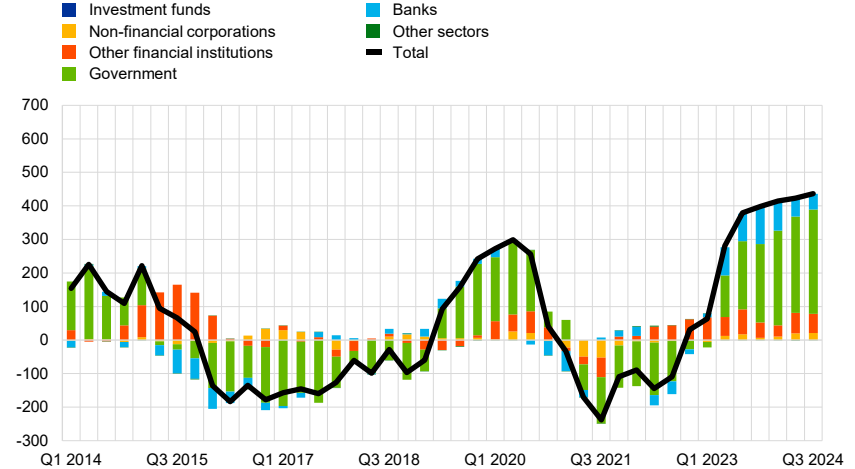
Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. Investment funds include money market funds. "Other sectors" includes governments, non-financial corporations and households and non-profit institutions serving households. The latest observations are for the third quarter of 2024.

Euro area portfolio investment liabilities by resident sector (transactions; four-quarter moving sums, EUR billions)

Equity



Debt



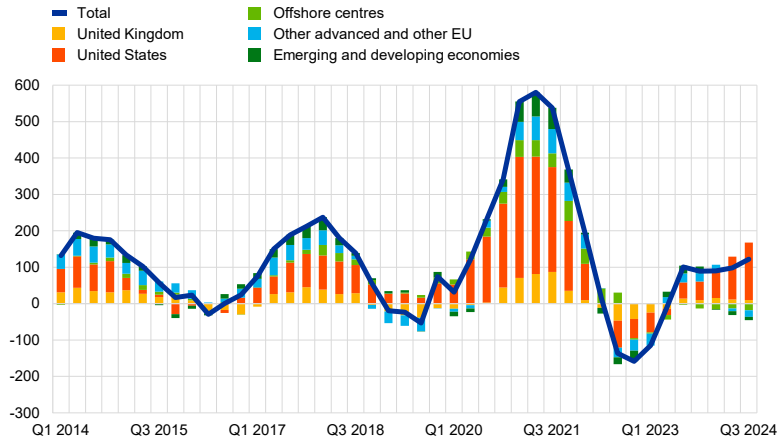
Source: ECB.

Notes: For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. Investment funds include money market funds. "Other sectors" includes the Eurosystem, households and households and non-profit institutions serving households, insurance corporations and pension funds. The latest observations are for the third quarter of 2024.

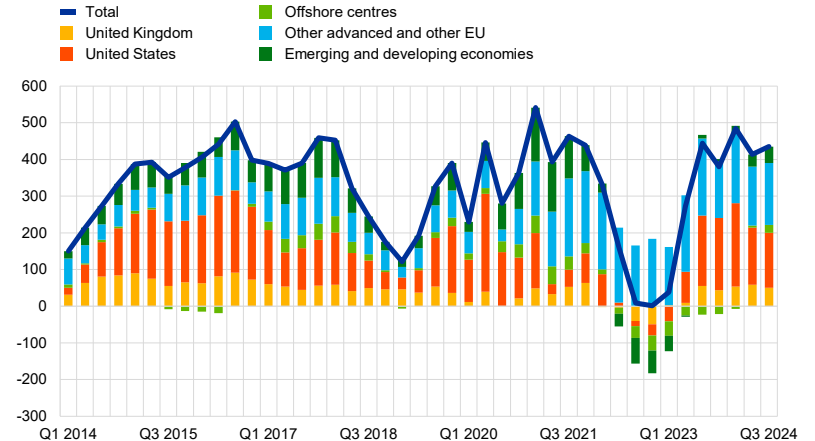
Euro area portfolio investment assets by counterpart location

(transactions; four-quarter moving sums, EUR billions)

Equity



Debt



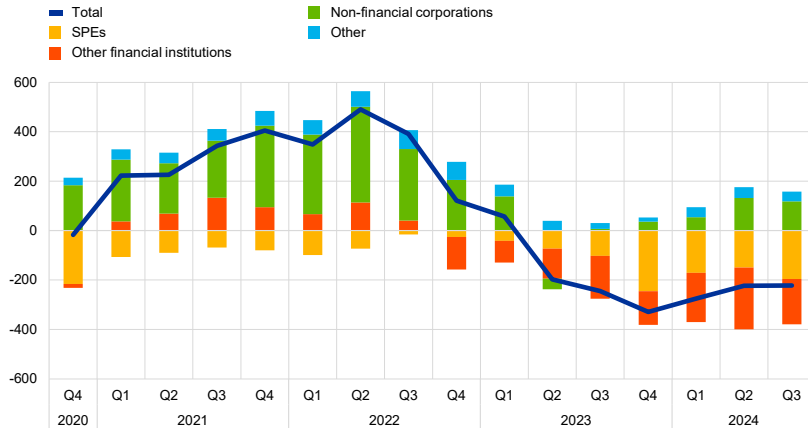
Source: ECB.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. "Other advanced and other EU" includes Australia, Canada, Japan, Norway, South Korea and Switzerland as well as the non-euro area EU Member States and those EU institutions and bodies that are considered for statistical purposes as being outside the euro area, such as the European Commission and the European Investment Bank. "Emerging and developing economies" includes all countries and country groups not shown in the chart, as well as unallocated transactions. The latest observations are for the third quarter of 2024.

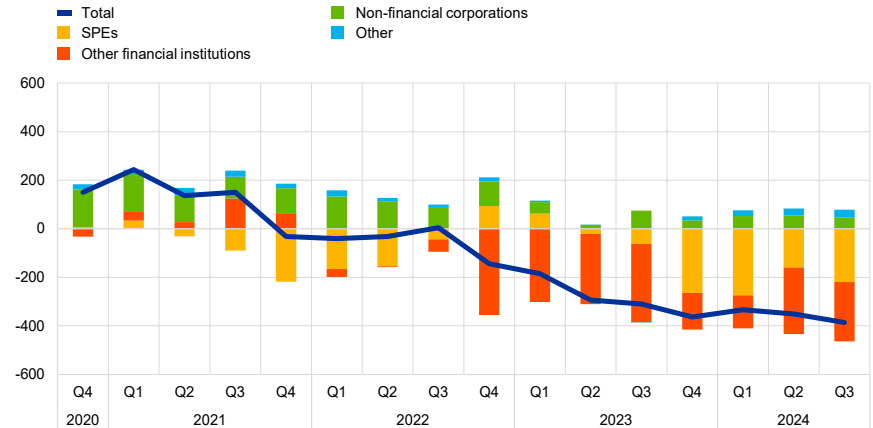
Euro area foreign direct investment by resident sector

(transactions; four-quarter moving sums, EUR billions)

Assets



Liabilities



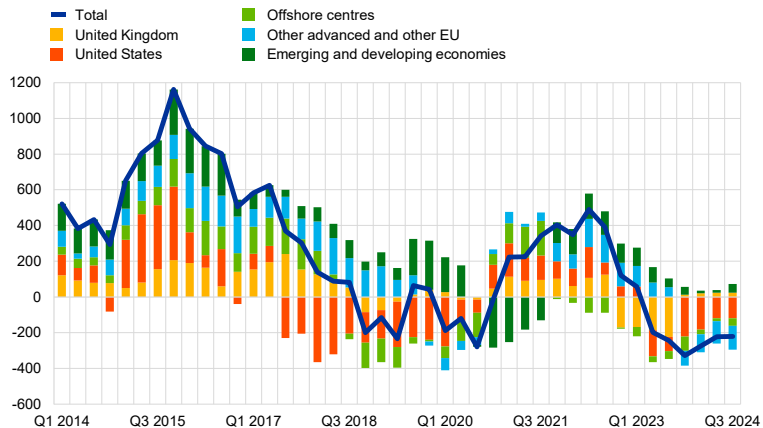
Source: ECB.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. "Other financial institutions" comprises financial institutions that are not banks, money market funds, investment funds, insurance corporations or pension funds and are not classified as special-purpose entities (SPEs). "Other" comprises all remaining resident sectors. The latest observations are for the third quarter of 2024.

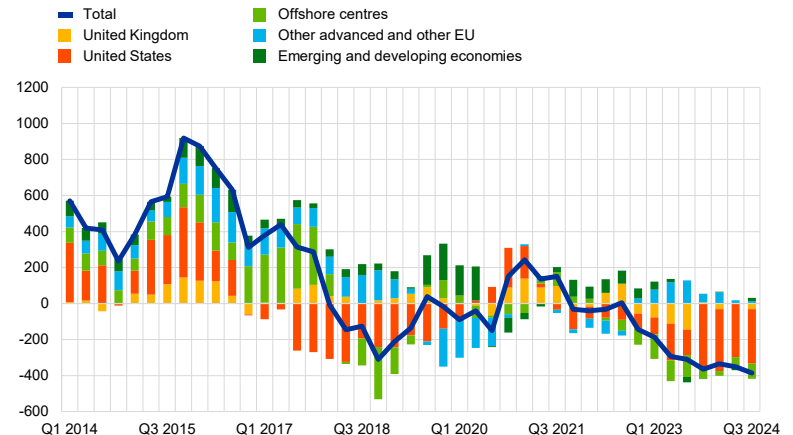
Euro area foreign direct investment by counterpart location

(transactions; four-quarter moving sums, EUR billions)

Assets



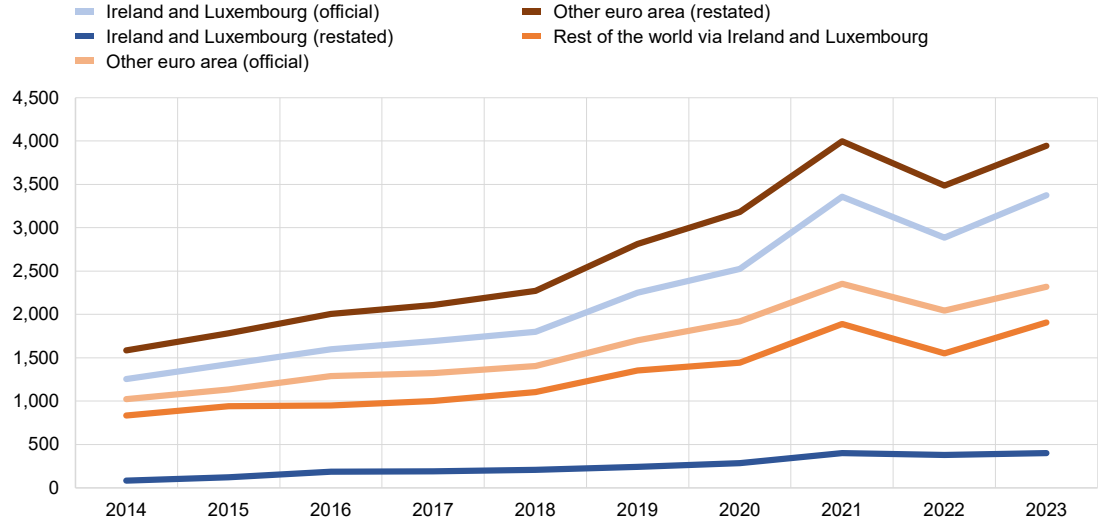
Liabilities



Source: ECB.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. "Other advanced and other EU" includes Australia, Canada, Japan, Norway, South Korea and Switzerland as well as the non-euro area EU Member States and those EU institutions and bodies that are considered for statistical purposes as being outside the euro area, such as the European Commission and the European Investment Bank. "Emerging and developing economies" includes all countries and country groups not shown in the chart, as well as unallocated transactions. The latest observations are for the third quarter of 2024.

Euro area cross-border portfolio investment in the United States (EUR billions)



Source: Updated data by Beck, R., Coppola, A., Lewis, A.J., Maggiori, M., Schmitz, M. and Schreger, J., based on “The geography of capital allocation in the euro area”, *Working Paper Series*, No 3007, ECB, December 2024.

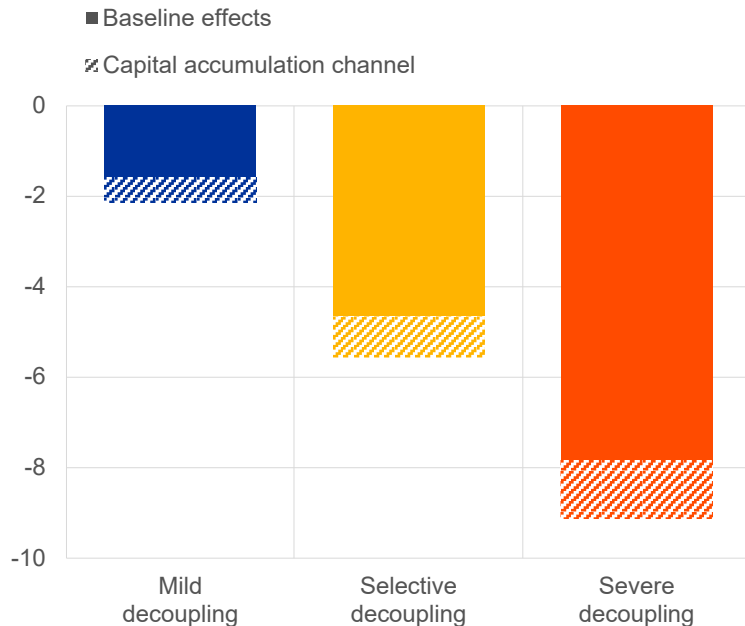
Notes: Official data as reported in the IMF Coordinated Portfolio Investment Survey (CPIS). Rest of world refers to investors resident outside the euro area. The latest observations are for 2023.

Assumptions underlying scenarios of trade fragmentation

Scenario	Sectors affected	Type of shock
Mild decoupling	All sectors	Partial trade restrictions
Selective decoupling	Products whose supply is more prone to being weaponised	Full trade ban for affected products
Severe decoupling	All sectors	Full trade ban

Global real GDP

(percentage deviation from steady state)

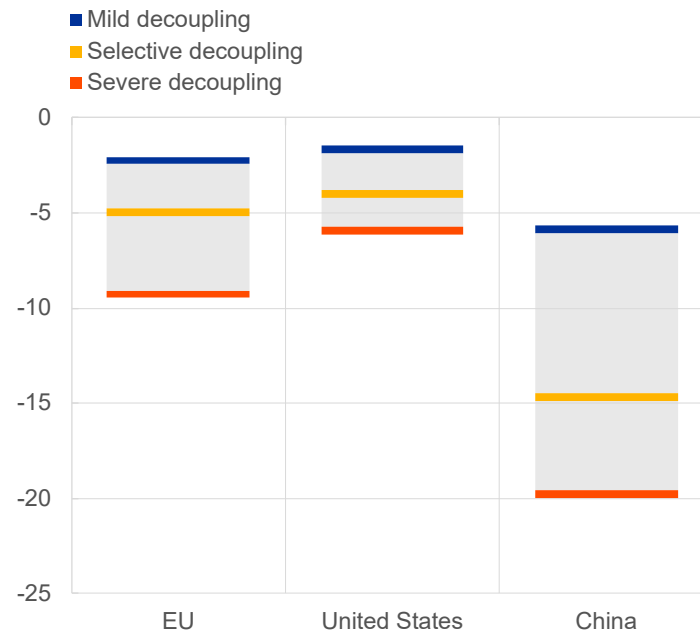


Sources: Baqaee and Farhi (2024), Conteduca et al. (2025), OECD TIVA, EORA, Quintana (2024) and authors' calculations.

Notes: Non-linear impact simulated through 25 iterations of the log-linearised model. The impact from capital accumulation is based on Quintana (2024).

Real GDP by region

(percentage deviation from steady state)

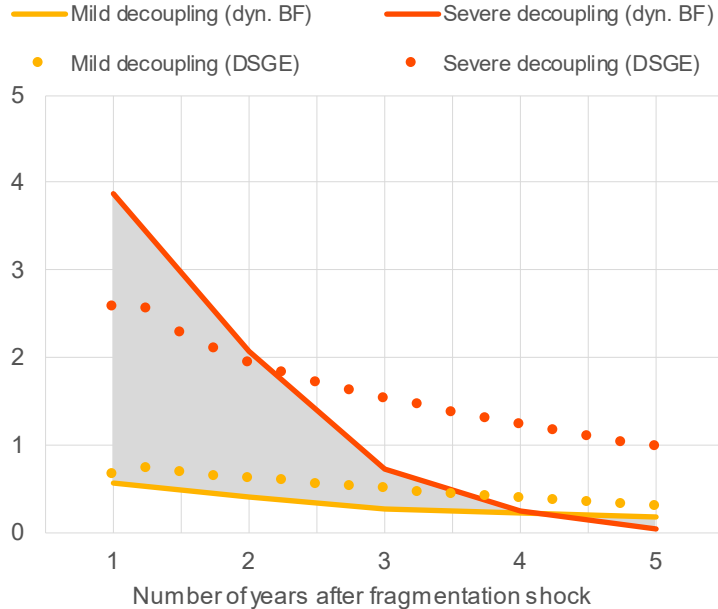


Sources: Baqaee and Farhi (2024), Conteduca et al. (2025), OECD TIVA, EORA, Quintana (2024) and authors' calculations.

Notes: Non-linear impact simulated through 25 iterations of the log-linearised model. Values include the additional impact from capital accumulation channel. The EU aggregate includes results for EFTA countries due to model-based aggregation.

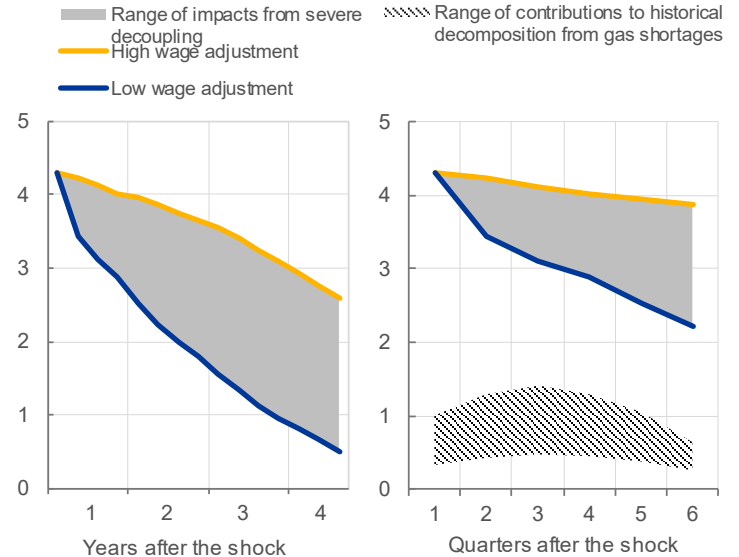
Global inflation

(annual percentage changes, percentage deviation from no fragmentation)



Euro area year-on-year core inflation

(left: p.p. deviations from baseline; right: p.p. deviations from baseline and p.p. contributions to historical decomposition)



Sources: Quintana (2024), Lechthaler and Mileva (2024), OECD TIVA, EORA, and author calculations.

Note: “Dyn. BF” refers to the dynamic extension of the Baqaee-Farhi model by Quintana (2024a) and “DSGE” refers to the Dynamic Stochastic General Equilibrium model by Lechthaler and Mileva (2024).

Sources: Left panel: Quintana (2024a), right panel: Quintana (2024), Barbura et. al. (2023) (lower bound), Alessandri and Gazzani (2023) (upper bound).

Note: For the empirical estimated (right panel) the period covered is Q3 2022 – Q4 2023.



Avoid broad-based protectionism

...because while resilience is a legitimate concern, tit-for-tat trade war is welfare-reducing and does not fully eliminate interdependencies

Adopt targeted policies

...to account for heterogeneity across sector, firms, regions

Strengthen supply chain monitoring

...by monitoring production networks to understand direct and indirect foreign dependencies and risks

Fragmentation matters for monetary policy

...*during the transition*: larger, more frequent supply shocks;
in the long run: reduced diversification through trade increases volatility and inflation



Look beyond aggregate trade data

...by using granular
trade data and a
disaggregated approach
to monitor
fragmentation

Conduct regular business surveys

...for a timely
understanding of firm's
exposure to
fragmentation risks

Enhance understanding of EU interdependencies

...as the full extent of
detailed interdependencies
is still unknown; enhanced
cooperation among NCBs
and other EU institutions is
desirable

Richer set of analytical tools

...is necessary to
assess impact of
fragmentation shocks
on activity and prices