



EUROPEAN CENTRAL BANK

EUROSYSTEM

# Monetary policy and inflation

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Seminar at Einaudi  
Institute for Economics  
and Finance, Rome

1 February 2024

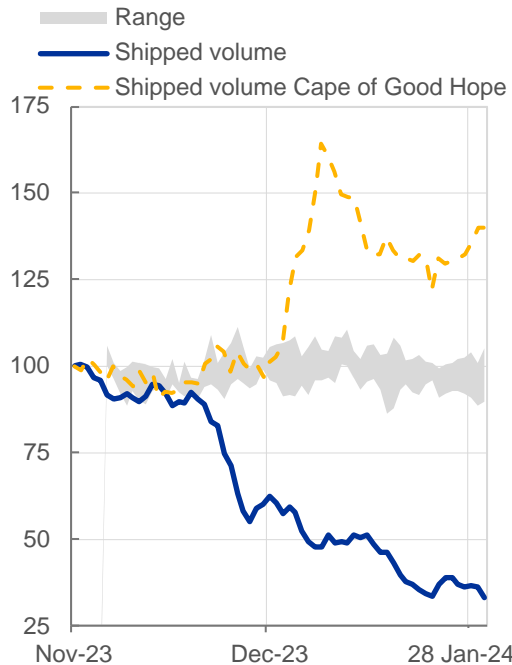


**Philip R. Lane**  
Member of the Executive Board

# Transit volumes, shipping prices and outlook for oil demand and supply

## Red Sea transit volumes (Bab el-Mandeb Strait)

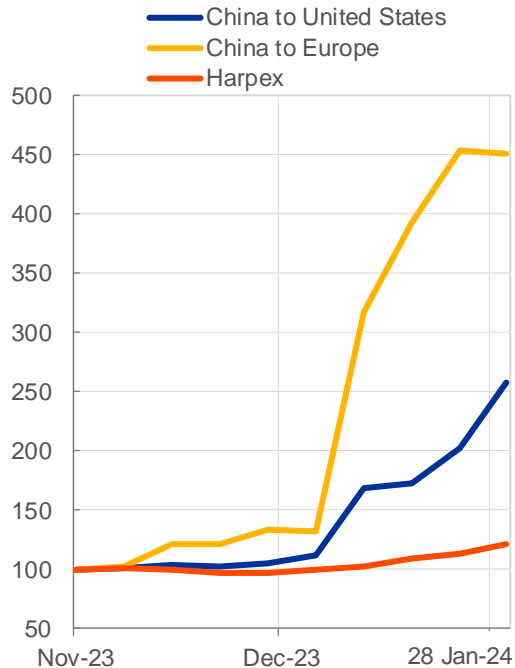
(index: 26 Nov 2023 = 100)



Sources: IMF and ECB calculations.  
 Notes: Seven-day moving average. The range represents the minimum and maximum for the evolution of shipping volumes at a given point in time between 2019 and 2022 (indexed to 1 December of a given year).  
 Latest observations: 28 January 2024.

## Shipping prices

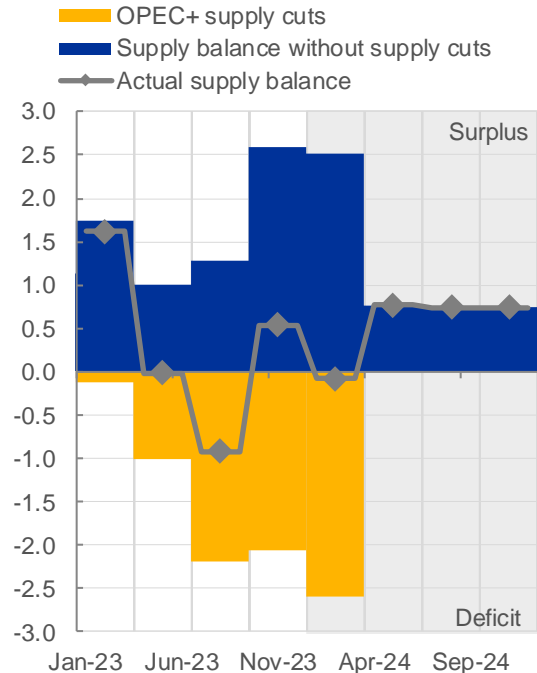
(index: 26 Nov 2023 = 100)



Sources: LSEG, Freightos, HARPEX and ECB calculations.  
 Notes: Freightos Baltic directional freight costs (for 40-foot equivalent unit shipping container) and HARPEX global cost for renting vessels that transport containers on all routes globally. Latest observations: 28 January 2024.

## Outlook for global oil supply and demand

(millions of barrels per day)



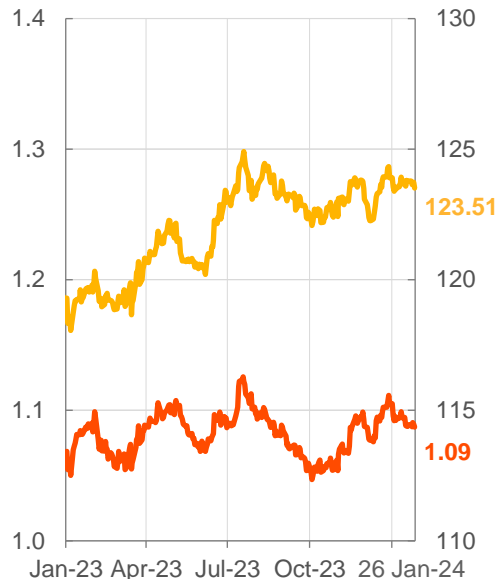
Sources: International Energy Agency (IEA) and ECB calculations.  
 Latest observations: Q4 2023 (January IEA Oil Market Report).

# Exchange rates, and oil and commodity prices

## EUR/USD and NEER

(left-hand scale – level; right-hand scale – index: 1999 = 100)

EUR/USD NEER 41 (rhs)

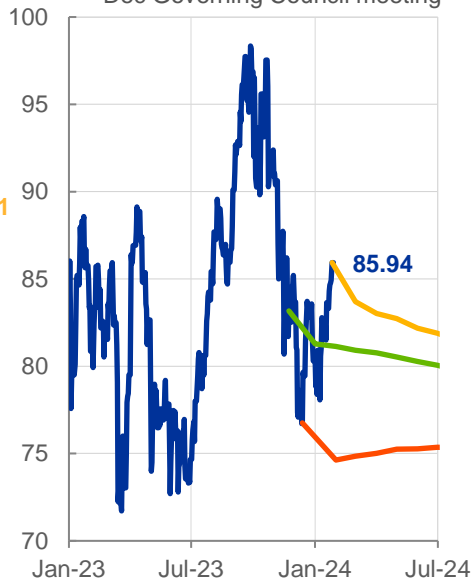


Source: ECB calculations.  
 Note: Nominal effective exchange rate (NEER) for 41 trading partners (NEER 41).  
 Latest observations: 26 January 2024.

## Brent crude oil

(USD/barrel)

Spot  
 Futures (latest)  
 Dec Eurosystem staff projections  
 Dec Governing Council meeting

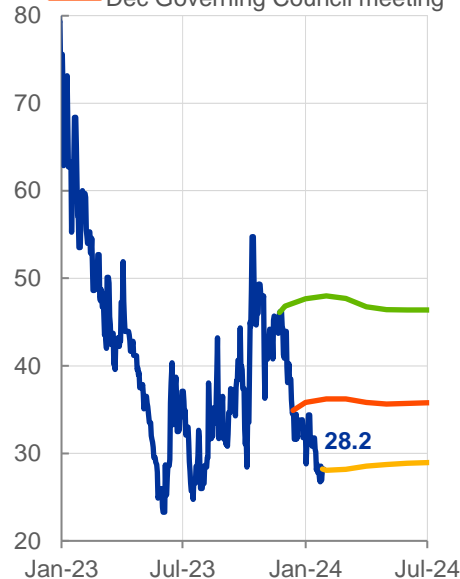


Sources: LSEG and ECB calculations.  
 Latest observations: 26 January 2024.

## Gas

(EUR/MWh)

Spot  
 Futures (latest)  
 Dec Eurosystem staff projections  
 Dec Governing Council meeting

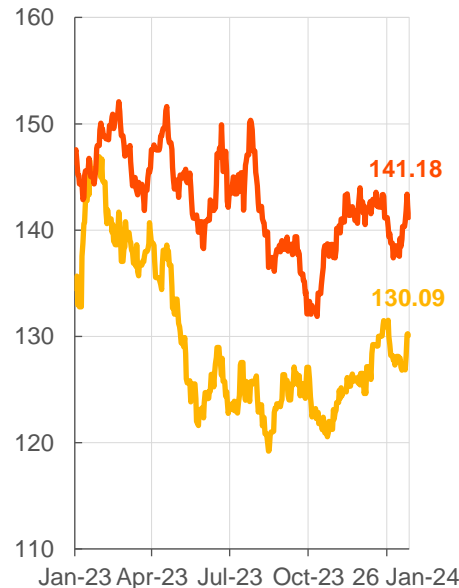


Sources: LSEG and ECB calculations.  
 Latest observations: 26 January 2024.

## Non-energy commodities

(index: 2020 = 100)

Metals Food



Sources: LSEG, HWWI and ECB calculations.  
 Latest observations: 26 January 2024.

## Projections for global GDP and trade growth

	IMF			ECB		
	(annual percentage changes)			(annual percentage changes)		
	2023	2024	2025	2023	2024	2025
<b>GDP</b>						
<b>World</b>	3.1	3.1	3.2	3.0	2.8	3.0
	(0.1)	(0.2)	(0.0)	(0.1)	(0.1)	(0.0)
United States	2.5	2.1	1.7	2.4	1.7	1.5
	(0.4)	(0.6)	(-0.1)	(0.4)	(0.8)	(0.2)
China	5.4	4.6	4.0	5.2	4.4	4.1
	(0.4)	(0.4)	(-0.1)	(0.3)	(0.1)	(-0.1)
<b>World trade</b>	0.4	3.3	3.6	0.8	2.6	3.1
	(-0.5)	(-0.2)	(-0.1)	(0.0)	(-0.4)	(-0.1)
	(Q4-on-Q4 percentage changes)			(Q4-on-Q4 percentage changes)		
	2023	2024	2025	2023	2024	2025
<b>GDP</b>						
<b>World</b>	3.2	3.1	3.1	2.9	2.9	3.0
	(0.3)	(-0.1)	(-)	(0.1)	(0.0)	(0.1)
United States	2.9	1.5	1.9	2.6	1.3	1.6
	(1.0)	(0.1)	(-)	(1.0)	(0.5)	(0.0)
China	5.8	4.2	3.9	5.2	4.3	4.2
	(0.9)	(-0.5)	(-)	(0.5)	(-0.6)	(0.4)

Sources: IMF January 2024 World Economic Outlook (WEO) Update and December 2023 Eurosystem staff projections.

Notes: Figures in parentheses denote percentage point revisions compared with the October 2023 WEO for the IMF and with the September 2023 ECB staff projections for the ECB. Q4-on-Q4 percentage changes are not reported for world trade because they are not available in the WEO. World trade is an average of world imports and exports.

# Euro area: December 2023 Eurosystem staff projections

	December 2023 (annual percentage changes)				Revisions vs. September 2023 (percentage points)		
	2023	2024	2025	2026	2023	2024	2025
	HICP	5.4	2.7	2.1	1.9	-0.2	-0.5
HICP excl. energy and food	5.0	2.7	2.3	2.1	-0.1	-0.2	0.1
Compensation per employee	5.3	4.6	3.8	3.3	0.0	0.3	0.0
Unit labour costs	6.1	4.1	2.6	2.0	0.3	0.6	0.2
Real GDP	0.6	0.8	1.5	1.5	-0.1	-0.2	0.0
Private consumption	0.5	1.4	1.6	1.4	0.2	-0.2	0.0
Government consumption	0.1	1.1	1.3	1.2	0.2	0.0	-0.1
Total investment	1.3	0.4	1.8	2.1	-0.4	0.8	0.4
Unemployment rate (% of labour force)	6.5	6.6	6.5	6.4	0.0	-0.1	-0.2

	December 2023 (Q4-on-Q4 percentage changes)				Revisions vs. September 2023 (percentage points)		
	23Q4	24Q4	25Q4	26Q4	23Q4	24Q4	25Q4
	HICP	2.8	2.6	2.0	1.9	-0.5	-0.3
HICP excl. energy and food	3.8	2.7	2.1	2.1	-0.3	0.2	0.0
Compensation per employee	4.7	4.6	3.5	3.1	0.0	0.1	0.4
Unit labour costs	5.5	3.6	2.3	1.9	0.5	0.4	0.5
Real GDP	0.3	1.3	1.5	1.5	-0.2	-0.1	0.0
Private consumption	0.6	1.8	1.4	1.4	0.1	-0.1	0.0
Government consumption	-0.3	1.9	1.0	1.3	0.1	0.4	-0.3
Total investment	1.2	0.4	2.2	2.0	-0.3	1.2	-0.1
Unemployment rate (% of labour force)	6.5	6.6	6.5	6.3	0.0	-0.1	-0.2

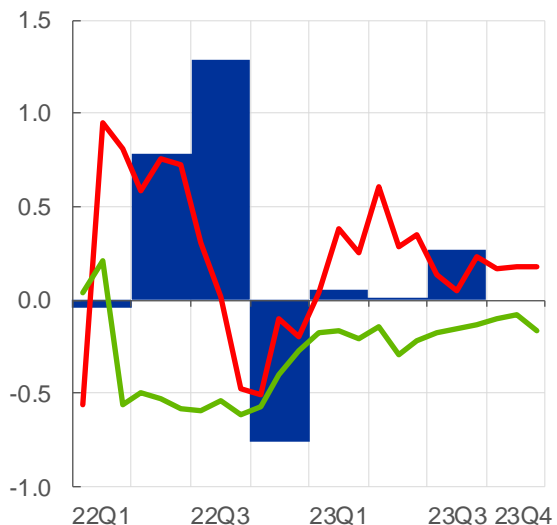
Note: Revisions calculated based on rounded figures.

# Private consumption and housing investment

## Private consumption and expectations

(quarter-on-quarter percentage changes, standardised percentage balances)

- Private consumption
- Firm expectations on contact-intensive services (right-hand scale)
- Firm expectations on retail trade (right-hand scale)

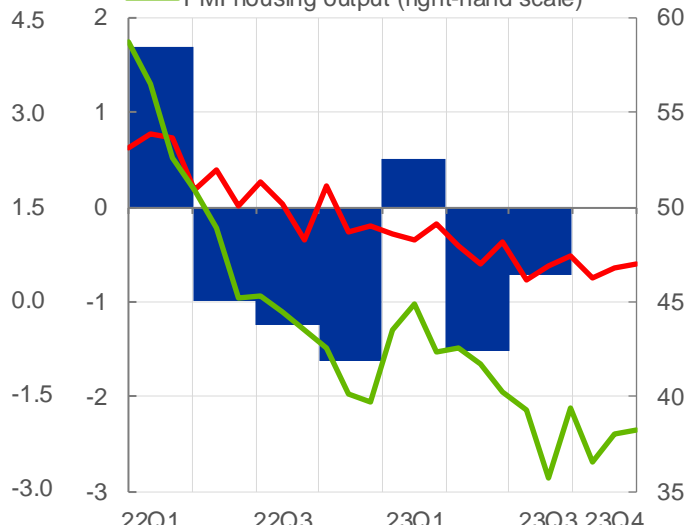


Sources: Eurostat, European Commission and ECB calculations.  
 Note: European Commission surveys standardised over the pre-pandemic period; demand for services and retail trade business situation over the next three months.  
 Latest observations: Q3 2023 for private consumption, December 2023 for surveys.

## Housing investment and short-term indicators

(quarter-on-quarter percentage changes, diffusion index)

- Housing investment
- European Commission building construction (right-hand scale)
- PMI housing output (right-hand scale)

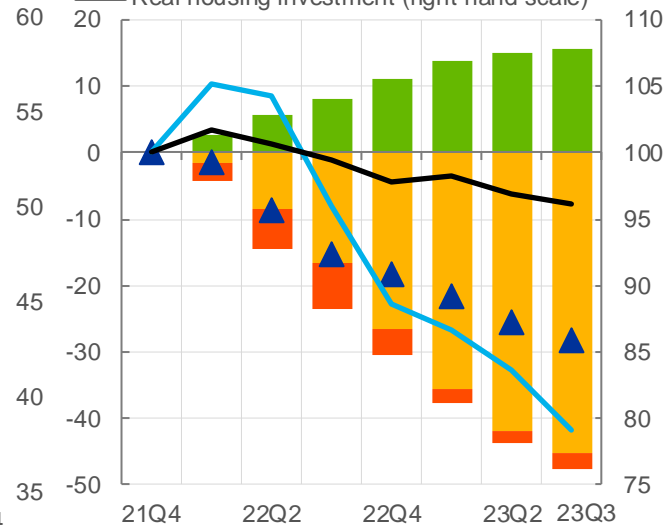


Sources: Eurostat, European Commission and S&P Global Market Intelligence.  
 Note: The European Commission indicator is standardised and rescaled to have the same mean and standard deviation as the PMI.  
 Latest observations: Q3 2023 for housing investment, December 2023 for surveys.

## Housing affordability

(changes and contributions in index points compared with Q4 2021, index: Q4 2021 = 100)

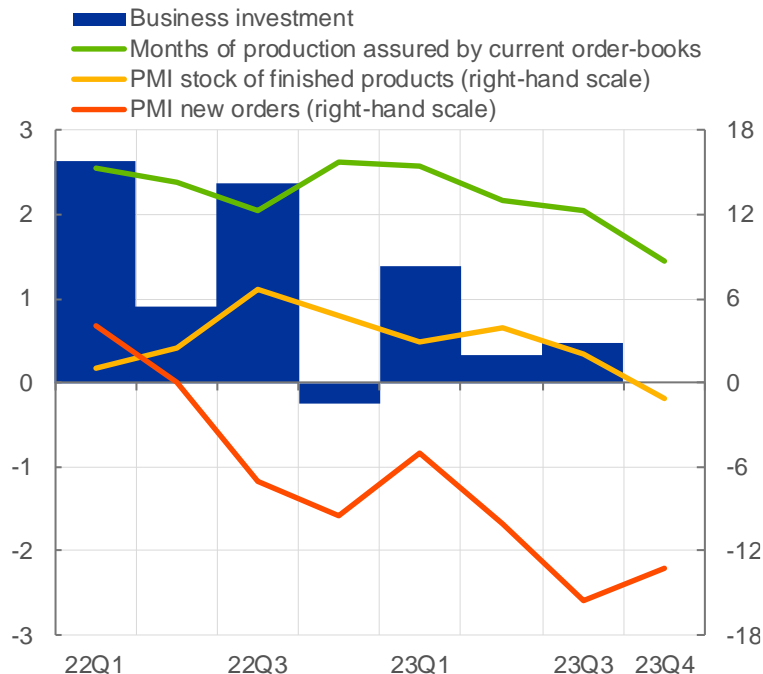
- Income contribution
- House price contribution
- Interest rate contribution
- Housing affordability
- Number of housing transactions (right-hand scale)
- Real housing investment (right-hand scale)



Sources: Eurostat and ECB calculations.  
 Notes: The housing affordability calculations follow the methodology underlying the Atlanta Fed's [HOAM Index](#), abstracting from changes in property taxes and insurance. Housing transactions refer to the median for the available euro area countries and include both newly built and existing dwellings. Latest observations: Q3 2023.

## Business investment and capital goods indicators

(left-hand scale: quarter-on-quarter percentage changes, months; right-hand scale: diffusion index (de-meaned))



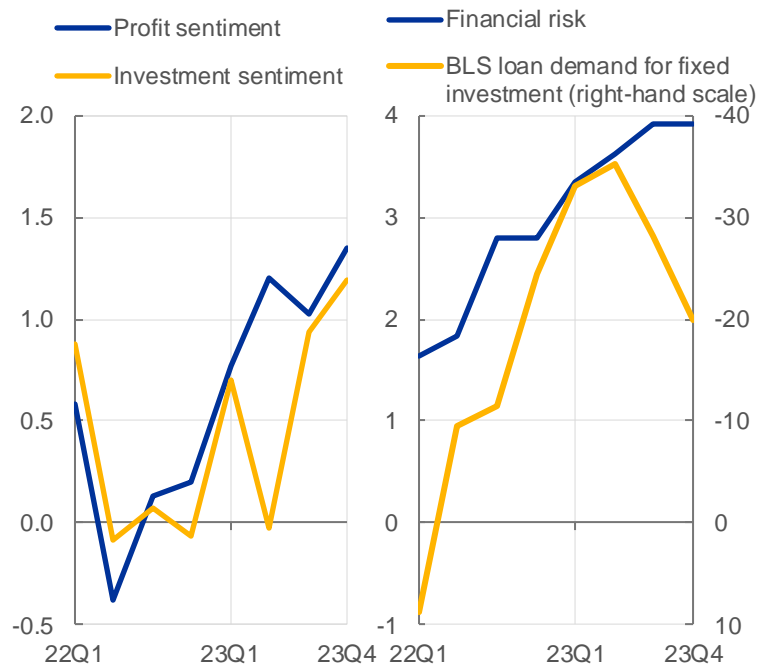
Sources: Eurostat, European Commission and S&P Global Market Intelligence.

Note: PMIs and months of assured production are de-meanded over the period 2000-2019 and are shown as quarterly averages.

Latest observations: Q3 2023 for business investment, Q4 2023 for months of assured production, December 2023 for PMIs.

## Sentiment and risk from earnings calls and loan demand for investment

(left-hand scale: z-scores; right-hand scale: percentages of sentences, net percentages)



Sources: ECB (bank lending survey – BLS), NL Analytics and ECB calculations.

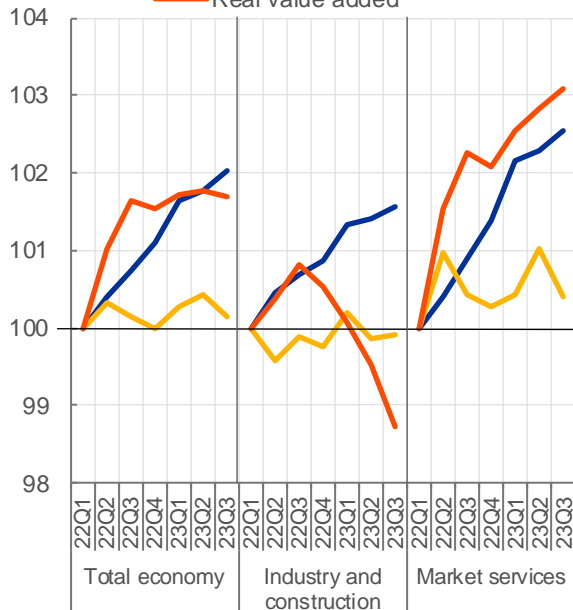
Note: Sentiment (risk) indices based on textual searches of positive/negative sentiment (risk) in combination with "investment" or "profit" ("financing"), or the like, in scripts of firms' earnings calls.

Latest observations: Q4 2023.

## Persons employed and real value added

(index: Q1 2022 = 100)

— Persons employed  
— Average hours worked  
— Real value added

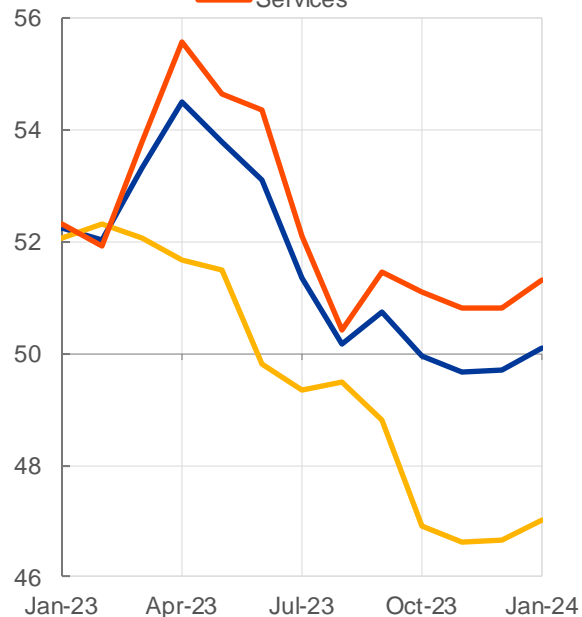


Sources: Eurostat and ECB calculations.  
Latest observations: Q4 2023.

## PMI employment

(diffusion index)

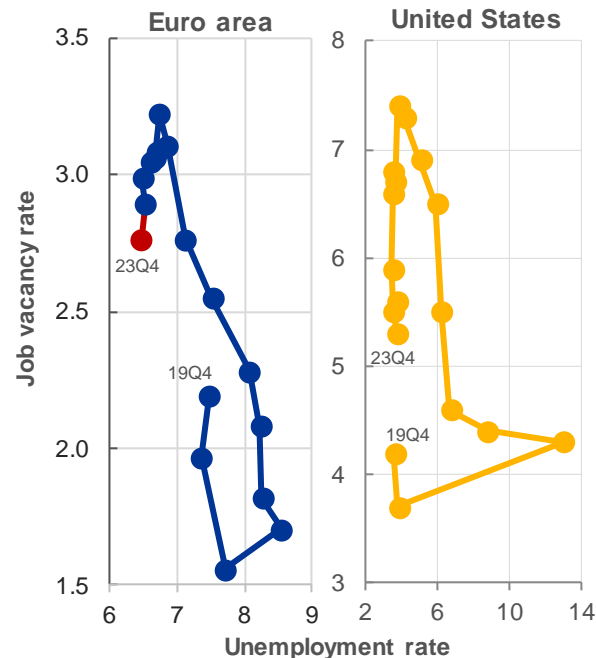
— Composite  
— Manufacturing  
— Services



Source: S&P Global Market Intelligence.  
Latest observations: January 2024.

## Beveridge curve

(x-axis: percentages of labour force;  
y-axis: percentages of total jobs)



Sources: Eurostat (labour force survey), Indeed and ECB calculations.

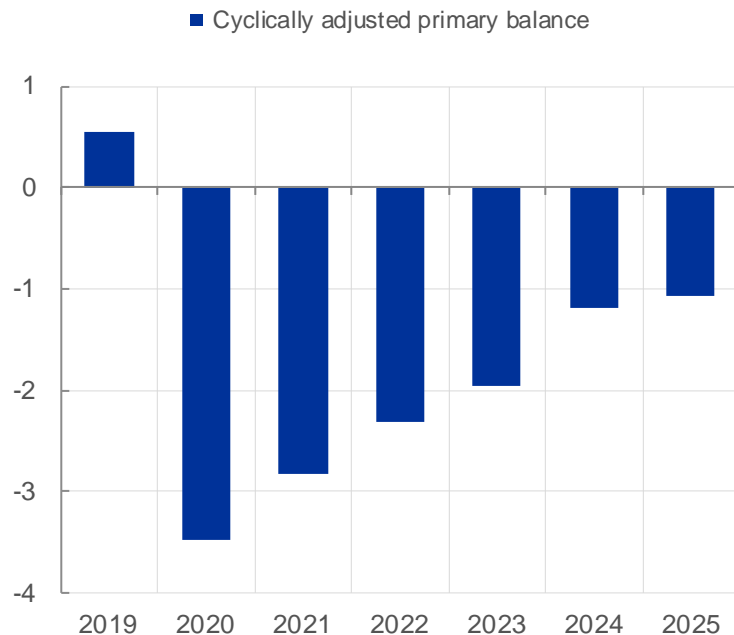
Notes: Total jobs is the sum of filled and unfilled jobs (vacancies). Job vacancy rate for Q4 2023 estimated on the basis of Indeed data up to November 2023.

Latest observations: November 2023 for unemployment, Q3 2023 for the job vacancy rate (November for the United States).



## Underlying fiscal position

(cyclically adjusted primary balance as percentage of GDP)

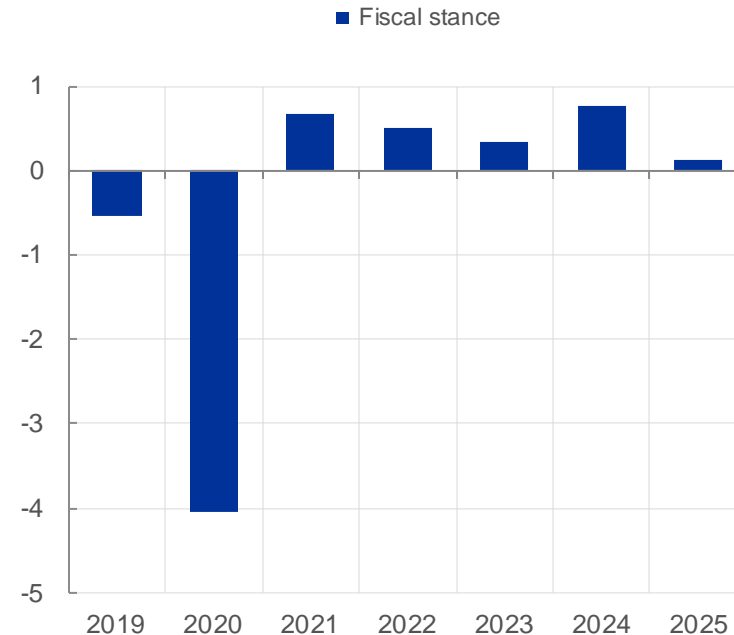


Sources: December 2023 Eurosystem staff projections.

Notes: The underlying fiscal position is approximated by the cyclically adjusted primary balance (CAPB). The euro area CAPB includes a share of the deficit at the EU level corresponding to debt-financed Next Generation EU grants to euro area countries.

## Fiscal stance

(change in ratio of cyclically adjusted primary balance to GDP, percentage points)



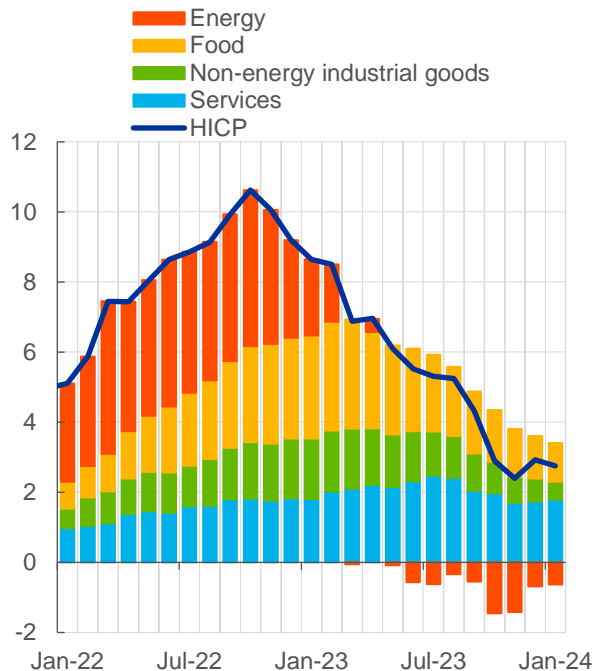
Sources: December 2023 Eurosystem staff projections.

Notes: The fiscal stance is approximated by the change in the cyclically adjusted primary balance (CAPB). The euro area CAPB includes a share of the deficit at the EU level corresponding to debt-financed Next Generation EU grants to euro area countries.

# Inflation outlook

## HICP inflation

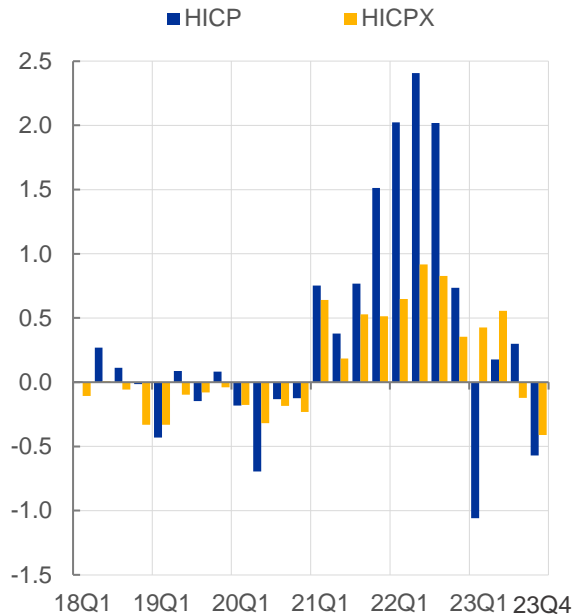
(annual percentage changes and percentage point contributions)



Sources: Eurostat and ECB calculations.  
Latest observations: January 2024 (flash).

## 1-quarter ahead projection errors

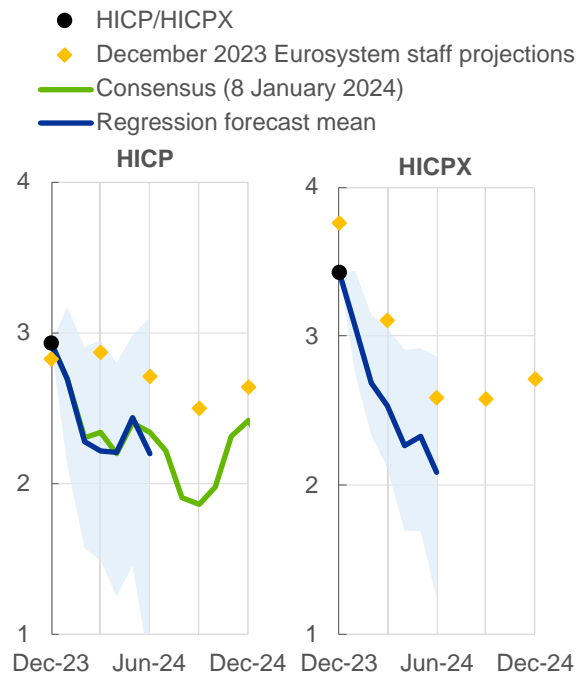
(percentage points)



Sources: Eurostat, projections database and ECB calculations.  
Notes: Projection error is for one quarter ahead and it is defined as actual inflation minus forecast.  
Latest observations: December 2023.

## Short-term forecasts

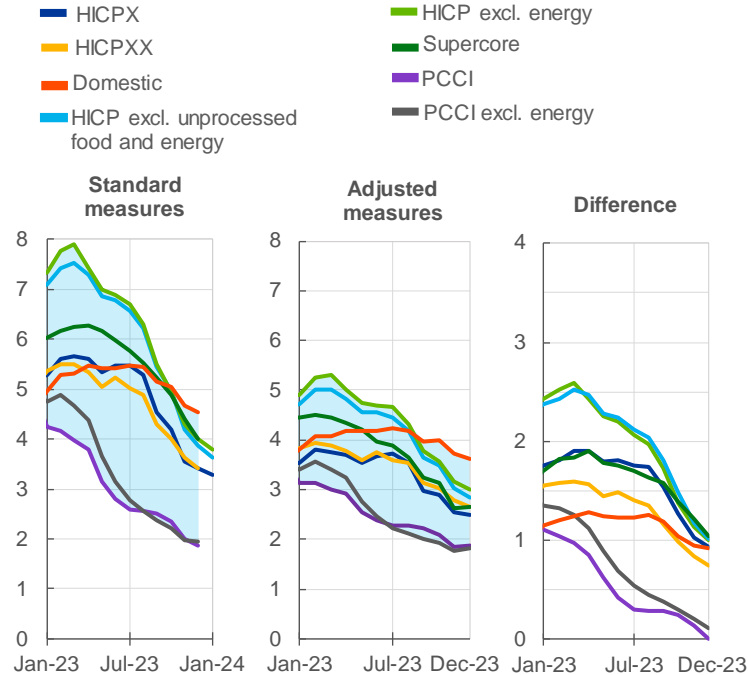
(annual percentage changes)



Sources: Eurostat, December 2023 Eurosystem staff projections, Consensus Economics and ECB calculations. Notes: Cut-off date for the random forest is 17 January 2024. Consensus Economics data were collected on 8 January. Random forest estimates are from Lenza, M., Moutachaker, I. and Paredes, J. (2023), "[Forecasting euro area inflation with machine learning models](#)", *Research Bulletin*, No 112, ECB. Latest observations: December 2023. [www.ecb.europa.eu](http://www.ecb.europa.eu)

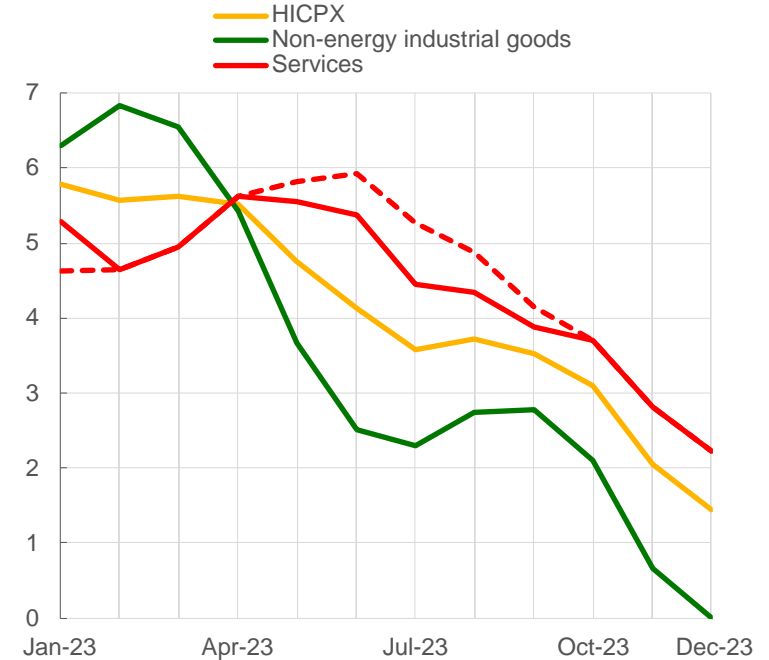
## Measures of underlying inflation

(annual percentage changes)



## Momentum for HICPX inflation and its components

(annualised three-month-on-three-month percentage changes)



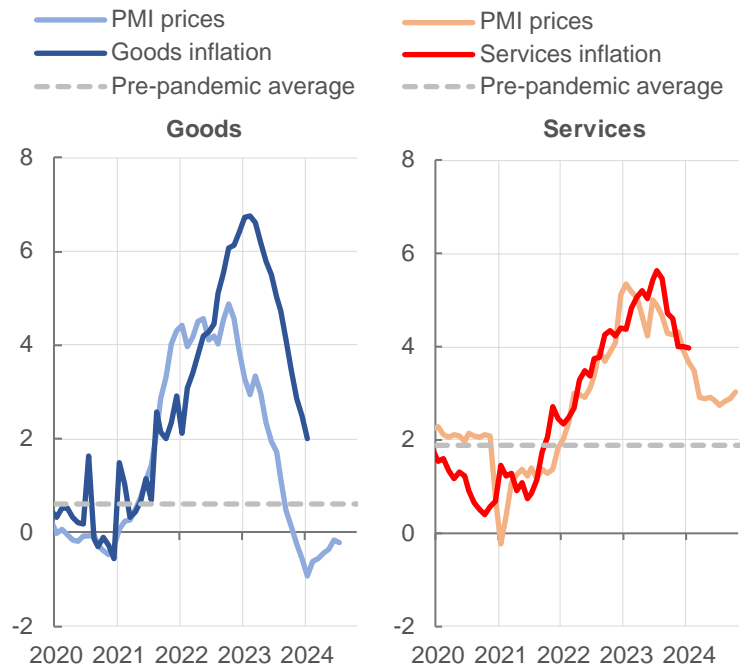
Sources: Eurostat and ECB calculations. Notes: “PCCI” stands for “persistent and common component of inflation”. “Adjusted measures” abstract from energy and supply bottleneck shocks using a large SVAR (see Bańbura, M., Bobeica, E. and Martínez Hernández, C. (2023), “[What drives core inflation? The role of supply shocks](#)”, *Working Paper Series*, No 2875, ECB), deducted mechanically from each measure. Latest observations: January 2024 (flash) for HICPX, HICP excl. energy and HICP excl. unprocessed food and energy (standard measures), December 2023 for the rest.

Sources: Eurostat and ECB calculations. Notes: Based on seasonally adjusted data. The dashed line corresponds to services adjusted for the effects of the €9 and €49 tickets introduced in Germany in June 2022 and May 2023, respectively. Latest observations: December 2023.

# Goods and services inflation

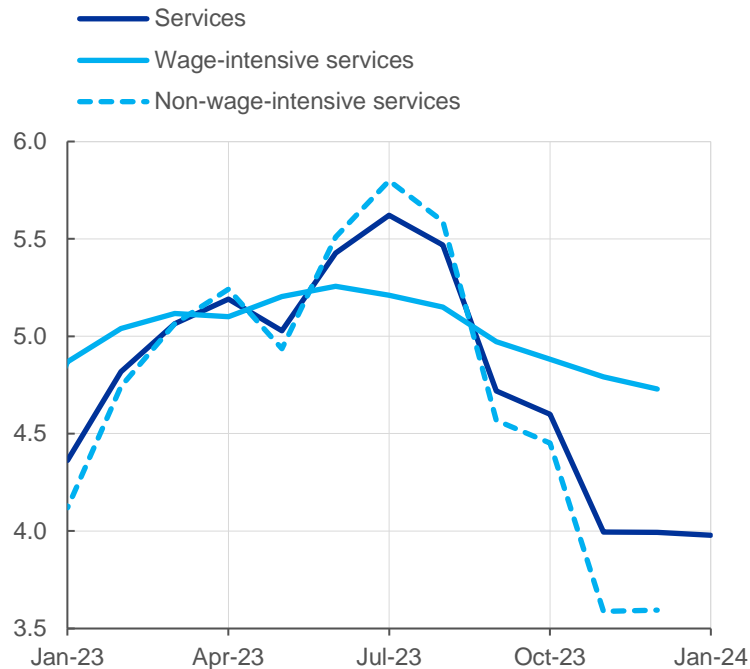
## Goods and services inflation and PMI

(annual percentage changes)



## Services inflation

(annual percentage changes)

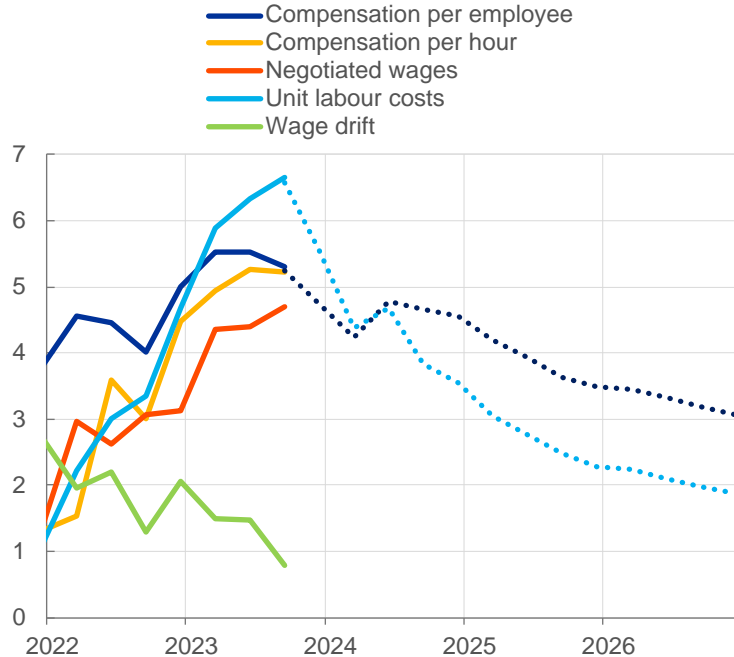


Sources: Eurostat, S&P Global Market Intelligence and ECB calculations.  
 Notes: PMIs reflect the average of input and output prices, both rescaled to match mean and standard deviation of goods and services inflation, and are lagged six months and nine months respectively. The pre-pandemic averages are computed for 1999 to 2019.  
 Latest observations: January 2024 for PMI and January 2024 (flash) for HICP.

Sources: Eurostat and ECB calculations.  
 Latest observations: January 2024 (flash) for Services and December 2023 for the rest.

## Labour cost indicators and projections

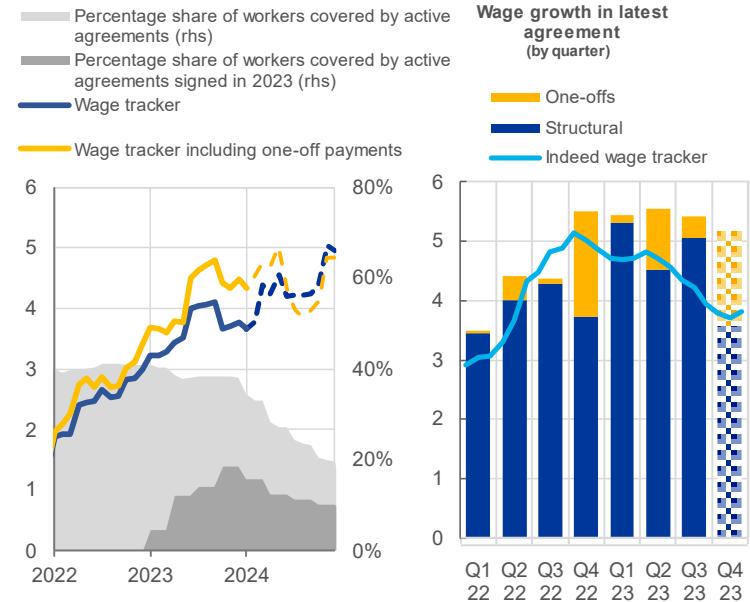
(annual percentage changes)



Sources: Eurostat, ECB, ECB calculations and December 2023 Eurosystem staff projections. Latest observations: Q3 2023.

## Wage trackers

(annual percentage changes, share of workers and percentage point contributions)

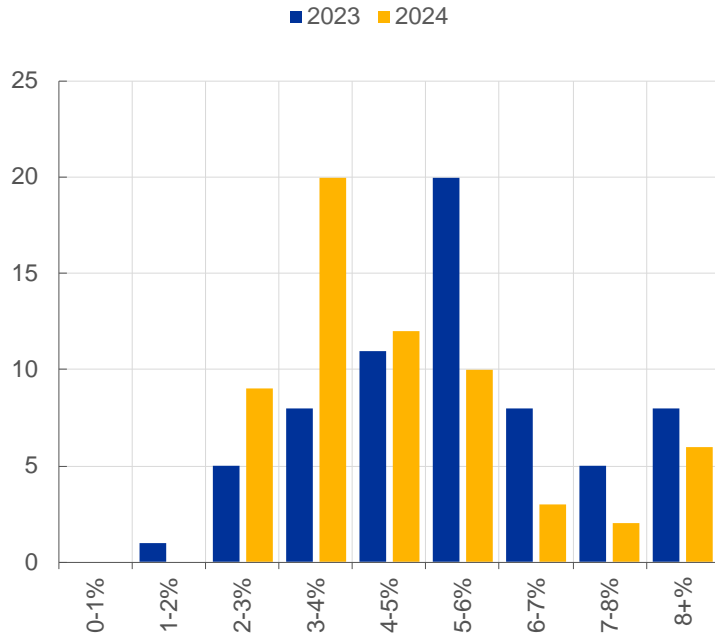


Sources: Calculated based on micro data on wage agreements provided by Deutsche Bundesbank, Banco de España, the Dutch employer association (AWVN), Oesterreichische Nationalbank, Bank of Greece, Banca d'Italia and Banque de France. Notes: Euro area aggregate based on ES, IT, GR, AT, DE, NL and FR as of December 2023. Experimental forward-looking wage trackers including one-offs distribute one-off payments equally over the 12 months after a one-off payment is made. The indicator of latest wage agreements shows the wage growth implied by agreements reached in a quarter for 12 months ahead. 2023Q4 for wage growth in latest agreements is preliminary as not all collective agreements reached in 2023Q4 are available yet. The Indeed tracker measures wage growth in online job ads, computed by the Central Bank of Ireland. Latest observations: December 2023.

# Wage expectations from surveys

## Corporate Telephone Survey: wage expectations

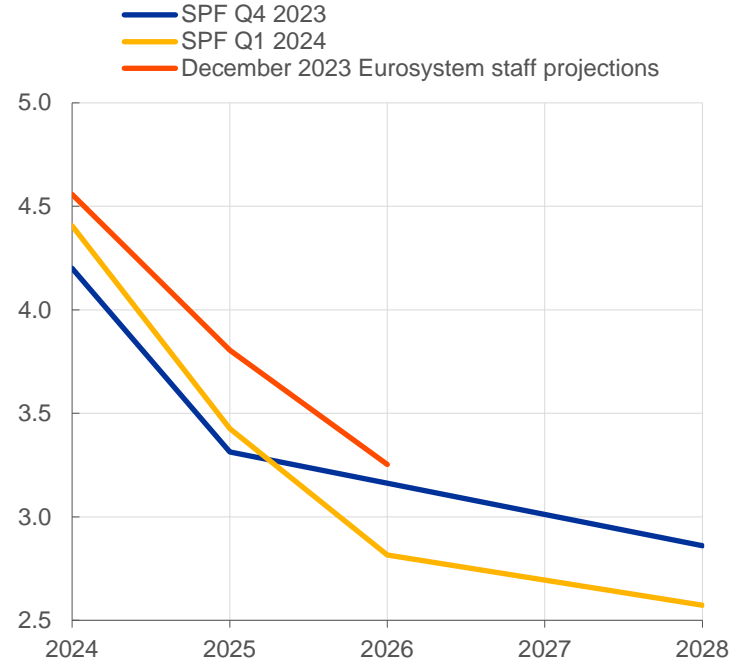
(number of responses)



Source: January 2024 Corporate Telephone Survey.

## Survey of Professional Forecasters: compensation per employee

(annual percentage changes)

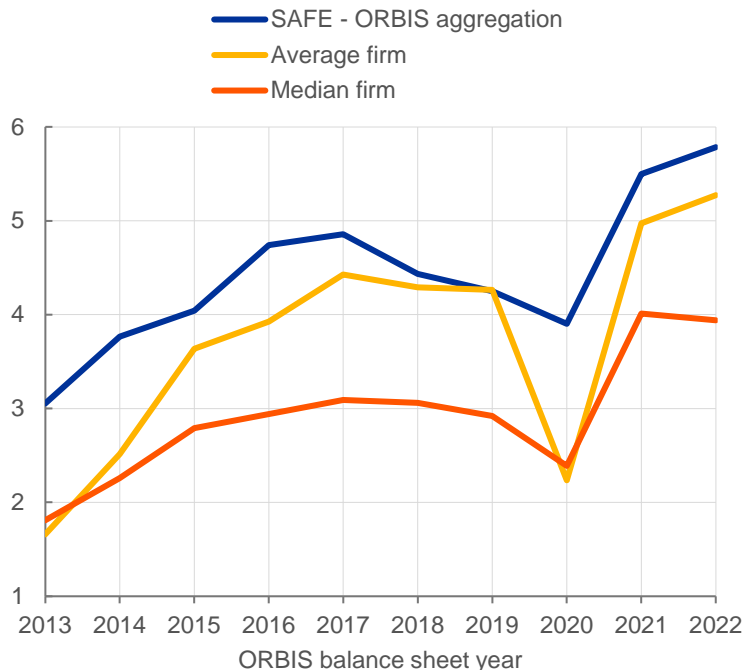


Sources: Survey of Professional Forecasters (SPF) and December 2023 Eurosystem staff projections.

# Survey-based measures of profit margins

## SAFE-ORBIS profit margins

(percentages)

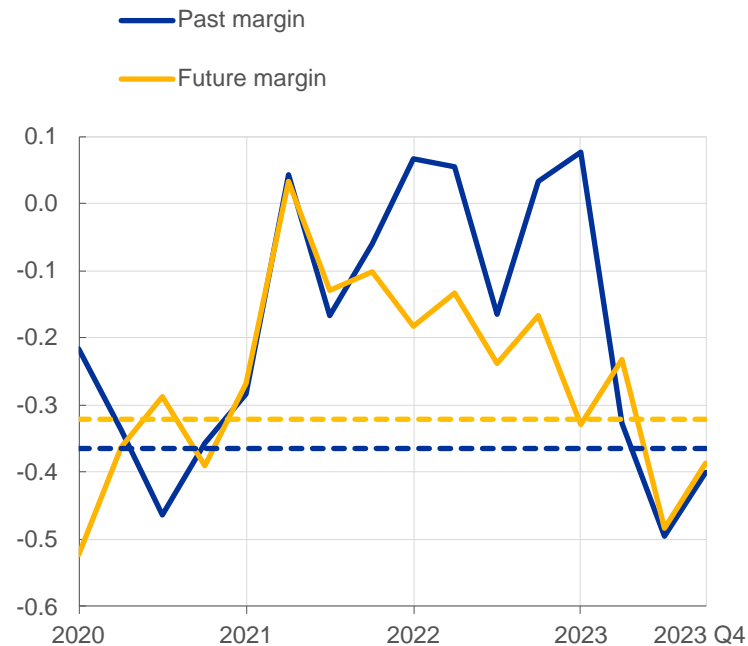


Sources: ECB, European Commission survey on the access to finance of enterprises (SAFE), and Moody's ORBIS.

Note: The SAFE-ORBIS aggregate profit margin is calculated by summing the profits before taxes and revenues of firms in each ORBIS balance sheet year before calculating the profit margin ratio.

## Corporate Telephone Survey (CTS): implied profit margin

(averages of CTS scores)

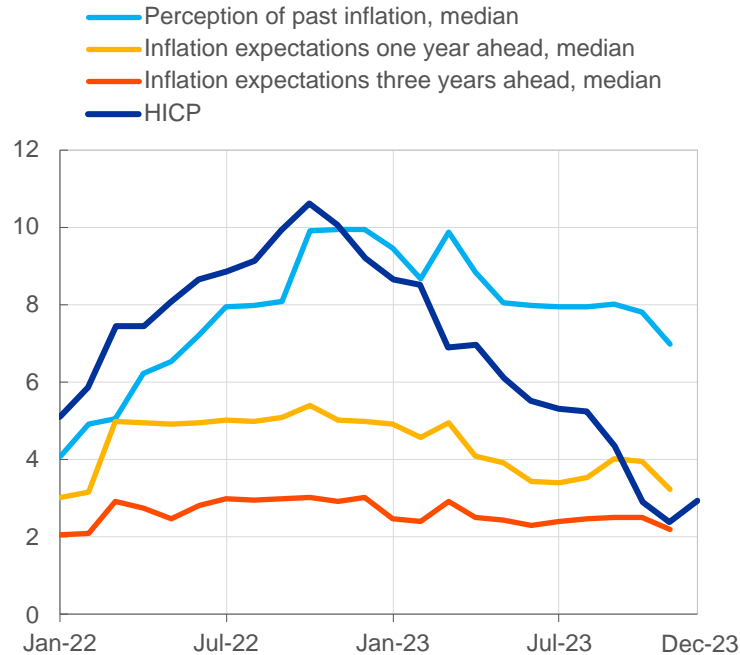


Source: January 2024 Corporate Telephone Survey.

Notes: The score is calculated as "selling price score - 0.5 x input cost score - 0.5 x wage score". 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 dashed lines represent the 2009-2019 average for "past" and "future".

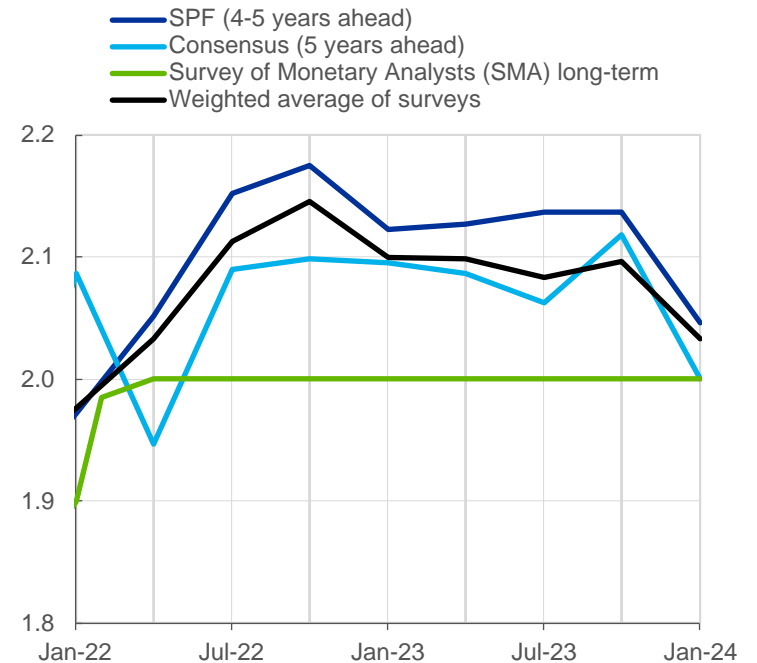
# Inflation expectations from surveys

## Consumers (annual percentage changes)



Source: Eurostat and ECB's Consumer Expectations Survey.  
Latest observations: November 2023 for CES and December 2023 for HICP.

## Professional forecasters (annual percentage changes)

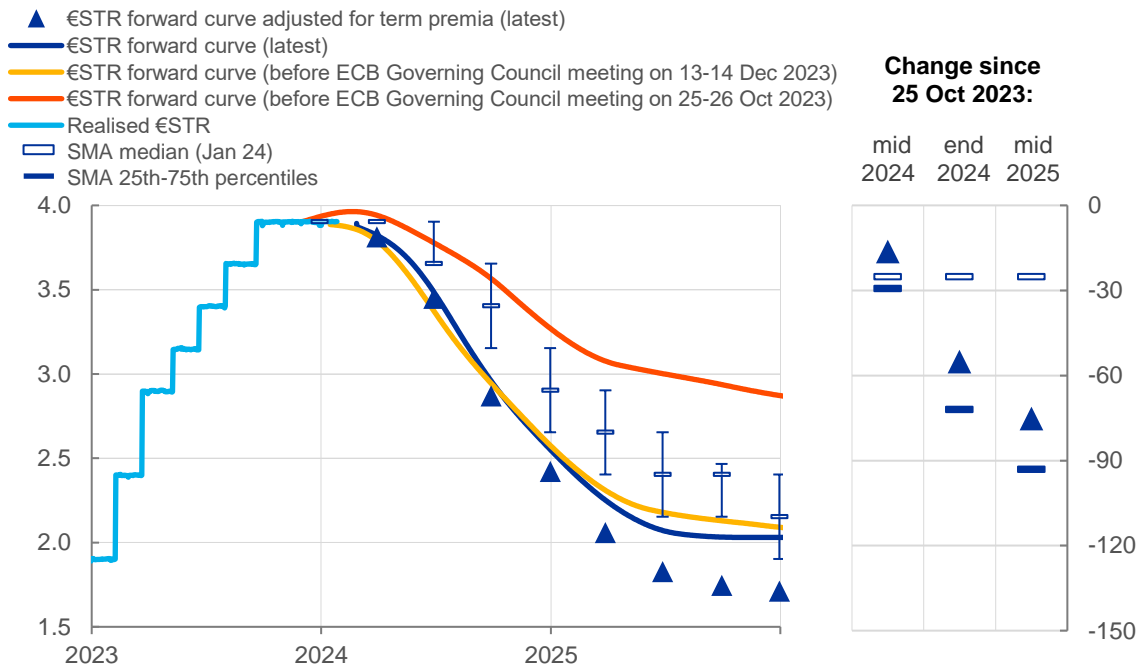


Sources: Consensus Economics, Survey of Professional Forecasters (SPF), ECB Survey of Monetary Analysts (SMA). Note: The weighted average of surveys is computed using the number of respondents in each survey as a weight.  
Latest observations: January 2024 for Consensus Economics and SMA, Q1 2024 for SPF.



## €STR forward curve and survey expectations on the deposit facility rate

(percentages per annum, basis points)

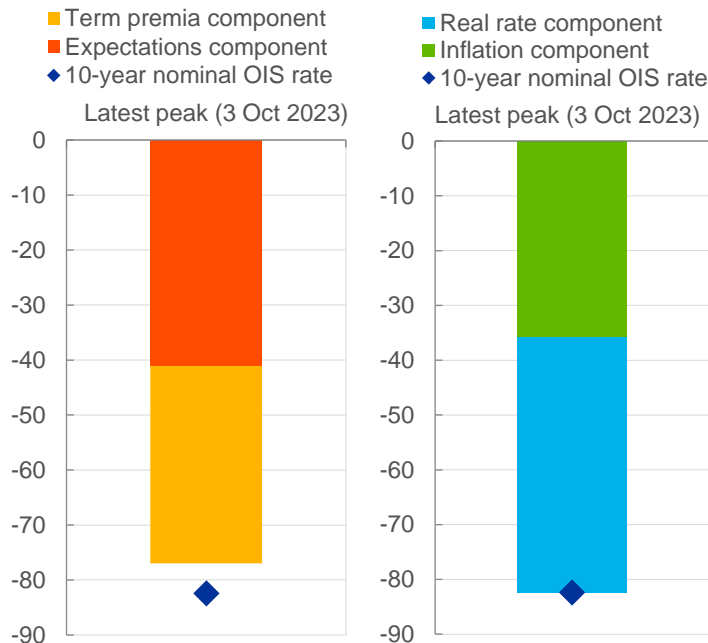


Sources: LSEG, Bloomberg and ECB calculations.

Notes: The bars depict the median of responses to the January 2024 ECB Survey of Monetary Analysts (SMA) on expectations of future deposit facility rates. Surveys are adjusted for a €STR versus deposit facility rate (DFR) spread. Model estimates are based on two affine term structure models, one with and one without survey information on interest rate expectations (both variations of 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), and a lower bound term structure model incorporating survey information on interest rate expectations following Geiger, F. and Schupp, F. (2018), "[With a little help from my friends: Survey-based derivation of euro area short rate expectations at the effective lower bound](#)", *Discussion Papers*, No 27, Deutsche Bundesbank.

Latest observations: 26 January 2024.

## Decomposition of changes in 10-year nominal OIS rate since its latest peak (basis points)



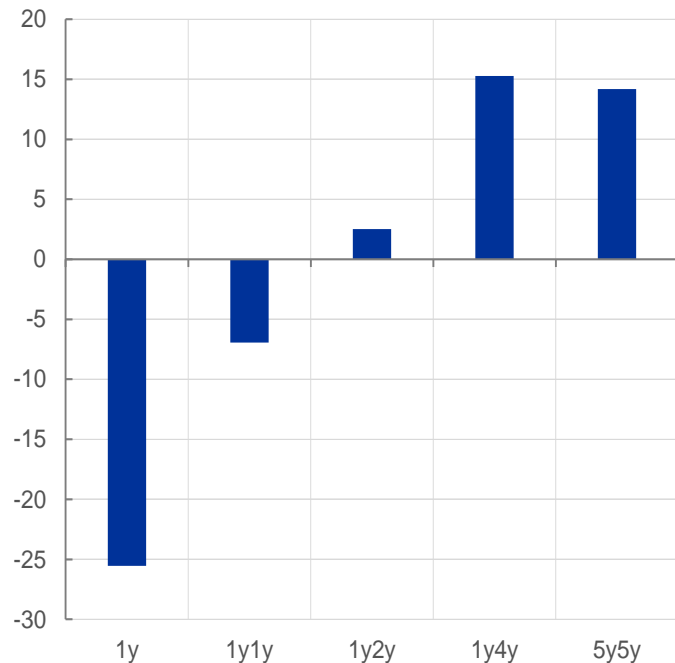
Sources: LSEG, Bloomberg and ECB calculations.

Notes: "OIS" stands for "overnight index swap". The decomposition in term premia and genuine rate expectations based on model estimates are based on two affine term structure models, one with and one without survey information on interest rate expectations (both variations of 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), and a lower bound term structure model incorporating survey information on interest rate expectations following Geiger, F. and Schupp, F. (2018), "[With a little help from my friends: Survey-based derivation of euro area short rate expectations at the effective lower bound](#)", *Discussion Papers*, No 27, Deutsche Bundesbank. The euro area real rate is calculated by subtracting the inflation-linked swap rate from the nominal OIS rate.

Latest observations: 26 January 2024.

## Changes in real risk-free rates since December 2023 Governing Council meeting

(basis points)



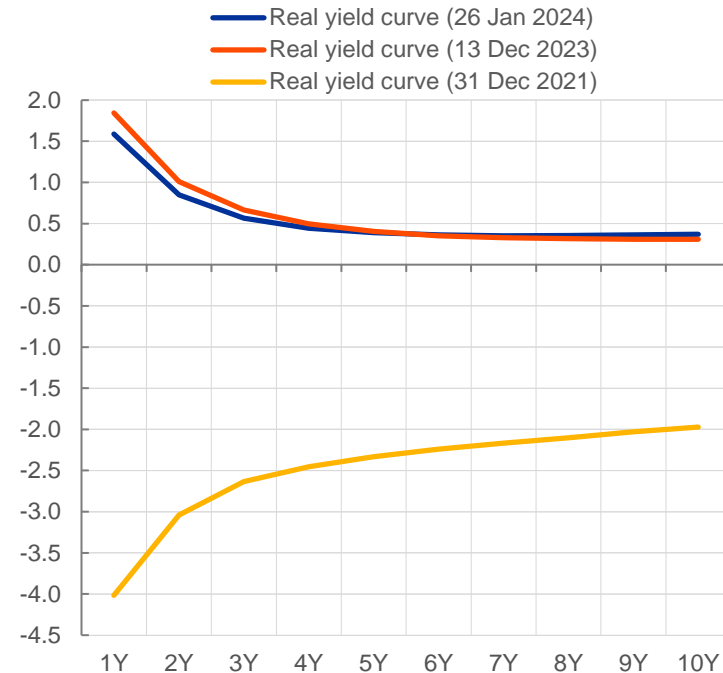
Sources: Bloomberg, LSEG and ECB calculations.

Note: The change bars refer to the day before the press conference of the December Governing Council meeting (13-14 December 2023).

Latest observations: 26 January 2024.

## Estimates of the real yield curve

(percentages per annum)

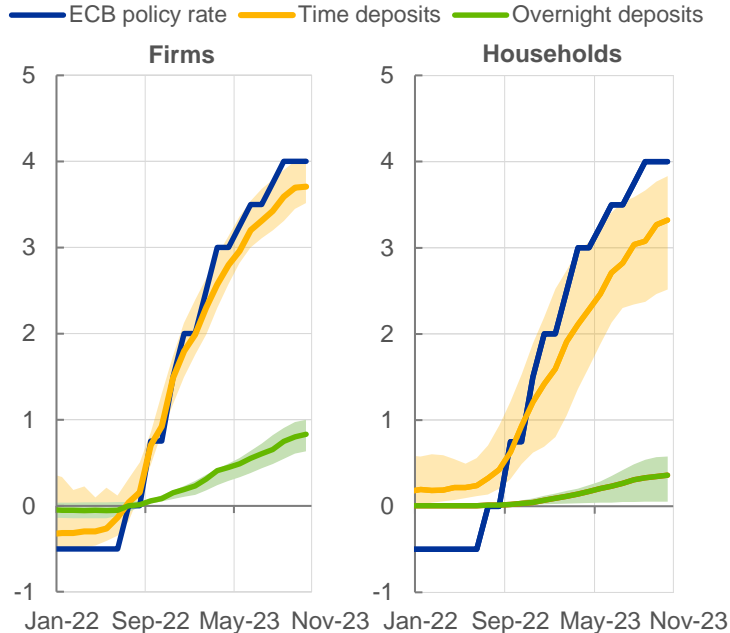


Sources: Bloomberg, LSEG and ECB calculations.

Notes: Real rates are calculated as the difference between nominal overnight interest rate swap rates and inflation linked swap rates.

Latest observations: 26 January 2024.

## Policy and deposit rates (percentages per annum)

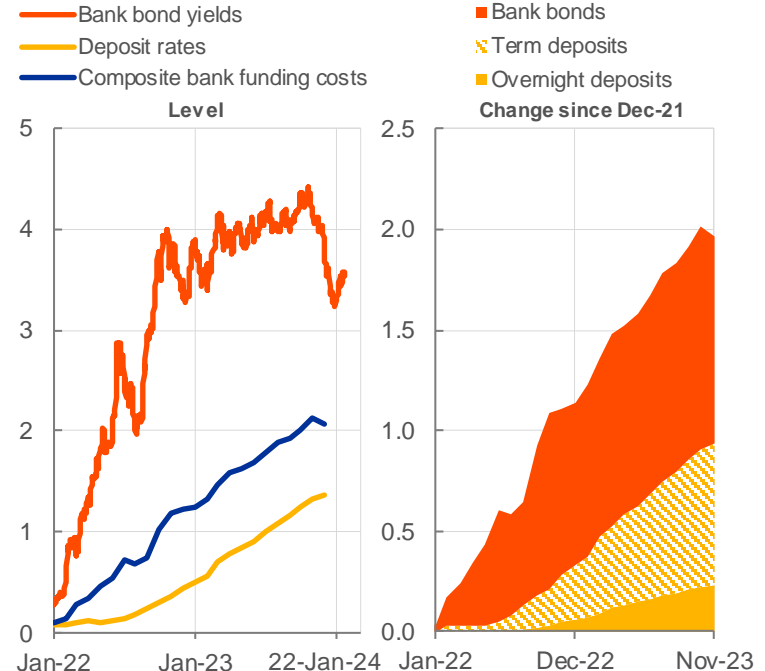


Sources: ECB (MIR and FM) and ECB calculations.

Notes: Time deposits refer to deposits with agreed maturity of up to two years. Shaded areas show ranges across countries.

Latest observations: November 2023.

## Bank funding costs (percentages per annum)

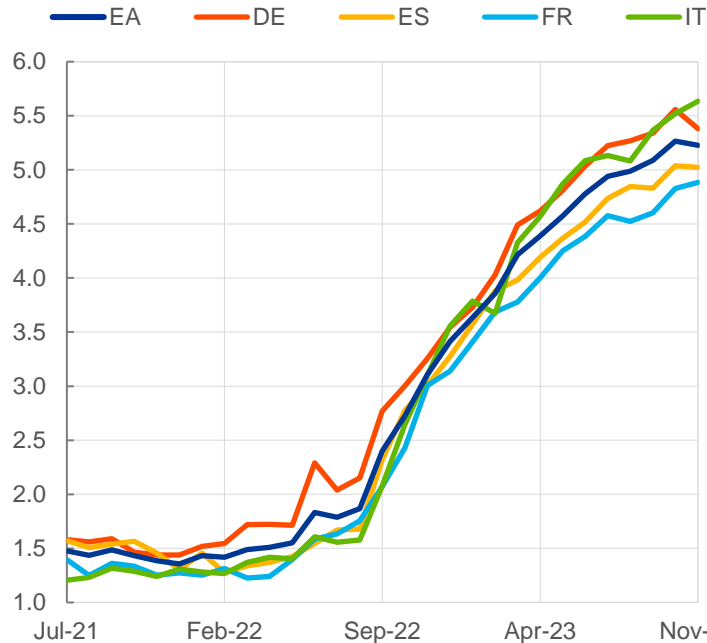


Sources: ECB (BSI and MIR), S&P Dow Jones Indices LLC and/or its affiliates and ECB calculations. Notes: Daily bank bond yields. Monthly deposit rates on new business volumes weighted by outstanding amounts. Composite funding costs are a weighted average of deposit rates and average monthly bond yields, with outstanding amounts as weights. Right panel shows the contributions of the components to the change in the composite bank funding cost between December 2021 and November 2023. Latest observations: 22 January 2024 for bond yields, November 2023 for other series.

# Cost of bank borrowing

## Cost of borrowing for firms

(percentages per annum)



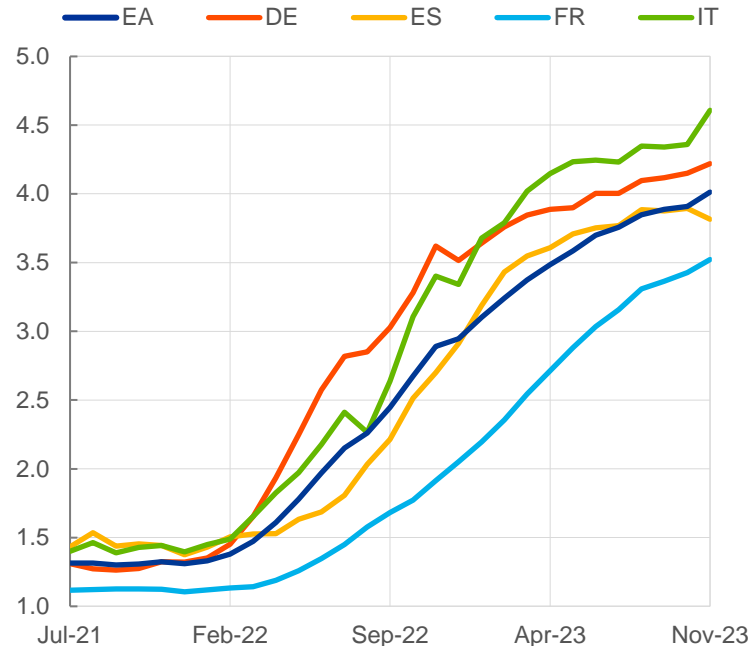
Source: ECB (MIR).

Note: The indicator for the total cost of borrowing for firms is calculated by aggregating short-term and long-term rates using a 24-month moving average of new business volumes.

Latest observations: November 2023.

## Cost of borrowing for households for house purchase

(percentages per annum)



Source: ECB (MIR).

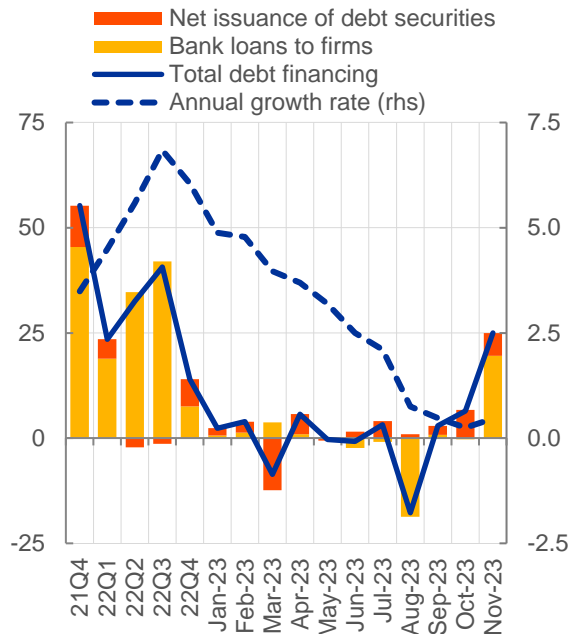
Note: The indicator for the total cost of borrowing for households for house purchase is calculated by aggregating short-term and long-term rates using a 24-month moving average of new business volumes.

Latest observations: November 2023.

# Firm debt financing, credit standards and loan demand

## Net debt financing flows of euro area firms

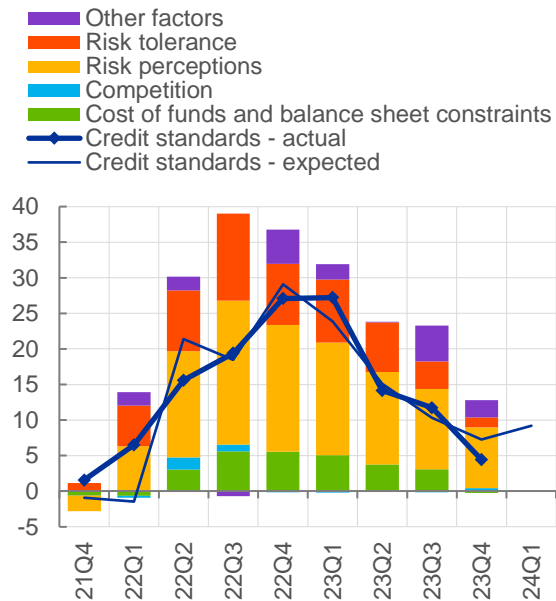
(average monthly flows over the respective period in EUR billions, annual percentage changes)



Sources: ECB (BSI and CSEC) and ECB calculations.  
 Notes: The seasonal adjustment for the net issuance of debt securities is not official. Bank loans are adjusted for sales, securitisation and cash pooling.  
 Latest observations: November 2023.

## Changes in credit standards for loans to firms, and contributing factors

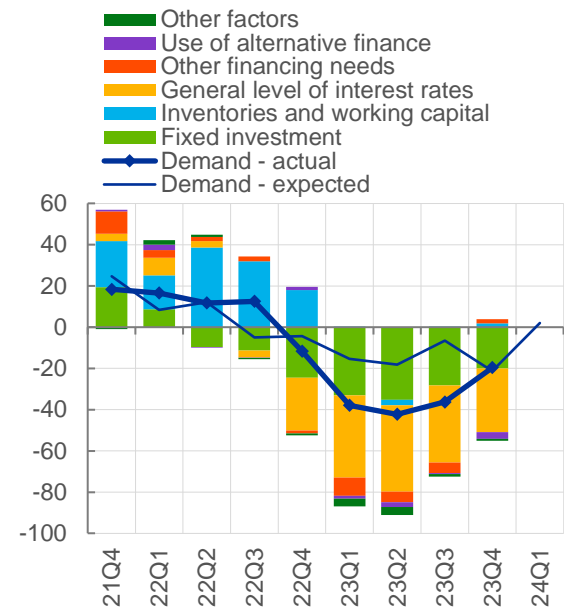
(net percentages)



Source: ECB bank lending survey.  
 Notes: "Other factors" refer to further factors which were mentioned by banks as having contributed to changes in credit standards.  
 Latest observations: Q4 2023.

## Changes in demand for loans to firms, and contributing factors

(net percentages)

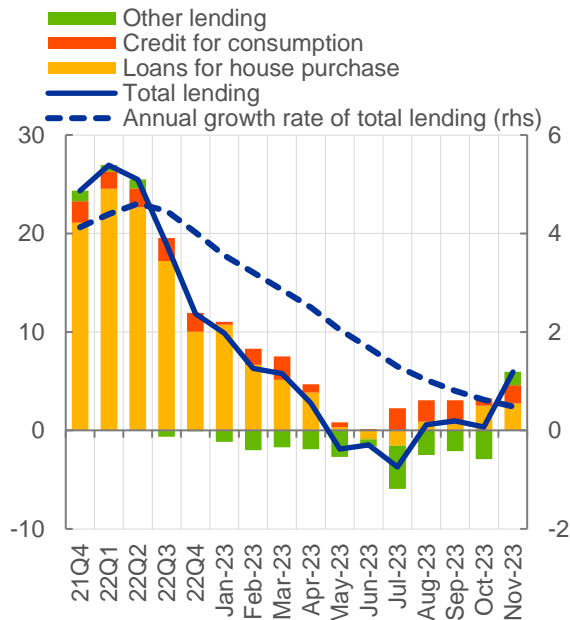


Source: ECB bank lending survey. Notes: "Other financing needs" as unweighted average of "M&A and corporate restructuring" and "debt refinancing/restructuring and renegotiation"; "Use of alternative finance" as unweighted average of "internal financing", "loans from other banks", "loans from non-banks", "issuance/redemption of debt securities" and "issuance/redemption of equity". Latest observations: Q4 2023.

# Household loans, credit standards and loan demand

## Bank loans to households

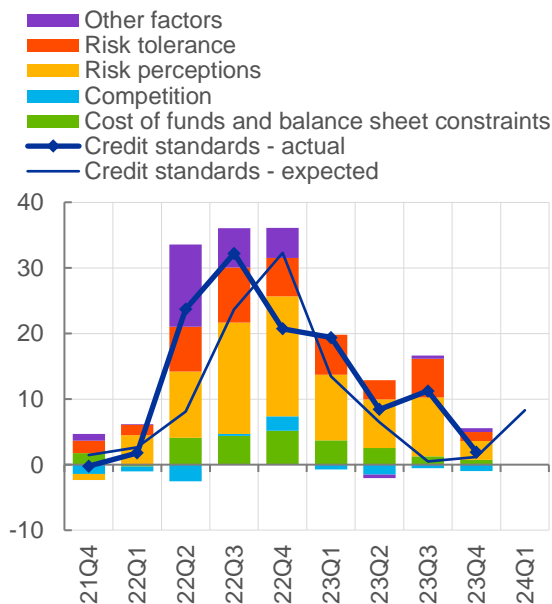
(average monthly flows in EUR billions, annual percentage change)



Sources: ECB (BSI) and ECB calculations.  
 Note: Bank loans are adjusted for sales and securitisation.  
 Last observations: November 2023.

## Changes in credit standards for loans to households, and contributing factors

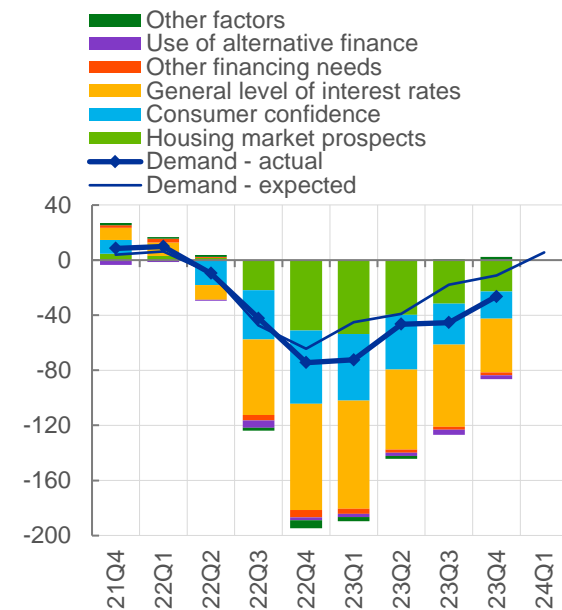
(net percentages)



Source: ECB bank lending survey.  
 Note: "Other factors" refer to further factors which were mentioned by banks as having contributed to changes in credit standards.  
 Latest observations: Q4 2023.

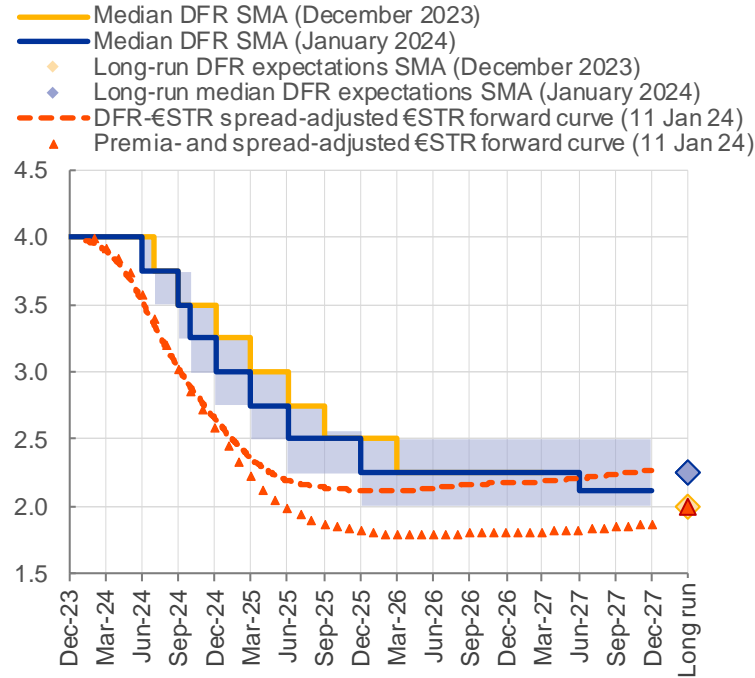
## Changes in demand for loans to households, and contributing factors

(net percentages)



Source: ECB bank lending survey.  
 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". Latest observations: Q4 2023.  
[www.ecb.europa.eu](http://www.ecb.europa.eu)

## Median deposit facility rate expectations (percentages per annum)



Sources: ECB Survey of Monetary Analysts (SMA), Bloomberg and ECB calculations.  
 Note: The premia and spread-adjusted €STR forward curve refers to the plain €STR forward curve adjusted for term premia and the spread between the deposit facility rate (DFR) and €STR on 11 January 2024, which was 10 basis points.