



EUROPEAN CENTRAL BANK

EUROSYSTEM

The transmission of monetary
policy tightening and medium-
term growth prospects

Latvijas Banka Economic
Conference 2023

8 November 2023

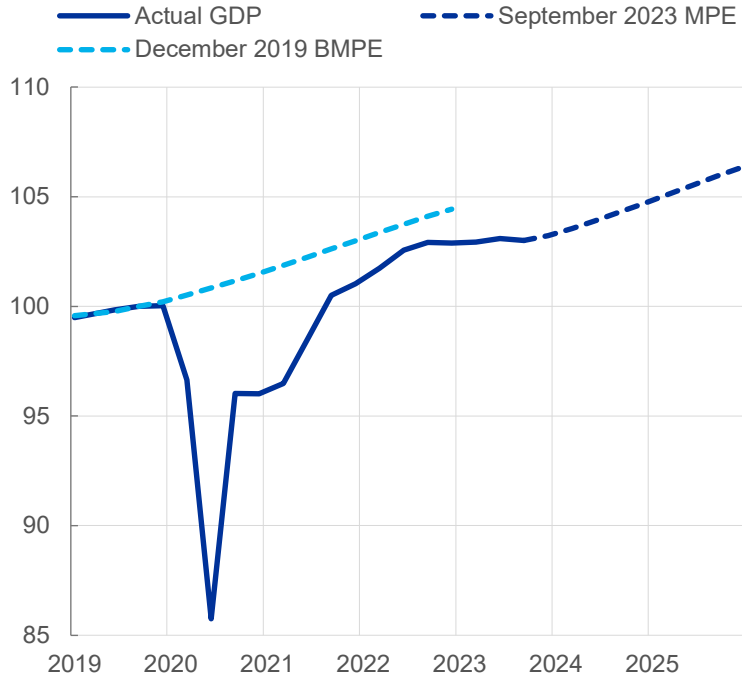


Philip R. Lane
Member of the Executive Board

Activity and unemployment

Real GDP

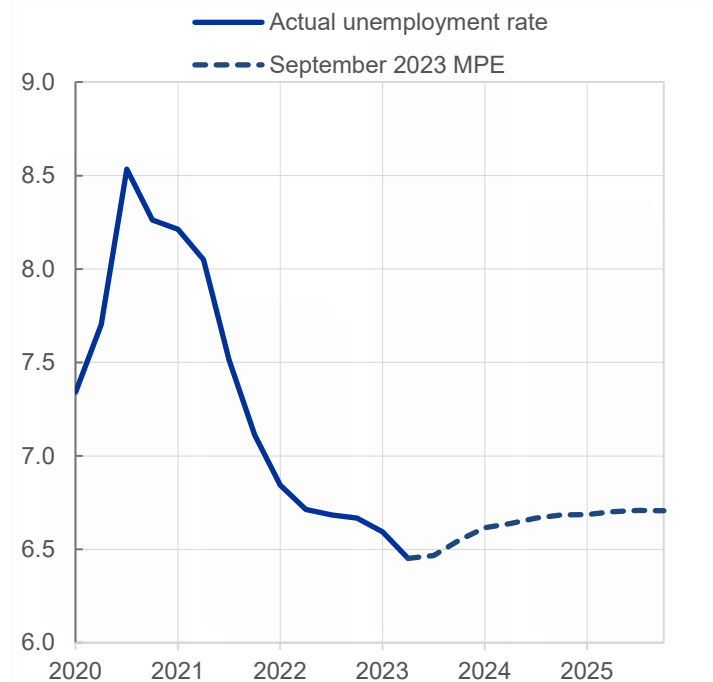
(index: Q4 2019 = 100)



Sources: Eurostat, September 2023 ECB staff macroeconomic projections for the euro area (MPE) and December 2019 Eurosystem staff macroeconomic projections for the euro area (BMPE).

Unemployment rate

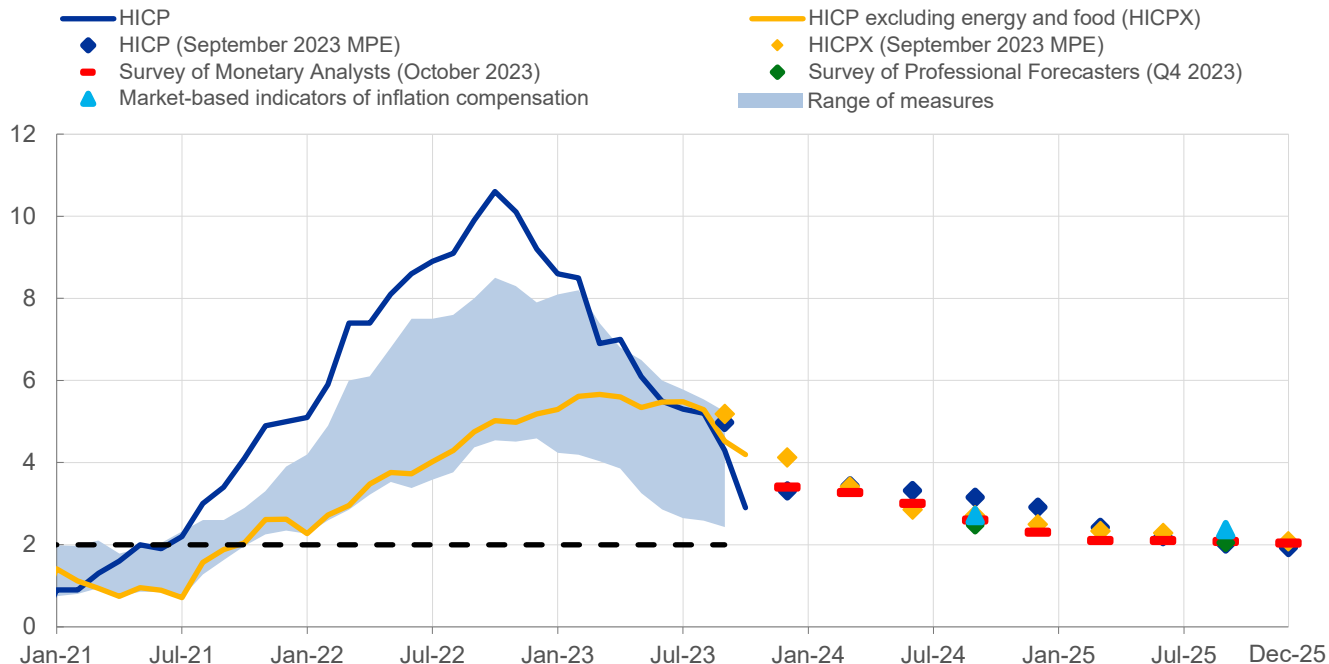
(percentages)



Sources: Eurostat and September 2023 ECB staff projections.
Note: The latest observation is for the second quarter of 2023.

Headline inflation, measures of underlying inflation, and inflation projections and expectations

(annual percentage changes)

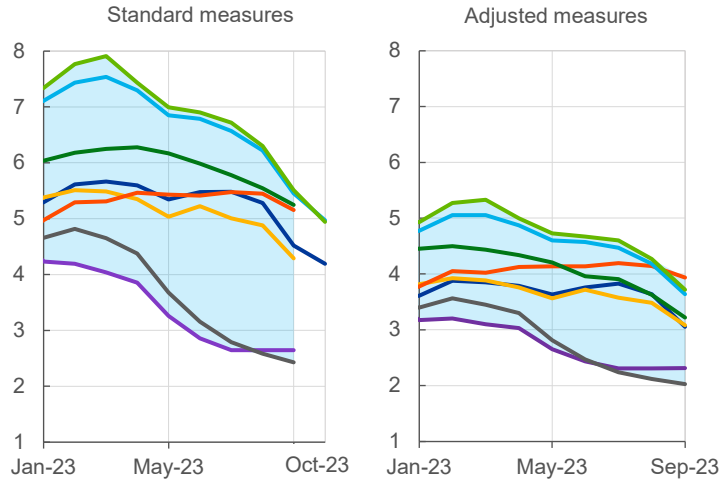
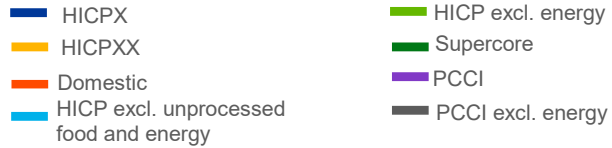


Sources: Eurostat, ECB staff calculations and September 2023 ECB staff projections.

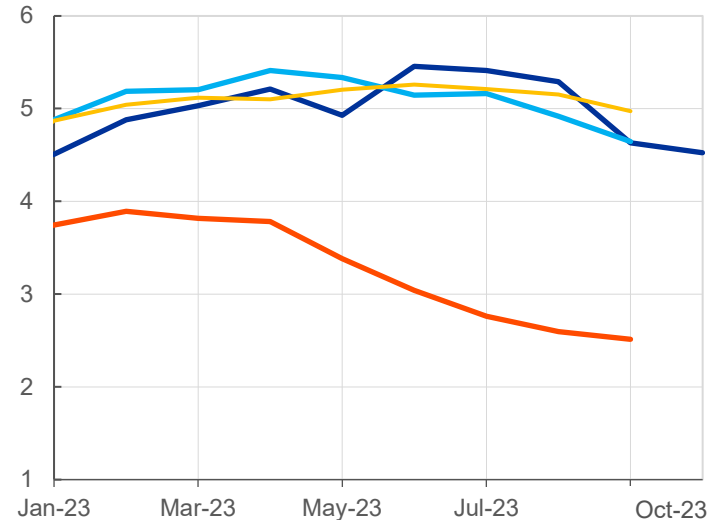
Notes: The measures in the range of underlying indicators include HICPX, HICP excluding energy and unprocessed food, HICPXX, Persistent and Common Component of Inflation (PCCI), PCCI excluding energy, Supercore, domestic inflation, trimmed mean 10%, trimmed mean 30% and weighted median. The latest observations are for October 2023 for HICP, HICPX (flash release) and September 2023 for the rest. Market-based indicators of inflation compensation are based on inflation-linked swap (ILS) data as on 30 October 2023. The cut-off date for technical assumptions in the September 2023 ECB staff projections was 22 August 2023 and the macroeconomic projections for the euro area (MPE) were finalised on 30 August 2023.

Measures of underlying inflation

Measures of underlying inflation (annual percentage changes)



Measures of underlying services inflation (annual percentage changes)



Sources: Eurostat and ECB calculations.

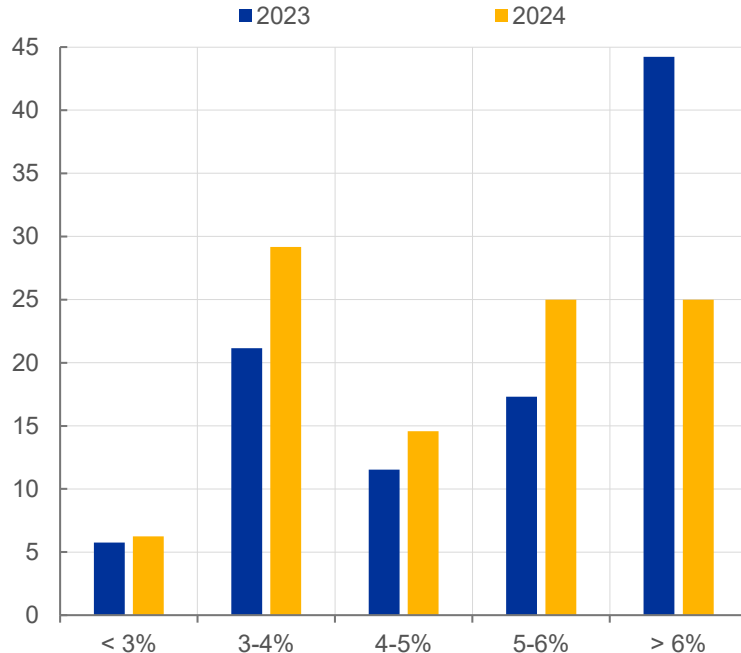
Notes: The adjusted measures exclude energy and supply bottleneck shocks using a large structural vector autoregression identified with zero and sign restrictions (see Bańbura, M., Bobeica, E. and Martínez-Hernández, C. (2023), "What drives core inflation? The role of supply shocks", forthcoming). Measures included: HICPX, HICPXX, HICP excluding energy, HICP excluding unprocessed food and energy, domestic inflation, Supercore, PCCI and PCCI excluding energy. The latest observations are for October 2023 (flash estimate) for HICPX, HICP excluding energy and HICP excluding unprocessed food and energy (standard measures) and September 2023 for the rest.

Sources: Eurostat and ECB calculations.

Note: The latest observations are for October 2023 (flash estimate) for services and September 2023 for the rest.

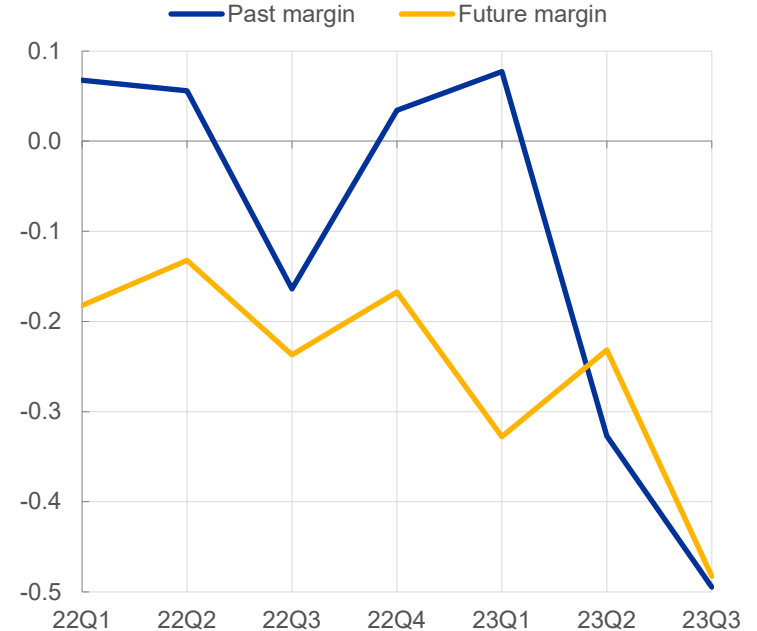
Corporate Telephone Survey results for wages and profit margins

CTS: wage expectations for 2023 and 2024 (percentages)



Source: October 2023 Corporate Telephone Survey (CTS).

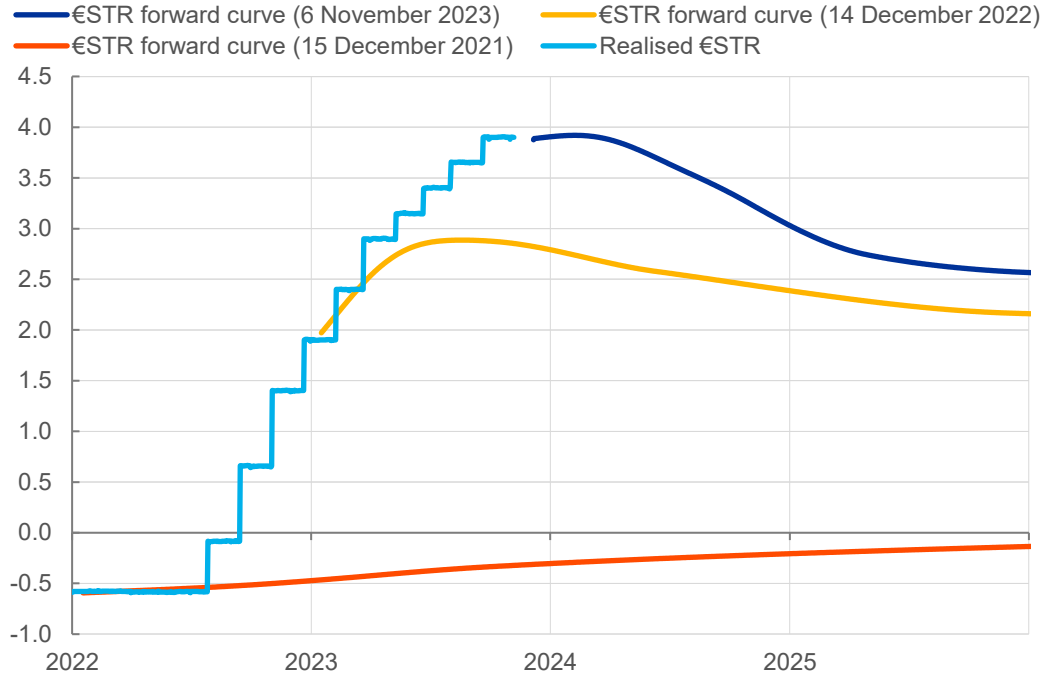
CTS: implied profit margins (average of CTS scores)



Source: October 2023 CTS.

Notes: The score is calculated as the difference between the selling price score and a simple average of the input cost and wage scores. While past and future selling and input price scores refer to developments in the previous and next quarters, past and future wage scores refer to developments in the previous and next year. The latest observations are for the third quarter of 2023.

€STR forward curve (percentages per annum)

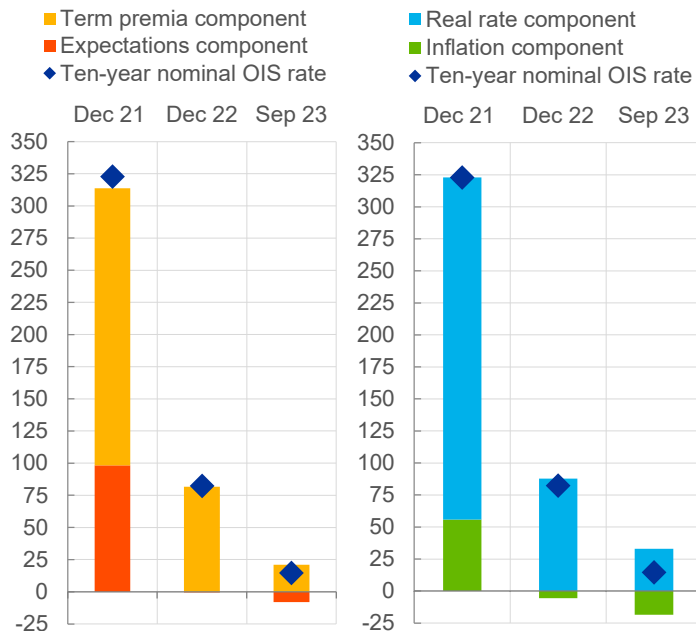


Sources: Bloomberg and ECB calculations.

Note: The latest observation for "Realised €STR" is for 6 November 2023.

Decomposition of changes in ten-year nominal OIS rate since previous Governing Council meetings

(basis points)

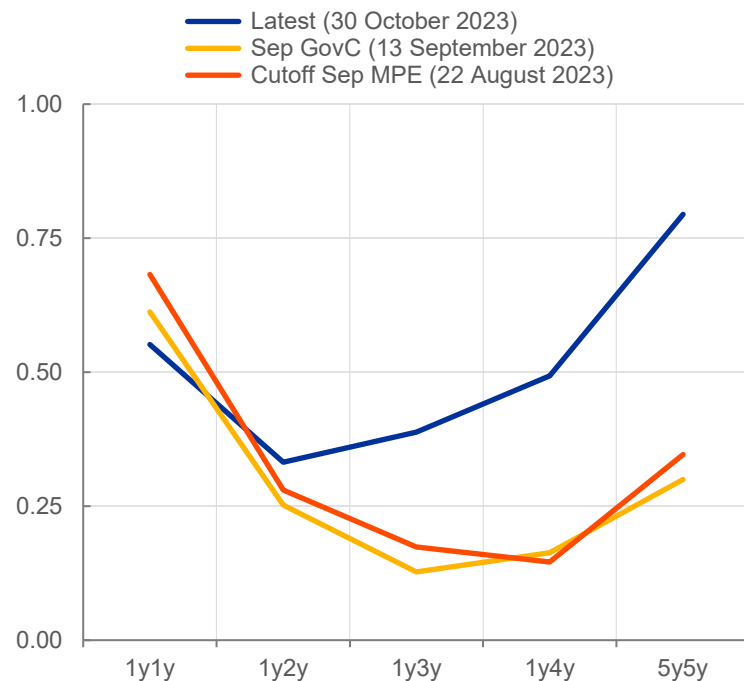


Sources: Refinitiv and ECB calculations.

Notes: The decomposition of the ten-year spot overnight index swap (OIS) rate into expected rates and term premia is based on an affine term structure model fitted to the euro area OIS curve. The estimation method follows Joslin, S., Singleton, K. and Zhu, H. (2011), "A New Perspective on Gaussian Dynamic Term Structure Models", *Review of Financial Studies*, Vol. 24, No 3, pp. 926-970. The euro area real rate is calculated by subtracting the ILS rate from the nominal OIS rate. Differences between decompositions (bars) and observed changes (diamonds) reflect model residuals. The latest observations are for 30 October 2023.

Term structure of real forward rates

(percentages)



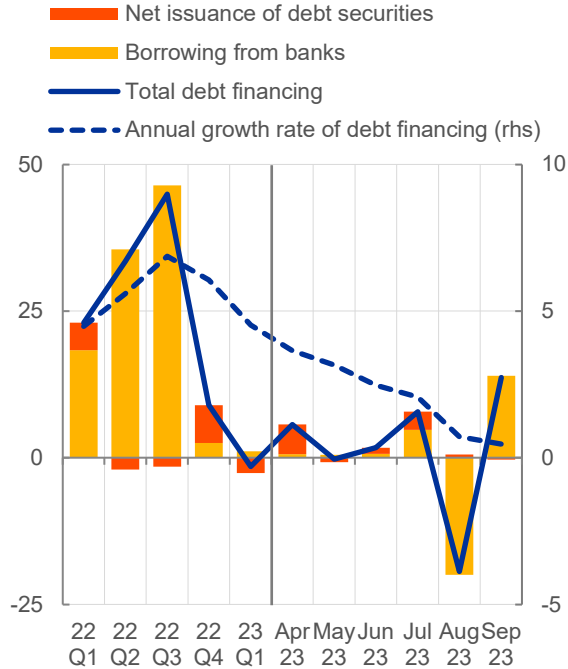
Sources: Bloomberg, Refinitiv and ECB calculations.

Notes: The euro area real forward rates are calculated by subtracting the inflation-linked swap forward rates from the nominal OIS forward rates for each maturity. 13 September 2012 is for the September Governing Council meeting. 22 August 2023 is for the cut-off of the September ECB staff macroeconomic projections. The latest observations are for 30 October 2023.

Firm debt financing, credit standards and loan demand

Net debt financing flows of firms

(left scale: average monthly flows in EUR billions; right scale: annual percentage changes)

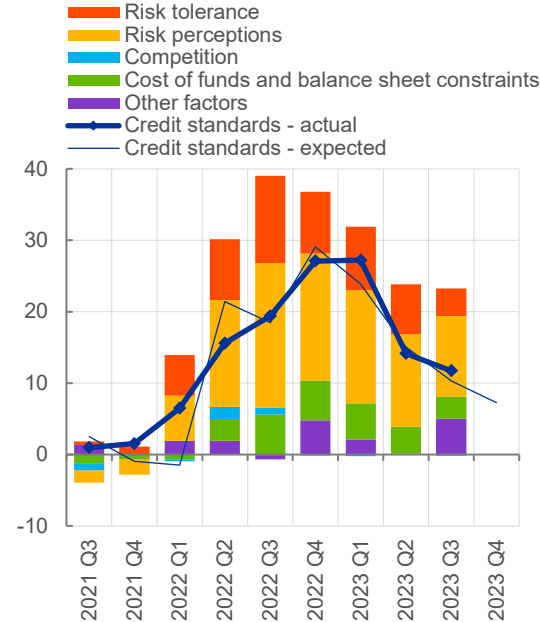


Sources: ECB (BSI, CSEC) and ECB calculations.

Notes: The seasonal adjustment for the net issuance of debt securities is not official. Monetary financial institution (MFI) loans are adjusted for sales, securitisation and cash pooling. The latest observations are for September 2023.

Changes in credit standards for loans to firms and contributing factors

(net percentages)

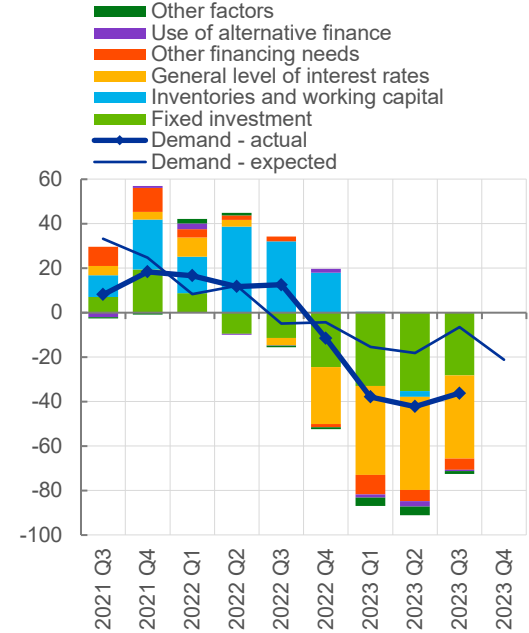


Source: ECB (BLS).

Notes: "Other factors" refer to further factors mentioned by banks as having contributed to changes in credit standards. The latest observations are for the third quarter of 2023.

Changes in demand for loans to firms and contributing factors

(net percentages)



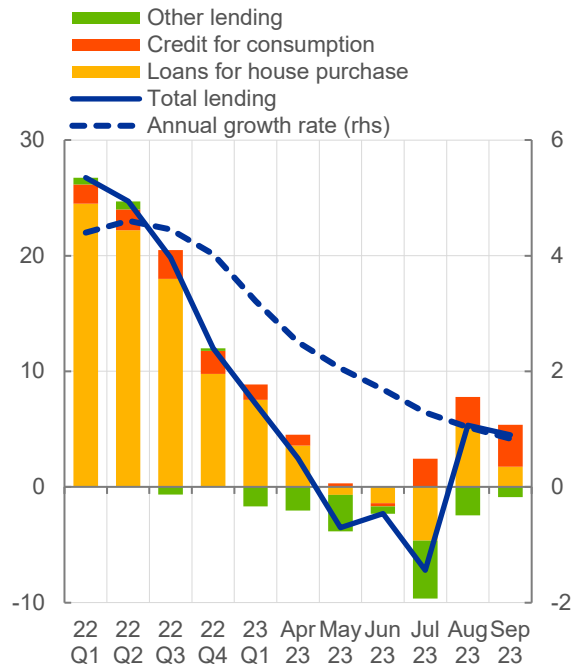
Source: ECB (BLS).

Notes: "Other financing needs" as unweighted average of "M&A and corporate restructuring" and "debt refinancing/restructuring and renegotiation"; "Use of alternative finance" as unweighted average of "internal financing", "loans from other banks", "loans from non-banks", "issuance/redemption of debt securities" and "issuance/redemption of equity". The latest observations are for the third quarter of 2023.

Household loans, credit standards and loan demand

Bank loans to households

(left scale: average monthly flows in EUR billions; right scale: annual percentage changes)

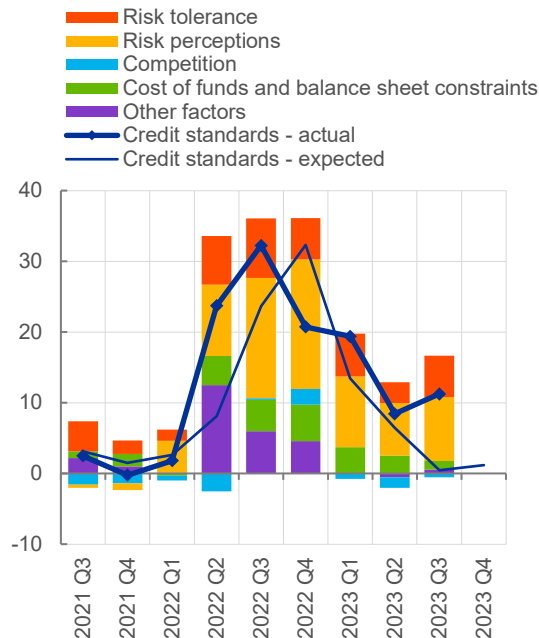


Sources: ECB (BSI) and ECB calculations.

Notes: MFI loans are adjusted for sales and securitisation. The latest observations are for September 2023.

Changes in credit standards for loans to households and contributing factors

(net percentages)

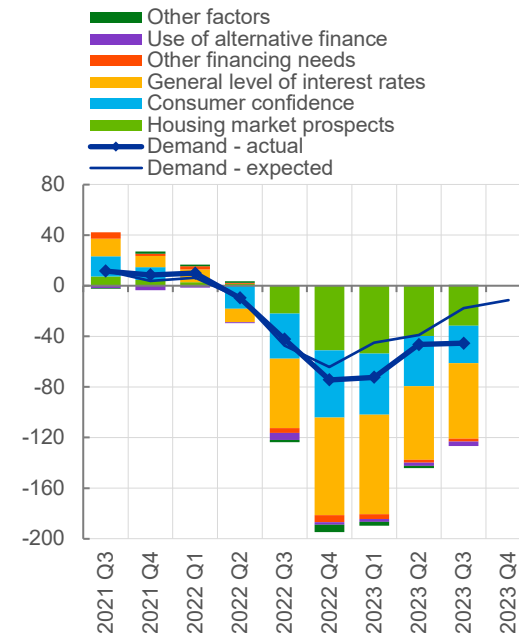


Source: ECB (BLS).

Notes: "Other factors" refer to further factors mentioned by banks as having contributed to changes in credit standards. The latest observations are for the third quarter of 2023.

Changes in demand for loans to households and contributing factors

(net percentages)

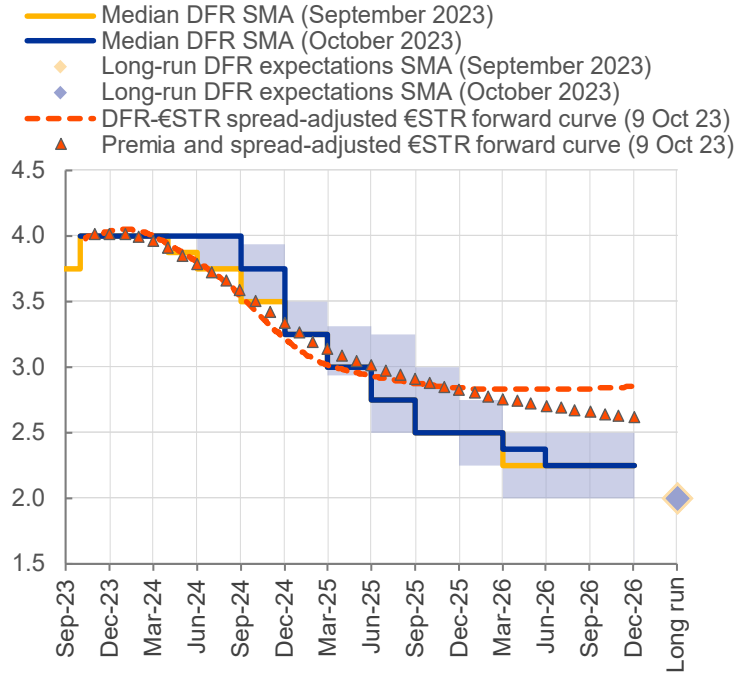


Source: ECB (BLS).

Notes: "Other financing needs" as unweighted average of "M&A and corporate restructuring" and "debt refinancing/restructuring and renegotiation"; "Use of alternative finance" as unweighted average of "internal financing", "loans from other banks", "loans from non-banks", "issuance/redemption of debt securities" and "issuance/redemption of equity". The latest observations are for the third quarter of 2023.

Median deposit facility rate (DFR) expectations

(percentages per annum)

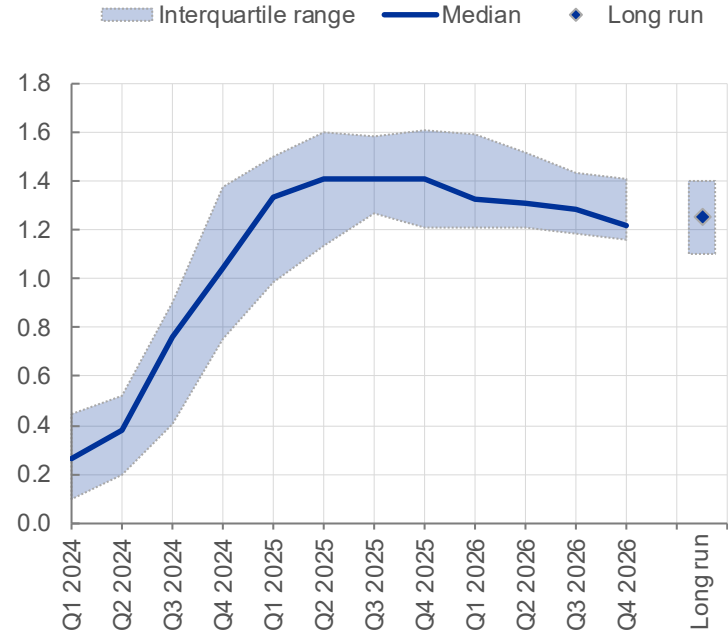


Sources: Survey of Monetary Analysts (SMA), Bloomberg and ECB calculations.

Note: The premia and spread-adjusted €STR forward curve (red triangles) refers to the plain €STR forward curve adjusted for term premia and the spread between the DFR and €STR on 9 October 2023, which was 10 basis points.

Real GDP growth projections

(percentages per annum)



Source: SMA October 2023.

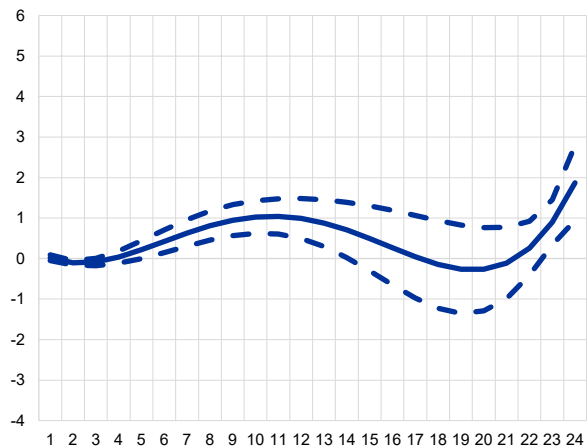
Medium-term growth prospects

- Monetary policy and medium-term growth: roles of stable demand and stable financing conditions in stimulating investment and innovation
- Demographics: area-wide; country-level
- Labour market and education policies: participation rates; working from home; skill levels; adaptability
- Market dynamism; EU single market; digitisation; geo-economic fragmentation; institutional quality
- Preserving competitiveness: relative cost base
- Green transition and potential output

Dynamic response of cyclically adjusted total factor productivity (TFP) to a 100 basis point decrease in nominal interest rates

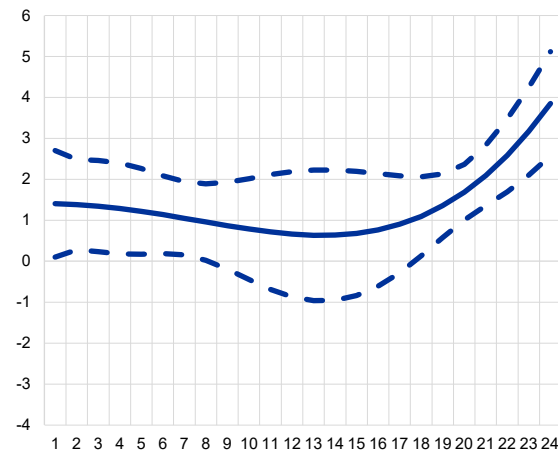
Euro area

(cumulative TFP growth in percentages)



United States

(cumulative TFP growth in percentages)



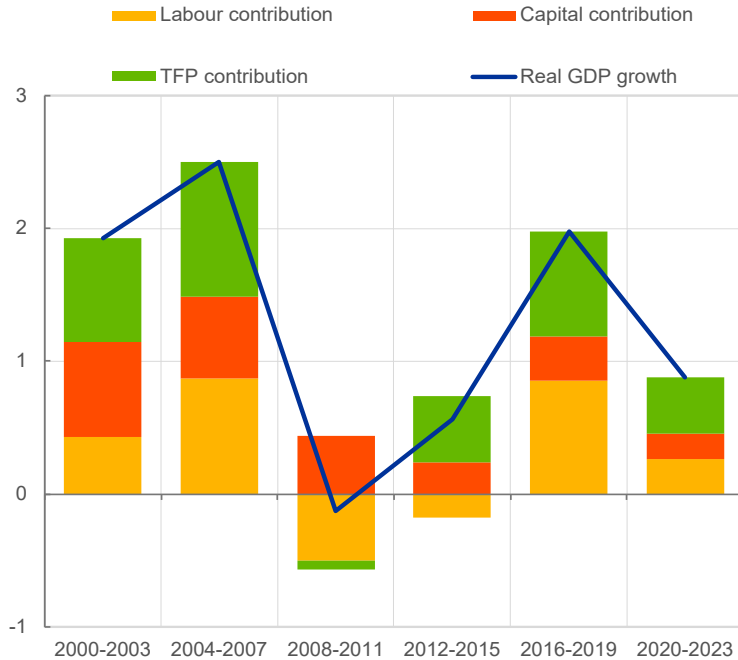
Source: Lopez-Garcia, P. and Szörfi, B. (2021), "[Key factors behind productivity trends in euro area countries](#)", *Economic Bulletin*, Issue 7, ECB.

Notes: Euro area TFP is computed using growth accounting at the industry level. Euro area cyclically adjusted TFP stems from the European Commission's [Spring 2020 Economic Forecast](#), while US cyclically adjusted TFP is taken from the Fernald database. The figures depict cumulative TFP growth at different time horizons (quarters, x-axis) after an expansionary monetary policy shock at $t=0$. Monetary policy shocks are identified using high-frequency surprises around monetary policy announcements, as in Jarociński, M. and Karadi, P. (2020), "Deconstructing Monetary Policy Surprises – The Role of Information Shocks", *American Economic Journal: Macroeconomics*, Vol. 12, No 2, pp. 1-43. Solid lines denote smooth local projections estimates; dashed lines denote 68% confidence intervals.

GDP growth and expected evolution of labour force

Contributions to euro area GDP growth

(four-year average annual percentage change and percentage point contributions)

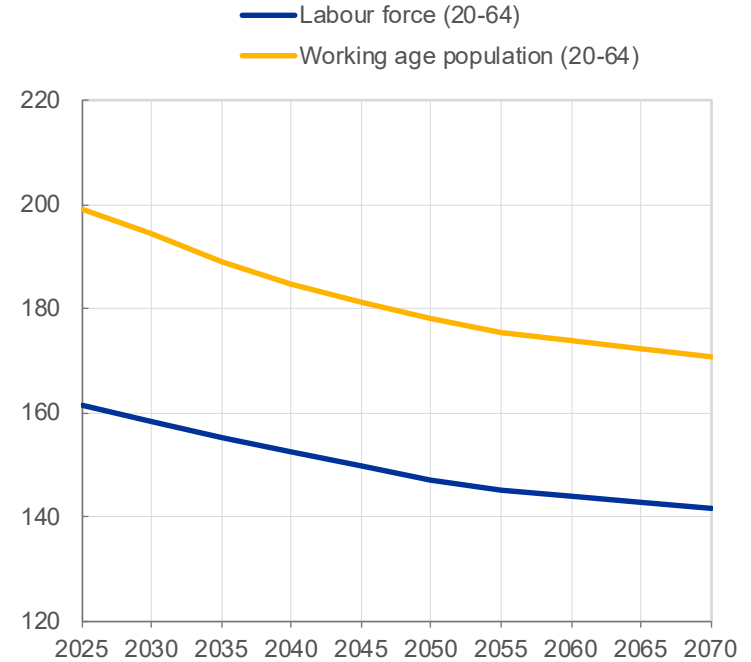


Sources: ECB calculations based on data from AMECO, Eurostat.

Note: Annual value for 2023 calculated as an average of the first two quarters.

Expected evolution of labour force

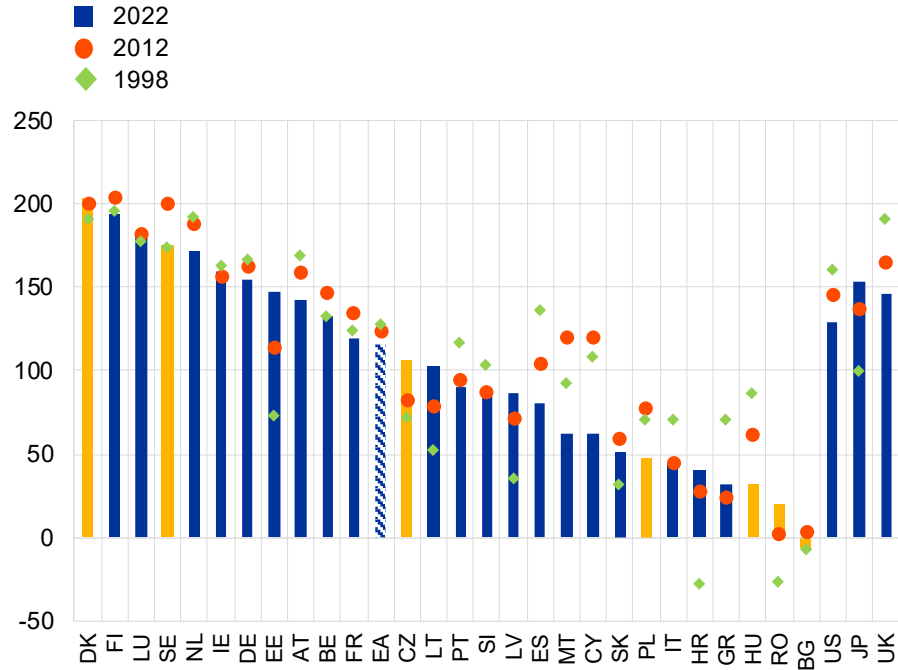
(millions)



Source: European Commission (2021), "The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019-2070)", *Institutional Papers*, No 148.

Institutional quality in EU Member States

(score ranging from -250 to 250)



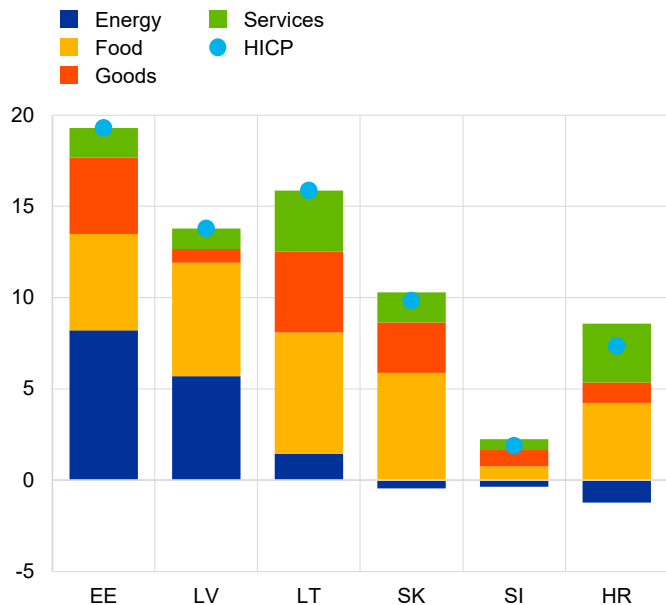
Source: World Bank [Worldwide Governance Indicators](#).

Notes: Scores reflect the average of the four measurable governance indicators: rule of law, regulatory quality, government effectiveness and control of corruption. Higher values indicate better governance. A score of 250 would reflect that a country is the global best performer in all four subcategories. Euro area average in unchanged composition. Euro area countries are in blue, non-euro area EU countries are in yellow.

Euro area countries of central and eastern Europe: inflation and unit labour costs

HICP and components

(percentage changes from January 2020 to August 2023 and percentage point contributions – deviations from the euro area)

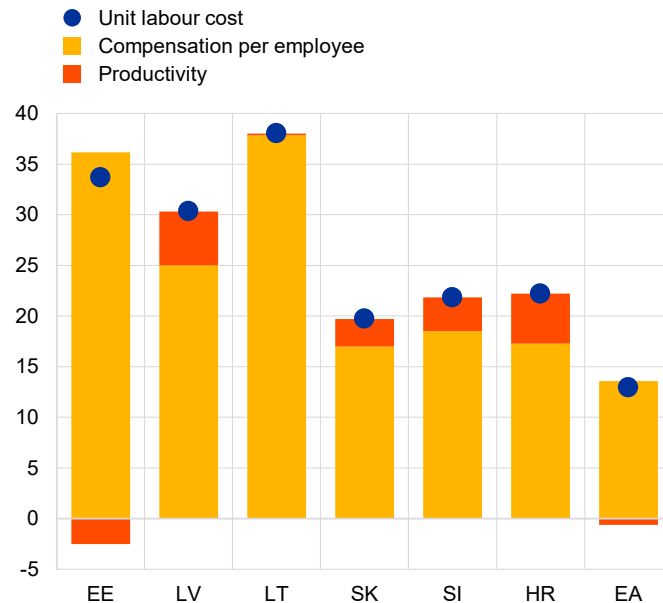


Sources: Eurostat and ECB calculations.

Notes: "Goods" refers to non-energy industrial goods. Based on Falagiarda, M. (forthcoming), "High inflation in euro area countries of central and eastern Europe: drivers and implications", *The ECB Blog*.

Unit labour costs and components

(percentage changes from Q4 2019 to Q2 2023 and percentage point contributions)



Sources: Eurostat and ECB calculations.

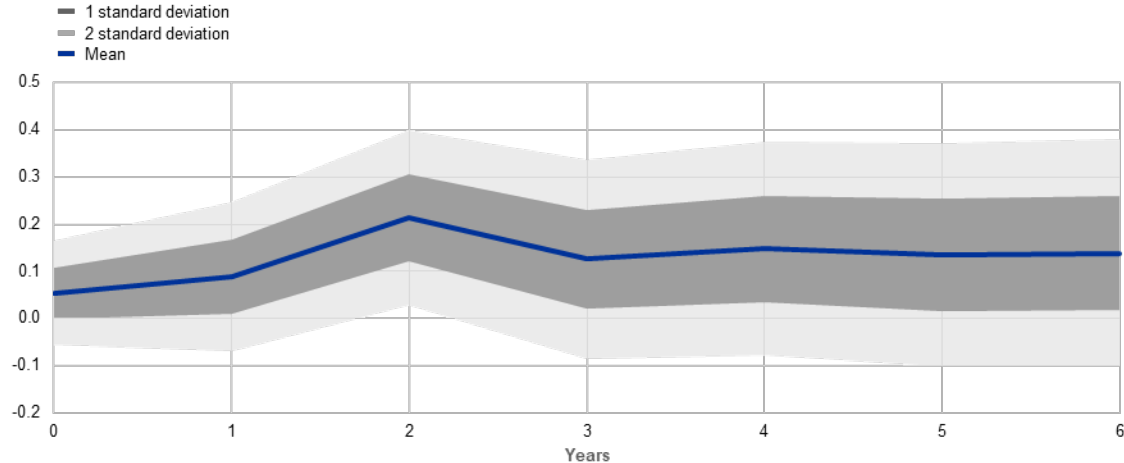
Note: Based on Falagiarda, M. (forthcoming), "High inflation in euro area countries of central and eastern Europe: drivers and implications", *The ECB Blog*.

Impacts of climate change on components of potential output

Climate impact type	Capital	Labour supply	Total factor productivity
Extreme weather and climate events	<ul style="list-style-type: none"> • Destruction of capital • Opportunity to replace old, destroyed capital with new technology • Greater uncertainty reduces willingness to invest over long run 	<ul style="list-style-type: none"> • Higher rates of mortality and sickness • Disaster-induced migration • Loss of education and skills 	<ul style="list-style-type: none"> • Bankruptcies/lack of finance cause reallocation, for better or worse • Rebuilding process distracts management
Long-run climate change	<ul style="list-style-type: none"> • Sectoral impacts e.g. agriculture, tourism • Regional impacts (heat, coastal areas) 	<ul style="list-style-type: none"> • Higher rates of mortality and sickness • Climate-induced migration 	<ul style="list-style-type: none"> • Adaptation capital less productive, diverts resources from innovation • Reduced labour efficiency
Climate policies and green transition	<ul style="list-style-type: none"> • Increase in stranded assets • Higher energy costs from carbon taxes reduce funds for investment 	<ul style="list-style-type: none"> • Skill mismatches increasing structural unemployment 	<ul style="list-style-type: none"> • Reallocation of output between firms within sectors may prove more or less efficient • Environmental regulations reduce productivity; offset by innovation?

Source: Parker, M. (2023), "[How climate change affects potential output](#)", *Economic Bulletin*, Issue 6, ECB.

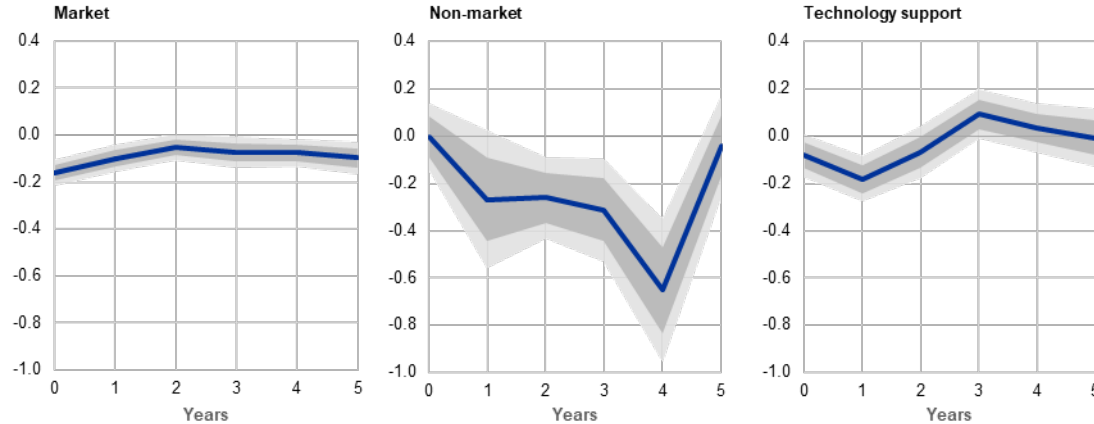
Impact of a USD 40/tCO₂ carbon tax shock on potential output growth (percentage points)



Sources: AMECO, World Bank and ECB calculations.

Note: The graph shows the impact on potential output in the years following the tax shock, with year 0 being the year of implementation. Tax shock calculated using the approach of Metcalf, G. and Stock, J. (2020), "Measuring the Macroeconomic Impact of Carbon Taxes", *AEA Papers and Proceedings*, Vol. 110, pp. 101-106. See Zwick, C. (2023), "[Empirical evidence on the impact of carbon taxes on potential output growth in Europe](#)", in Parker, M. (2023), "How climate change affects potential output", *Economic Bulletin*, Issue 6, ECB.

Firm-level impulse response functions of a tightening of environmental policy on total factor productivity growth of high-emission firms (percentage points)

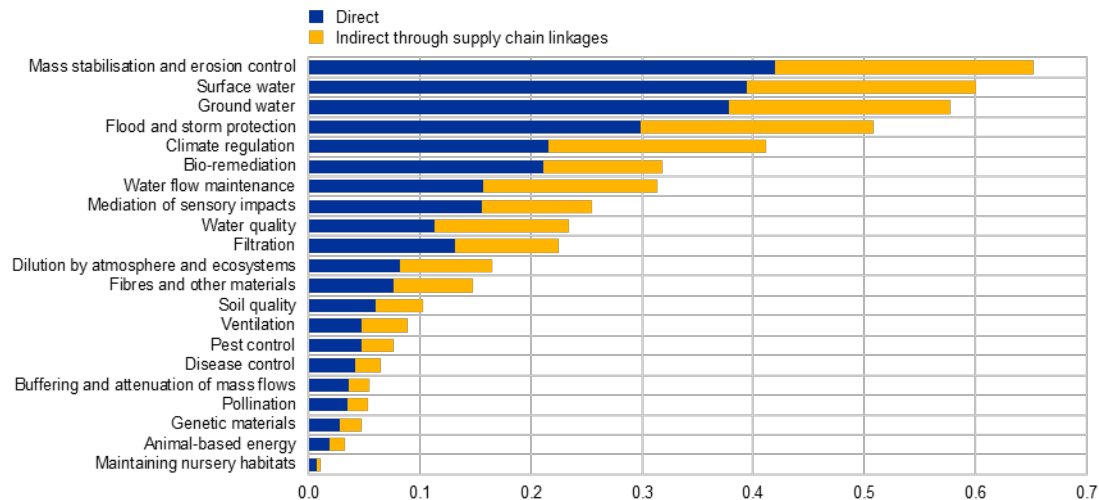


Source: Benatti, N., Groiss, M., Kelly, P. and Lopez-Garcia, P. (2023), "[Environmental regulation and productivity growth in the euro area: testing the Porter hypothesis](#)", *Working Paper Series*, No 2820, ECB.

Notes: Impulse response function of a 1 percentage point tightening in environmental policy stringency on a firm's total factor productivity growth over five years for market (e.g. taxes), non-market (e.g. emission limits) and technology support (e.g. R&D subsidies) policies. High-emission firms are identified as those in the top half of the carbon emission distribution. Shaded areas show the 68% and 90% confidence intervals. See Lopez-Garcia, P. (2023), "[Testing the Porter hypothesis: environmental regulation and productivity growth in the euro area](#)", in Parker, M. (2023), "How climate change affects potential output", *Economic Bulletin*, Issue 6, ECB.

Direct and indirect dependency of euro area non-financial corporations on ecosystem services

(dependency scores)



Sources: ENCORE, EXIOBASE, AnaCredit and ECB calculations.

Notes: The euro area dependency score is computed as the average of the dependency scores of euro area non-financial corporations. A distinction is made between direct dependency (Scope 1) and indirect dependency (upstream) associated with the supply chain. See Ceglár, A. (2023), "Economic activity's reliance on nature", in Parker, M. (2023), "How climate change affects potential output", *Economic Bulletin*, Issue 6, ECB.