



EUROPEAN CENTRAL BANK

EUROSYSTEM

Challenges for monetary policy at times of high inflation

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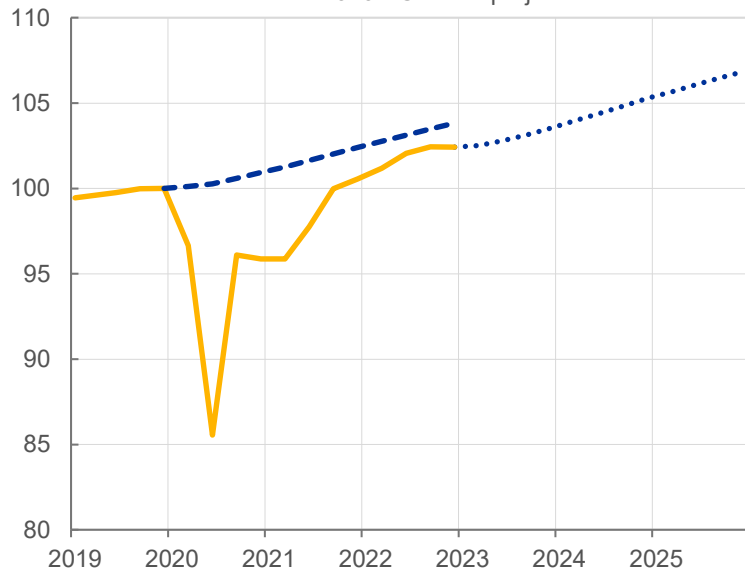
Mannheim, 19 April 2023

Economic growth and inflation in the euro area since the start of the pandemic

Real GDP

(index: Q4 2019 = 100)

- March 23 ECB staff projections
- Realised GDP
- - - March 2020 ECB staff projections

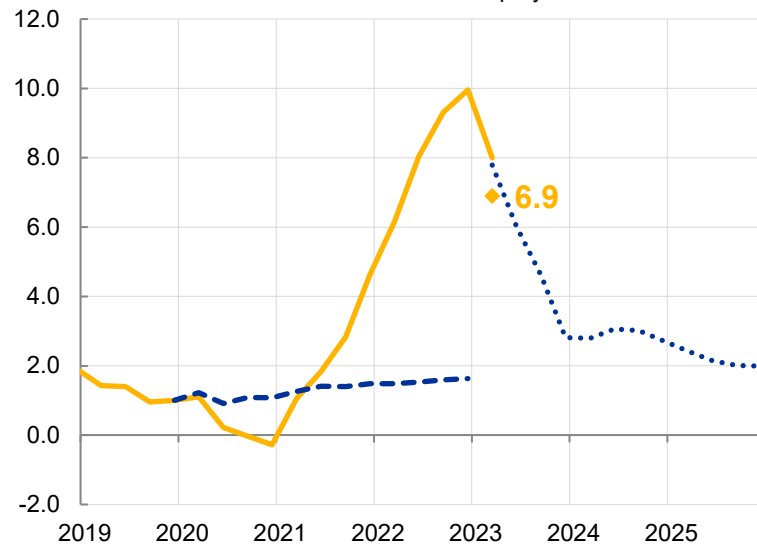


Sources: Eurostat, ECB and Eurosystem.
Latest observation: Q4 2022.

Inflation

(annual percentage changes, quarterly data)

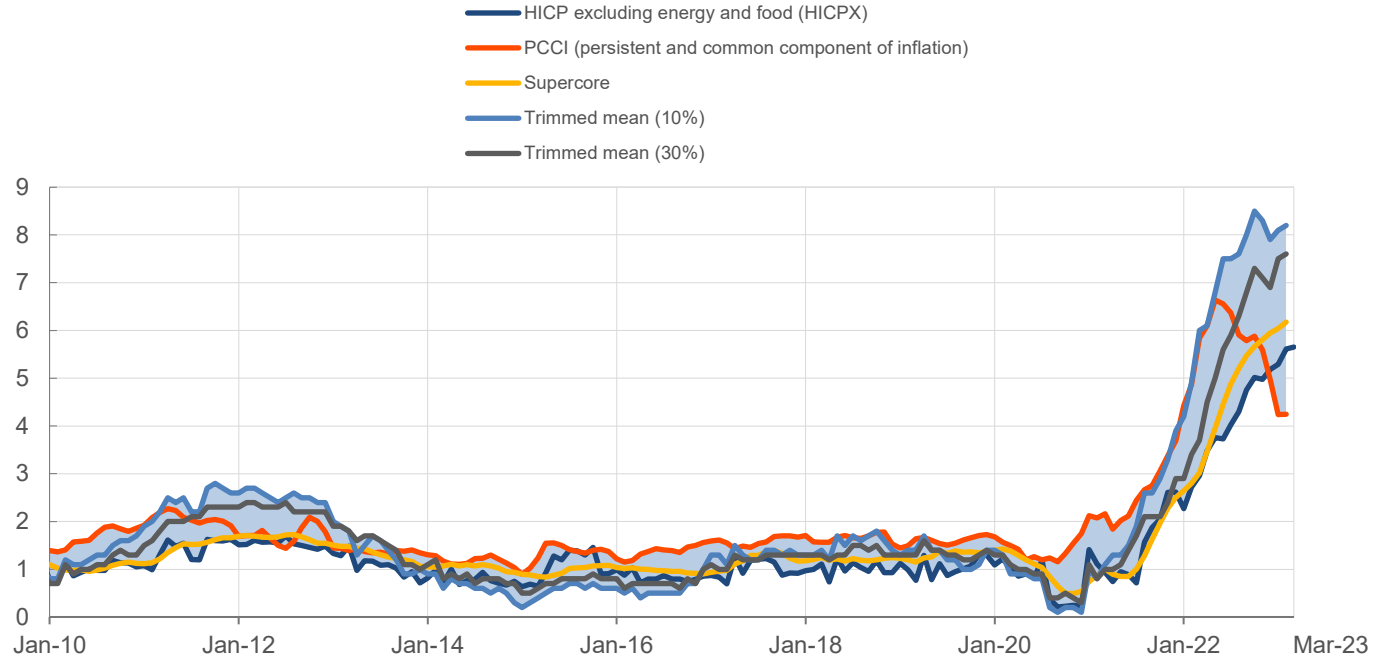
- March 2023 ECB staff projections
- Realised HICP
- ◆ March 2023 (final release)
- - - March 2020 ECB staff projections



Sources: Eurostat, ECB and Eurosystem.
Latest observation: Q1 2023 for quarterly data, March 2023 for monthly data (diamond).

While headline inflation has started to decline, underlying inflation proves sticky

Measures of underlying inflation (annual percentage changes)



Sources: ECB and ECB calculations.

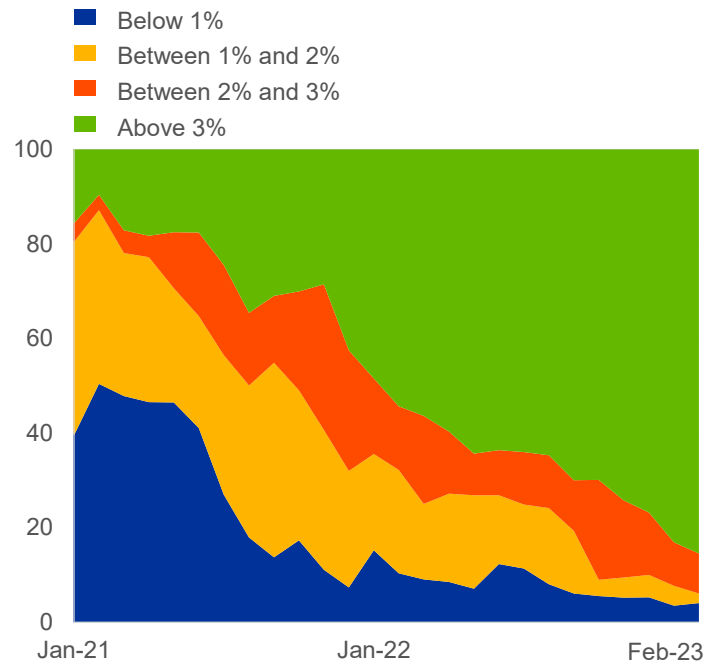
Notes: HICPX, Supercore and Trimmed means are non-seasonally adjusted, while PCCI is based on seasonally adjusted price series.

Latest observation: March 2023 (flash) for HICPX and February 2022 for the rest.

Broadening of inflationary pressures to most components in the consumption basket

Share of HICP components according to pace of change

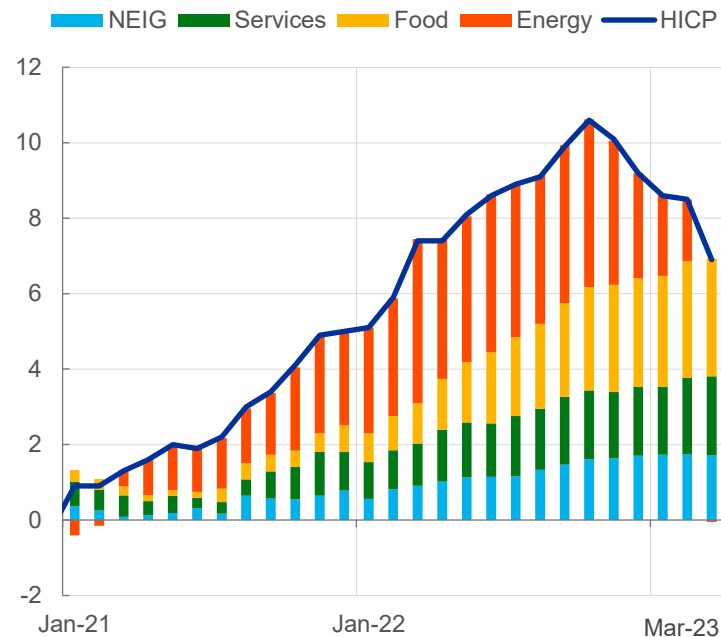
(percent)



Sources: ECB and ECB calculations.
Latest observation: February 2023.

Contributions to headline inflation

(annual percentage changes and percentage point contribution)

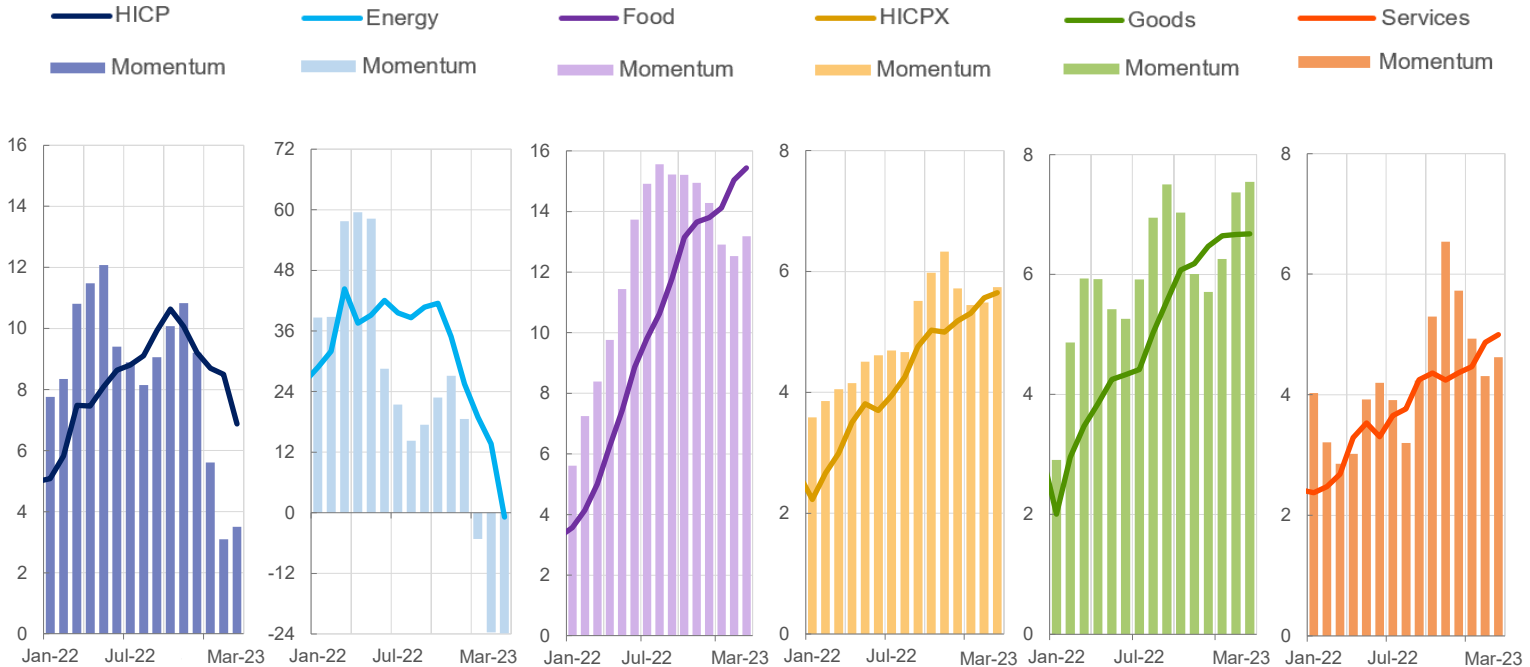


Sources: Eurostat and ECB calculations.
Latest observation: March 2023 (flash).

Inflation momentum remains high for all components except for energy

Inflation momentum for HICP and its sub-components

(annual percentage change; annualised 3m-o-3m percentage change)

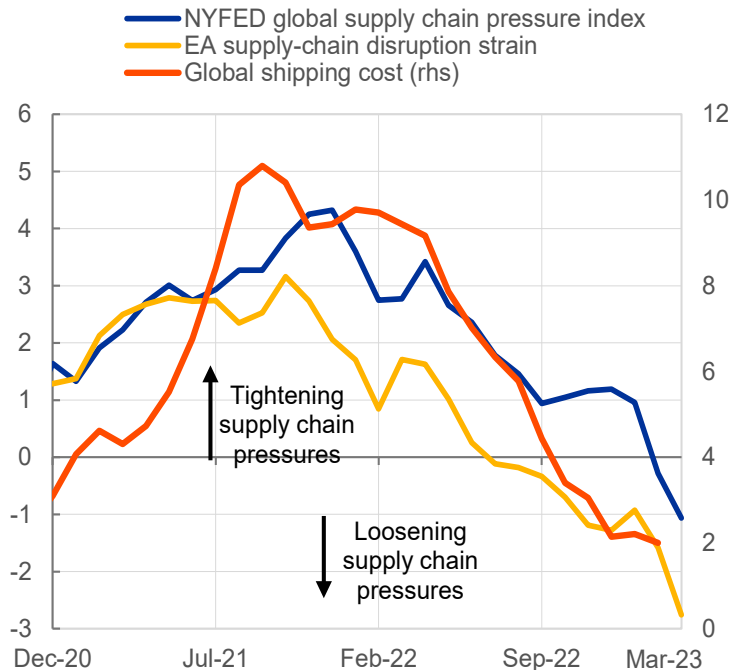


Sources: Eurostat and ECB calculations.
Note: Seasonally-adjusted data.
Latest observation: March 2023 (flash).

Supply-side shocks from bottlenecks and energy prices continue to fade

Supply bottlenecks

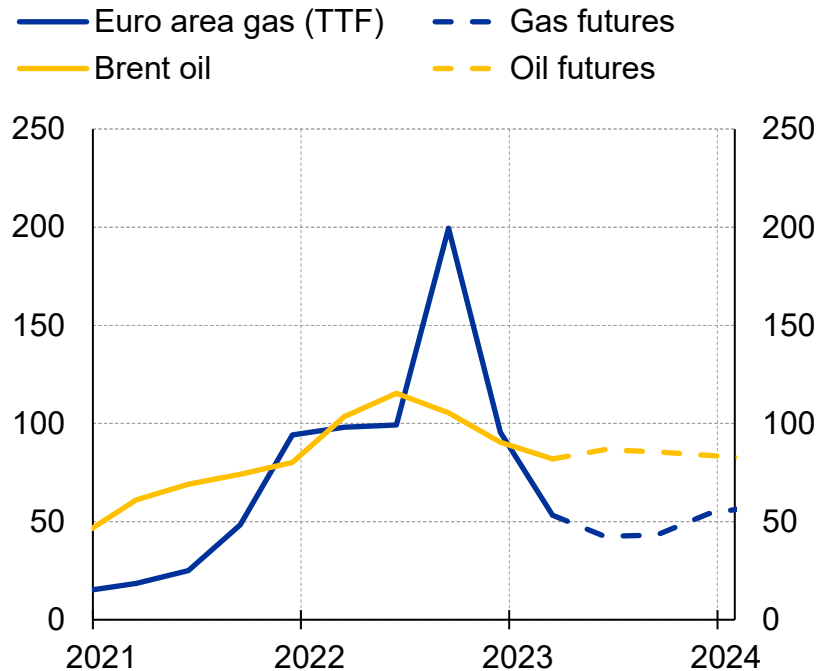
(lhs: standard deviations; rhs: USD per TEU)



Sources: Haver Analytics, Refinitiv and ECB calculations.
 Notes: Global shipping cost is Freightos Baltic aggregate across major trade routes. TEU stands for twenty-foot equivalent unit shipping container.
 Latest observation: February 2023 for global shipping costs, March 2023 for the rest.

Gas and oil prices with futures

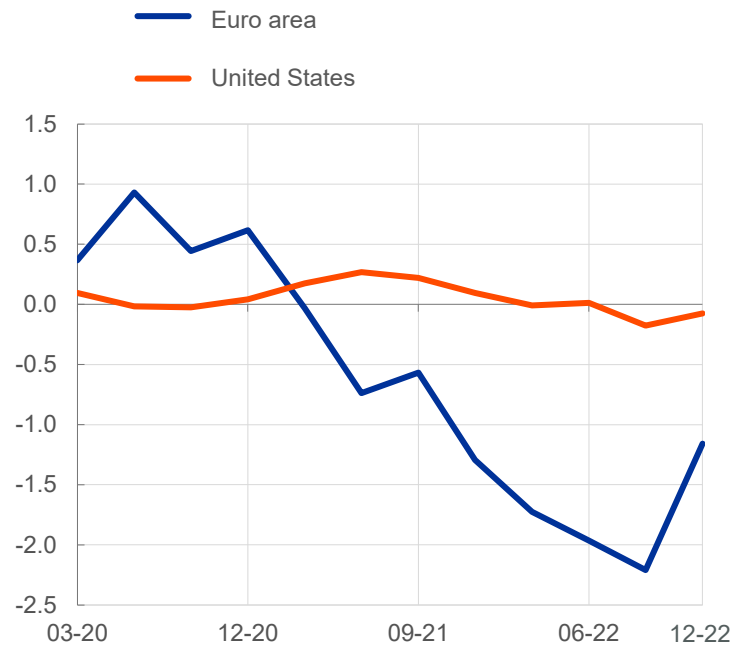
(Gas: EUR/MWh, Oil: USD/barrel)



Sources: Refinitiv, Bloomberg and ECB calculations.
 Latest observation: 14 April 2023.

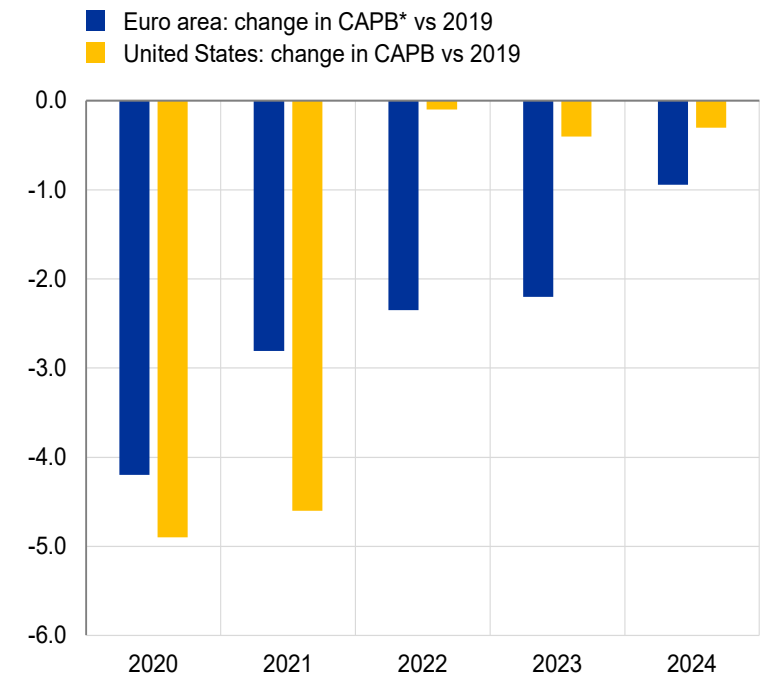
Terms-of-trade shock is reversing while fiscal response remains accommodative

Income effects of terms-of-trade shock (impact on year-on-year GDP growth in percentage points)



Source: Haver analytics, Eurostat and ECB calculations.
Notes: The income effect of terms of trade is calculated import and export price changes by their respective past values (one-year lag) expressed as percentage of GDP. The latest observation is 2022 Q4.

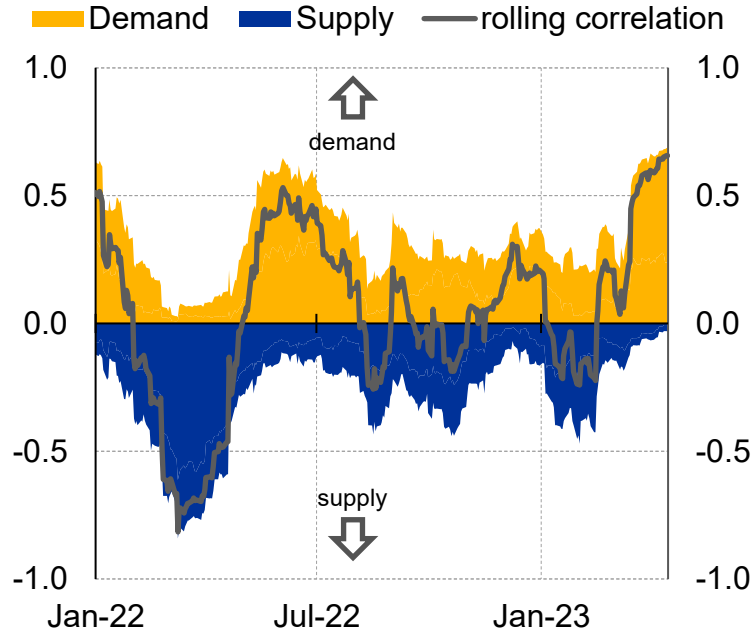
Fiscal response to pandemic and energy crisis (percent of potential GDP)



Source: March 2023 ECB staff Macroeconomic projections and IMF Fiscal Monitor, April 2023.
Notes: Negative (positive) numbers denote fiscal loosening (tightening) vs 2019.
*CAPB stands for the cyclically adjusted primary balance. For the EA, this is adjusted for NGEU grants on the revenue side, in line with the definition for the EA fiscal stance. The measure shown in chart is a proxy for the discretionary fiscal policy response since the pre-pandemic period (2019). It includes also other factors (such as revenue windfalls/shortfalls). The measures for the EA and US are not fully comparable due to the timing and other methodological differences between the two sources.

Rotation towards demand-side factors amid stronger-than-expected macroeconomy

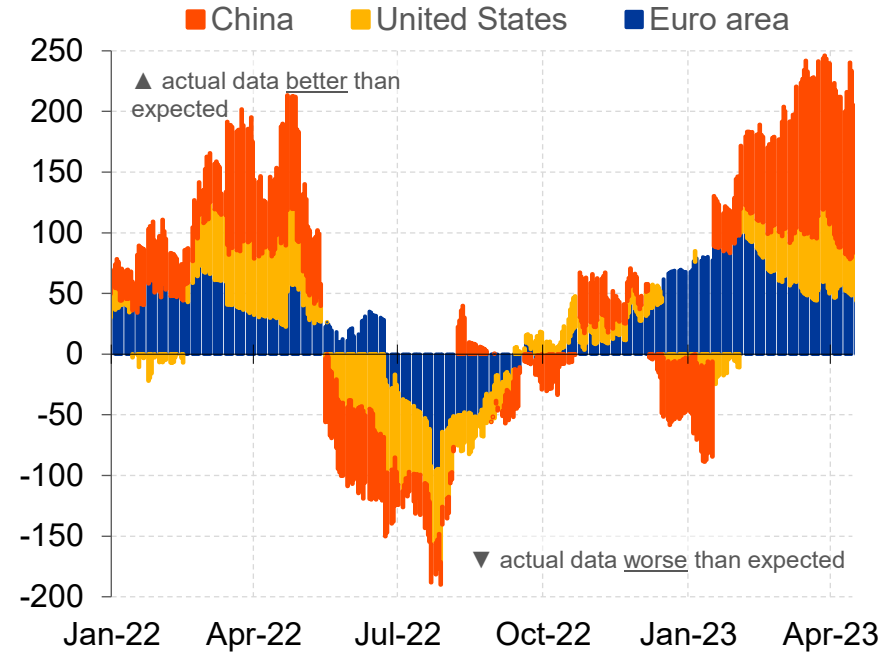
Role of demand vs supply factors (correlation coefficient)



Sources: Refinitiv and ECB calculations.

Notes: 30-trading days rolling correlation of daily percentage point changes in 1Y1Y ILS rates and daily returns on Euro Stoxx. Demand (supply) refers to that part of the correlation coming from trading days on which ILS rates and stock returns moved in the same (opposite) direction. In each subsample, the split between favourable and adverse is based on the share of days in the rolling window of favourable (equities up) or adverse (equities down) market dynamics. Latest observation: 14 April 2023.

Citi economic surprise indices



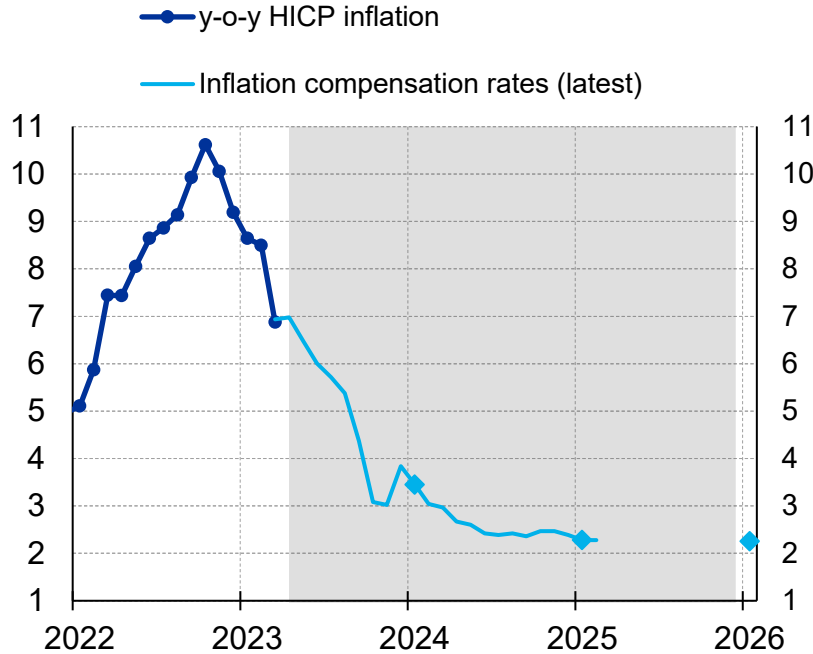
Sources: Bloomberg, Citi.

Latest observation: 14 April 2023.

Markets expect inflation to ease rapidly but LT inflation compensation remains elevated

EA inflation rates implied by market-based measures of inflation compensation

(percentages per annum)

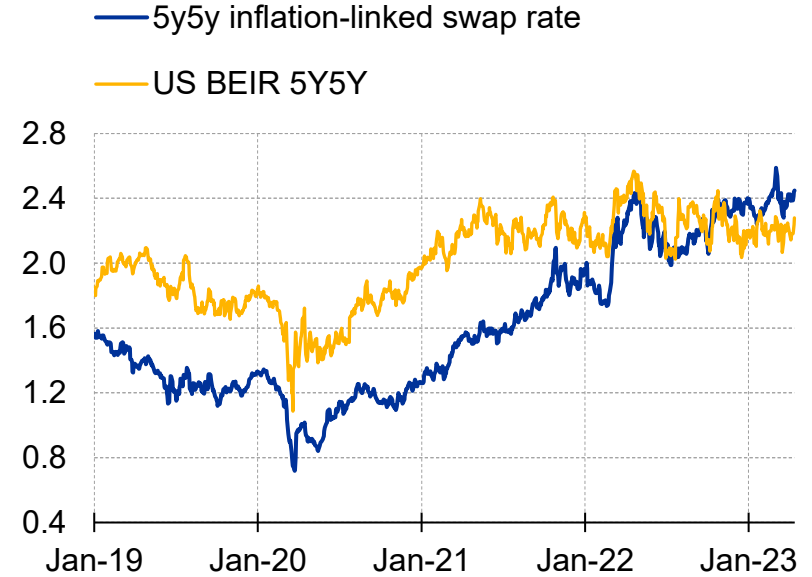


Sources: Bloomberg, Refinitiv and ECB calculations.

Notes: The coloured diamonds refer to forward ILS rates that extend the equally coloured line of inflation fixings. The grey area refers to a projection horizon ending in December 2025. Latest observation: 17 April 2023.

5y5y inflation compensation

(percentage per annum)

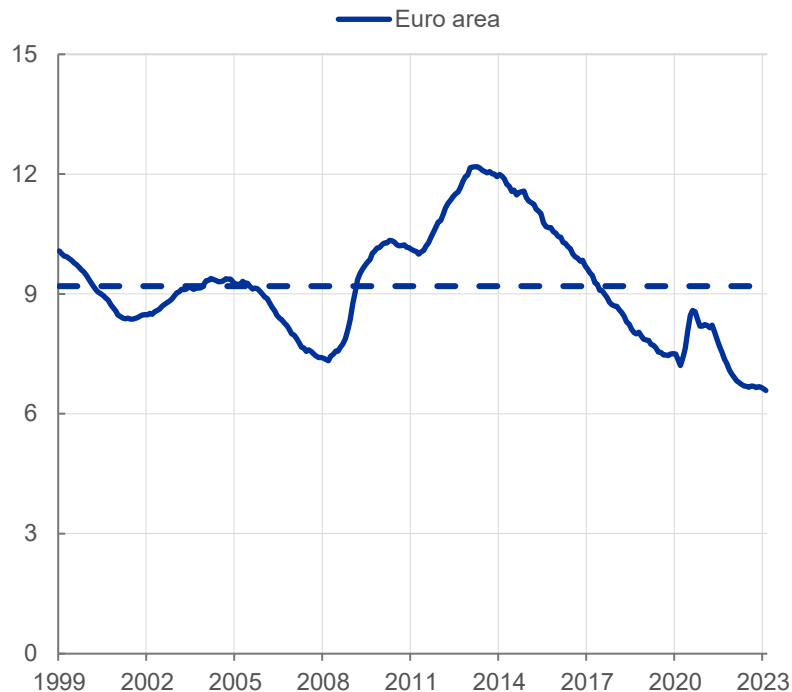


Source: Bloomberg, Refinitiv and ECB calculations.

Notes: One caveat applying to BEIRs is that the market for inflation-linked bonds is less liquid than that for standard bonds. This implies that BEIRs also reflect liquidity premia. Latest observation: 17 April 2023.

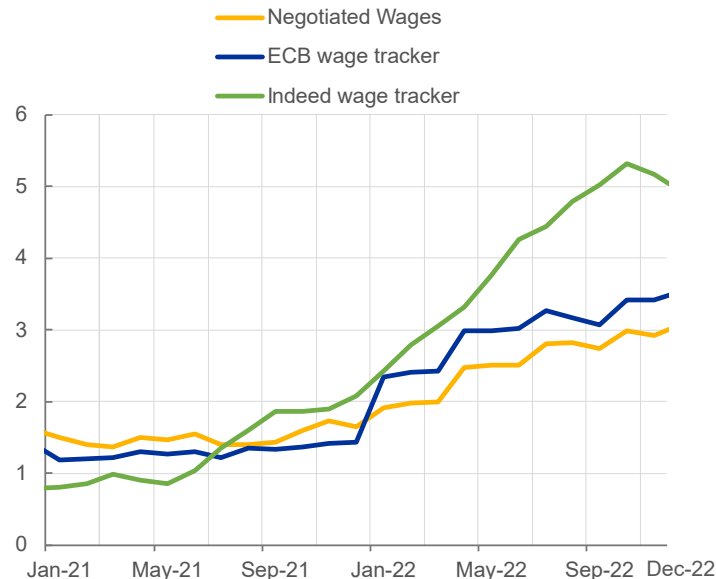
Strong labour markets with nominal wage growth picking up

Unemployment rate (percent)



Sources: Eurostat Labour Force Survey and ECB staff calculations.
Notes: The dashed line refers to the sample average over 1999M1-2023M2.
Latest observation: February 2023.

Nominal wage growth according to wage trackers (annual percentage changes)

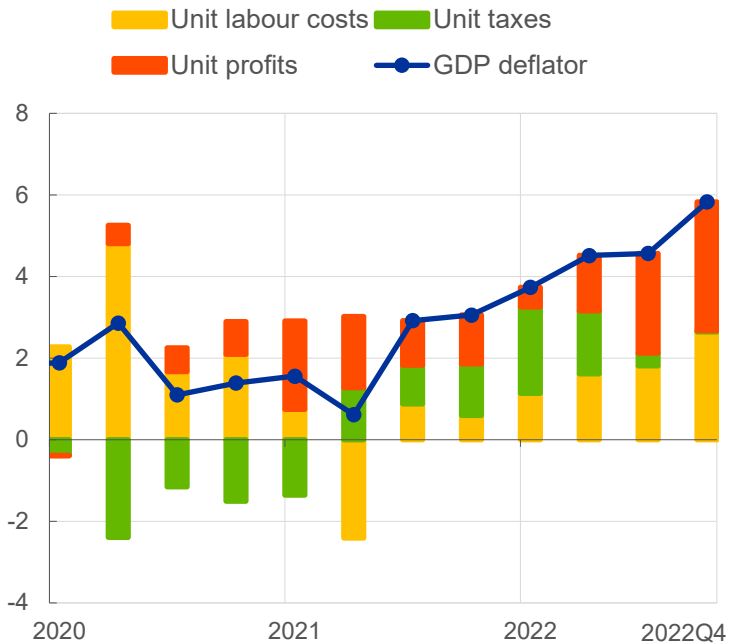


Sources: Adrjan, Pawel & Reamonn Lydon (2022), [Wage Growth in Europe: Evidence From Job Ads](#) – Central Bank of Ireland - Economic letter - Vol 2022, No. 7 (November), ECB and Eurostat. Notes: the ECB wage tracker is calculated based on micro data on wage agreements provided by Bundesbank, Banco de España, the Dutch employer association (AWVN), Oesterreichische Nationalbank, Bank of Greece, Banca d'Italia and Banque de France. For FR see also: Gautier, E. (2023): [Negotiated wage increases: what is the picture for 2022?](#). EA aggregate based on ES, IT, GR, AT, DE, NL and FR. Latest observations: 2022 Q4 (based on Oct and Nov data) for negotiated wages and March 2023 for ECB wage tracker and Indeed data.

Rise in profits has played an important role for the rise in domestic inflation

GDP deflator

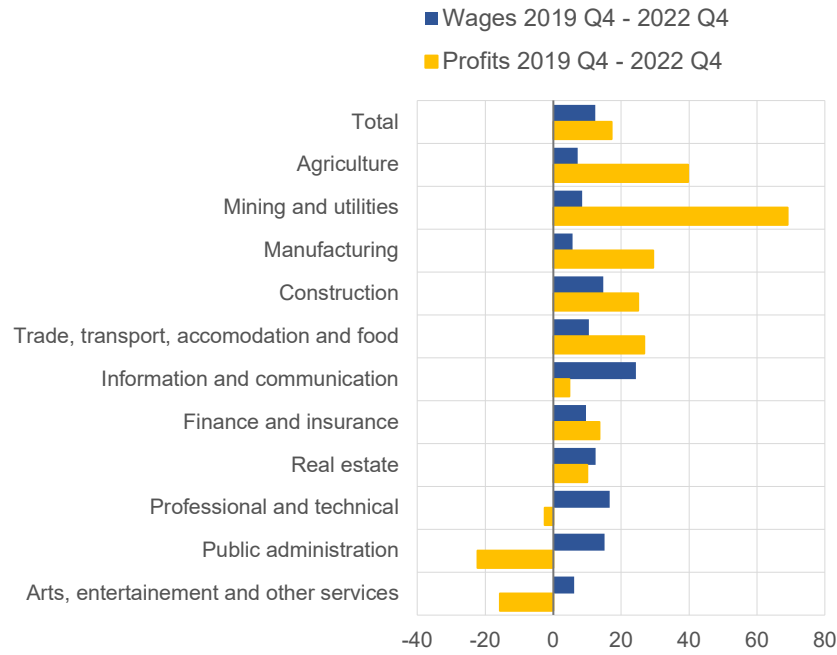
(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB staff calculations.
Latest observation: 2022 Q4.

Sectoral wage and profit developments

(percentage changes over the indicated period)

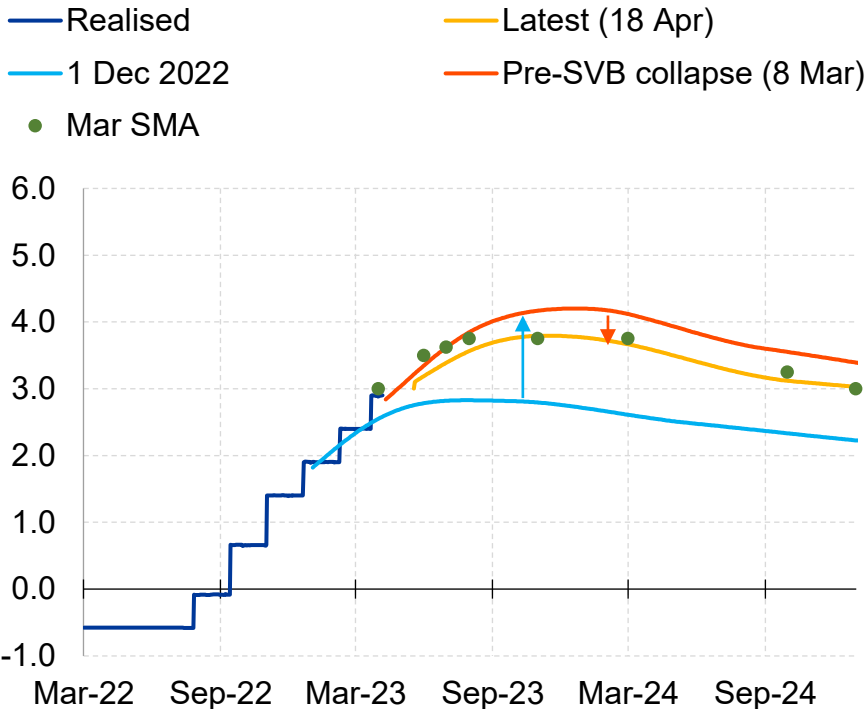


Sources: Eurostat and ECB calculations. Notes: For each sector, wages refer to compensation of employees and labour income of the self-employed, and profits refer to gross operating surplus, computed as nominal gross value added minus wages. The total labour income of the self-employed is computed assuming that the per-capita labour income of the self-employed is the same as that of employees and it is then distributed to each sector according to the sector-specific share of total compensation of employees.
Latest observation: 2022 Q4.

Sharp repricing of rate expectations due to persistent inflation and financial instability

Euro nominal forward OIS curve

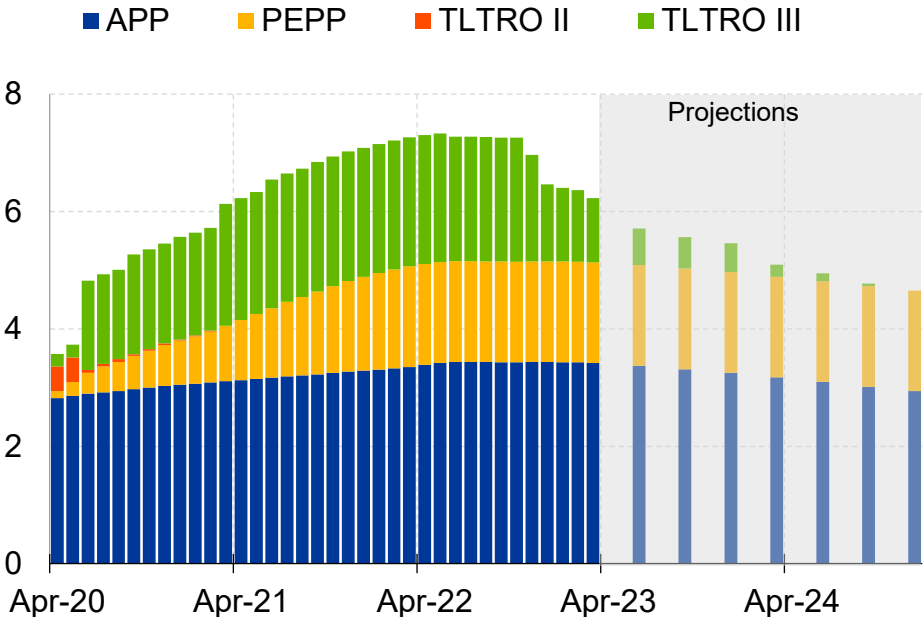
(percent)



Sources: Bloomberg, ECB calculations.
 Notes: Chart refers to realized and forward €STR levels. SMA refers to the expected level of deposit facility rate (DFR). Latest observation 18 April 2023.

Eurosystem bond holdings and TLTROs

(EUR trillion)



Source: ECB, Survey of Monetary Analysts (SMA).
 Notes: Blue and yellow bars show Eurosystem aggregated holdings under the asset purchase programme (APP) and pandemic emergency purchase programme (PEPP) in book amortized values. SMA responses for the projections. Latest observation: March 2023.

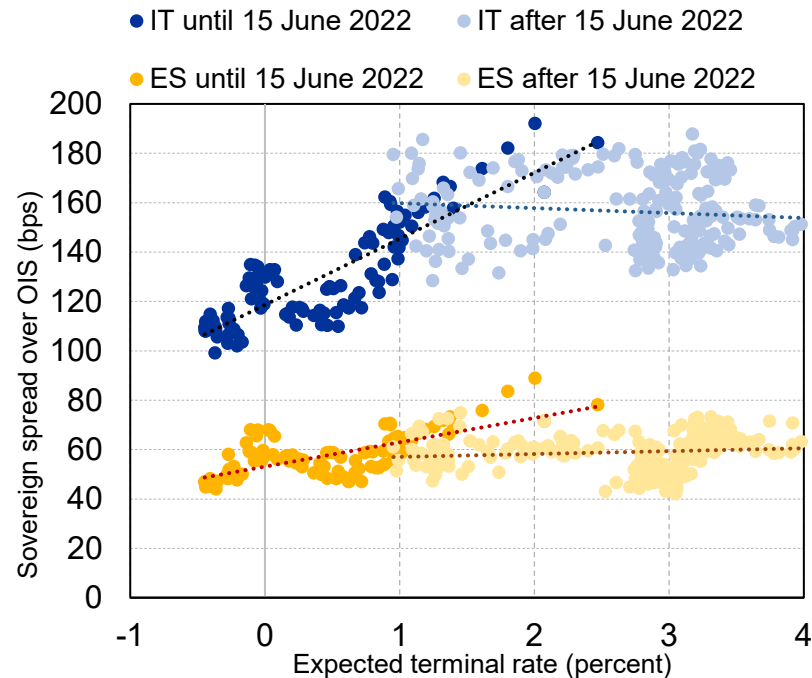
Real rates have risen from very low levels with stable sovereign spreads

Euro area 10-year real OIS rates (percent)



Sources: Bloomberg.
Latest observation: 17 April 2023.

Sensitivity of sovereign spreads to risk-free rate expectations (basis points, percentage)

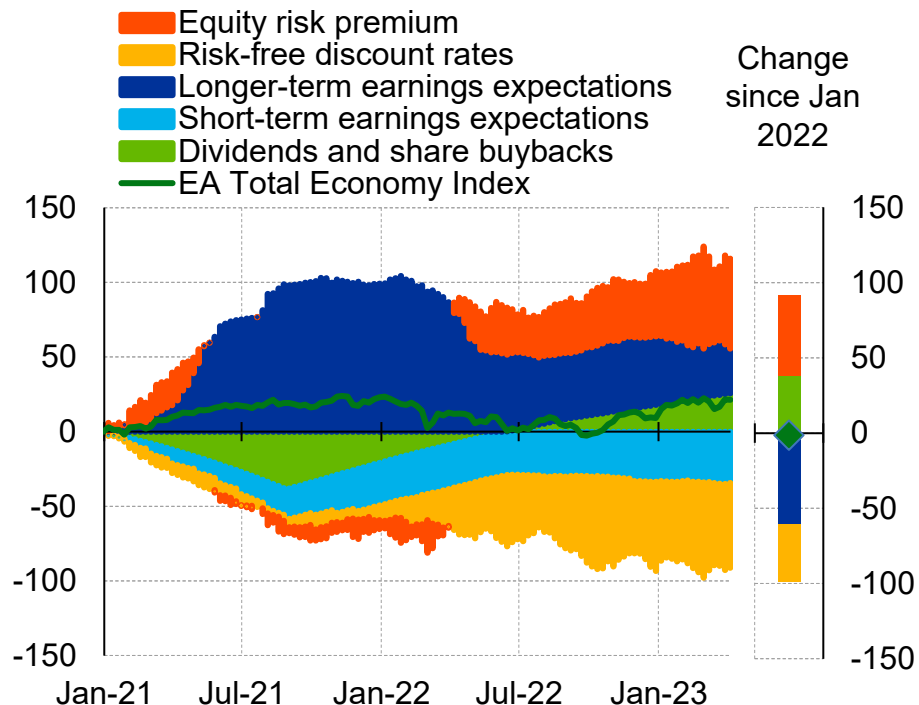


Sources: Bloomberg and ECB calculations. * This chart shows the relationship between the spread of selected sovereign 10-year benchmarks over the 10-year EA OIS rate (y-axis) versus the outright level of the ESTR OIS forward covering the 8th ECB maintenance period from today (%). The chart differentiates between the period from the start of 2022 until 15 June 2022 (ECB announcement on activation of PEPP flexibility and work on an anti-fragmentation instrument) and the period thereafter. Latest observation: 14 April 2023.

Equity markets remain strong in spite of higher rates due to compressed risk premia

Drivers of equity prices

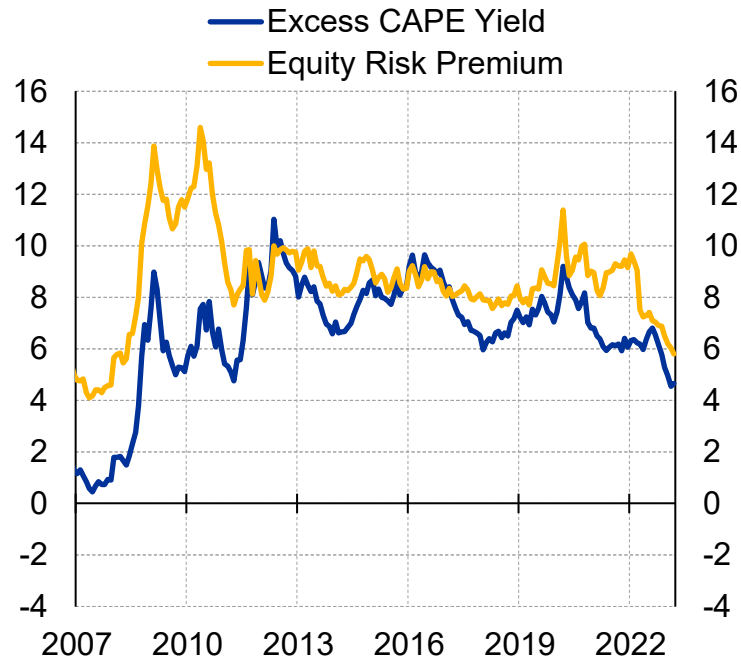
(lhs panel: cumulative change re-based to zero in Jan-21, rhs panel: percentages)



Sources: Refinitiv, IBES, Consensus Economics, Bloomberg, and ECB calculations.
 Notes: The decomposition is based on a dividend discount model. The model includes share-buybacks, discounts future cash-flows with interest rates of appropriate maturity and includes five expected dividend growth horizons. See ECB Economic Bulletin, issue 4/2018 for more details.
 Latest observation: 7 April 2023 (weekly data).

Equity risk premium and excess CAPE yield

(percentages per annum)

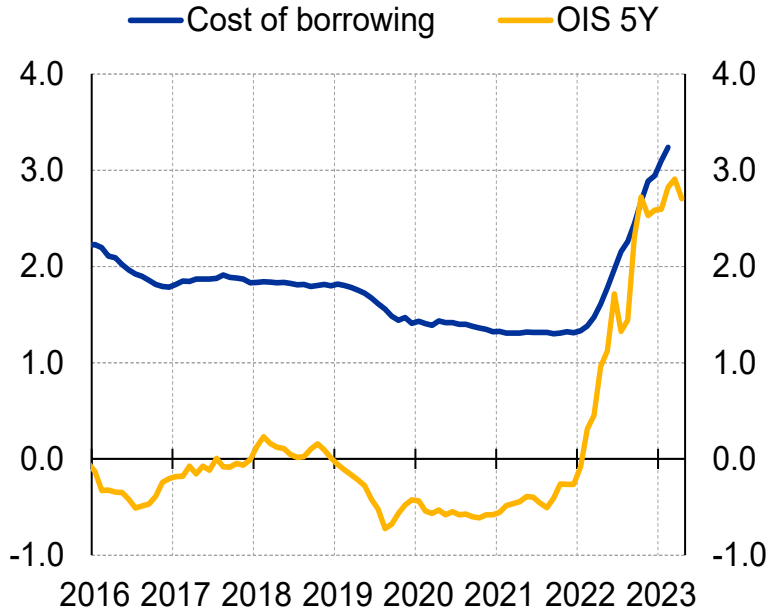


Sources: Refinitiv, IBES, Consensus Economics, Bloomberg and ECB calculations.
 Note: The excess CAPE yield is the inverse CAPE minus the risk-free rate. The equity risk premium is derived from a dividend discount model. See ECB Economic Bulletin, issue 4/2018 for more details. Latest observation: March 2023 (monthly data).

Higher mortgage rates eventually translate into lower house prices

Risk-free rates and mortgage rates

(percentages per annum)



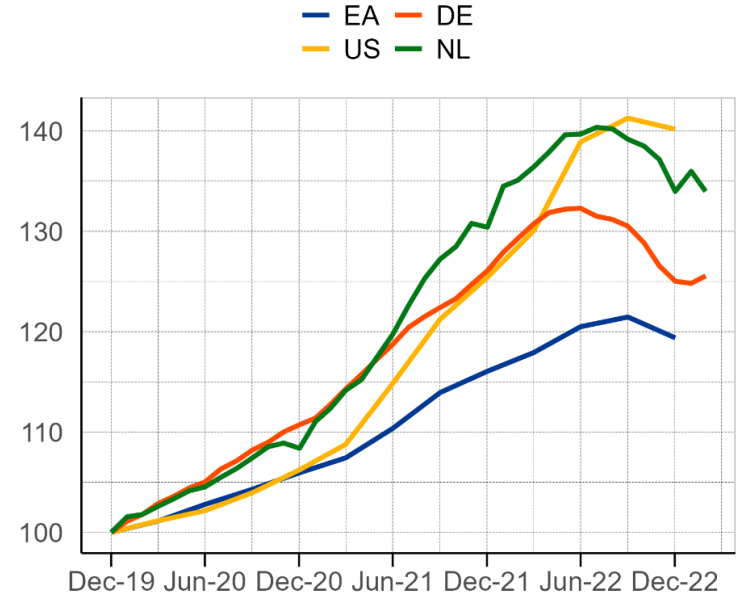
Sources: ECB and ECB calculations.

Notes: The cost of borrowing indicator is calculated as a weighted average of MFI interest rates on short-term and long-term loans to households for house purchase, where the new business volumes used are smoothed with a moving average of the previous 24 months' observations.

Latest observation: February 2023 for the cost of borrowing, 11 April 2023 for the OIS 5Y.

House prices

(Monthly RRE price indices – December 2019 = 100)



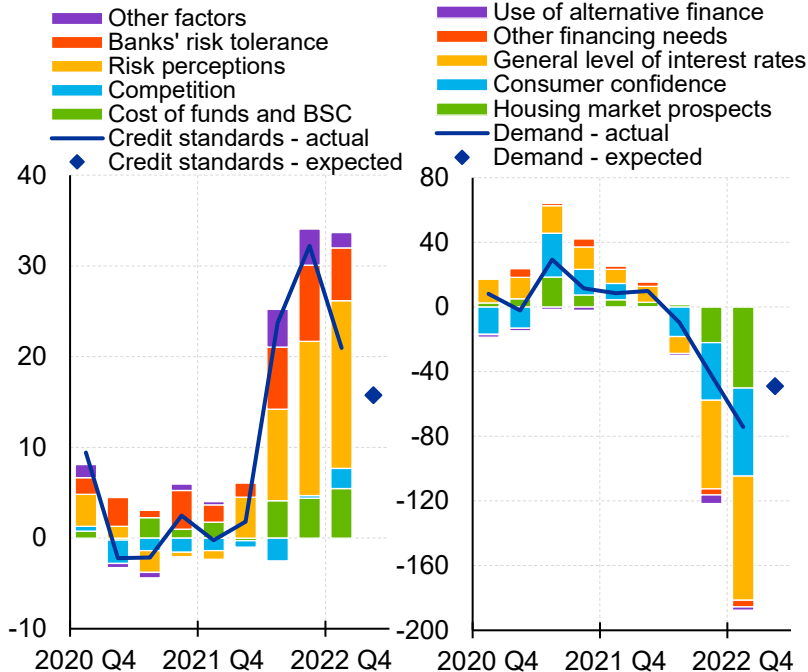
Sources: Europace, Statistics Netherlands, Eurostat, SDW (U.S. Federal Housing Finance Agency).

Notes: RRE stands for Residential Real Estate. Last EA observation from Eurostat is for Q4 2022, so several countries with more timely data available are added.

Latest observation: February 2023 for DE, NL, Q4 2022 for US, EA

Credit standards and demand for loans to households for house purchase

(net percentages of banks reporting a tightening or an increase)

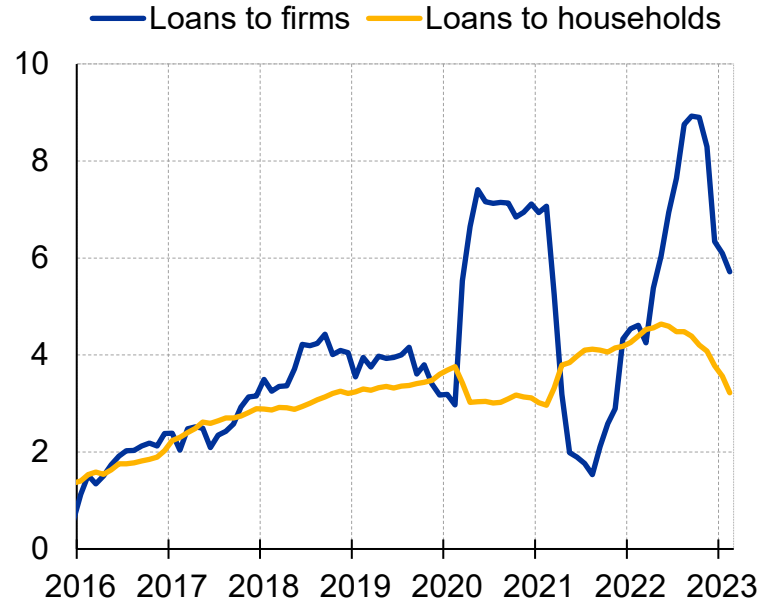


Source: ECB (Bank Lending Survey).

Notes: Net percentages refer to the difference between the percentage of banks reporting a tightening (an increase) and the percentage of banks reporting an easing (a decrease). "Other factors" refer to the further factors which were mentioned by the banks as having contributed to changes in credit standards. "BSC" for "balance sheet constraints". The separate factors are also reported in net terms but do not sum to the net tightening of credit standards (net increase in loan demand).
Latest observation: 2022 Q4 (January 2023 Bank Lending Survey).

Bank loans by borrower type

(annual percentage changes)



Sources: ECB (Balance Sheet Statistics) and ECB calculations.

Notes: Loans are adjusted for loan sales and securitization as well as positions arising from notional cash pooling services provided by MFIs.

Latest observation: February 2023.

Financial turbulence has mainly affected financial firms but limited fallout in EA

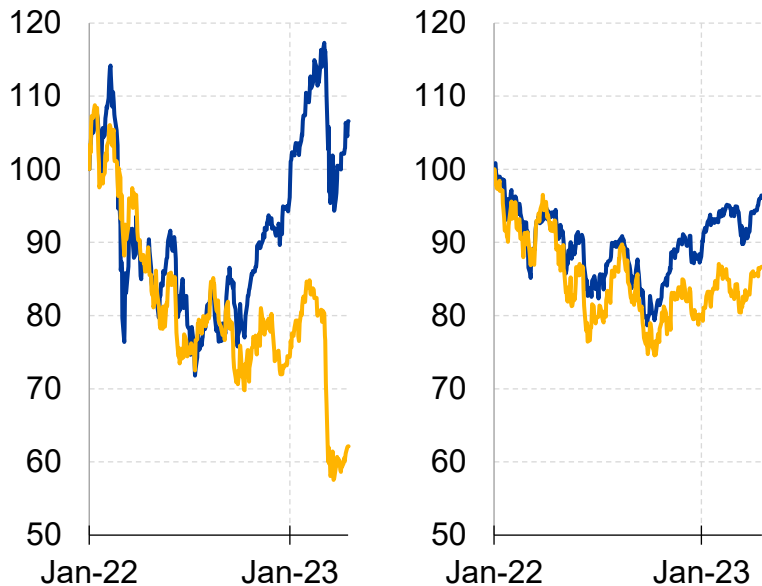
Equity prices

(Index levels, Jan 2022 = 100)

Banks

NFCs

— EA — US



Sources: Bloomberg, ECB calculations. Notes: NFC series are based on standard S&P500 and Eurostoxx indices, stripped of banks and financial sectors. Daily data. Last observation: 18 April 2023.

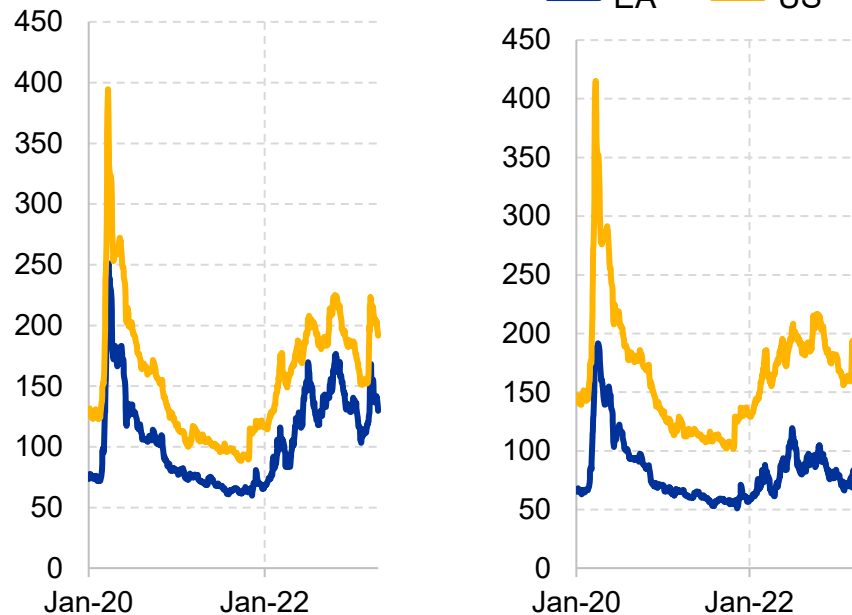
IG financials spreads

(basis points)

IG non-financials spreads

(basis points)

— EA — US

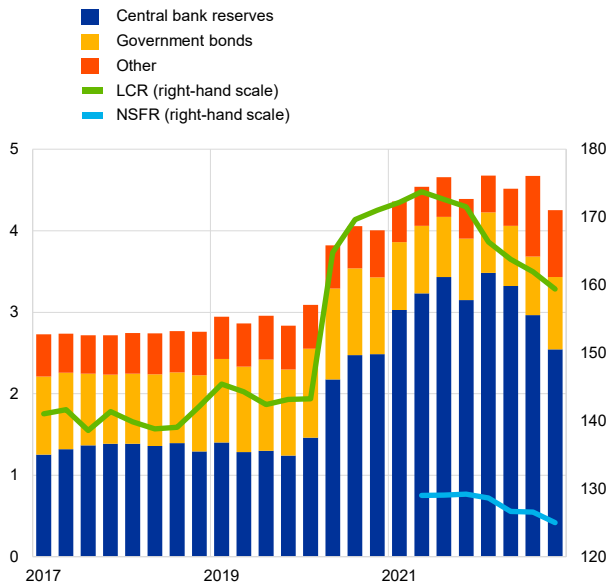


Sources: iBoxx, ECB calculation.
Latest observation: 18 April 2023.

Banking sector has strong liquidity and capital ratios

Liquidity ratios of banks

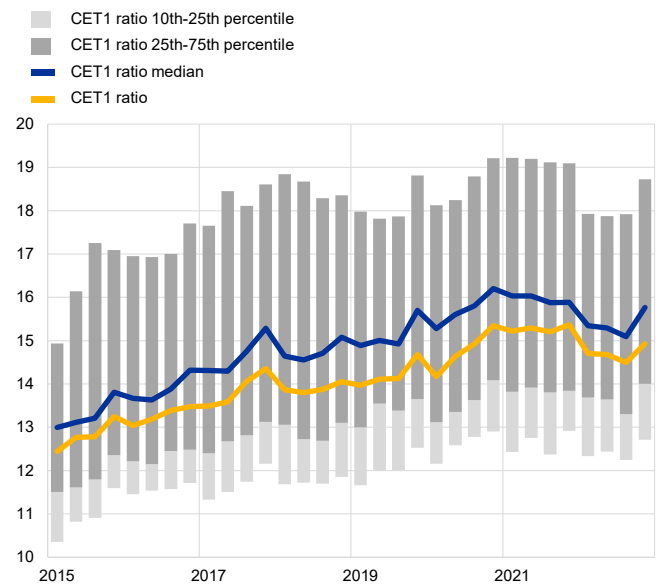
(lhs: € trillions, rhs: percentage, Q3 2016 – Q4 2022)



Source: ECB Supervisory Banking Statistics.
 Note: Based on a sample of 84 Significant Institutions.

Capital ratios of banks

(percentages of total risk-weighted assets, Q1 2015- Q4 2022)

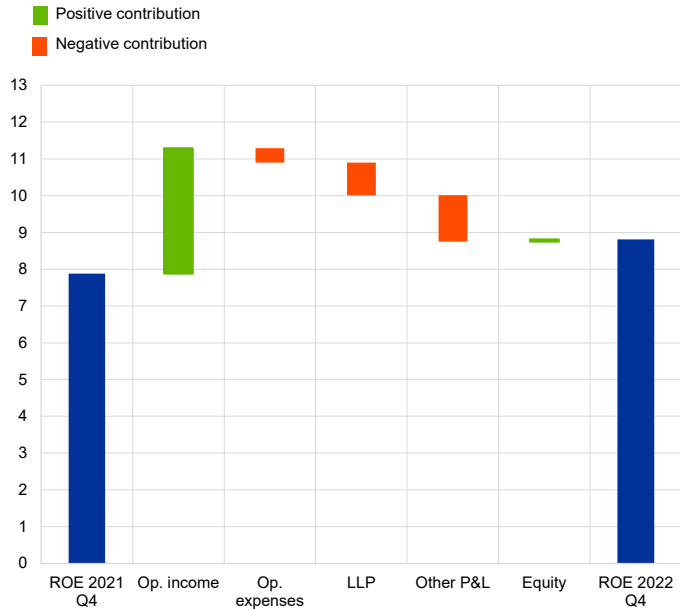


Source: ECB Supervisory Banking Statistics.
 Note: Based on a sample of 84 Significant Institutions.

Higher interest rates boost banks' short-run profitability but not their economic capital

Decomposition of changes in banks' RoE

(percentage of risk-weighted assets, Q4 2021- Q4 2022)

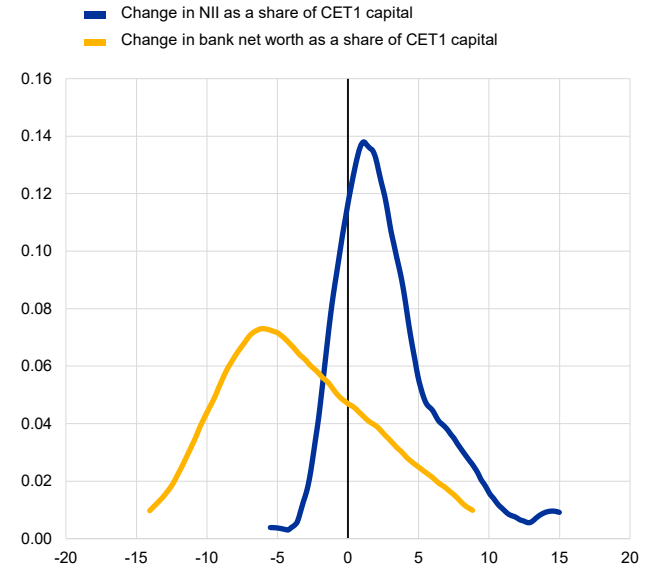


Source: Bloomberg and ECB calculations.

Note: Based on a sample of 29 listed euro area Significant Institutions.

Impact of a 200 basis point parallel upward shift of yield curve on banks

(x-axis: percentage of CET1 capital, y-axis: density, Q4 2022)



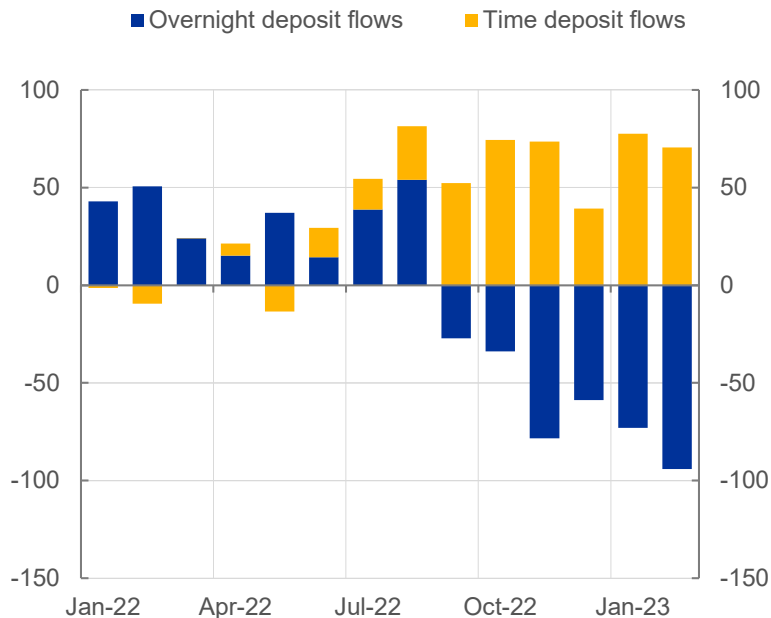
Source: ECB Supervisory Banking Statistics.

Note: Based on Q4 2022 data. The kernel density shows the distribution of a sample of 100 euro area Significant Institutions. Data is based on supervised banks' self-reported sensitivity estimates to a 200 basis point parallel shift of the yield curve. Changes in NII are based on a 12-month horizon, the change in bank-net worth goes beyond the 12-month horizon, accounting also for the longer-term impact (e.g. due to gradually rising funding costs).

Shift from overnight into time deposits, while deposit rates increase only sluggishly

Overnight and time deposits by the non-financial private sector

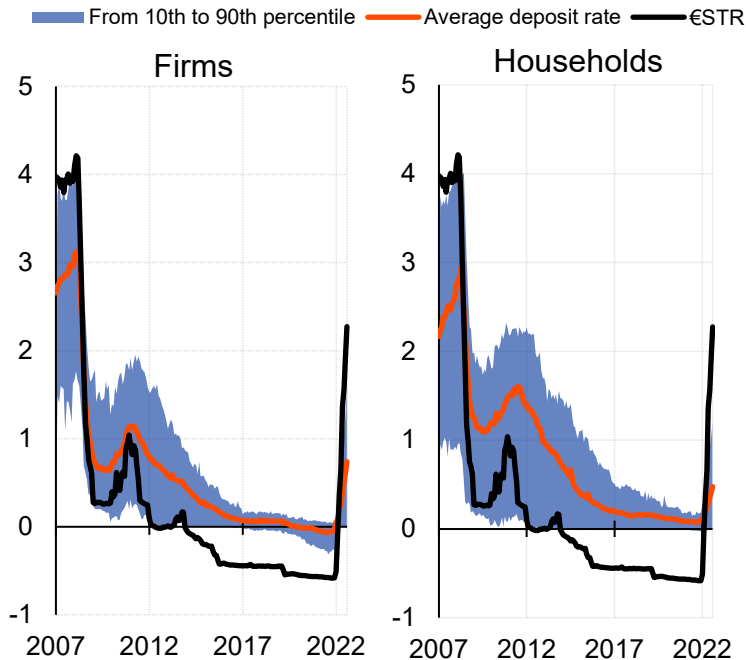
(monthly flows in EUR billion)



Source: ECB. Notes: Time deposits are those with a maturity up to two years.
Latest observation: February 2023.

Composite deposit rates vs €STR

(percentages per annum)



Sources: ECB (IBSI, iMIR).

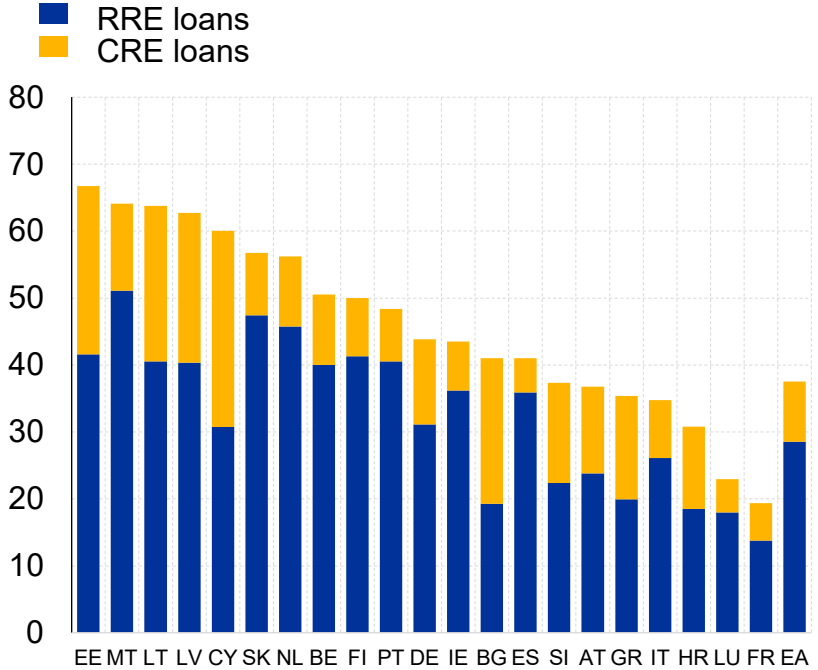
Notes: Distribution of composite deposit rates on firms' (lhs) and households' (rhs) newly issued deposits weighted by outstanding amounts (cumulated over six months). The average deposit rate is taken from the aggregate MIR data.

Latest observation: February 2023.

Structural changes imply risks from CRE exposures for banks and non-banks

Bank exposures to RRE and CRE loans

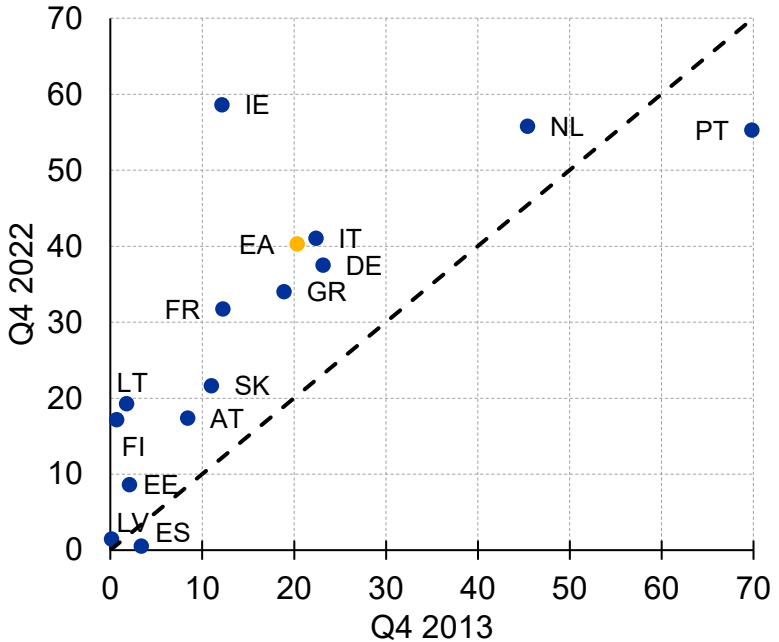
(% of total loans and advances, Q3 2022)



Source: Supervisory data and ECB calculations. RRE (Residential Real Estate) loans are loans to households collateralised by residential immovable property and CRE (Commercial Real Estate) loans are loans to NFC (Non-Financial Corporation) collateralised by commercial immovable property as a share of total loans and advances. Latest observation: Q3 2022.

Share of REIFs in EA CRE markets

(Q4 2013 – Q4 2022; REIFs' CRE assets as a percentage of total CRE market)



Sources: ECB IVF (Investment Funds Balance Sheet Statistics), RCA, C&W, MSCI & ECB calculations. Notes: 'CRE assets' include non-financial assets, debt securities, shares and other equity. LU excluded for readability. Latest observation for Q1 2023: 14/02/2023

Thank you very much for your attention!