EUROPEAN CENTRAL BANK

EUROSYSTEM

Inflation and disinflation in the euro area

Lecture at EMU lab, European University Institute

Florence

23 May 2025

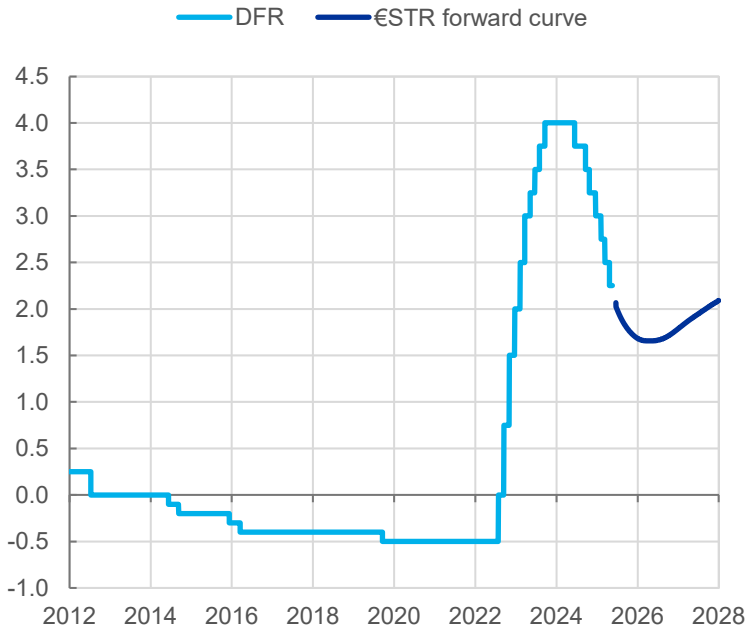
Philip R. Lane

Member of the Executive Board

Decade of zero or negative rates (2012-2022)

Deposit facility rate and €STR forward rate

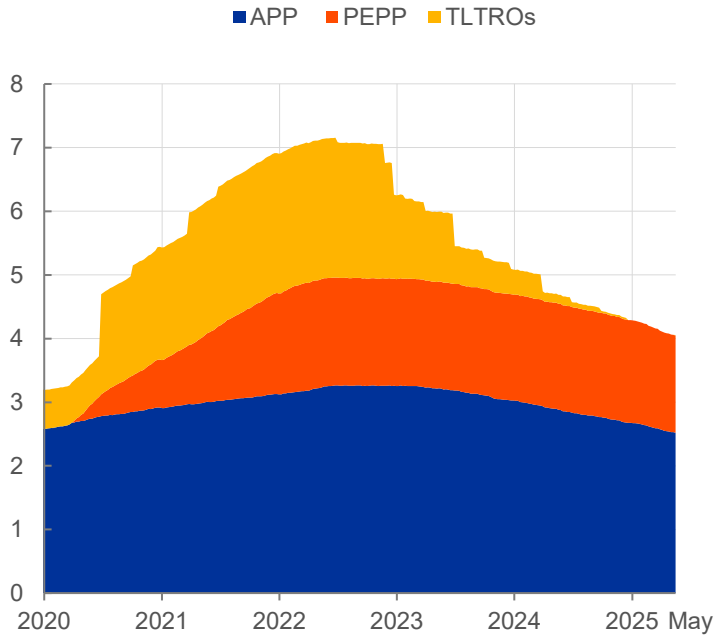
(percentages per annum)



Sources: LSEG, Bloomberg, and ECB calculations.
Latest observation: 19 May 2025.

Eurosystem monetary policy assets

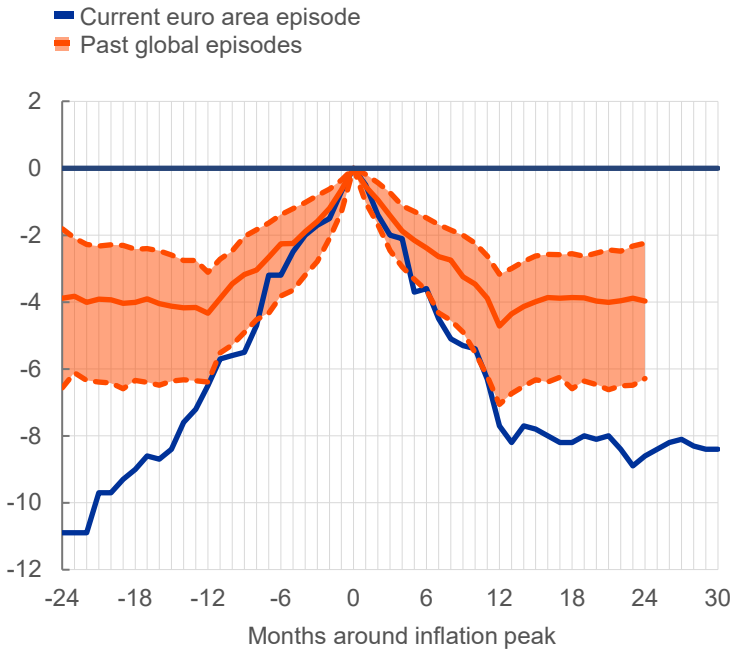
(EUR billion)



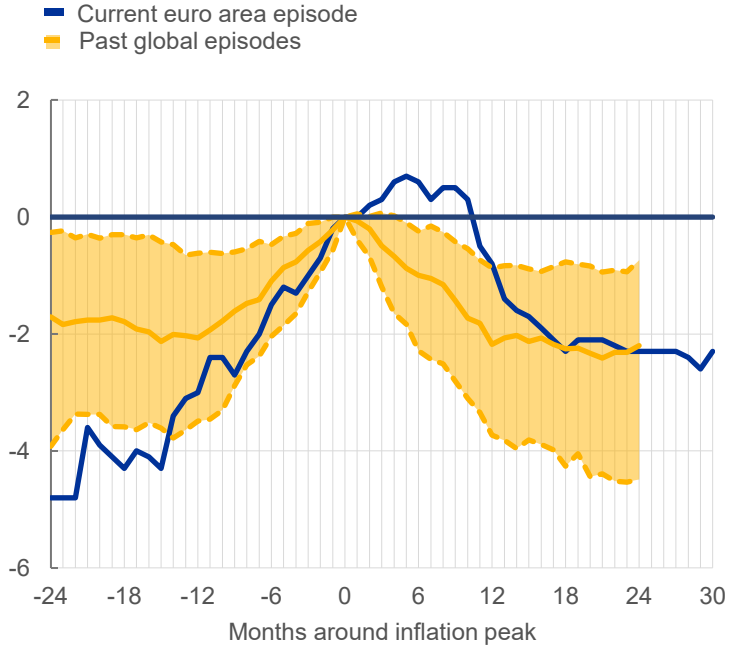
Source: ECB.
Latest observation: 16 May 2025.

Historical inflation and the recent inflation episode in the euro area - headline and core

Headline inflation
(percentage points)



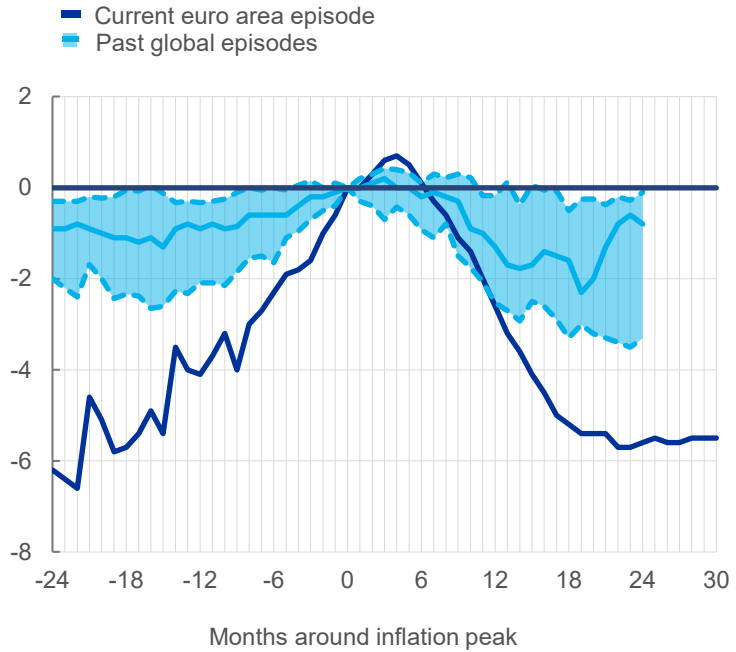
Core inflation
(percentage points)



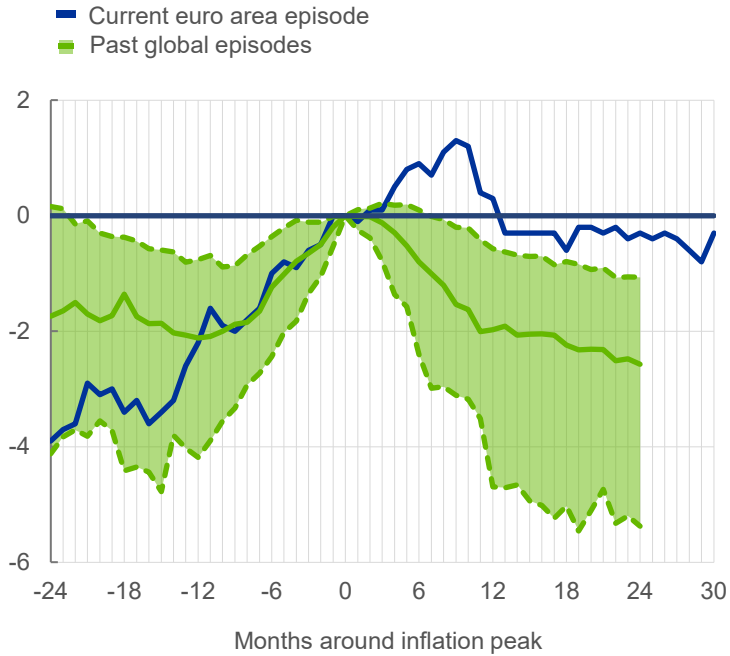
Sources: BIS, Eurostat, and ECB calculations.
Notes: The shaded areas and the orange and yellow lines represent respectfully the interquartile range and the median of national headline and core inflation series relative to their peaks during disinflation episodes before 2022 across a panel of 30 advanced economies and 28 emerging market economies. Month = 0 is when the headline inflation rate is at its highest during that particular episode. The dark blue line represents the latest developments in headline and core inflation for the euro area relative to the October 2022 peak. The latest observations are for April 2025.

Historical inflation and the recent inflation episode in the euro area – goods and services

Non-energy industrial goods inflation
(percentage points)



Services inflation
(percentage points)

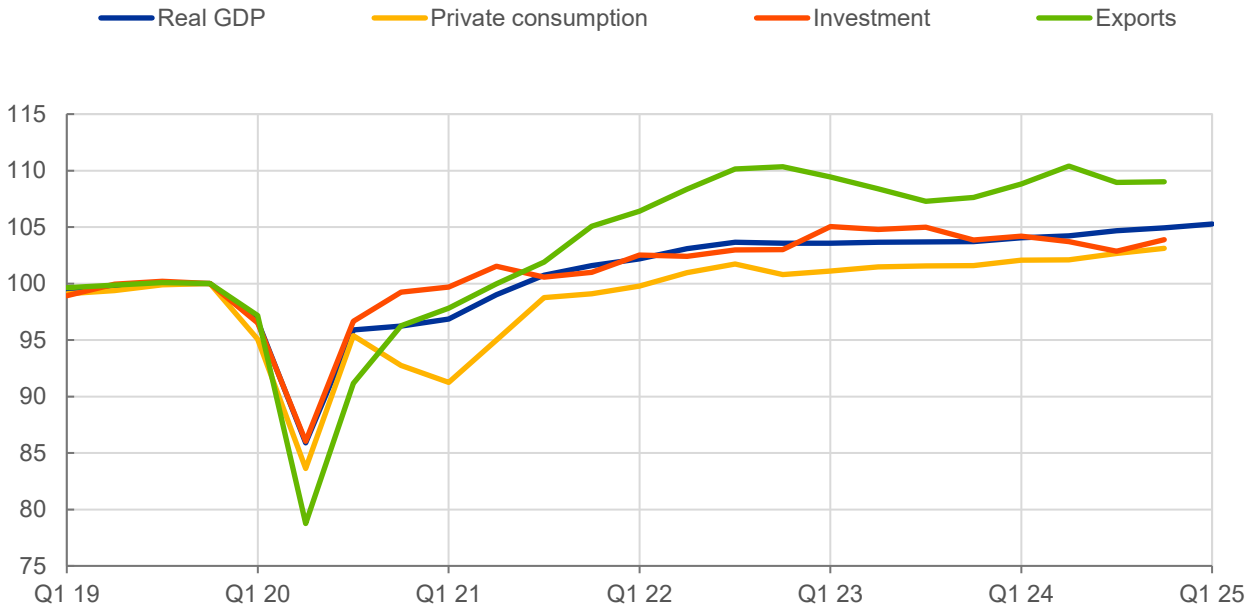


Sources: BIS, Eurostat, and ECB calculations.
Notes: The shaded areas and the light blue and green lines represent respectfully the interquartile range and the median of national NEIG and services inflation series relative to their peaks during disinflation episodes before 2022. Non-energy industrial goods inflation refers to a panel of all euro area couties, while services inflation refers to a panel of 30 advanced economies and 28 emerging market economies. Month = 0 is when the headline inflation rate is at its highest during that particular episode. The dark blue line represents the latest developments in NEIG and services inflation for the euro area relative to the October 2022 peak. The latest observations are for April 2025.

Post-pandemic recovery of the euro area economy

Real GDP and components

(fourth quarter of 2019 = 100)

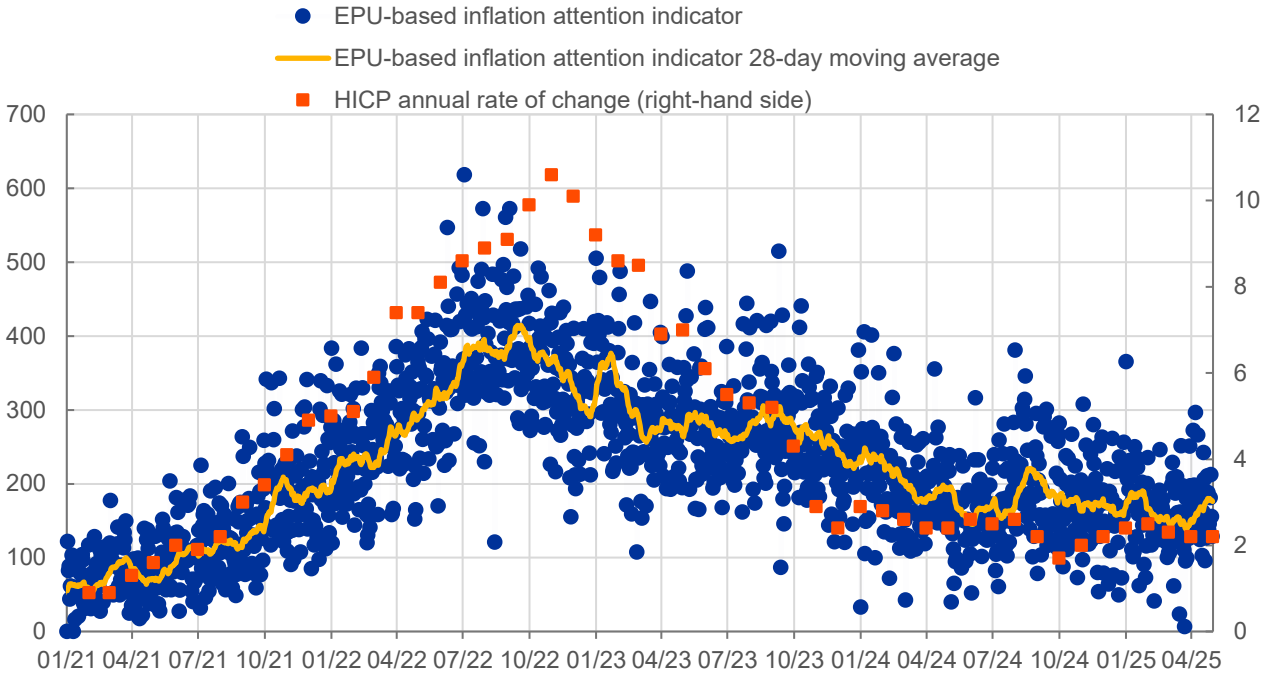


Sources: Eurostat and ECB calculations.
Note: The latest observations are for the first quarter of 2025 for GDP and for the fourth quarter of 2024 for all other series.

Attention to inflation

Inflation developments and attention to inflation

(lhs: index of relative number of articles; rhs: percentage points)

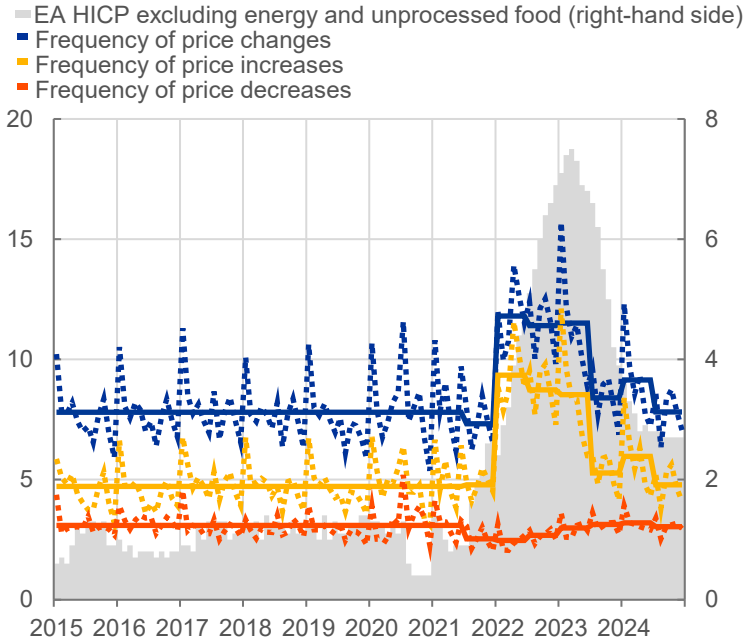


Sources: Dow Jones Factiva Database, Eurostat and ECB staff calculations.
Notes: The blue dots represent the inflation attention indicator reproducing the methodology of the Economic Policy Uncertainty index (EPU) from Caldara et al. (2020). Inflation related articles are counted based on the number of inflation related words they contain. The inflation-related articles proportion in the daily publications is then computed for each newspaper source, normalized by its standard deviation for the period of 1997-2010, before aggregation. The final indicator is scaled to have a mean of 100 over the period 1997-2010. The latest observations are for April 2025.

State-dependent pricing and evidence for non-linearities

Repricing frequency (all sectors)

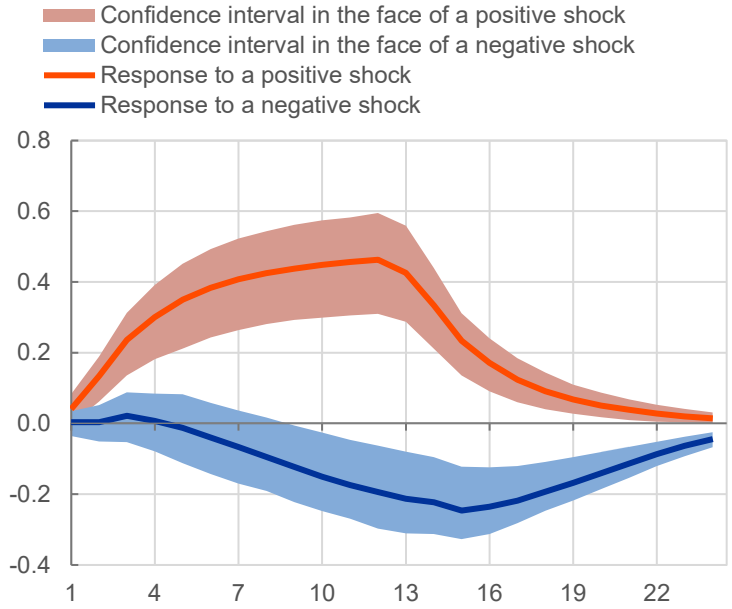
(lhs: percentages; rhs: annual percentage change)



Source: Consumer price micro-datasets from the national statistics institutes of Germany, France, Italy, Spain, Austria, Greece, Estonia, Latvia and Lithuania. Data for 2024 include DE (Hessen) until July 2024, FR, IT, ES, AT, EE, LV until Dec 2024, GR until Dec 2023 and LT until March 2023. Calculations: "Consumer Price Stickiness in the Euro Area During an Inflation Surge" E. Gautier , C. Conflitti , D. Enderle, L. Fadejeva , A. Grimaud, E. Gutiérrez, V. Jouvanceau, J.-O. Menz, A. Paulus, P. Petroulas P. Roldan-Blanco, E. Wieland, mimeo. Notes: The chart shows the weighted average frequencies of price changes (excluding sales) for all sectors and by aggregate product category. VAT changes in Jan 2024 in Germany (restaurant sector) and EE (main rate) are controlled for in a similar way as other VAT changes over the whole sample. The solid lines plot the average over the period 2015-21 and half-year averages over the period 2021-24. The latest observations are for December 2024.

Response of core inflation to energy price increases and decreases

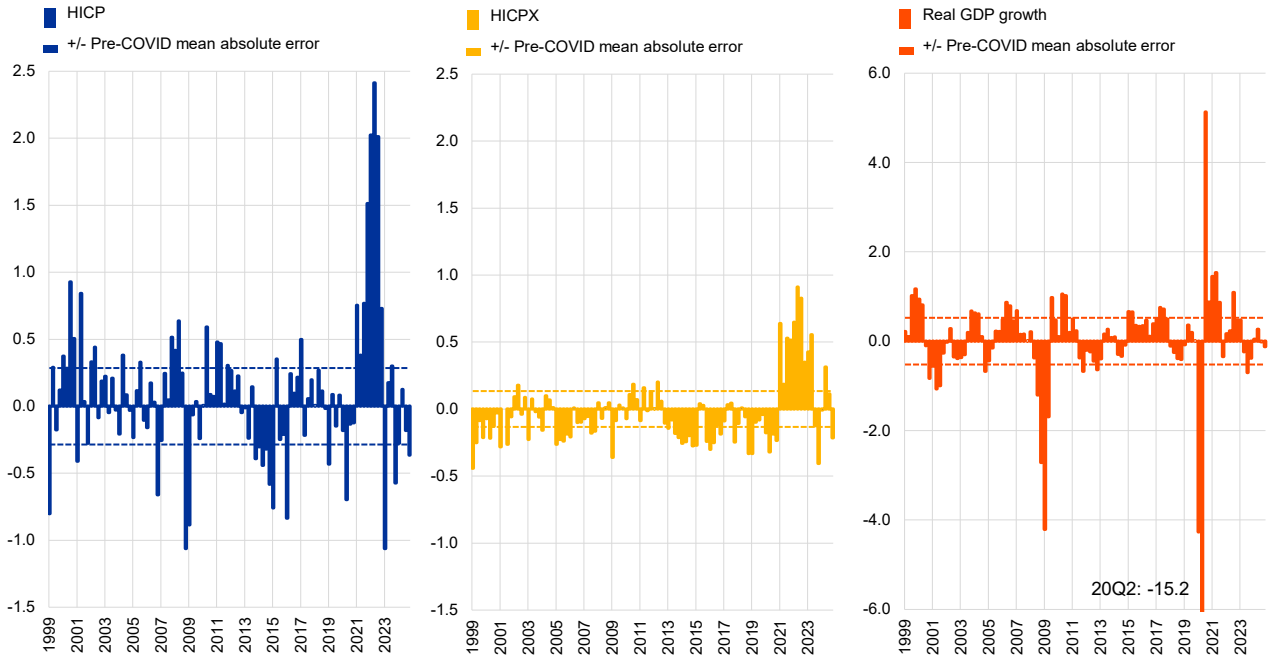
(percentage points)



Sources: See Burriel et al., 2024.
Notes: The x-axis shows the time after the shock in months. The y-axis shows the response of year-on-year core inflation in percentage points. The energy price shock increases (decreases) energy price inflation by 6% on impact. Results are based on a bivariate non-linear SVAR which consists of y-o-y energy price inflation and y-o-y core inflation. The energy price shock is identified via contemporaneous restrictions.

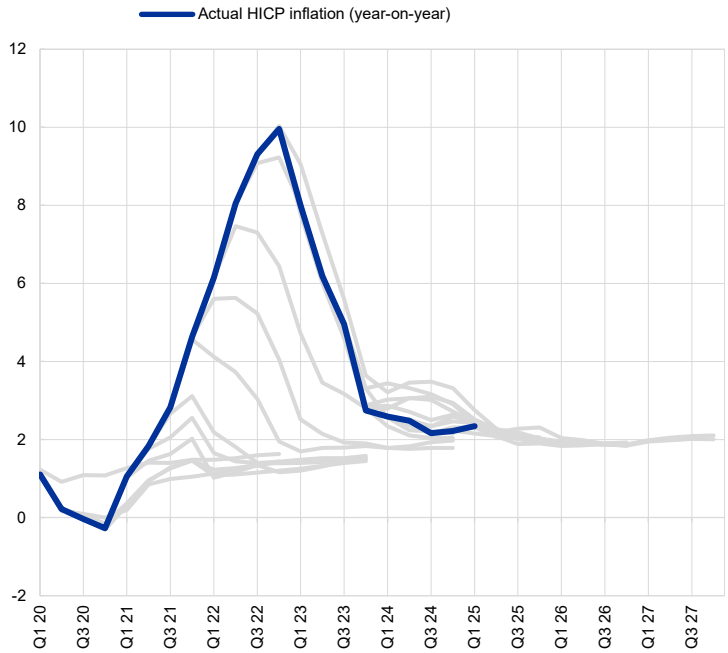
One-quarter-ahead errors in the inflation and growth projections of Eurosystem/ECB staff

(annual percentage changes)



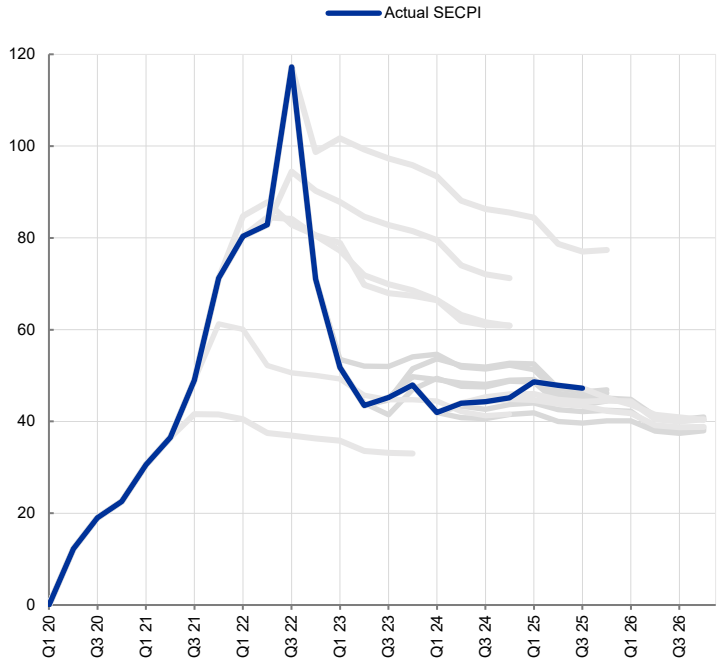
Sources: Eurosystem/ECB staff projections and Eurostat.
Notes: An error is defined as the outturn for a given quarter minus the projection made for that quarter in the previous quarter (for example, the outturn for the fourth quarter of 2022 minus the figure projected for that quarter in the September 2022 ECB staff macroeconomic projections). The latest observations are for the fourth quarter of 2024 (outturn).

HICP inflation projections
(annual percentage changes)



Sources: Eurosystem/ECB staff projections and Eurostat.
Note: The latest observations are for the first quarter of 2025 for actual HICP inflation data and March 2025 MPE for the projections.

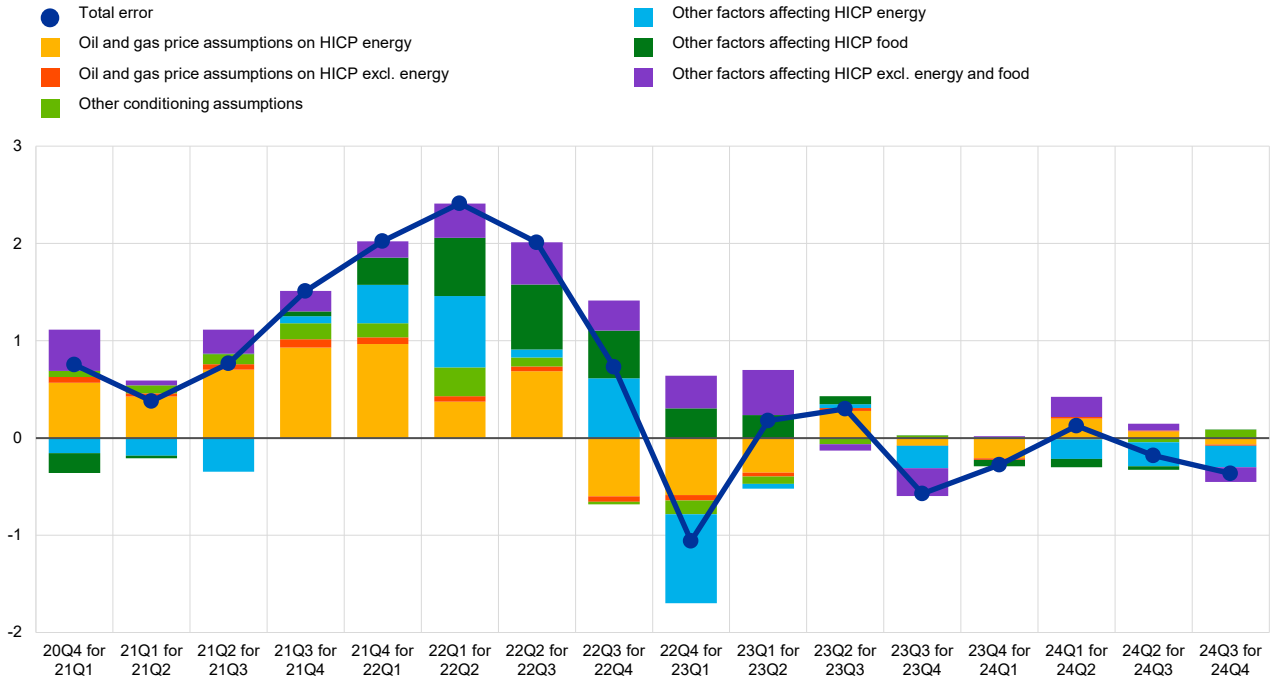
Synthetic energy price projections
(USD per MWh)



Sources: Refinitiv and ECB staff calculations.
Notes: Projections for the synthetic energy price index were introduced in 2021. Its methodology was changed in 2023. To account for this, projections before 2023 are rebased to the new Synthetic Energy Commodity Price Index (SECPI). The latest observations are from the second quarter of 2025.

Decomposition of recent one-quarter-ahead HICP inflation errors in Eurosystem/ECB staff projections

(annual percentage points; percentage point contributions)



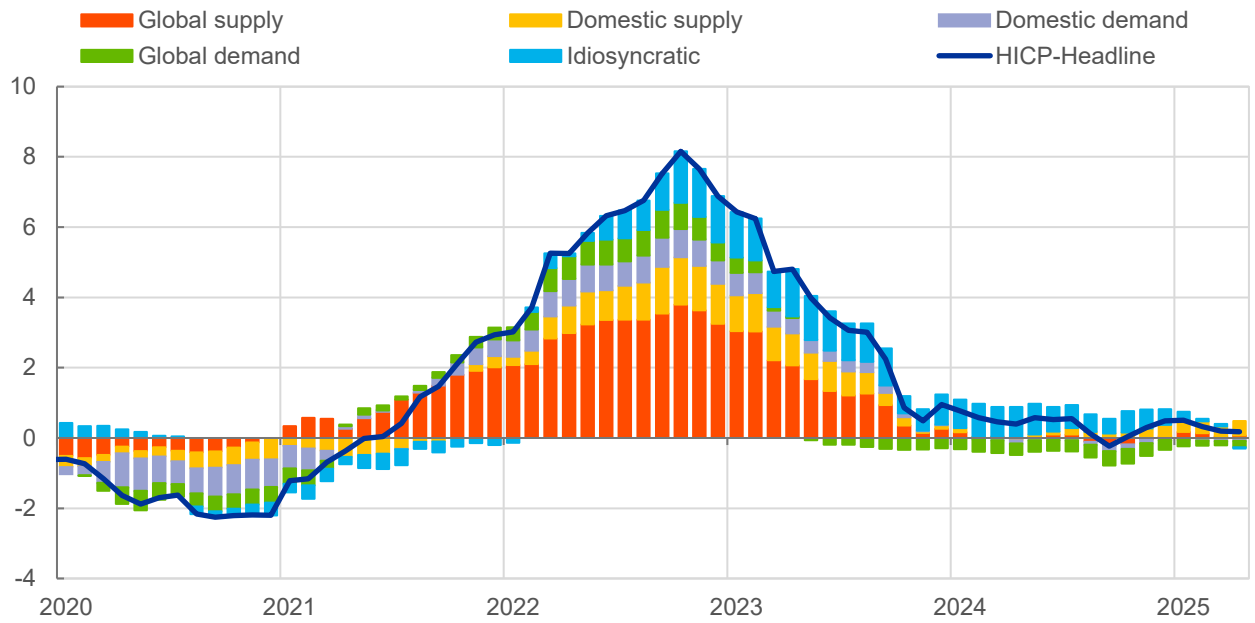
Source: ECB calculations.

Notes: "Total error" is the outturn minus the projection. The labels on the horizontal axis indicate the quarter in which the projections were published and the quarter to which those projections relate (i.e. "Q4 20 for Q1 21" denotes projections for the first quarter of 2021 that were published in the fourth quarter of 2020). The decomposition is based on updated elasticities derived from Eurosystem staff macroeconomic projection models as at late 2023. "Other assumptions" refers to exchange rates, short and long-term interest rates, stock prices, foreign demand, competitors' export prices and food prices". The latest observations are from the June 2024 Eurosystem staff Broad Macroeconomic Projection Exercise (BMPE).

Drivers of inflation

Supply and demand drivers of inflation dynamics

(percentage points and percentage point contributions; deviations from mean)

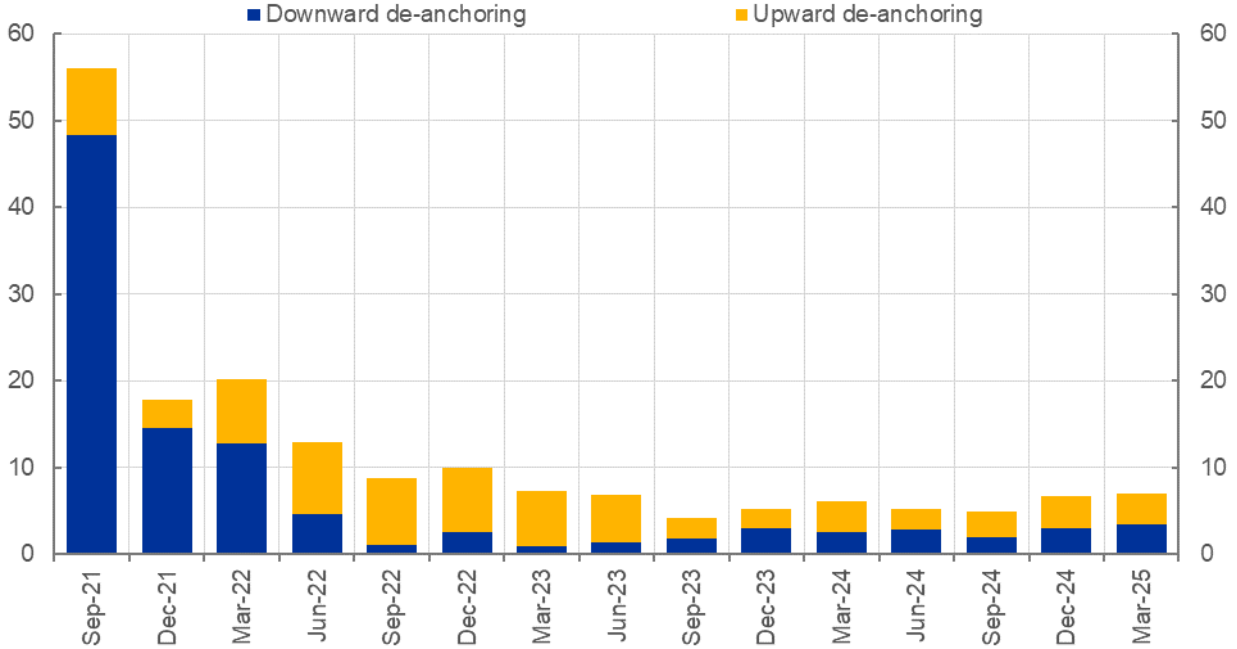


Sources: Eurostat, ECB, Eurosystem, and ECB staff calculations.
Notes: historical decomposition based on a large BVAR model accounting for a rich set of inflation drivers, identified with zero and sign restrictions, see Bańbura, M., Bobeica, E. and Martínez Hernández, C., (2024) "What drives core inflation? The role of supply shocks", ECB Working Paper No. 2875. The chart shows the deviations of HICP inflation from the mean implied by the model. The latest observations are for April 2025.

De-anchoring risks

Risks of de-anchoring of medium-term inflation expectations

(percentage risk of upside and downside de-anchoring risks)



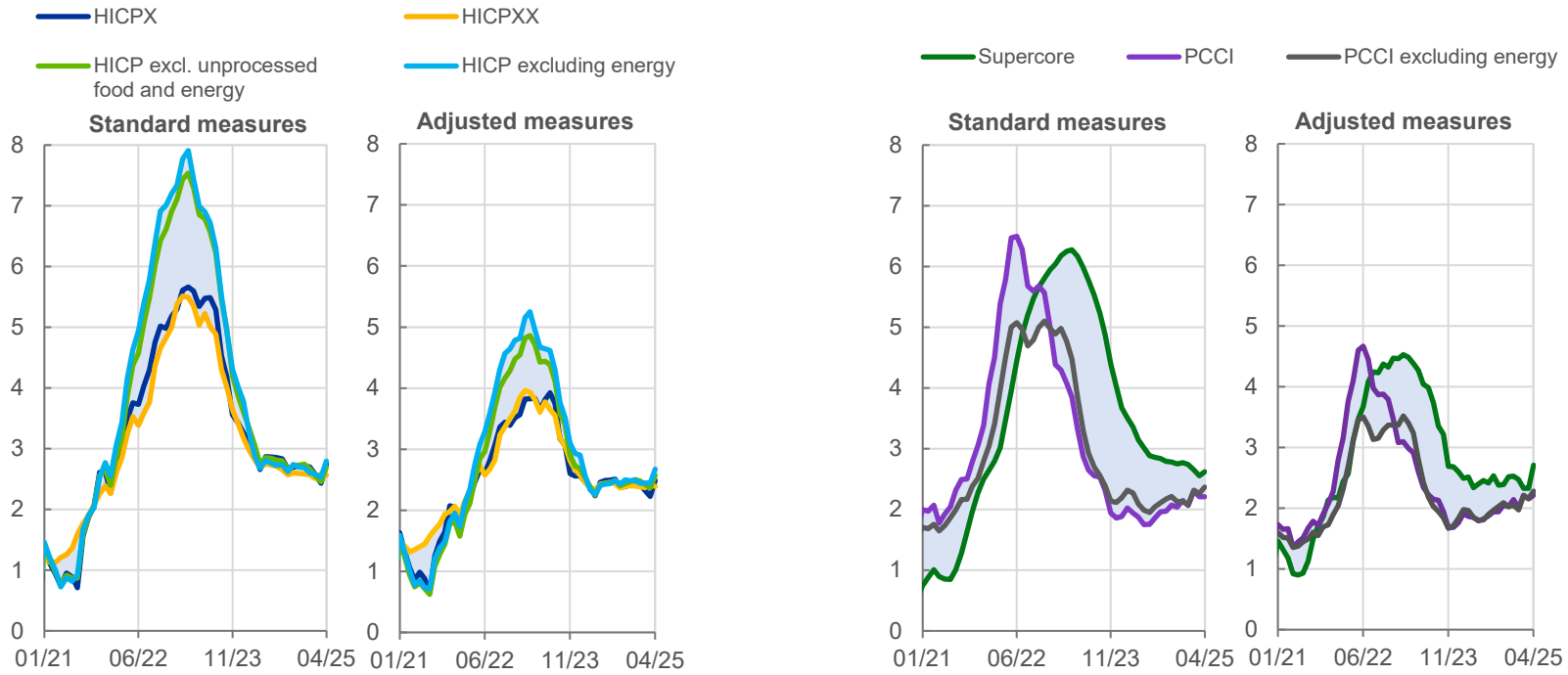
Source: ECB calculations based on Christoffel, K. and Farkas, M. (2025), "Managing the Risks of Inflation Expectation De-anchoring", *IMF Working Paper Series*, 2025, forthcoming.

Notes: The charts show the risk of de-anchoring for the staff projections from June 2021 to September 2024. The simulations are based on a regime switching version of the NAWM I (Christoffel, K., Coenen, G. and Warne, A. (2007)), where the credible regime is defined as the estimated version of the NAWM-I, with a fixed inflation target, the de-anchored regime is characterised by a time varying inflation target. Upward de-anchoring is defined as a situation in a de-anchoring episode, where the perceived inflation target is above 2%. The share of de-anchoring is based on 1,000 simulations over a ten-quarter evaluation horizon. The latest observations are from the March 2025 MPE.

Measures of underlying inflation

Euro area underlying inflation measures and their adjusted counterpart

(annual percentage changes)



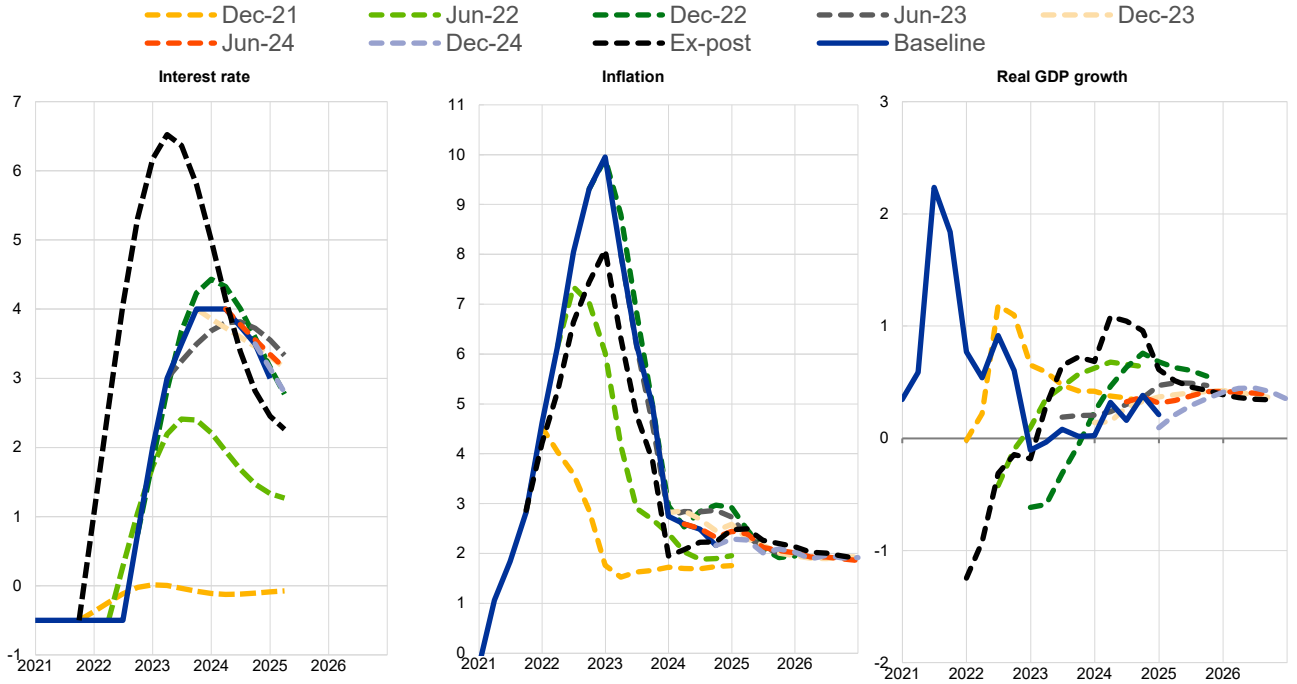
Sources: Eurostat and ECB staff calculations.

Notes: HICPX stands for HICP inflation excluding energy and food; HICPXX for HICP inflation excluding energy, food, travel-related items, clothing and footwear; PCCI is the persistent and common component of inflation, while Supercore aggregates HICPX items sensitive to domestic business cycle. See also Bańbura et al. (2023), "Underlying inflation measures: an analytical guide for the euro area", *Economic Bulletin*, Issue 5, ECB. The "adjusted" measures abstract from energy and supply-bottlenecks shocks using a large SVAR, see Bańbura, M., Bobeica, E. and Martínez-Hernández, C. (2023), "What drives core inflation? The role of supply shocks", *Working Paper Series*, No 2875, ECB, November. The latest observations are for April 2025.

Optimal policy - MMR

Optimal policy in real time and with hindsight – MMR

(left panel: percentage per annum; middle panel: annual percentage changes; right panel: quarterly percentage changes)

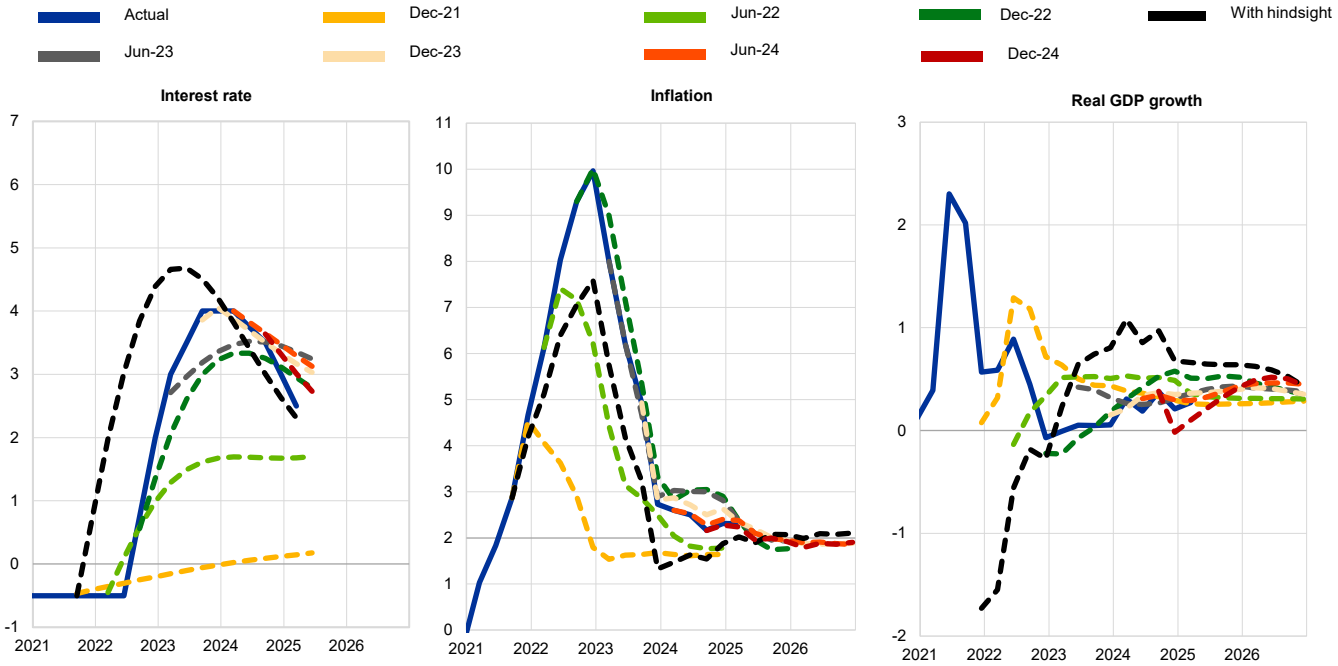


Source: ECB calculations based on the MMR model (see Mazelis, F., Motto, R., Ristiniemi, A. (2023) with the exercises documented in the Handbook on Inflation (Coenen, G., Mazelis, F., Motto, R., Ristiniemi, A., Smets, F., Warne, A., Wouters, R. (forthcoming)).

Notes: The optimal policy rate path simulations beyond the first quarter of 2025 are not shown for confidentiality reasons. “Actual” denotes historical data. The other dashed lines on the left graph are a sequence of optimal policy counterfactuals computed in real time at each projection vintage from the fourth quarter of 2021 to the fourth quarter of 2024. The “With hindsight” lines denote the optimal policy counterfactual computed in the fourth quarter of 2021 with the benefit of hindsight by assuming that the same information that we now have on subsequent inflation and output developments was already available in the fourth quarter of 2021. The middle and right panels show implied inflation and output growth respectively.

Optimal policy in real time and with hindsight – NAWM

(left panel: percentage per annum; middle panel: annual percentage changes; right panel: quarterly percentage changes)

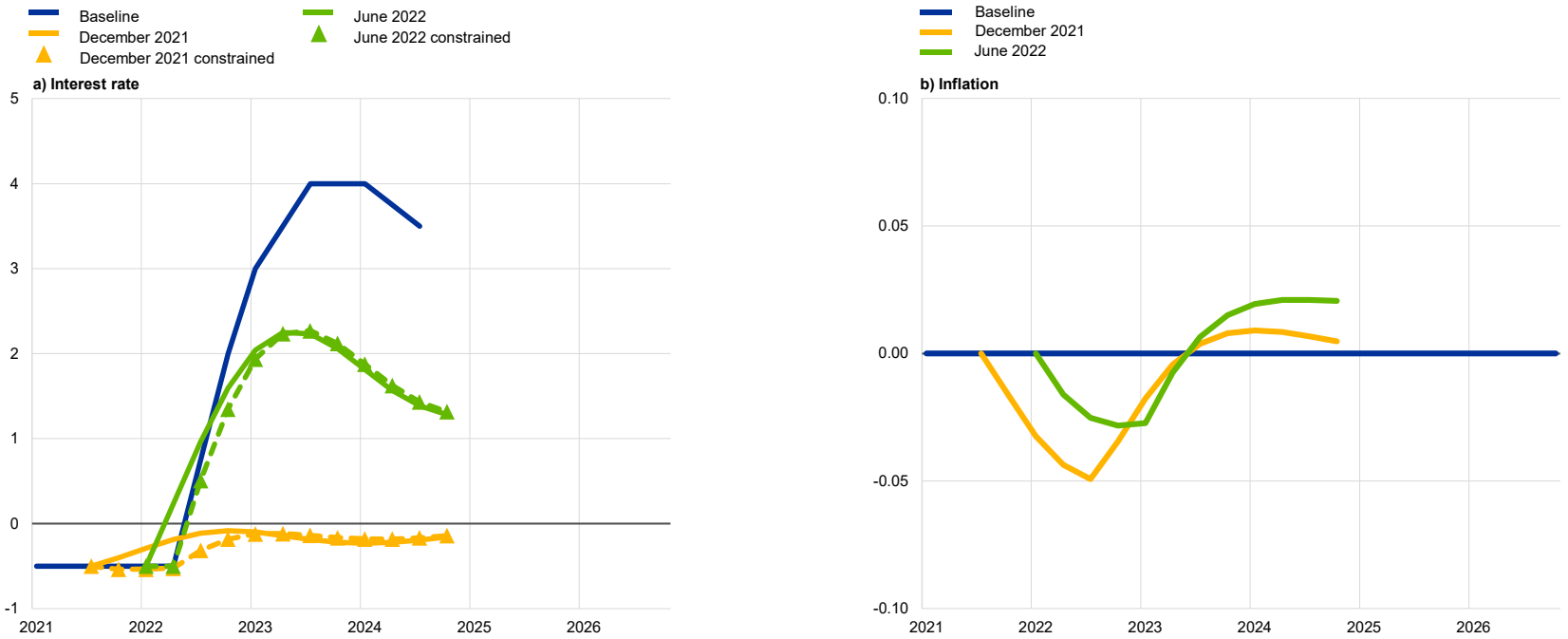


Source: ECB calculations based on the NAWM II model, see Darracq Pariès, M., Kornprobst, A. and Priftis, R. (2024), "Monetary policy strategies to navigate post-pandemic inflation: an assessment using the ECB's New Area-Wide Model", *ECB Working Paper Series*, 2935.

Notes: The optimal policy rate path simulations beyond the first quarter of 2025 are not shown for confidentiality reasons. "Actual" denotes historical data. The other dashed lines on the left graph are a sequence of optimal policy counterfactuals computed in real time at each projection vintage from the fourth quarter of 2021 to the fourth quarter of 2024. The "With hindsight" lines denote the optimal policy counterfactual computed in the fourth quarter of 2021 with the benefit of hindsight by assuming that the same information that we now have on subsequent inflation and output developments was already available in the fourth quarter of 2021.

Early tightening counterfactual

(left panel: percentages per annum; right panel: annual percentage changes of the unconstrained case relative to the constrained counterfactual)

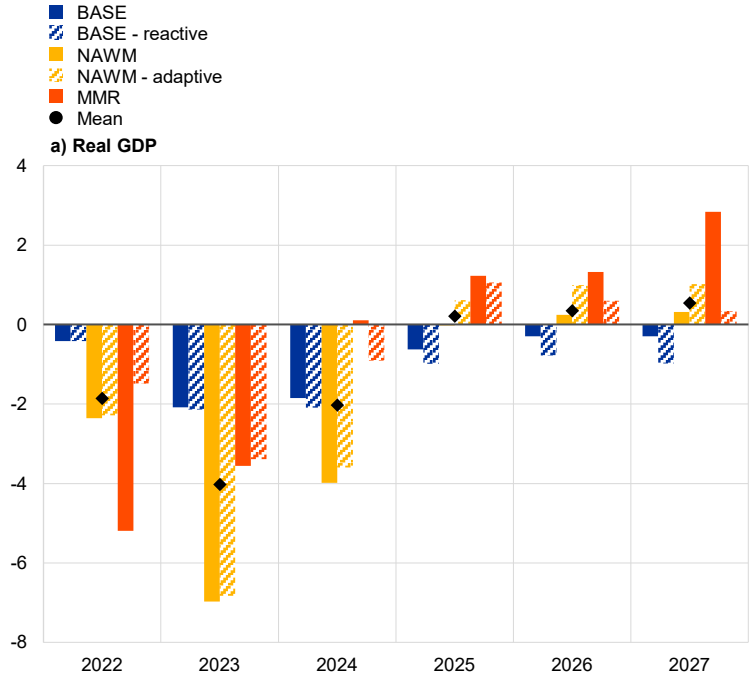


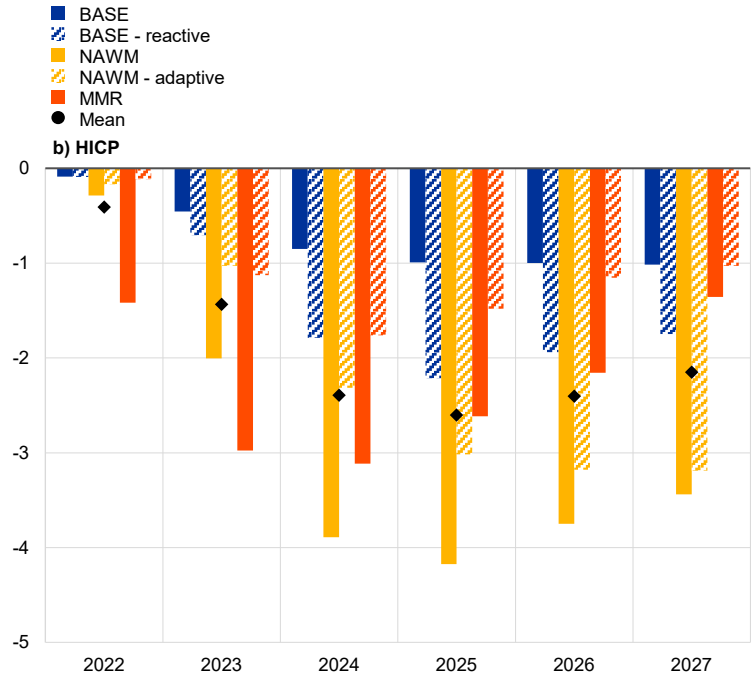
Source: ECB calculations based on the MMR model (see Mazelis, F., Motto, R., Ristiniemi, A. (2023) with the exercises documented in the Handbook on Inflation (Coenen, Mazelis, Motto, Ristiniemi, Smets, Warne, Wouters (forthcoming)).

Notes: "Baseline" denotes historical data available in the third quarter of 2024. The solid lines in the left chart are the counterfactuals in the fourth quarter of 2021 and the second quarter of 2022 from Slide 12. Each of the lines with a marker in the left panel is a counterfactual rate path computed by constraining the lift-date to match the actual one and letting policy evolve optimally afterwards. The lines in the right panel are the difference in impact on inflation between the unconstrained and constrained case.

Impact of monetary policy tightening according to a suite of models

(annual percentage changes)





Sources: ECB calculations based on the NAWM II model (see Coenen, G., Karadi, P., Schmidt, S., Warne, A. (2018), "The New Area-Wide Model II: an extended version of the ECB's micro-founded model for forecasting and policy analysis with a financial sector", *Working Paper Series*, No 2200, ECB, November), the MMR model (see Mazelis, F., Motto, R., Ristiniemi, A. (2023) with the exercises documented in the Handbook on Inflation (Coenen, Mazelis, Motto, Ristiniemi, Smets, Warne, Wouters (forthcoming)) and the ECB-BASE model (see Angelini, E., Bokan, N., Christoffel, K., Ciccarelli, M., Zimic, S. (2019), "Introducing ECB-BASE: The blueprint of the new ECB semi-structural model for the euro area", *Working Paper Series*, No 2315, ECB, September).
Notes: This chart reports the results of a simulation involving changes to short-term rate expectations between December 2021 and March 2025 and changes to expectations regarding the ECB's balance sheet between October 2021 (to account for anticipation) and March 2025. "Mean" denotes the average across the six model variants. The latest observations are for 6 February 2025 for the underlying short rate expectations from MP-dated ESTR forward contracts.