EUROPEAN CENTRAL BANK

EUROSYSTEM

Economic Bulletin

Issue 2 / 2024

Contents

Economic, financial and monetary developments

Overview

At its meeting on 7 March 2024, the Governing Council decided to keep the three key ECB interest rates unchanged. Since its monetary policy meeting on 25 January 2024, inflation has declined further. In the March 2024 ECB staff macroeconomic projections for the euro area, inflation has been revised down, in particular for 2024 which mainly reflects a lower contribution from energy prices. Staff now project inflation to average 2.3% in 2024, 2.0% in 2025 and 1.9% in 2026. The projections for inflation excluding energy and food have also been revised down and average 2.6% for 2024, 2.1% for 2025 and 2.0% for 2026. Although most measures of underlying inflation have eased further, domestic price pressures remain high, in part owing to strong growth in wages. Financing conditions are restrictive and the past interest rate increases continue to weigh on demand, which is helping push down inflation. Staff have revised down their growth projection for 2024 to 0.6%, with economic activity expected to remain subdued in the near term. Thereafter, staff expect the economy to pick up and to grow at 1.5% in 2025 and 1.6% in 2026, supported initially by consumption and later also by investment.

The Governing Council is determined to ensure that inflation returns to its 2% medium-term target in a timely manner. Based on its current assessment, the Governing Council considers that the key ECB interest rates are at levels that, maintained for a sufficiently long duration, will make a substantial contribution to this goal. The Governing Council's future decisions will ensure that its policy rates will be set at sufficiently restrictive levels for as long as necessary.

The Governing Council will continue to follow a data-dependent approach to determining the appropriate level and duration of restriction. In particular, its interest rate decisions will be based on its assessment of the inflation outlook in light of the incoming economic and financial data, the dynamics of underlying inflation and the strength of monetary policy transmission.

Economic activity

The economy remains weak. Consumers continued to hold back on their spending, investment moderated and companies exported less, reflecting a slowdown in external demand and some losses in competitiveness. However, surveys point to a gradual recovery over the course of 2024. As inflation falls and wages continue to grow, real incomes will rebound, supporting growth. In addition, the dampening impact of past interest rate increases will gradually fade and demand for euro area exports should pick up.

The unemployment rate is at its lowest since the start of the euro. Employment grew by 0.3% in the final quarter of 2023, again outpacing economic activity. As a result, output per person declined further. Meanwhile, employers are posting fewer job vacancies, and fewer firms are reporting that their production is being limited by labour shortages.

According to the March 2024 projections, economic growth is projected to gradually pick up during 2024 as real disposable income rises, amid declining inflation and robust wage growth, and as the terms of trade improve. With the current shipping disruptions in the Red Sea unlikely to cause significant renewed supply constraints, export growth is expected to catch up with strengthening foreign demand. Over the medium term the recovery is seen to also be supported by the gradual fading of the impact from the ECB's monetary policy tightening. Overall, annual average real GDP growth is expected to be 0.6% in 2024, and to strengthen to 1.5% in 2025 and 1.6% in 2026. Compared with the December 2023 Eurosystem staff macroeconomic projections for the euro area, the outlook for GDP growth has been revised down for 2024, owing to carry-over effects from past negative data surprises and weaker incoming forward-looking information, it is unrevised for 2025 and has been revised slightly up for 2026.

Governments should continue to roll back energy-related support measures to allow the disinflation process to proceed sustainably. Fiscal and structural policies should be strengthened to make the euro area economy more productive and competitive, expand supply capacity and gradually bring down high public debt ratios. A speedier implementation of the Next Generation EU programme and more determined efforts to remove national barriers to deeper and more integrated banking and capital markets can help increase investment in the green and digital transitions and reduce price pressures in the medium term. The EU's revised economic governance framework should be implemented without delay.

Inflation

Inflation edged down to 2.8% in January and, according to Eurostat's flash estimate, declined further to 2.6% in February. Food price inflation fell again, to 5.6% in January and 4.0% in February, while energy prices in both months continued to decline compared with a year ago but at a lower rate than in December. Goods price inflation also fell further, to 2.0% in January and 1.6% in February. Services inflation, after remaining at 4.0% for three months in a row, edged lower to 3.9% in February.

Most measures of underlying inflation declined further in January as the impact of past supply shocks continued to fade and tight monetary policy weighed on demand. However, domestic price pressures are still elevated, in part owing to robust wage growth and falling labour productivity. At the same time, there are signs that growth in wages is starting to moderate. In addition, profits are absorbing part of the rising labour costs, which reduces the inflationary effects.

Inflation is expected to continue this downward trend in the coming months. Further ahead, it is expected to decline to the Governing Council's target as labour costs

moderate and the effects of past energy shocks, supply bottlenecks and the reopening of the economy after the pandemic fade. Measures of longer-term inflation expectations remain broadly stable, with most standing around 2%.

According to the March 2024 projections, inflation is projected to moderate further owing to the ongoing easing of pipeline pressures and the impact of monetary policy tightening, albeit at a more modest pace than seen in 2023. Pipeline price pressures should continue to fade with the shipping disruptions in the Red Sea expected to have only a limited upward impact. As energy prices decline, strong labour cost developments should be the dominant driver of inflation excluding energy and food. Nominal wage growth is set to remain elevated, driven by persistent tightness in the labour market, but it should gradually ease over the projection horizon as upward impacts from inflation compensation fade. A recovery in productivity growth should support the moderation in labour cost pressures. Profit growth is set to weaken over the projection horizon and provide a buffer to the pass-through of labour costs. Overall, annual average headline inflation is expected to decrease from 5.4% in 2023 to 2.3% in 2024, 2.0% in 2025 and 1.9% in 2026. Given the weak outlook for energy inflation, headline inflation is expected to remain below inflation excluding energy and food throughout the projection horizon. Compared with the December 2023 projections, headline inflation has been revised down for 2024 and 2025, mainly owing to the direct and indirect effects from lower assumptions for energy commodity prices and lower labour cost pressures, and is unrevised for 2026.

Risk assessment

The risks to economic growth remain tilted to the downside. Growth could be lower if the effects of monetary policy turn out stronger than expected. A weaker world economy or a further slowdown in global trade would also weigh on euro area growth. Russia's unjustified war against Ukraine and the tragic conflict in the Middle East are major sources of geopolitical risk. This may result in firms and households becoming less confident about the future and global trade being disrupted. Growth could be higher if inflation comes down more quickly than expected and rising real incomes mean that spending increases by more than anticipated, or if the world economy grows more strongly than expected.

Upside risks to inflation include the heightened geopolitical tensions, especially in the Middle East, which could push energy prices and freight costs higher in the near term and disrupt global trade. Inflation could also turn out higher than anticipated if wages increase by more than expected or profit margins prove more resilient. By contrast, inflation may surprise on the downside if monetary policy dampens demand more than expected, or if the economic environment in the rest of the world worsens unexpectedly.

Financial and monetary conditions

Market interest rates have risen since the Governing Council's meeting on 25 January 2024 and its monetary policy has kept broader financing conditions restrictive. Lending rates on business loans have broadly stabilised, while mortgage rates declined in December and January. Nevertheless, lending rates remain elevated, at 5.2% for business loans and 3.9% for mortgages.

Bank lending to firms had turned positive in December, growing at an annual rate of 0.5%. But, in January, it edged lower, to 0.2%, owing to a negative flow in the month. The growth in loans to households continued to weaken, falling to 0.3% on an annual basis in January. Broad money – as measured by M3 – grew at a subdued rate of 0.1%.

Monetary policy decisions

The interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility remain unchanged at 4.50%, 4.75% and 4.00% respectively.

The asset purchase programme portfolio is declining at a measured and predictable pace, as the Eurosystem no longer reinvests the principal payments from maturing securities.

The Governing Council intends to continue to reinvest, in full, the principal payments from maturing securities purchased under the pandemic emergency purchase programme (PEPP) during the first half of 2024. Over the second half of the year, it intends to reduce the PEPP portfolio by €7.5 billion per month on average. The Governing Council intends to discontinue reinvestments under the PEPP at the end of 2024.

The Governing Council will continue applying flexibility in reinvesting redemptions coming due in the PEPP portfolio, with a view to countering risks to the monetary policy transmission mechanism related to the pandemic.

As banks are repaying the amounts borrowed under the targeted longer-term refinancing operations, the Governing Council will regularly assess how targeted lending operations and their ongoing repayment are contributing to its monetary policy stance.

Conclusion

The Governing Council decided at its meeting on 7 March 2024 to keep the three key ECB interest rates unchanged. The Governing Council is determined to ensure that inflation returns to its 2% medium-term target in a timely manner. Based on its current assessment, the Governing Council considers that the key ECB interest rates are at levels that, maintained for a sufficiently long duration, will make a substantial

contribution to this goal. The Governing Council's future decisions will ensure that the key ECB interest rates will be set at sufficiently restrictive levels for as long as necessary. The Governing Council will continue to follow a data-dependent approach to determining the appropriate level and duration of restriction. In any case, the Governing Council stands ready to adjust all of its instruments within its mandate to ensure that inflation returns to its 2% target over the medium term and to preserve the smooth functioning of monetary policy transmission.

1 External environment

Global growth moderated at the turn of the year, as monetary policy tightening transmitted to the world economy. The slowdown in consumption growth partly reflects fading tailwinds across major advanced economies, where labour markets are gradually cooling, though remaining relatively tight, and the stock of excess savings built up during the pandemic has largely been depleted. In China, consumer spending remains subdued against the backdrop of a weak real estate market. Annual global growth rates are projected to gradually decline over the 2024-26 period and are expected in the medium term to remain slightly below the levels observed over the last decade. Compared with the December 2023 Eurosystem staff macroeconomic projections for the euro area, global growth has been revised up for this year in the March 2024 ECB staff macroeconomic projections, largely thanks to stronger growth outcomes in the United States. Global trade is projected to recover this year and grow more in line with global activity thereafter. While the projection for global trade is broadly unchanged compared with the December 2023 projections, global trade is expected to remain below its historical trend over the projection horizon. Global inflation is projected to decline over the same period.

Global economic growth moderated at the turn of the year, as monetary policy tightening transmitted to the world economy. Growth in global real GDP is estimated to have slowed to 0.8% in the fourth quarter, down from 1.0% in the third quarter of 2023.[1] Overall, global economic activity is estimated to have increased by 3.5% in 2023, which is a similar pace to the previous year and the average growth rate over the last decade. It is also 0.2 percentage points above the global growth rate projected in the December 2023 Eurosystem staff macroeconomic projections. Incoming data suggest, however, that global consumption growth is moderating, as tailwinds to consumer spending are fading. Labour markets, while remaining relatively tight, are gradually cooling across major advanced economies, as signalled by declining vacancy-to-unemployment ratios, while nominal wage growth is also progressively falling. Moreover, the stock of excess savings accumulated during the pandemic has largely been depleted. In China, consumer spending remains weak against the backdrop of developments in the residential real estate market. As a result, global consumer spending, which underpinned economic activity in the post-pandemic recovery, remains subdued. Most recently, the global composite output Purchasing Managers' Index (PMI) increased slightly in February, suggesting that activity has strengthened in both the manufacturing and services sectors (Chart 1). This signal should, however, be seen in the light of a broader set of incoming data, which continue to point towards subdued global activity overall.

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[1] Given the focus of this section on developments in the global environment, all references to world and/or global aggregate economic indicators exclude the euro area.

Chart 1

Global PMI output

(diffusion indices)
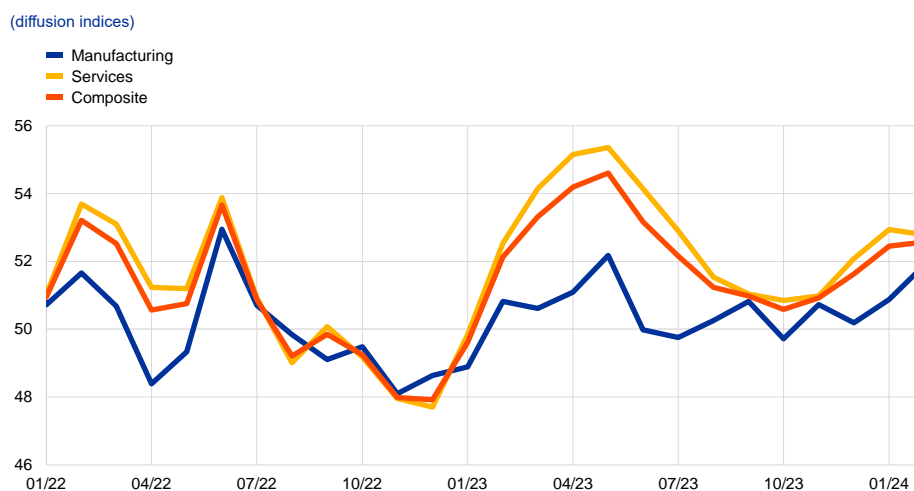
Sources: S&P Global Market Intelligence and ECB staff calculations.
Note: The latest observations are for February 2024.

Global growth is projected to gradually decline over the projection horizon.
Mildly lower growth this year reflects the continued fading impact of the above-mentioned tailwinds which had supported consumer spending in advanced economies in the post-pandemic period. The effects of past monetary policy tightening as well as elevated uncertainty amid geopolitical tensions have contributed to these developments. Overall, global real GDP growth is projected to be 3.4% this year, before slowing to 3.2% annually over the 2025-26 period, a pace slightly below the one observed over the last decade. Global growth has been revised up for this year compared with the December 2023 projections, largely thanks to the carry-over of stronger growth outcomes in the United States.

Growth in global trade in goods remains positive. World merchandise trade growth turned positive in the fourth quarter of 2023 and is estimated to have remained so in January 2024 (Chart 2). This improvement reflects a correction of developments characterising the post-pandemic recovery, such as the rebalancing of spending from goods towards services and an adjustment in global inventories. Global trade should continue to recover, as the impact of the post-pandemic developments is expected to gradually fade and both the global manufacturing cycle and private investment appear to be stabilising in early 2024. The improvement in the global "tech cycle", an early indicator of overall manufacturing growth, is also expected to support trade in the near term.[2]

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[2] Developments in global manufacturing of technological goods such as computers, electronic and electrical equipment are thought to offer insights into future developments in the global manufacturing sector and the global economy more broadly. See the box entitled "What the maturing tech cycle signals for the global economy", *Economic Bulletin*, Issue 3, ECB, 2019.

Chart 2

Growth in trade in goods

(real imports, three-month-on-three-month annualised percentage change, percentage points)

- Global trade (excl. euro area)
- Advanced economies (excl. euro area)
- Emerging markets
- Nowcast
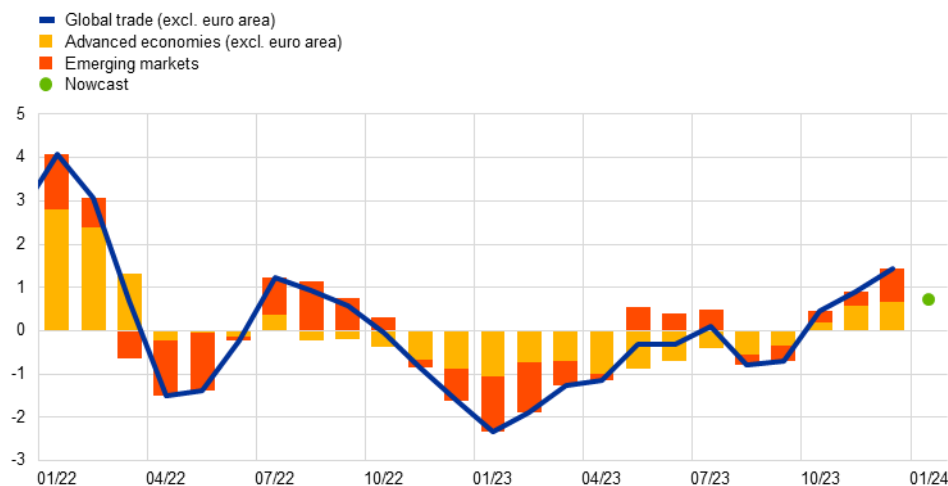
Sources: CPB Netherlands Bureau for Economic Policy Analysis, national sources via LSEG and ECB staff calculations.
Notes: The nowcast incorporates the latest data release using a forecast of global aggregate and a range of macroeconomic variables.
The latest observations are for December 2023 for official CPB data and January 2024 for the nowcast.

Disruptions to shipping in the Red Sea could restrain the recovery in global merchandise trade, though their impact to date is judged to be limited. Transit volumes through the Red Sea have fallen significantly as shipping companies are avoiding the area and rerouting their vessels around the Cape of Good Hope. So far, however, global supply chains have remained robust overall – suppliers' delivery times have only lengthened slightly at the global level this year. They remain in line with their historical average, well below the levels seen in 2021-22 when global supply chains were under severe strain. There are a number of mitigating factors at play. First, spare shipping capacity seems ample, as global demand for goods is relatively subdued and the global fleet of cargo vessels has grown. Second, the levels of congestion at global ports remain broadly unchanged, signalling the ability of these ports to cope with rerouted vessels. Finally, large inventories held by manufacturers are helping to cushion the impact of longer delivery times on production. However, risks to global trade and inflation will remain if the Red Sea disruptions escalate and prove persistent.[3]

Global trade is projected to recover gradually this year and grow more in line with global activity thereafter. Global import growth is expected to increase from 1.2% in 2023 to 2.8% this year, before gradually accelerating to 3.1% in 2025 and 3.2% in 2026, broadly unchanged compared with previous projections. Despite the projected recovery, global trade is expected to remain below its historical trend, reflecting the impact of the ongoing structural changes in trade relations caused by rising geopolitical tensions. Euro area foreign demand is expected to recover more gradually compared with previous projections, held back by weaker import growth in some of the euro area's main trading partners last year, including the United

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[3] For a detailed assessment of the Red Sea disruptions and their impact on the global economy and the euro area, see Box 3 of "ECB staff macroeconomic projections for the euro area, March 2024", published on the ECB's website on 7 March 2024.

Kingdom and central and eastern European countries. This weakness carries over to euro area foreign demand recovering more gradually this year compared with the December 2023 projections.

The gradual disinflation trend has continued. Headline consumer price index (CPI) inflation across the member countries of the Organisation for Economic Co-operation and Development (OECD) declined to 5.7% in January, down from 6.0% in the previous month. Core inflation (excluding food and energy) fell slightly in January, to 6.6% after 6.7% in December. Headline CPI inflation momentum, measured as a three-month-on-three-month annualised change, suggests that the global disinflation trend is likely to continue in 2024, although the pace of disinflation is expected to slow compared with last year (Chart 3). This is corroborated by the latest readings of input and output price PMIs, which have leading indicator properties for global core goods and services inflation. According to the March 2024 ECB staff macroeconomic projections, disinflation towards central banks' targets is projected to proceed gradually over the projection horizon for advanced economies, whereas in emerging market economies, inflation is expected to pick up slightly this year before declining again. This pattern reflects the projected higher inflation in some larger economies such as China, Russia and Türkiye. Growth in euro area competitors' export prices is expected to turn positive this year and remain around its estimated long-term average over the rest of the projection horizon. This growth has been revised down slightly in 2024 compared with the December 2023 projections, amid lower pipelines pressures and energy commodity prices.

Chart 3

OECD headline consumer price inflation momentum

(three-month-on-three-month annualised percentage change, percentage point contributions)
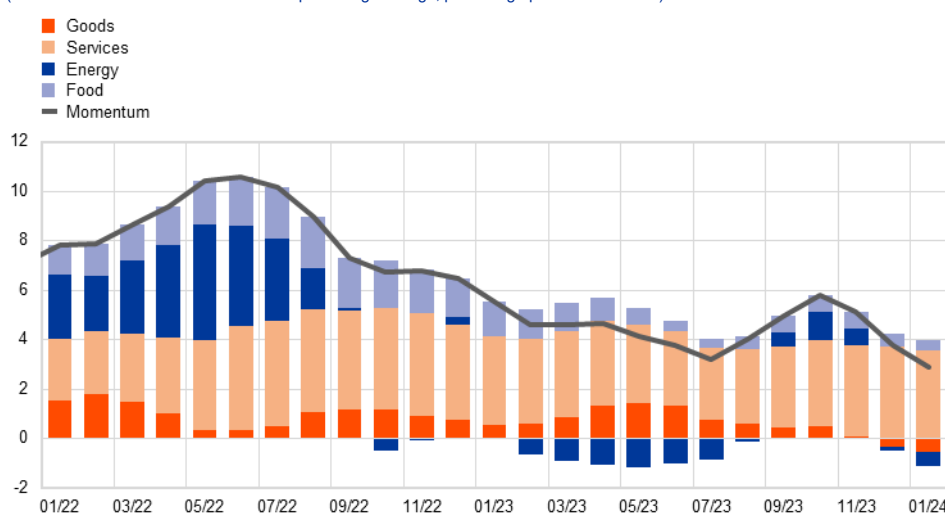
Sources: OECD and ECB calculations.
Notes: Contributions of respective components of OECD headline inflation momentum reported in the chart are constructed bottom-up using available country data, which jointly account for 84% of the OECD area aggregate. Goods inflation is computed as the residual of the contribution of total goods less the contributions of energy and food. The latest observations are for January 2024.

Since the December 2023 projections, crude oil prices have been broadly unchanged, while European gas prices have declined significantly. Oil prices remain relatively stable, despite heightened geopolitical risk in the Middle East.

Attacks by Houthi rebels on ships in the Red Sea have disrupted some oil trading. However, oil trade via the much more important Strait of Hormuz has remained largely unaffected, dampening the economic impact of these attacks. Moreover, shipping through the Red Sea has been redirected around the Cape of Good Hope, limiting the upward pressure on oil prices due to higher shipping costs, which only constitute around 1-2% of the oil price. Oil prices have also remained largely unaffected by the supply cuts announced by OPEC+ in late November, which were in place for the first quarter of 2024 and recently also extended to the second quarter. Overall, the global oil market is expected to remain in balance in the first quarter of 2024 and in surplus for the remainder of the year, due to higher oil supply from the United States and weaker oil demand in advanced economies. European gas prices declined sharply, largely due to weaker demand, which reflects a confluence of factors such as a mild winter, reduced gas consumption by households and weaker industrial activity. Supply factors were also supportive of lower gas prices, as gas storage levels remain high.

In the United States, growth remains robust but is expected to moderate this year. High frequency indicators, such as consumer confidence and retail sales, provide rather mixed signals for consumer spending in early 2024, following a strong performance in the fourth quarter of 2023. Rising consumer loan delinquencies indicate that household balance sheets are coming under increasing pressure, with the household saving rate standing at a low level of 4%. In addition, the restrictive monetary policy of the Federal Reserve System continues to weigh on economic activity. Labour market conditions, while remaining tight by historical standards, are gradually cooling and wage growth has declined slightly, albeit remaining at a still elevated level. Headline CPI inflation declined slightly to 3.1% in January, driven by energy prices, whereas annual core inflation remained steady at 3.9%. Core services prices ticked up, primarily due to the reacceleration of non-shelter components. A sectoral breakdown of personal consumption expenditures (PCE) inflation shows the effective transmission of the Federal Reserve's monetary policy during this tightening cycle, with the interest rate-sensitive sectors showing a larger drop in inflation than the non-sensitive sectors.

In China, recent activity indicators provide mixed signals amid an ongoing adjustment in the residential property market. While industrial production growth increased slightly to 6.5% in annual terms in December, surveys provide mixed signals for the first months of this year. The weak residential property sector remains the key headwind to economic activity and is weighing on private consumption growth in particular. The adjustment in the housing sector has continued into 2024, as new housing sales have declined sharply and construction starts and property sales remain stagnant at very low levels. Against the backdrop of these adverse developments, the equity market has experienced severe volatility recently and consumer confidence has stabilised at a historically low level. Annual headline CPI inflation fell to -0.8% in January, down from -0.3% in the previous month, primarily reflecting further declines in food prices. Annual core CPI inflation (excluding food and energy) remained positive at 0.4%. This low reading for core inflation reflects a very subdued level of consumer demand.

In Japan, real GDP unexpectedly declined in the final quarter of 2023. Economic activity fell again in the fourth quarter, by 0.1%, after contracting by a downwardly revised 0.8% in the third quarter. This outcome reflects weakness in domestic demand which was relatively broad-based. Growth is likely to turn positive in early 2024, supported by stronger readings of survey indicators, especially for the services sector, and rising consumer confidence. Annual headline inflation stood at 2.2% in January 2024, above market expectations but below the levels observed towards the end of last year. The slowdown in headline inflation mostly reflects slowing food inflation and falling energy prices. Core CPI inflation also eased to 2.6% in January, down from 2.8% in December.

In the United Kingdom, economic activity declined again in the fourth quarter. Real GDP growth surprised to the downside in the fourth quarter, standing at -0.3%, down from -0.1% in the third quarter. This contraction was driven by a fall in net trade, reflecting a large decline in services exports. Private consumption and government spending underperformed as well, with the fallout in government spending stemming from recurrent strikes in the public sector. The composite PMI, retail sales and confidence indicators all continued to rise in January 2024, pointing to a pick-up in UK growth momentum as lower financing costs, rising real disposable income and a resilient labour market support domestic demand. The labour market is gradually cooling, but remains tight by historical standards. Vacancies declined, but labour market tightness, measured as vacancies per unemployed worker, remains above historical averages. The latest data on private earnings suggest that nominal wage growth eased to 6.2% in the three months to December, down from 6.6% in the three months to November, and is expected to slow further. In January headline and core CPI inflation remained steady at 4.0% and 5.1% respectively. Over the next few months, headline inflation is expected to drop closer to the Bank of England's 2% target, but only temporarily due to base effects from previous increases in regulated energy bills.

2   Economic activity

Euro area output remained stagnant at the end of 2023, affected by weak global trade, destocking and the transmission of the ECB's monetary policy tightening. Activity is expected to remain subdued in the near term and gradually recover later in the year, reflecting falling inflation, robust wage growth and strengthening foreign demand. Survey data continue to point to little or no growth in the short term, but the most forward-looking survey indicators are showing some signals of improvement. Private consumption is still weak as consumers remain price-sensitive and hold off major purchases; however, it should improve as real disposable income recovers. Depleted order backlogs and tight monetary policy are weighing on the short-term business investment outlook, although an improvement in investor confidence suggests that the pre-conditions could be in place for a recovery later in the year. By contrast, housing investment is likely to remain weak. Although demand for labour continues to slow, employment rose further in the fourth quarter of 2023, in line with the increasing labour force. Over the medium term the recovery will also be supported by the gradual fading of the impact from tight monetary policy.

This outlook is reflected in the March 2024 ECB staff macroeconomic projections for the euro area, which foresee annual real GDP growth of 0.6% in 2024, picking up to 1.5% and 1.6% in 2025 and 2026 respectively. Compared with the December 2023 Eurosystem staff macroeconomic projections for the euro area, the outlook for GDP growth has been revised down for 2024, while remaining broadly unchanged for 2025 and 2026.

Euro area output remained stagnant at the end of 2023. According to Eurostat's flash estimate, real GDP displayed zero growth, quarter on quarter, in the fourth quarter of 2023, on the back of the growing impact of weak global trade and strong monetary policy transmission (Chart 4). This implies that output has remained broadly stable since the third quarter of 2022.[1]

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[1]   The expenditure breakdown of GDP for the fourth quarter of 2023 was published after the cut-off date for the data included in this issue of the Economic Bulletin.

Chart 4

Euro area real GDP and its components

(quarter-on-quarter percentage changes; percentage point contributions)
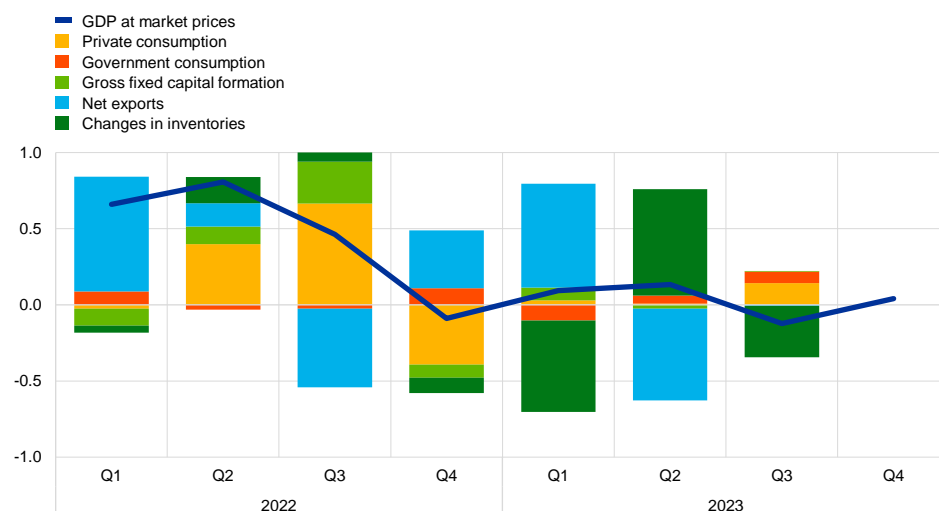
- GDP at market prices
- Private consumption
- Government consumption
- Gross fixed capital formation
- Net exports
- Changes in inventories

Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2023 for GDP and the third quarter of 2023 for all other items.

Activity is expected to remain weak in the first quarter of 2024. The composite output Purchasing Managers' Index (PMI) stood at 48.6 on average in January and February, up from 47.2 in the fourth quarter of 2023. Although it has clearly recovered from its most recent trough of 46.5 in October 2023, the index is still below the growth threshold of 50. Across sectors, the PMI for manufacturing output remained in contractionary territory in February, despite increasing steadily from the summer of last year (Chart 5, panel a). The new orders index has shown a somewhat stronger improvement, which is likely related to declining backlogs of work. Business activity in the services sector had shown more stable dynamics at a higher, but still suppressed, level in recent months, before picking up in February, suggesting that the decline that started last year has come to a halt (Chart 5, panel b).

Chart 5

PMI indicators across sectors of the economy

a) Manufacturing

(diffusion indices)

- Output
- New orders
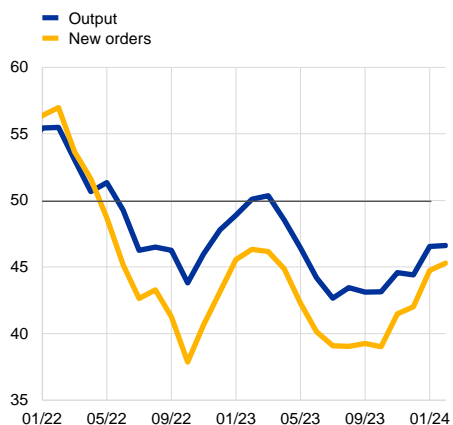
b) Services

(diffusion indices)

- Business activity
- New business
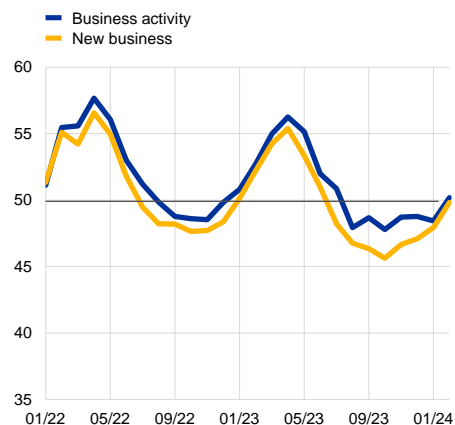
Source: S&P Global Market Intelligence.
Note: The latest observations are for February 2024.

Overall, the labour market remained resilient to weakening economic activity in the fourth quarter of 2023. Employment rose by 0.3% in the fourth quarter (Chart 6, panel a) driven mainly by the continued growth of the labour force, which also increased by 0.3% in the fourth quarter of 2023. By contrast, preliminary data suggest a decline in average hours worked in the fourth quarter of 2023, indicating ongoing labour hoarding (the part of labour input which is not fully utilised by a company in its production process). The unemployment rate declined marginally to 6.4% in January, from 6.5% in December, reaching its lowest level since the euro was introduced. Labour demand has weakened but remains at high levels, with the job vacancy rate falling to 2.7% in the fourth quarter of 2023, 0.2 percentage points lower than in the previous quarter.

Chart 6

Euro area employment, PMI assessment of employment and unemployment rate, and sectoral employment PMIs

a) Employment, PMI assessment of employment and unemployment rate

(left-hand scale: quarter-on-quarter percentage changes, diffusion index; right-hand scale: percentages of the labour force)

- Employment
- PMI assessment of employment
- Unemployment rate (right-hand scale)
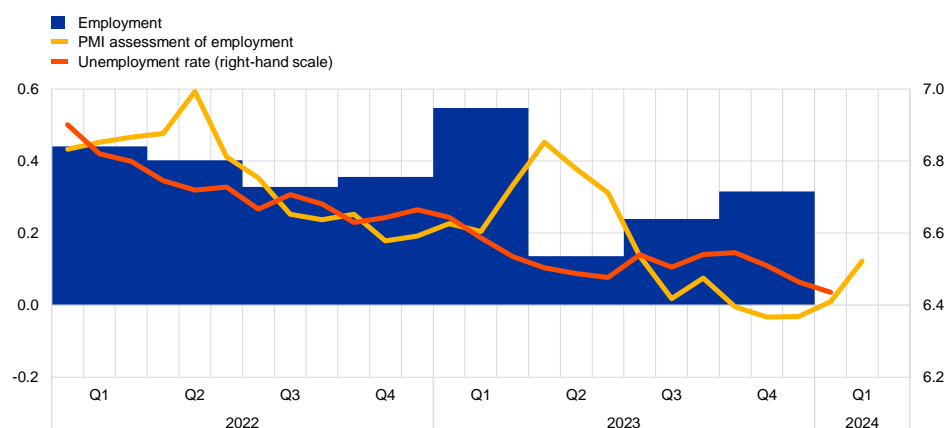
b) Sectoral employment PMIs

(diffusion indices)

- Composite index
- Manufacturing
- Construction
- Services
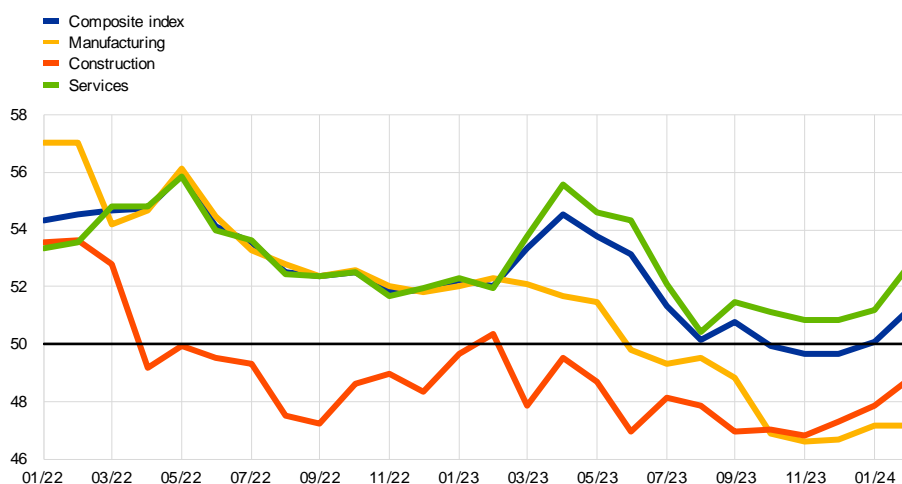
Sources: Eurostat, S&P Global Market Intelligence and ECB calculations.
Notes: In panel a), the two lines indicate monthly developments, while the bars show quarterly data. The PMI is expressed in terms of the deviation from 50, then divided by 10. The latest observations are for the fourth quarter of 2023 for employment, February 2024 for the PMI assessment of employment and January 2024 for the unemployment rate. In panel b), the latest observations are for February 2024.

Short-term labour market indicators suggest continuing employment growth in the first quarter of 2024. The monthly composite PMI employment indicator rose from 50.1 in January to 51.2 in February, suggesting a further increase in employment. This indicator declined substantially from its peak of April 2023, but has edged up again in the last two months, driven by the services sector (Chart 6, panel b). The PMI services indicator increased from 51.2 in January to 52.7 in February. By contrast, the PMI manufacturing indicator remained in contractionary territory.

Private consumption is likely to have stagnated in the fourth quarter of 2023 and incoming data point to a continued soft outlook in the short term. An aggregation of available country data for private consumption points to a stagnation in the fourth quarter of last year, with the consumption of services likely to have

increased slightly, offset by a contraction in spending on goods.[2] This is reflected in the ongoing weakness of retail sales volumes and car sales, both of which remained subdued at the end of the year and were below their fourth-quarter average in January. Moreover, incoming survey data continue to signal overall weakness in spending on goods at the beginning of the year. The European Commission's consumer confidence indicator picked up marginally in February but remains somewhat below its long-term average. At the same time, the Commission's indicators for business expectations for retail trade remained subdued in the first two months of 2024 and there has been a downturn in expected sales of motor vehicles compared with the fourth quarter of 2023. Business expectations for contact-intensive services declined in January but rebounded in February, remaining in growth territory (Chart 7). The ECB's Consumer Expectations Survey (CES) for January also indicates resilient expected demand for holiday bookings. Overall, the ongoing divergence between the consumption of goods and services is supported by the CES analysis, which indicates that households have mainly adjusted their consumption of goods to cope with inflationary pressures over the past few years, while spending on recreation and travel has continued to rise, suggesting a shift in preferences.[3]

Chart 7

Private consumption and business expectations for retail trade, services and motor vehicles

(quarter-on-quarter percentage changes; net percentage balances)
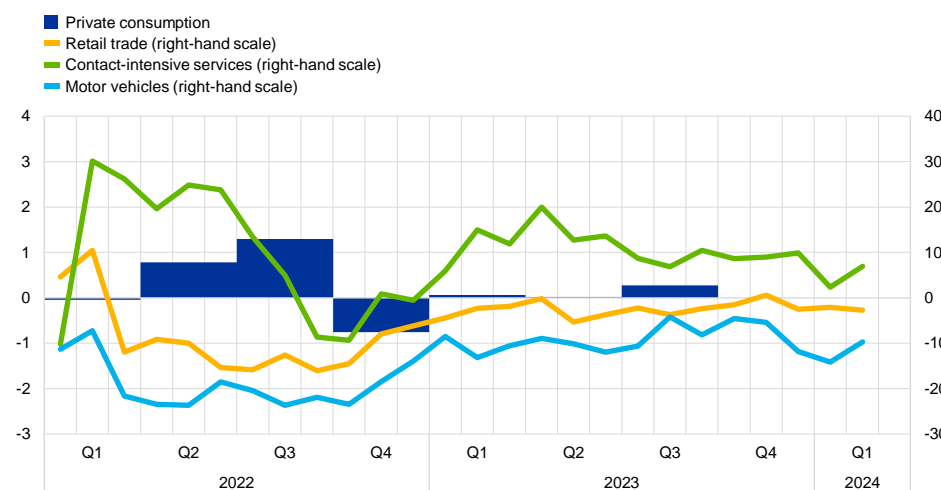
Sources: Eurostat, European Commission and ECB calculations.
Notes: Business expectations for retail trade (excluding motor vehicles), expected demand for contact-intensive services and expected sales of motor vehicles for the next three months refer to net percentage balances; "contact-intensive services" refers to accommodation, travel and food services. The latest observations are for the third quarter of 2023 for private consumption and February 2024 for business expectations for retail trade, contact-intensive services and motor vehicles.

Business investment is likely to have contracted sharply in the fourth quarter of 2023 and is expected to remain weak in the short term. An aggregation of available country data for non-construction investment (excluding Irish intangibles) points to a decline of 1.6%, quarter on quarter, in the fourth quarter of 2023, while

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[2]   The country coverage for the GDP expenditure breakdown is around 89%.

[3]   See the box entitled "How have households adjusted their spending and saving behaviour to cope with high inflation?" in this issue of the Economic Bulletin.

industrial production in the euro area capital goods sector (excluding Ireland), which supplies investment goods to firms in the euro area and beyond, fell further.[4] Against a backdrop of depleted order backlogs, which had supported business investment in the past few quarters, the sharp drop in the fourth quarter likely reflected weak activity amid strong monetary policy transmission. With regard to the short-term outlook, the PMI for the capital goods sector showed a slowdown in the decline of output and new orders in the fourth quarter of the year (Chart 8, panel a). However, more forward-looking data for the wider economy, as reflected in the Sentix investor confidence sub-index for the coming six months, have been indicating a recovery since September 2023, with the index rising to a quarterly average not seen since the start of 2022. Moreover, the January 2024 euro area bank lending survey reported that demand for longer-term loans (typically used for fixed capital investment) was expected to rebound into positive territory in the first quarter of 2024. Further ahead, delayed disbursements of Next Generation EU funds are also expected to help crowd in business investment related to the green and digital transitions.

Chart 8

Real investment dynamics and survey data

a) Business investment

(quarter-on-quarter percentage changes; percentage balances and diffusion indices)

- Business investment
- PMI output (right-hand scale)
- PMI new orders (right-hand scale)
- Sentix (right-hand scale)

b) Housing investment

(quarter-on-quarter percentage changes; percentage balances and diffusion index)

- Housing investment
- PMI output (right-hand scale)
- EC activity trend (right-hand scale)

Sources: Eurostat, European Commission (EC), S&P Global Market Intelligence, Sentix and ECB calculations.
Notes: Lines indicate monthly developments, while bars refer to quarterly data. The PMIs are expressed in terms of the deviation from 50. In panel a), business investment is measured by non-construction investment excluding Irish intangibles. The lines refer to responses from the capital goods sector, except for the Sentix six-month ahead sub-index, which reflects wider investor confidence for the period ahead (series divided by three to re-scale). The latest observations are for the third quarter of 2023 for business investment, March 2024 for the Sentix index and February 2024 for all other items. In panel b), the line for the European Commission's activity trend indicator refers to the building construction sector's assessment of the trend in activity compared with the preceding three months. The latest observations are for the third quarter of 2023 for housing investment and February 2024 for all other items.

Housing investment is likely to have fallen somewhat in the fourth quarter of 2023 and should continue to decline in the short term. An aggregation of available national accounts data shows that housing investment in the euro area fell by 0.4% in the fourth quarter of 2023 compared with the third quarter, while building construction in the euro area – a leading indicator for housing investment – dropped

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4   Data made available after the cut-off date for this issue broadly confirm this trend.

by 0.5%. Short-term indicators point to a further decline in housing investment in the first quarter of 2024, with both the PMI for housing production and the European Commission's indicator for building construction activity remaining in contractionary territory at the start of the year (Chart 8, panel b). Overall, the continuing downward trend in housing investment reflects the significant rise in mortgage interest rates resulting from the tighter monetary policy and its negative impact on the affordability of housing. The persistently high level of interest rates is likely to cause the affordability of housing to remain low and continue to weigh on the momentum of housing investment.

Euro area export growth remained sluggish at the turn of the year. Extra-euro area goods exports declined, quarter on quarter, in December, as subdued global demand continued to exert a drag on exports. In particular, the weakness of the Chinese economy was reflected in low exports to China, while there were signs of a recovery in exports to the United States. At the same time, price competitiveness challenges weighed on exports, reflecting high – albeit falling – energy prices and the past appreciation of the euro. Moreover, euro area imports remained subdued in December as a result of sluggish activity in the euro area. As imports continue to decline at a faster pace than exports, the contribution of net exports to GDP remained positive in the fourth quarter. Looking ahead, exports should begin to recover as global demand rebounds and external price competitiveness pressures ease. However, in the near term, survey-based indicators point to continued weakness in euro area exports as new export orders for both manufactured goods and services remain in contractionary territory.

Euro area growth is expected to embark on a cyclical recovery over the course of this year. Barring further shocks, this recovery will initially be brought about by rising real disposable income providing support to private consumption, amid declining inflation and robust wage growth. Over the medium term the recovery will also be supported by investment, reflecting in part the gradual fading of the impact from the ECB's monetary policy tightening.

The March 2024 ECB staff projections for the euro area foresee annual real GDP growth of 0.6% in 2024, picking up to 1.5% in 2025 and 1.6% in 2026. Compared with the December 2023 Eurosystem staff macroeconomic projections for the euro area, the outlook for GDP growth has been revised down for 2024, while remaining broadly unchanged for 2025 and 2026.[5]

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[5] See "ECB staff macroeconomic projections for the euro area, March 2024", published on the ECB's website on 7 March 2024.

3   Prices and costs

Euro area headline inflation declined to 2.6% in February 2024, from 2.8% in January. Most measures of underlying inflation had declined further in January and HICP inflation excluding energy and food did so as well in February. Nevertheless, domestic price pressures are still elevated, in part owing to robust wage growth and falling labour productivity. Measures of longer-term inflation expectations remained broadly stable in February, with most standing at around 2%. The March 2024 ECB staff macroeconomic projections for the euro area foresee that headline inflation will decline gradually, averaging 2.3% in 2024, 2.0% in 2025 and 1.9% in 2026.

According to the Eurostat flash estimate, headline inflation, as measured in terms of the Harmonised Index of Consumer Prices (HICP), declined to 2.6% in February, from 2.8% in January (Chart 9). This decline resulted from lower inflation rates for all the main components with the exception of energy inflation, which became less negative in February (-3.7%, after -6.1% in January). Food inflation continued to ease, falling from 5.6% in January to 4.0% in February. This decrease reflected a lower annual rate of change in both processed and unprocessed food prices, which was particularly pronounced for the latter owing to a negative base effect from developments in 2023. HICP inflation excluding energy and food (HICPX) dropped further to 3.1% in February, down from 3.3% in January, owing to a decrease in both non-energy industrial goods (NEIG) inflation (1.6% in February, after 2.0% in January) and services inflation (3.9% in February, after 4.0% in January). The declining growth rates for processed food and NEIG reflect the continued easing of pipeline price pressures, while more persistent services inflation is related to the stronger role of labour costs in some of its items, among other factors.

Chart 9

Headline inflation and its main components

(annual percentage changes; percentage point contributions)
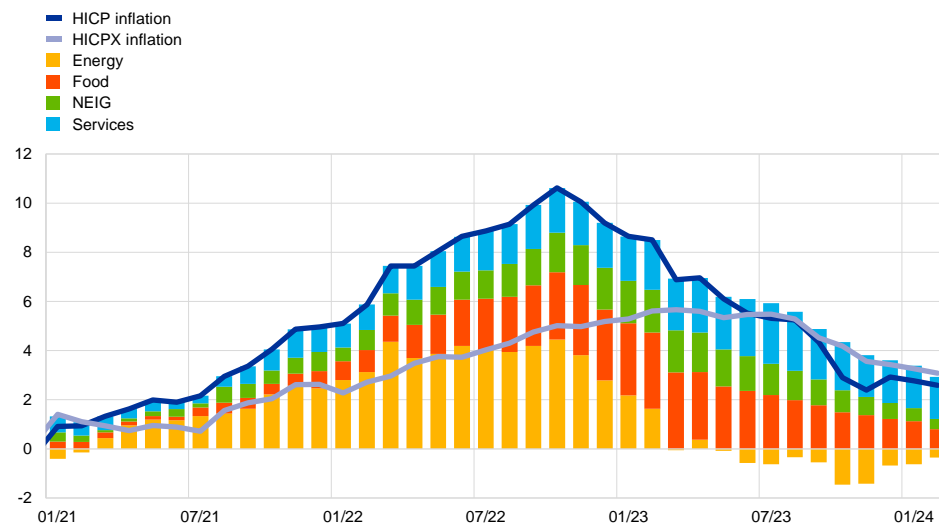
Sources: Eurostat and ECB calculations.
Note: The latest observations are for February 2024 (flash estimate).

Most indicators of underlying inflation have continued to decrease according to the latest available data, reflecting the fading effects of previous shocks to energy costs and supply chain disruptions, as well as weaker demand amid tighter monetary policy (Chart 10). The indicator values ranged from 1.9% to 4.5% in January, with the Persistent and Common Component of Inflation (PCCI) at the bottom of the range and the domestic inflation indicator at the top. HICPXX inflation (which refers to HICPX inflation excluding travel-related items, clothing and footwear) decreased from 3.4% in December to 3.2% in January. The Supercore indicator, which comprises HICP items that are sensitive to the business cycle, declined from 4.0% in December to 3.7% in January, while the model-based PCCI measure was unchanged at 1.9% over the same period. The indicator for domestic inflation (excluding items with a large import content) has been the highest and most persistent measure, standing at 4.5% in December 2023 and January 2024, reflecting the relative importance of wage pressures.

Chart 10

Indicators of underlying inflation

(annual percentage changes)

- Range of indicators
- HICPX
- HICPXX
- PCCI
- Supercore
- Domestic inflation
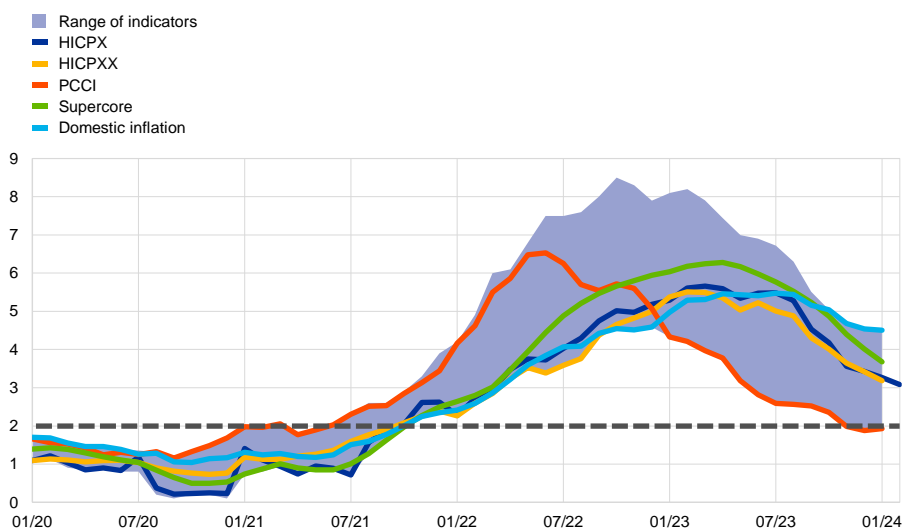
Sources: Eurostat and ECB calculations.
Notes: The range of indicators of underlying inflation includes HICP excluding energy, HICP excluding energy and unprocessed food, HICPX, HICPXX, domestic inflation, 10% and 30% trimmed means, PCCI, the Supercore indicator and a weighted median. The grey dashed line represents the ECB's inflation target of 2% over the medium term. The latest observations are for February 2024 (flash estimate) for HICPX, and January 2024 for the rest.

Pipeline pressures continued to ease as the cumulative effects of past shocks further dissipated (Chart 11). At the early stages of the pricing chain, producer price inflation for energy, which has been negative since March 2023, edged up to -21.3% in January from -27.3% in December. The annual growth rate of producer prices for domestic sales of intermediate goods also remained negative (-5.8% in January, down from -4.8% in December). The same holds for import price inflation for intermediate goods (-7.3% in January after -7.4% in December). Meanwhile, at the later stages of the pricing chain, domestic producer price inflation for durable consumer goods dropped to 1.1% in January, down from 2.9% in December, and the corresponding annual growth rate of import prices was zero in January, after 0.6% in December. This confirms the ongoing gradual easing of accumulated pipeline price pressures. Further easing was also observed for producer price inflation for non-durable goods, which declined further in January to 2.0%, its lowest level since May 2021. The annual growth rate of import prices for non-durable goods remained negative (-1.7% in January, after -1.2% in December). Non-durable consumer goods include food products, which initially recorded a faster decline in their annual rates of producer price change than non-food goods. However, more recently they have seen a convergence to non-food goods in terms of the speed of unwinding.

Chart 11

Indicators of pipeline pressures

(annual percentage changes)
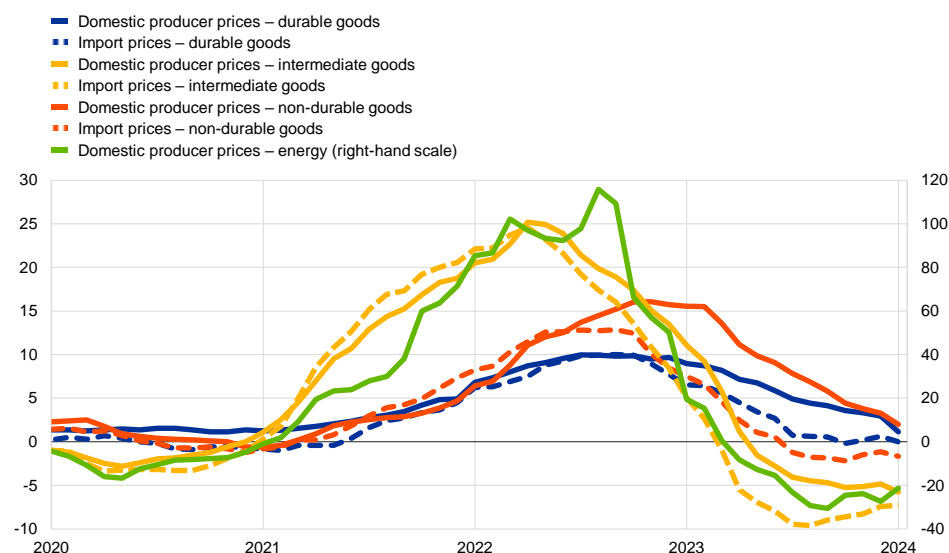
- ▬ Domestic producer prices – durable goods
- ▪▪▪ Import prices – durable goods
- ▬ Domestic producer prices – intermediate goods
- ▪▪▪ Import prices – intermediate goods
- ▬ Domestic producer prices – non-durable goods
- ▪▪▪ Import prices – non-durable goods
- ▬ Domestic producer prices – energy (right-hand scale)

Sources: Eurostat and ECB calculations.
Note: The latest observations are for January 2024.

The latest data available at the time of the review suggest that domestic cost pressures, as measured by growth in the GDP deflator, have started to ease.
The annual growth rate of the GDP deflator decreased to 5.9% in the third quarter of 2023, down from 6.1% in the previous quarter, owing to a smaller contribution from unit profits (Chart 12). The latest data thus corroborated the expected buffering against the stronger pressures from labour costs. The slightly stronger annual growth in unit labour costs in the third quarter reflects a more negative growth rate for labour productivity, concealing the fact that wage growth, as measured in terms of compensation per employee or per hour, had edged downwards. Information available for a large number of countries pointed to a further easing of euro area wage growth and some moderation in unit labour cost growth in the fourth quarter of 2023. [1] Negotiated wage growth decreased to 4.5% in the fourth quarter of 2023, from 4.7% in the previous quarter, confirming easing wage pressures in the latter part of the year. Data on the latest wage agreements point towards an ongoing gradual easing of wage pressures, albeit remaining at relatively high levels in the period ahead.[2]

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[1] The cut-off date for data included in this issue of the Economic Bulletin was 6 March 2024. National accounts data released on 8 March 2024 saw weaker annual growth in compensation per employee in the fourth quarter of 2023 (4.6% after 5.1% in the third quarter) and in unit labour costs (5.8% after 6.5% in the third quarter).The annual growth rate of the GDP deflator decreased to 5.3% in the fourth quarter of 2023, down from 5.9% in the third quarter, and included also a decrease in unit profit growth to 2.8% from 4.7%.

[2] See Górnicka and Koester (editors), "A forward-looking tracker of negotiated wages in the euro area", *Occasional Paper Series*, No 338, ECB, February 2024.

Chart 12

Breakdown of the GDP deflator

(annual percentage changes; percentage point contributions)
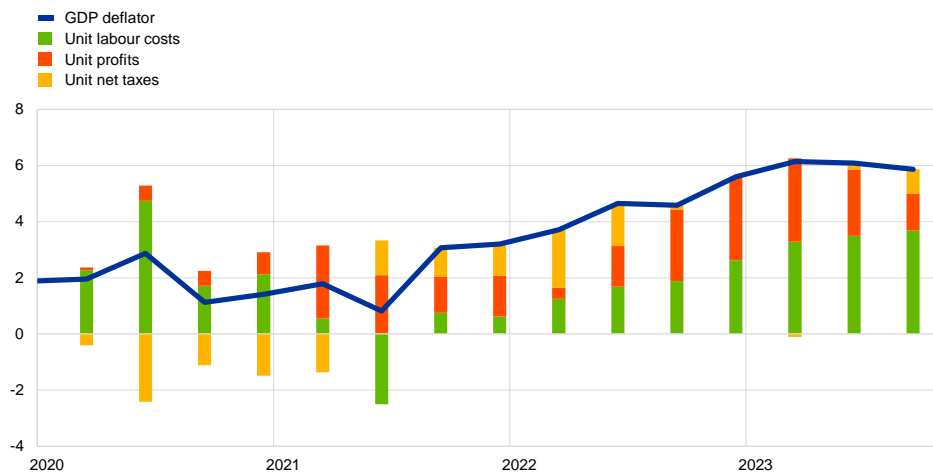
- GDP deflator
- Unit labour costs
- Unit profits
- Unit net taxes

Sources: Eurostat and ECB calculations.
Notes: The latest observations are for the third quarter of 2023. Compensation per employee contributes positively to changes in unit labour costs and labour productivity contributes negatively.

Survey-based indicators of longer-term inflation expectations and market-based measures of inflation compensation were also broadly unchanged with most standing at around 2% (Chart 13). In both the ECB Survey of Professional Forecasters for the first quarter of 2024 and the March 2024 ECB Survey of Monetary Analysts, average longer-term inflation expectations (for 2028) stood at 2.0%. Market-based measures of inflation compensation (based on the HICP excluding tobacco) at the longer end of the curve were stable, with the five-year forward inflation-linked swap rate five years ahead standing at around 2.3%, down from the multi-year peak reached in early August 2023. It should, however, be noted that these market-based measures of inflation compensation are not a direct gauge of the genuine inflation expectations of market participants, as these measures include inflation risk premia. Model-based estimates of genuine inflation expectations, excluding inflation risk premia, indicate that market participants expect inflation to be around 2% in the longer term. Market-based measures of near-term euro area inflation outcomes suggest that investors expect inflation to decline further in 2024, standing on average at 2% in the second half of the year. The one-year forward inflation-linked swap rate one year ahead was broadly unchanged over the review period, standing at 2.1%. On the consumer side, the January 2024 ECB Consumer Expectations Survey reported that median expectations for headline inflation over the next year stand at 3.3%, compared with 3.2% in December, while inflation expectations for three years ahead have remained at 2.5%.

Chart 13

Market-based measures of inflation compensation and consumers' inflation expectations

a) Market-based measures of inflation compensation

(annual percentage changes)

- One-year forward one year ahead
- Five-year forward five years ahead
- US five-year forward five years ahead

b) Headline inflation and ECB Consumer Expectations Survey

(annual percentage changes)

- HICP
- Perception of past inflation, mean/median
- Inflation expectations one year ahead, mean/median
- Inflation expectations three years ahead, mean/median
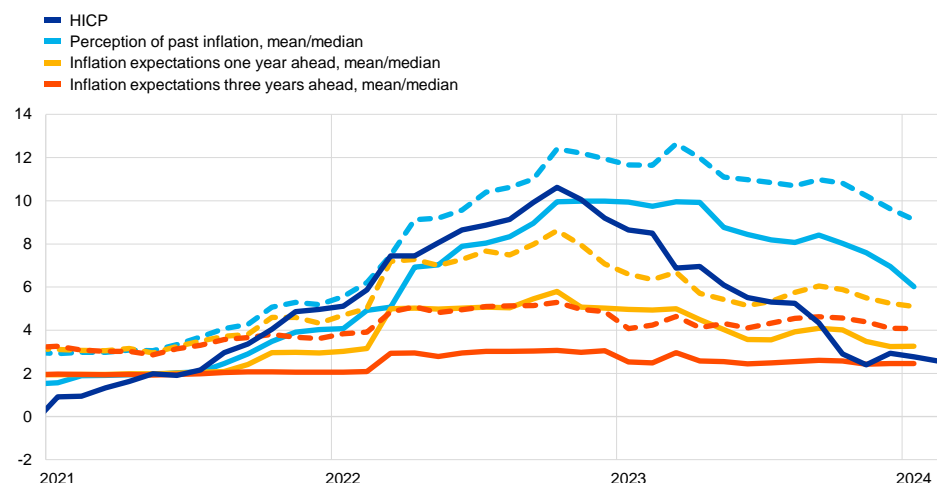
Sources: Refinitiv, Bloomberg, Eurostat, CES and ECB calculations.
Notes: Panel a) shows forward inflation-linked swap rates over different horizons for the euro area and the five-year forward break-even inflation rate five years ahead for the United States. The vertical grey line denotes the start of the review period on 14 December 2023. In panel b), dashed lines represent the mean and solid lines the median. The latest observations are for 6 March 2024 for the forward rates, February 2024 (flash estimate) for the HICP and January 2024 for the rest.

The March 2024 ECB staff macroeconomic projections expect headline inflation to moderate further, from 2.3% in 2024 to 2.0% in 2025 and 1.9% in 2026 (Chart 14).[3] This moderation reflects the continued fading of pipeline pressures as well as the impact of monetary policy tightening. Wage growth is expected to remain elevated, driven by high inflation and the tightness of the labour markets. However, nominal wage growth is projected to gradually decline, but to remain elevated, allowing for a catch-up of real wages to levels prevailing before the inflation surge, by 2025. Compared with the December 2023 projections, the projections for headline inflation have been revised down for 2024 and 2025, by 0.4

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[3]   See the March 2024 ECB staff macroeconomic projections for more details.

and 0.1 percentage points respectively, mainly resulting from the direct and indirect effects of lower assumptions for energy commodity prices and lower labour cost pressures. Projections for headline inflation in 2026 are unrevised. HICPX inflation is projected to ease further in the coming years and to average 2.6% in 2024, 2.1% in 2025 and 2.0% in 2026. Compared with the December 2023 projections, HICPX inflation has been revised down for the whole projection horizon. In particular, it has been revised down by 0.1 percentage point for 2024, 0.2 percentage points for 2025 and 0.1 percentage points for 2026.

Chart 14

Euro area HICP and HICPX inflation

(annual percentage changes)

- HICP inflation
- HICPX inflation
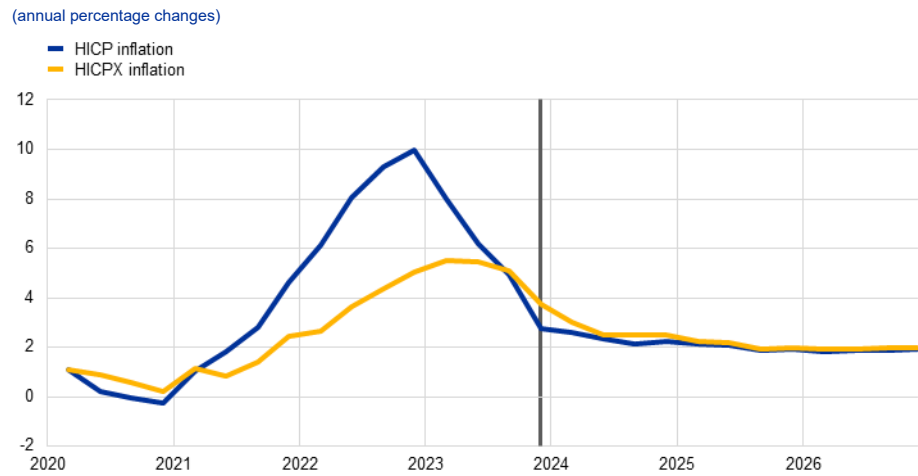
Sources: Eurostat and March 2024 ECB staff macroeconomic projections.
Notes: The vertical line indicates the start of the projection horizon. The latest observations are for the fourth quarter of 2023 for the data and the fourth quarter of 2026 for the projections. The March 2024 ECB staff macroeconomic projections for the euro area were finalised on 21 February, and the cut-off date for the technical assumptions was 9 February 2024. Both historical and actual data for HICP and HICPX inflation are at quarterly frequency.

4 Financial market developments

During the review period from 14 December 2023 to 6 March 2024 the focus in euro area financial markets remained on the timing and extent of prospective monetary policy rate cuts. Short-term risk-free rates shifted upwards as market participants revised their expectations towards later and fewer ECB policy rate cuts in 2024. Specifically, at the end of the review period, the euro short-term rate (€STR) forward curve almost fully priced in an initial rate cut of 25 basis points in the second quarter of 2024 and 100 basis points of cumulative cuts in the course of 2024. Longer-term risk-free rates initially moved lower following the December meeting but later reversed, which was also in line with a stronger repricing of the US curve as growth and inflation releases in the United States surprised to the upside. Sovereign bond yields moved about one-for-one with risk-free rates, with the dispersion of sovereign spreads over the overnight index swap (OIS) rate narrowing and the larger volumes of bond issuance being well absorbed by investors. Euro area stock prices rose slightly but underperformed their US peers, weighed down by further downward revisions to euro area earnings expectations. Finally, in foreign exchange markets the euro appreciated slightly in trade-weighted terms but depreciated a little against the US dollar.

The OIS forward curve has shifted upwards since the December Governing Council meeting as market participants revised the expected timing of the first rate cut to later in the second quarter of 2024 (Chart 15). The benchmark euro short-term rate (€STR) remained stable at 3.9% over the review period, reflecting the unchanged deposit facility rate, which the Governing Council has kept at 4% since the monetary policy meeting in September 2023. Excess liquidity decreased by around €83 billion to stand at €3,500 billion. This mainly reflected repayments of the third series of targeted longer-term refinancing operations (TLTRO III) and the decline in the asset purchase programme (APP) portfolio, as the Eurosystem no longer reinvests the principal payments from maturing securities in this portfolio. €STR-based OIS forward rates spanning the forthcoming Governing Council meetings have increased since the December meeting. This movement indicates that market participants expect the first policy rate cut to come slightly later than previously anticipated and that there will be fewer rate cuts than previously expected by the end of the year. Specifically, at the end of the review period, the forward curve almost fully priced in an initial rate cut of 25 basis points in the second quarter of 2024 and 100 basis points of cumulative cuts in the course of 2024.

Chart 15

€STR forward rates

(percentages per annum)

- Realised €STR
- €STR forward curve 13 December 2023
- €STR forward curve 24 January 2024
- €STR forward curve 6 March 2024
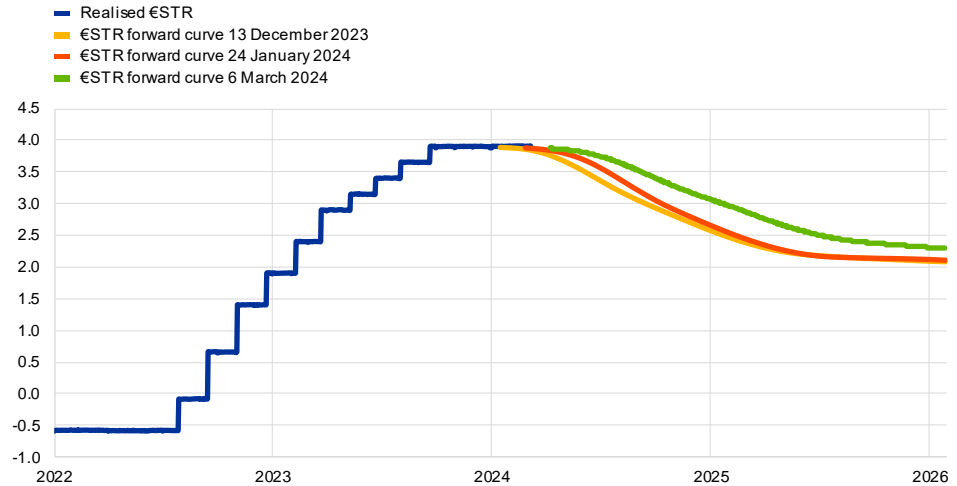
Sources: Bloomberg and ECB calculations.
Note: The forward curve is estimated using spot OIS (€STR) rates.

Euro area long-term risk-free rates increased on the back of an even stronger repricing of the US interest rate curve as the American economy remained resilient (Chart 16). Early in the review period, long-term risk-free rates declined substantially: the ten-year euro OIS rate stood about 20 basis points lower in late December than it did at the start of the review period. Subsequently, the movement in long-term euro area risk-free rates more than reversed, broadly in line with the stronger movements in US Treasury yields, partly reflecting stronger-than-expected US macroeconomic news and a reappraisal of monetary policy on both sides of the Atlantic. The ten-year euro OIS rate ultimately stood at around 2.5%, about 10 basis points above its level at the start of the review period. The ten-year US Treasury yield was up by about 19 basis points at 4.1%, while the UK equivalent rose about 21 basis points to around 4%.

Chart 16

Ten-year sovereign bond yields and the ten-year OIS rate based on the €STR

(percentages per annum)
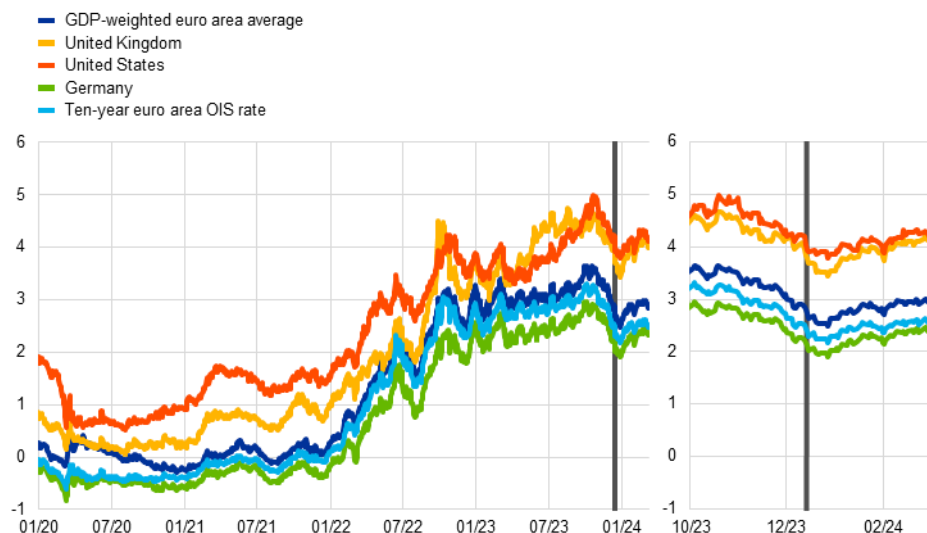
- GDP-weighted euro area average
- United Kingdom
- United States
- Germany
- Ten-year euro area OIS rate

Sources: LSEG and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 14 December 2023. The latest observations are for 6 March 2024.

Euro area sovereign bond yields moved in lockstep with risk-free rates, leaving sovereign spreads little changed (Chart 17). At the end of the review period, the ten-year GDP-weighted euro area sovereign bond yield stood about 11 basis points higher at around 2.8%, leading to only a slight increase in its spread over the OIS rate based on the €STR. Sovereign spreads across countries narrowed, as some of the higher-yield sovereigns saw a decrease in spreads and the German sovereign yield narrowed its negative gap to the OIS. The review period was marked by resilience in the sovereign bond market, with the larger volumes of bond issuance being well absorbed by private investors.

Chart 17

Ten-year euro area sovereign bond spreads vis-à-vis the ten-year OIS rate based on the €STR
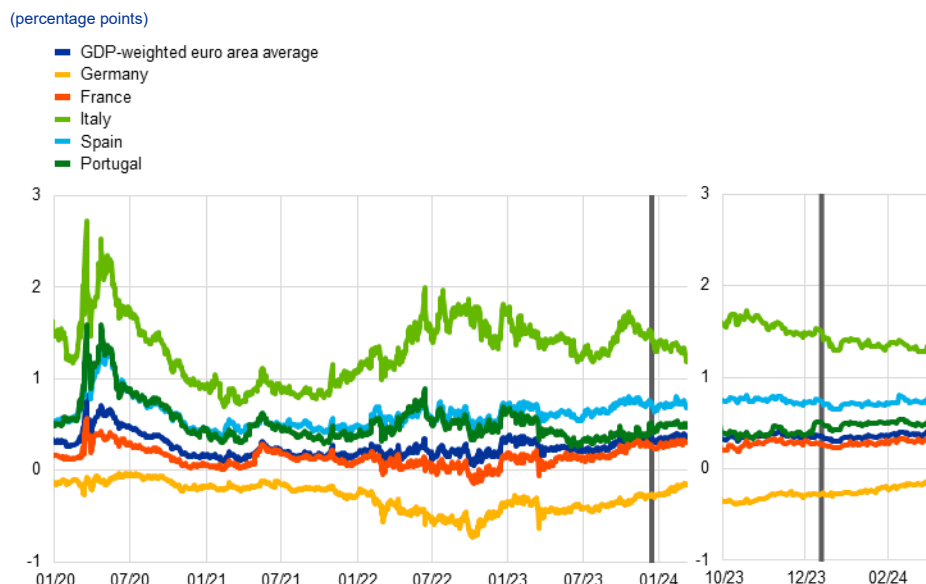
(percentage points)

Sources: LSEG and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 14 December 2023. The latest observations are for 6 March 2024.

High-yield corporate bond spreads narrowed significantly amid favourable risk sentiment. Over the review period, spreads on high-yield corporate bonds declined significantly, by about 37 basis points, especially after the turn of the year. The decline was stronger for financial corporations than for non-financial corporations (NFCs). Spreads on investment-grade corporate bonds, by contrast, fluctuated only moderately, standing broadly unchanged. Taking a longer perspective, current levels of corporate bond spreads remain low by historical standards, especially for high-yield bonds, standing about 50 basis points below their levels in December 2021 after having risen to around 250 basis points above those levels in the course of 2022. Lower spreads helped contain the rise in the cost of market-based debt at a time of sizeable and rapid increases in risk-free rates.

Euro area equity prices strengthened, supported by market sentiment, despite further downgrades in expected earnings and slightly higher discount rates (Chart 18). Over the review period, the broad stock market index in the euro area rose, albeit less than its US counterpart. The two indices are up about 6% and 8% respectively, with nominal earnings in the euro area expected to grow significantly less than those in the United States in the course of 2024. The weaker performance in the euro area, not only over the review period but also since the trough in late October, was relatively wide-ranging, with both market capitalisation and equal-weighted indices rising by less than in the United States. While equity prices for financial corporations grew at similar rates on both sides of the Atlantic, the euro area non-financial sector underperformed its US counterpart. Euro area equity prices were supported by lower equity risk premia, which more than offset a downward revision of earnings forecasts and higher discount rates.

Chart 18

Euro area and US equity price indices

(index: 1 January 2020 = 100)
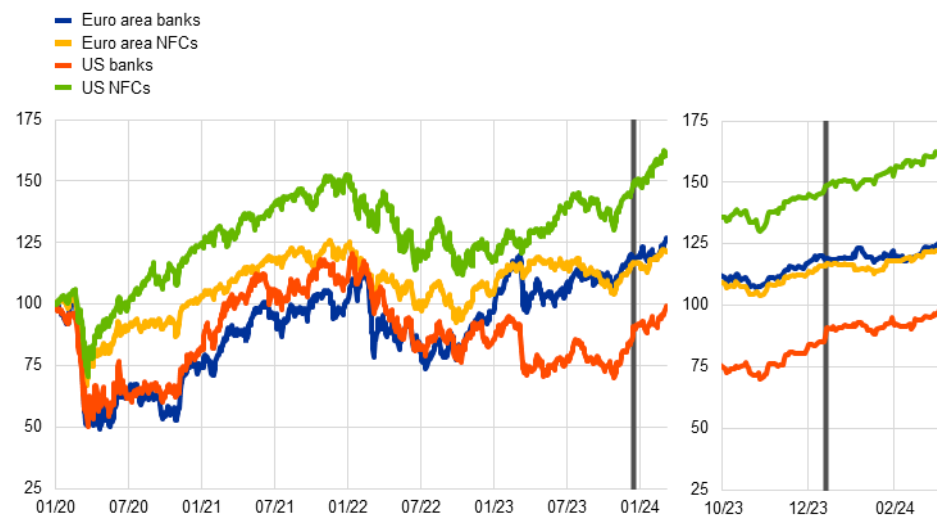
- Euro area banks
- Euro area NFCs
- US banks
- US NFCs

Sources: LSEG and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 14 December 2023. The latest observations are for 6 March 2024.

In foreign exchange markets, the euro appreciated slightly in trade-weighted terms but depreciated a little against the US dollar (Chart 19). During the review period, the nominal effective exchange rate of the euro – as measured against the currencies of 41 of the euro area's most important trading partners – appreciated by 0.8%. The slight appreciation of the euro reflects gains against the currencies of several advanced economies (e.g. by 5% against the Japanese yen), emerging economies and non-euro area EU Member States. By contrast, the euro depreciated slightly against the US dollar (by 0.4%) amid intra-period fluctuations, reflecting mostly changes in market participants' expectations about relative economic strength and policy rates. Between mid-December and the turn of the year, the euro appreciated against the US dollar, as market participants interpreted the December Federal Open Market Committee (FOMC) meeting as a dovish pivot, while strengthened risk appetite weighed on the US dollar. Since the start of 2024 the euro has depreciated against the US dollar, reflecting the stronger economic resilience of the United States compared to the euro area, and market participants lowered expectations of imminent US rate cuts following a more cautious Federal Reserve System communication at the January FOMC meeting. That interpretation was further re-enforced by robust US labour market data and a higher-than-expected US consumer price index print in February.

Chart 19

Changes in the exchange rate of the euro vis-à-vis selected currencies

(percentage changes)

■ Since 14 December 2023
■ Since 6 March 2023
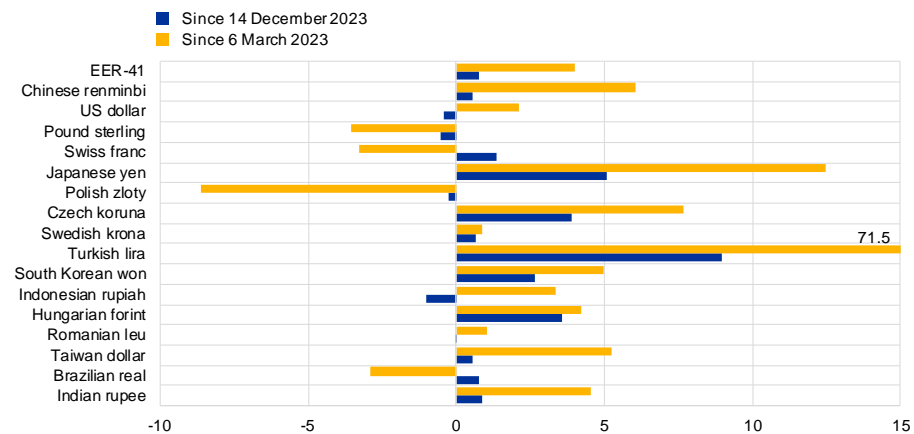
Source: ECB.
Notes: EER-41 is the nominal effective exchange rate of the euro against the currencies of 41 of the euro area's most important trading partners. A positive (negative) change corresponds to an appreciation (depreciation) of the euro. All changes have been calculated using the foreign exchange rates prevailing on 6 March 2024.

5 Financing conditions and credit developments

After declining in the fourth quarter of 2023, composite bank funding costs edged up again in January 2024, remaining at a high level by historical standards. Over the review period from 14 December 2023 to 6 March 2024, the cost to non-financial corporations (NFCs) of market-based debt increased slightly, while that of equity declined marginally. Bank lending rates for firms were broadly unchanged, while those for households for house purchase decreased somewhat. The annual growth rate of broad money (M3) remained close to zero, driven by high opportunity costs, stagnant lending and the reduction in the Eurosystem balance sheet.

Euro area bank funding costs remained at a high level by historical standards, despite declining bond yields. In January 2024 the composite cost of debt financing for euro area banks again edged up slightly, amid considerable cross-country heterogeneity, after coming down from the peak reached in October 2023 (Chart 20, panel a). Having fallen significantly in the fourth quarter of 2023, bank bond yields rebounded in the first quarter of 2024 (Chart 20, panel b), reflecting similar changes in the risk-free curve (see Section 4). In January 2024 (aggregate) deposit rates, which account for the bulk of composite bank funding costs, rose further, amid variation across instruments and sectors. While rates on overnight deposits increased modestly, rates on time deposits fell in January, resulting in a slight narrowing of the large spread between time and overnight deposits. Intensifying competition among banks for customer deposits pushed up deposit funding costs for banks. For retail lenders, which are highly dependent on deposit funding, the costs continued to rise owing to the sustained upward pressure stemming from the weakness in aggregate deposit volumes. By contrast, banks reliant on wholesale funding benefited more from the decline in bank bond yields in the fourth quarter of 2023, although they had also experienced a larger and faster increase in deposit funding costs in the early stages of the tightening cycle. In general, the composition of bank liabilities has continued to shift towards more expensive funding sources. Furthermore, liquidity has been mechanically drained from the financial system given that the Eurosystem balance sheet has continued to normalise.

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Chart 20

Composite bank funding costs in selected euro area countries

(annual percentages)

- Euro area
- Germany
- France
- Italy
- Spain

a) Banks' composite cost of debt financing

b) Bank bond yields
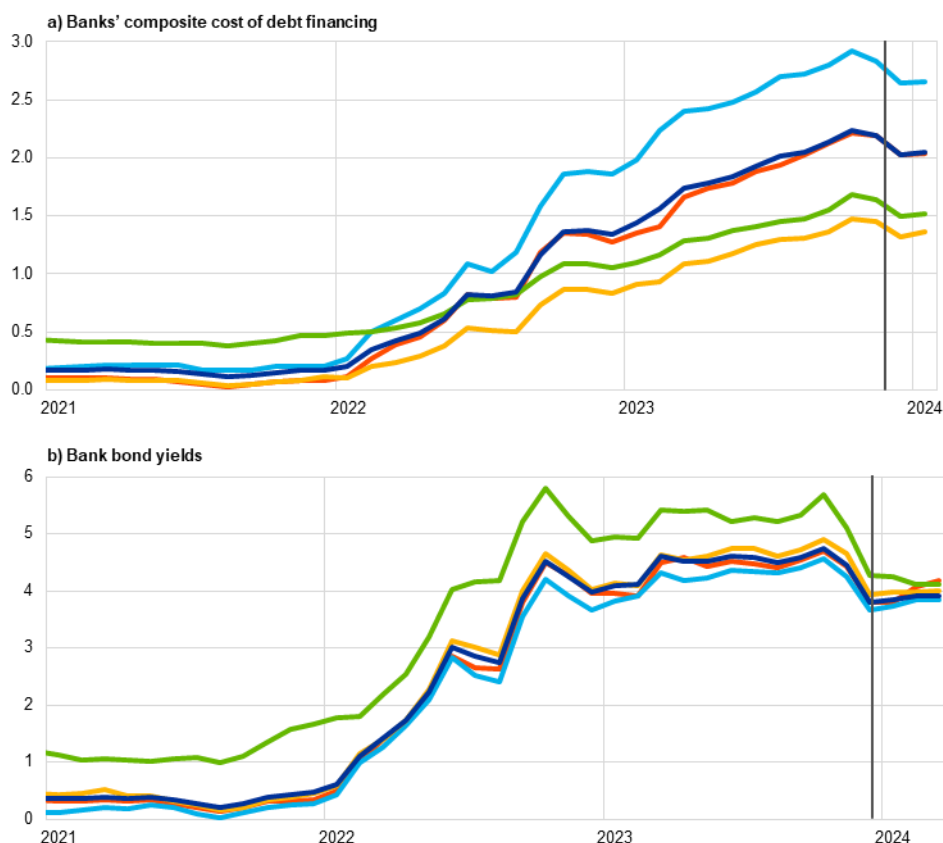
Sources: ECB, S&P Dow Jones Indices LLC and/or its affiliates, and ECB calculations.
Notes: Composite bank funding costs are a weighted average of the composite cost of deposits and unsecured market-based debt financing. The composite cost of deposits is calculated as an average of new business rates on overnight deposits, deposits with an agreed maturity and deposits redeemable at notice, weighted by their respective outstanding amounts. Bank bond yields are monthly averages for senior-tranche bonds. The vertical grey line in panels a) and b) denotes 31 October 2023. The latest observations are for January 2024 for banks' composite cost of debt financing and for 6 March 2024 for bank bond yields.

In January 2024 bank lending rates for firms remained broadly unchanged, while those for households for house purchase decreased. Lending rates for both firms and households across euro area countries started to rise sharply at the beginning of 2022 and have shown signs of stabilising at these high levels since November 2023 (Chart 21). In January 2024 lending rates for firms stood at 5.22%, compared with 5.25% in December 2023, while those on new loans to households for house purchase recorded a modest decline, falling to 3.87% in January, down from 3.97% in December. This decline was widespread across the largest euro area countries and was more pronounced for loans with medium and longer-term fixation periods. Variations in the size of the decline helped to reduce lending rate dispersion. At the same time, bank rates on new loans to households for consumption and for overdrafts and consumer credit continued to rise in January. The cross-country dispersion of lending rates for firms and households remained at a low level (Chart 21), suggesting smooth monetary policy transmission across euro

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area countries. As higher bank lending rates continue to feed through to outstanding amounts of loans for house purchase and as debt servicing costs rise, an increasing proportion of households, especially among the lower income quintiles, reported in the ECB's Consumer Expectations Survey in January 2024 that they expect to face difficulties in meeting their mortgage payments over the next three months.

Chart 21

Composite bank lending rates for NFCs and households in selected countries

(annual percentages; standard deviation)

- Euro area
- Germany
- France
- Italy
- Spain
- Cross-country standard deviation (right-hand scale)

a) Rates on loans to NFCs
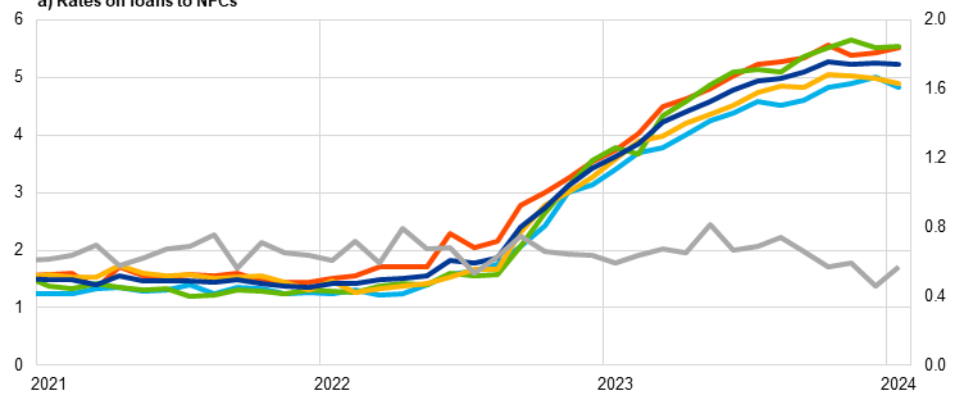
b) Rates on loans to households for house purchase
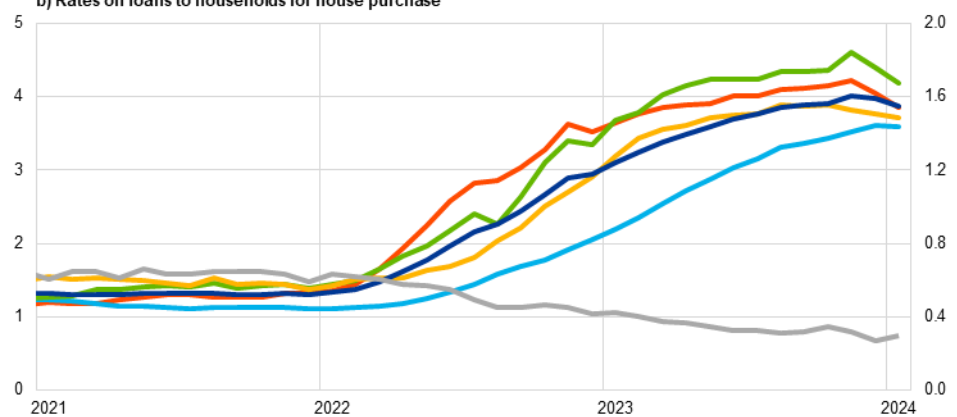
Sources: ECB and ECB calculations.
Notes: Composite bank lending rates are calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for January 2024.

Daily data for the review period – 14 December 2023 to 6 March 2024 – show a slight increase in the cost to NFCs of market-based debt and a marginal decline in that of equity. Based on monthly data, the overall cost of financing for NFCs for January 2024 – i.e. the composite cost of bank borrowing, market-based debt and equity – fell considerably from the multi-year high reached in October 2023,

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to stand at 6.0%, namely 10 basis points lower than in December (Chart 22).[1] This was due primarily to the decline in the cost of equity, given that there was no significant change in any of the other cost components. According to the daily data, the cost of market-based debt increased over the review period, owing to a rise in the risk-free rate that was not fully offset by a compression of the spreads on NFC bonds in the high-yield segments. At the same time, the cost of equity financing fell slightly, reflecting a decline in the equity risk premium that outweighed the above-mentioned increase in the risk-free rate (approximated by the ten-year overnight index swap rate) (see Section 4).

Chart 22

Nominal cost of external financing for euro area NFCs, broken down by component

(annual percentages)

- Overall cost of financing
- Cost of equity
- Cost of market-based debt
- Short-term cost of bank borrowing
- Long-term cost of bank borrowing
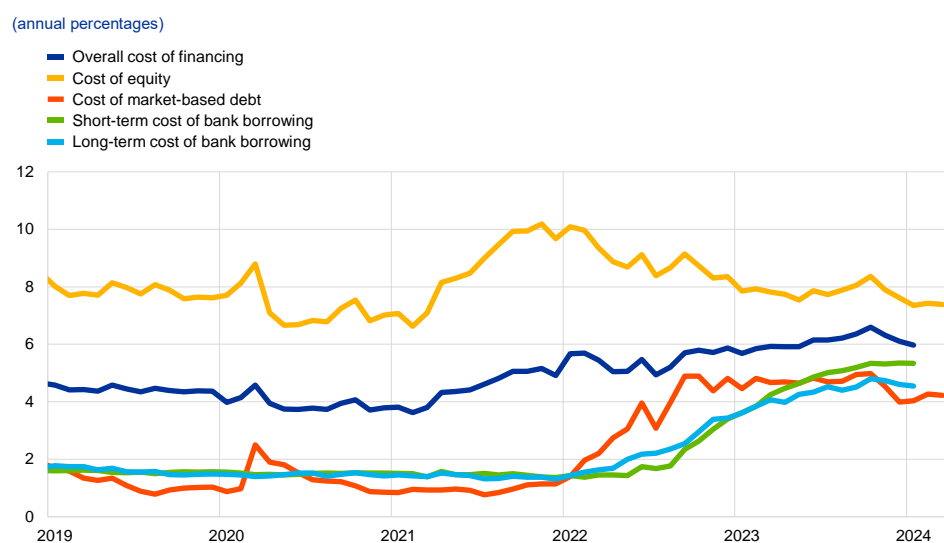
Sources: ECB, Eurostat, Dealogic, Merrill Lynch, Bloomberg, Thomson Reuters and ECB calculations.
Notes: The overall cost of financing for non-financial corporations (NFCs) is based on monthly data and is calculated as a weighted average of the cost of borrowing from banks (monthly average data), market-based debt and equity (end-of-month data), based on their respective outstanding amounts. The latest observations are for 6 March 2024 for the cost of market-based debt and the cost of equity (daily data), and for January 2024 for the overall cost of financing and the cost of borrowing from banks (monthly data).

Bank lending to firms and households stabilised at low levels in January 2024, amid high lending rates, subdued loan demand and tight credit standards.
Annual growth in loans to NFCs declined to 0.2% in January 2024, down from 0.5% in December 2023 (Chart 23, panel a), amid considerable cross-country heterogeneity. At the same time, volatility has been rising, as reflected in the strong contraction in short-term lending in January that reversed an increase of similar proportions over the previous two months. Overall, the ongoing weakness in loan growth remains in line with the stagnant lending dynamics observed since the beginning of 2023 on the back of weak aggregate demand, tight credit standards and restrictive monetary policy. The annual growth rate of loans to households edged down to 0.3% in January 2024, from 0.4% in December 2023 (Chart 23, panel b), amid negative housing market prospects, somewhat tighter credit standards and high lending rates. This decline was driven mainly by housing loans and loans to sole proprietors (i.e. unincorporated small businesses), while consumer loan growth

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[1]   Owing to lags in the data availability for the cost of borrowing from banks, data on the overall cost of financing for NFCs are only available up to January 2024.

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remained stable, owing primarily to demand from the lower income quintiles, which was reflected in an increase in loan application rejections. Moreover, the results of the ECB's Consumer Expectations Survey in January 2024 suggest that a large net percentage of survey respondents perceived credit standards to be tight and expected housing loans to become harder to obtain over the next 12 months.

Chart 23

MFI loans in selected euro area countries

(annual percentage changes; standard deviation)
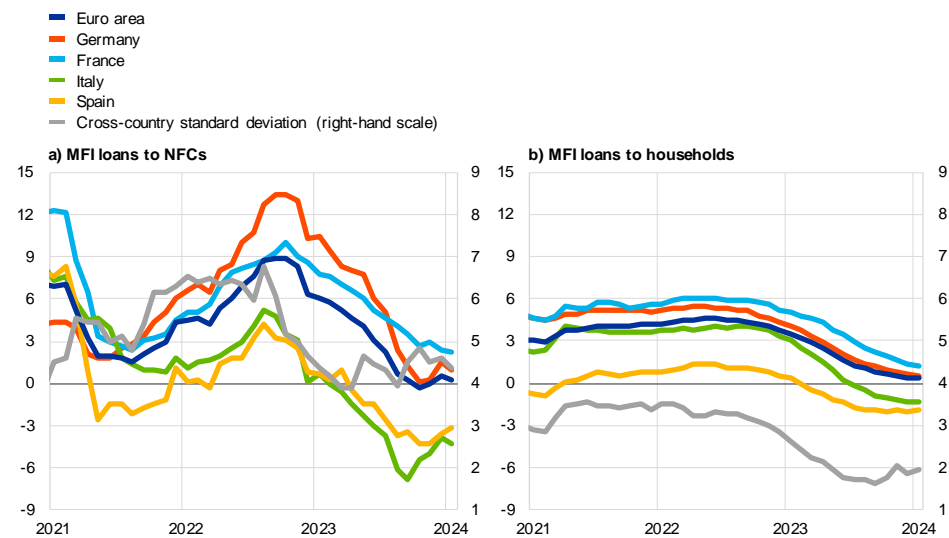
Sources: ECB and ECB calculations.
Notes: Loans from monetary financial institutions (MFIs) are adjusted for loan sales and securitisation; in the case of non-financial corporations (NFCs), loans are also adjusted for notional cash pooling. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for January 2024.

Growth in net external financing of euro area firms remained weak in the fourth quarter of 2023 and in January 2024, reflecting low levels of debt financing.
While the annual growth rate of net external financing increased from -0.9% in October 2023 to 0.8% in January 2024, the monthly flow again turned negative in January (Chart 24). Unlike previous episodes of weak loan dynamics, corporate bond issuance did not make up for the overall decline in bank loans. In January loan demand by firms related primarily to short-term maturities, with longer-term loans being replaced by corporate bonds. Moreover, the issuance of listed shares continued to be muted.

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Chart 24

Net external financing flows for euro area NFCs

(monthly flows; EUR billions)
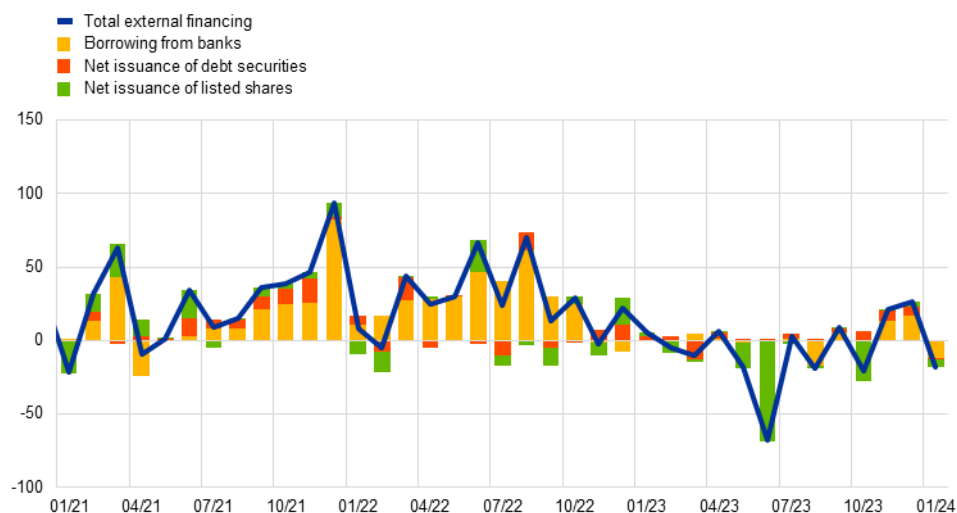
Sources: ECB, Eurostat, Dealogic and ECB calculations.
Notes: Net external financing is the sum of borrowing from banks (MFI loans), net issuance of debt securities and net issuance of listed shares. MFI loans are adjusted for loan sales, securitisation and cash-pooling activities. The latest observations are for January 2024.

Firms and households continued to reallocate overnight deposits to time deposits in January 2024. The annual growth rate of overnight deposits continued to contract and stood at -9.9% in January 2024, down from -9.7% in December 2023 (Chart 25). The strong preference for time deposits is explained by the sizeable spread between the rates on time deposits and those on overnight deposits, reflecting the large opportunity costs of holding highly liquid instruments.[2] In January the rates offered to firms for holding time deposits were close to the ECB's deposit facility rate and remained above those for households. There was another large monthly shift from overnight to time deposits for households and a pick-up in the pace at which firms rebalanced these two instruments, which had slowed considerably in the fourth quarter of 2023.

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[2]   As in previous tightening cycles, interest rates on overnight deposits have adjusted to policy rate changes more slowly than those on time deposits. See also the box entitled "Monetary dynamics during the tightening cycle", *Economic Bulletin*, Issue 8, ECB, 2023.

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Chart 25

M3, M1 and overnight deposits

(annual percentage changes, adjusted for seasonal and calendar effects)

- M3
- M1
- Overnight deposits
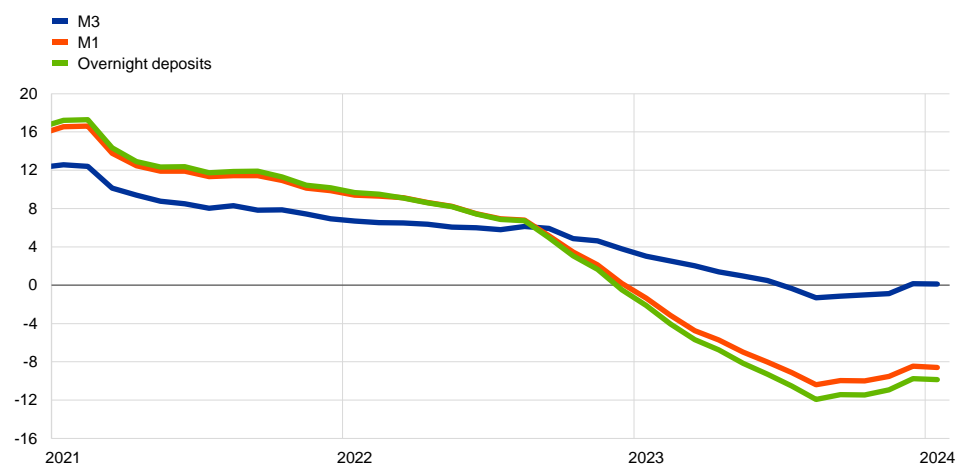
Source: ECB.
Note: The latest observations are for January 2024.

In January 2024 the annual growth rate of M3 remained close to zero, driven by high opportunity costs, stagnant lending and the reduction in the Eurosystem balance sheet. M3 growth in the euro area declined marginally and stood at 0.1% in January 2024, down from 0.2% in December 2023 (Chart 25). In January annual narrow money (M1) growth, which comprises the liquid assets of M3, fell slightly, to stand at -8.6%, down from -8.5% in December. After a relatively large inflow in the fourth quarter of 2023, M3 recorded a sizeable monthly outflow in January, amid increasing volatility and portfolio shifts out of M3 that reinforced weak monetary dynamics. The January outflow reflected a partial reversal of bank government bond purchases in December, matched by an increase in government bonds held by the money holding sector, and the renewed issuance of long-term bank bonds ahead of the upcoming repayment of TLTRO funds in March 2024. These outflows were offset partly by larger inflows from abroad that reflected a sizeable current account surplus, amid weak imports, and increased interest in euro area securities among foreign investors. Moreover, the reduction in the Eurosystem balance sheet continued to have a contractionary effect on money creation, alongside stagnant lending to the private sector.

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6 Fiscal developments

According to the March 2024 ECB staff macroeconomic projections, the euro area general government budget deficit will improve moderately to 2.9% of GDP in 2024 but only marginally thereafter, levelling off at 2.8% in 2025 and 2026. The gradual reduction in the budget deficit registered since the height of the pandemic is thus projected to come to a halt and even to increase slightly. Broadly reflecting these developments, the euro area fiscal stance is projected to tighten significantly in 2024 but almost no further thereafter. This tightening of the fiscal stance reflects the fact that governments are expected to continue to roll back energy-related support measures. Since this tightening is not set to continue beyond 2024, the ratio of euro area debt-to-GDP is projected to remain elevated, increasing marginally over the projection horizon, from an estimated 88.3% in 2023 to around 88.6% in 2026. On 21 February 2024, the Commission published the mid-term evaluation of the Recovery and Resilience Facility (RRF). While some progress is highlighted, it remains important to accelerate the implementation of the NGEU programme to reap its full potential. Following the recent provisional political agreement between the ECOFIN Council and the European Parliament on the reform of the EU's economic governance framework, the legislative process should be concluded swiftly so that the new rules can be implemented without delay.

According to the March 2024 ECB staff macroeconomic projections, the euro area general government budget balance will improve moderately in 2024 but only marginally in 2025.[1] According to the projections, the euro area budget deficit is estimated to have declined from 3.6% of GDP in 2022 to 3.2% of GDP in 2023 and will continue declining to 2.9% of GDP in 2024 and to 2.8% in 2025 where it will remain in 2026 (Chart 26). The projected path mainly reflects a less negative cyclically adjusted primary balance in 2024 and to a small extent also in 2025. The lower primary deficits are only partly compensated by increasing interest expenditures as the pass-through of past interest rate increases will be gradual, owing to long sovereign debt residual maturities, for which the euro area average is currently just below 8 years (up from 6.5 years in 2015). The fall in the cyclically adjusted primary deficit in 2024 is in turn largely driven by the scaling back of government fiscal support measures as the energy shock and high inflation fade. It is now estimated that, at the euro area level, these measures amounted to 1.3% of GDP in 2023, will decline significantly to 0.4% of GDP in 2024 and will decline further to around 0.2% of GDP in 2025 and 2026.

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[1] See "ECB staff macroeconomic projections for the euro area, March 2024", published on the ECB's website on 7 March 2024.

Chart 26

Budget balance and its components

(percentages of GDP)
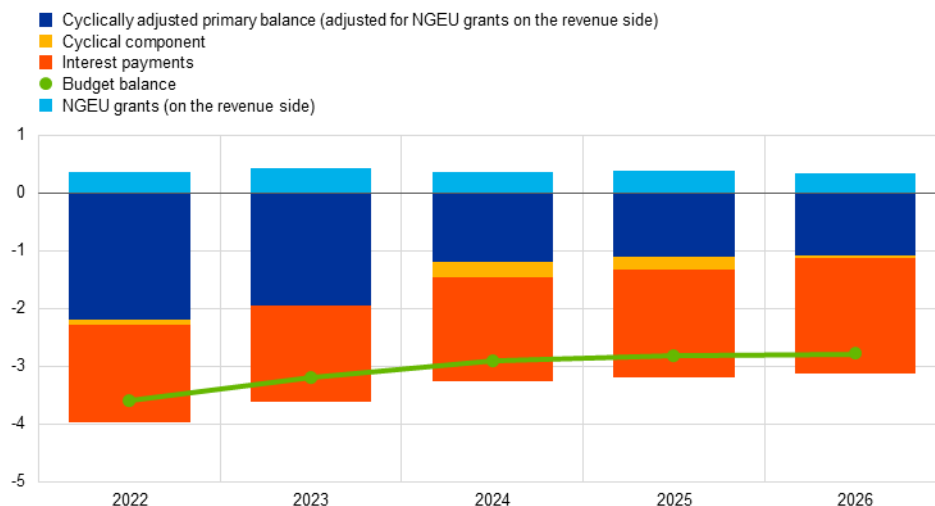
- ■ Cyclically adjusted primary balance (adjusted for NGEU grants on the revenue side)
- ■ Cyclical component
- ■ Interest payments
- ● Budget balance
- ■ NGEU grants (on the revenue side)

Source: March 2024 ECB staff macroeconomic projections for the euro area.
Note: The data refer to the aggregate general government sector of all 20 euro area countries (including Croatia).

Compared with the December 2023 Eurosystem staff macroeconomic projections, the budget balance has been revised down marginally by 0.1 percentage points per annum in 2023, 2024 and 2025 and by 0.2 percentage points in 2026. These revisions can be attributed to downward revisions of the cyclical component over the whole projection horizon (by between 0.1 and 0.2 percentage points per annum), which is partly compensated by downward revisions in interest payments due to more favourable financing conditions.

The euro area fiscal stance is projected to tighten notably in 2024 but not much afterwards.[2] The annual change in the cyclically adjusted primary balance, adjusted for grants extended to countries under the NGEU programme, points to a significant tightening of fiscal policies in the euro area in 2023 and 2024 taken together as a large share of the energy and inflation support measures introduced in 2022 are phased out. In the outer years of the forecast horizon, 2025 and 2026, the fiscal stance is expected to be neutral. Despite the ongoing unwinding of energy-related support measures, the level of fiscal support in the euro area is expected to remain largely accommodative over the whole projection horizon given that the cyclically adjusted budget balance remains well below its pre-pandemic level due to expansionary measures taken during the crisis that have to date proven to be lasting.

The ratio of euro area government debt-to-GDP is projected to remain above its pre-pandemic level and to even increase slightly over the projection

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[2] The fiscal stance reflects the direction and size of the stimulus from fiscal policies to the economy beyond the automatic reaction of public finances to the business cycle. It is measured here as the change in the cyclically adjusted primary balance ratio net of government support to the financial sector. Given that the higher budget revenues related to Next Generation EU (NGEU) grants from the EU budget do not have a contractionary impact on demand, in this context the cyclically adjusted primary balance is adjusted to exclude those revenues. For more details on the euro area fiscal stance, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

horizon from an estimated 88.3% in 2023 to 88.6% in 2026. During the pandemic, the debt ratio increased significantly to around 97% in 2020 but has gradually fallen since. However, this improving trend seems to have ground to a halt, and the debt ratio is instead expected to increase marginally over the projection horizon, driven by primary deficits and expected positive deficit-debt adjustments, which are only partly compensated by still negative interest rate-growth differentials (Chart 27).

Chart 27

Drivers of change in euro area government debt

(percentages of GDP, unless otherwise indicated)
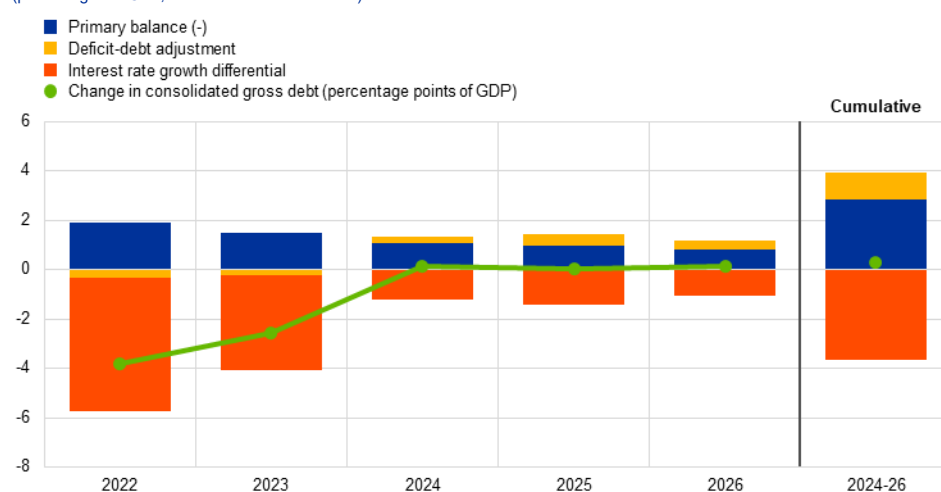
Source: March 2024 ECB staff macroeconomic projections for the euro area.
Note: The data refer to the aggregate general government sector of all 20 euro area countries (including Croatia).

It is important that governments make swift progress on both NGEU implementation and on the EU's reformed economic governance framework.
On 21 February 2024, the Commission published the mid-term evaluation of the Recovery and Resilience Facility (RRF). While the evaluation highlights some progress in implementing the NGEU programme, it also acknowledges that there have to date been delays in disbursements and investments, leading to a significantly lower positive growth impact than anticipated at the outset. Accelerating implementation of the NGEU programme to reap its full potential is now crucial. Finally, following the recent provisional political agreement between the ECOFIN Council and the European Parliament on the reform of the EU's economic governance framework, the legislative process should be concluded swiftly so that the new rules can be implemented without delay.

Boxes

1 Speculation in oil and gas prices in times of geopolitical risks

Prepared by Livia Chițu, Massimo Ferrari Minesso and Ana-Simona Manu

Large movements in oil and gas prices, coupled with higher price volatility amid the pandemic, the war in Ukraine and rising geopolitical tensions in the Middle East, have raised the question of to what extent speculation is driving oil and gas prices. Oil and gas prices have increased significantly since the pandemic came to an end, with large-scale price volatility seen during the post-pandemic recovery. More recently, renewed concerns of heightened price volatility have been triggered by the terrorist attacks in Israel and the rising tensions in the Red Sea, albeit to a lesser extent than in the post-pandemic recovery period, putting some upward pressure on Brent oil prices (Chart A, panel a).[1] Yet, at the current juncture, upside pressure on oil prices from geopolitical tensions and OPEC+ cuts is being offset by weak demand and higher non-OPEC production. Although gas prices have also reacted to recent geopolitical tensions, they have remained well below 2022 levels. Against this background, attention has again turned to trying to understand the drivers of oil and gas prices. Of particular interest is the question of whether prices mainly reflect fundamental factors (i.e. global supply and demand for oil and gas) or more non-fundamental factors related to speculative positioning. The topic has been heavily debated for more than two decades, with some observers pointing to speculation and the financialisation of commodity markets as the main drivers behind spikes in oil prices. Academic studies, however, do not generally find strong evidence of financial speculation playing an important role.[2]

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[1] For an estimate of the oil price reaction to geopolitical shocks, see the box entitled "Geopolitical risk and oil prices", *Economic Bulletin,* Issue 8, ECB, 2023.

[2] See, for example, Kilian, L., "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market", *American Economic Review*, Vol. 99, No 3, 2009, pp. 1053-1069, and Vansteenkiste, I., "What is driving oil futures prices? Fundamentals versus speculation", *Working Paper Series*, No 1371, ECB, 2011.

Chart A

Oil and gas price developments and key events

a) Oil prices

(USD/barrel)

― Crude oil, Brent

b) Gas prices

(EUR/MWh)

― Gas, Dutch TTF

Sources: LSEG and ECB staff calculations.
Notes: The Dutch TTF is the European benchmark price for natural gas. The shaded area corresponds to the zoom window. The latest observations are for 15 February 2024.

Market metrics generally point to speculation playing a limited role above and beyond hedging needs. The importance of speculation can be measured by constructing speculation indices for both oil and gas markets using the "Working T index". Using data on positions in the US futures market from the Commodity Futures Trading Commission's (CFTC) Commitments of Traders (COT) report, the index measures speculation as the amount of futures contracts held by non-commercial traders (as a proxy for speculators) in excess of what it is required to balance hedging positions held by commercial traders (which are measured by the reporting institution).[3] Values above one indicate that traders hold more contracts than needed to hedge market risk. Speculation could amplify price movements (both

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[3]   Reporting institutions define positions as speculative or hedging based on the underlying contract and the counterparty involved. It is important to note that there are several limitations on the data, such as that the CFTC classifies positions by entity (commercial versus non-commercial) and not by trading activity (speculation versus hedging). See also Vansteenkiste, I., op. cit., for similar use of CFTC data and applications of the Working T index.

raising or lowering prices) depending on the position taken by investors; the average impact of speculative activities in the sample is assessed in the second part of this box. Looking back in time, the index for oil was stable until around the end of 2002, with an average close to 1. The index then increased steadily until around 2010 – and once more in 2015 – to reach a peak of almost 1.3, but has subsided since then (Chart B, panel a).[4] Overall, the correlation between the speculation index and the oil price appears to be limited.

Gas market speculation indices have remained broadly stable in both the United States and Europe over recent years. Given that gas markets are less globally integrated than oil markets, a further distinction is made between the US market and the European market. This is based on CFTC data for the United States and information from the European Securities and Markets Authority (ESMA) for dynamics in Europe. The analysis suggests that speculation in excess of hedging is historically higher in Europe than in the United States (Chart B, panel b).[5] From a European perspective, the gas speculation index increased following the Russian invasion of Ukraine, even though it remained relatively stable when gas prices spiked again in the summer of 2022. The correlation between the speculation index and the gas price appears to be limited overall, with the series decoupling over the last few months.

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[4] It should be noted that while the speculation index increased in 2015, oil prices dropped because of a supply glut driven by a period of weak demand and a boom in supply as a consequence of high US shale production and OPEC lifting export quotas; see Baumeister, C. and Kilian, L., "Forty Years of Oil Price Fluctuations: Why the Price of Oil May Still Surprise Us", *Journal of Economic Perspectives*, Vol. 30, No 1, 2016, pp. 139-160.

[5] The ESMA time coverage is much shorter, however, as the data are reported only after 2018.

Chart B

Speculation indices in oil and gas markets

a) Oil spot price and CFTC-based oil speculation index

(left-hand scale: USD/barrel; right-hand scale: percentage)

- Oil spot price
- Speculation index (right-hand scale)
- Mean speculation index (right-hand scale)

b) Gas spot price and gas speculation indices

(left-hand scale: EUR/MWh; right-hand scale: percentage)

- Gas spot price
- Gas speculation index - CFTC (right-hand scale)
- Gas speculation index - ESMA (right-hand scale)
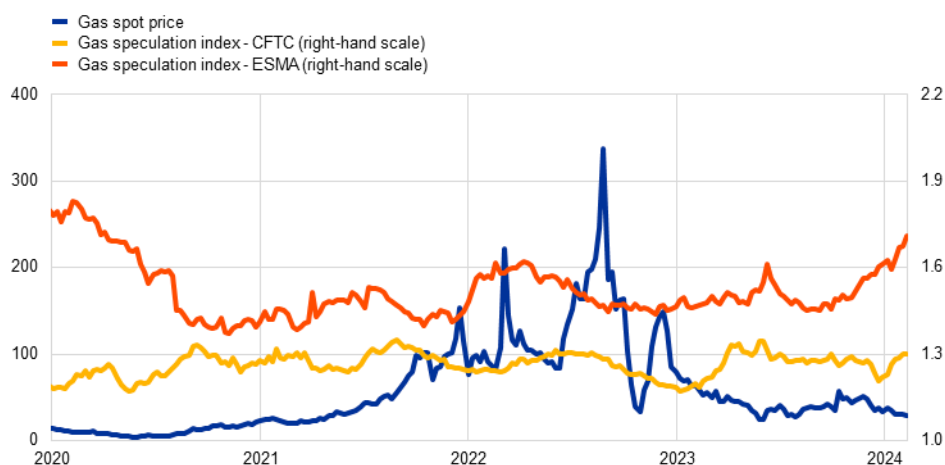
Sources: CFTC, ESMA, LSEG and ECB calculations.
Notes: Panel a): The index lower bound is unity. Larger values indicate a larger number of open non-commercial (i.e. speculative) positions than commercial (i.e. hedging) positions. To the extent that the positions taken by non-commercial firms do not offset those taken by commercial firms, the size of this imbalance is indicative of speculative positions in excess of the requirements of hedgers. The mean speculation index is calculated starting from 1995. Panel b): The CFTC-based gas speculation index is based on US data, while the ESMA-based gas speculation index captures speculation in the European gas market.
The latest observations are for 15 February 2024 for panel a) (daily data) and 9 February 2024 for panel b) (weekly data).

An empirical investigation of the link between oil prices and speculation shows that there is only limited evidence that speculation affects the transmission of fundamental demand or supply shocks to oil prices. The empirical investigation of the role of speculation on energy prices focuses on the oil market, because gas prices are more heavily influenced by regional factors.[6] The basic idea is to use a structural model to identify surprises in oil price movements (i.e. shocks to the oil price) that are not expected by market participants. This can help in assessing whether speculative positioning by investors significantly

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[6] The empirical framework used here is in a similar spirit to that set out in Altmeyer, P., Boneva, L., Kinston, R., Saha, S. and Stoja, E., "Yield curve sensitivity to investor positioning around economic shocks", *Staff Working Papers*, No 1029, Bank of England, 2023.

influences the dynamics of oil prices when shocks occur. For example, faced with a fundamental shock that causes an unexpected increase in oil prices, investors excessively exposed to oil prices might re-adjust their portfolio, amplifying the effect of the shock. At the same time, investors holding positions that would lead to gains in the event of an unexpected increase in the oil price may close their positions to capitalise those gains, thus dampening the effect of the fundamental shock. This hypothesis can be tested by regressing oil price changes on fundamental shocks, conditioning on the level of investor positioning in oil markets (Chart C, panel a).[7] Empirical estimates show limited differences in the reaction of the oil price when the level of speculation is higher.[8] For crude oil spot prices, the elasticity to a standardised oil supply shock increases from 1.6 when the level of speculative contracts is low, to about 1.8 when investor net long positions are large. These estimates are not statistically different from each other, as confidence intervals overlap greatly. Differences are even smaller when considering oil futures as, in this case, risk-averse investors holding long positions will make a profit as they have correctly anticipated higher oil prices. Unwinding such positions will dampen the effect of the fundamental shock on oil prices. Overall, speculation is found not to play a major role in amplifying the transmission of fundamental shocks to oil spot and futures prices, in line with the academic findings mentioned above.

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[7]   Specifically, oil prices are regressed on daily oil supply shocks interacted with the oil speculation index or the level of non-commercial positions. The daily oil shocks are taken from Gazzani, A., Venditti, F. and Veronese, G., "Oil price shocks in real-time", *Journal of Monetary Economics*, forthcoming.

[8]   Results remain robust to using the Working T index in the interaction with the negative supply shock.

Chart C

Reaction of oil prices to oil supply shocks, conditional on the level of speculative positioning

Estimated response of oil spot prices

(percentages)

- 25th-75th percentile
- Median

a) Standard level of geopolitical risk

b) Heightened geopolitical risk
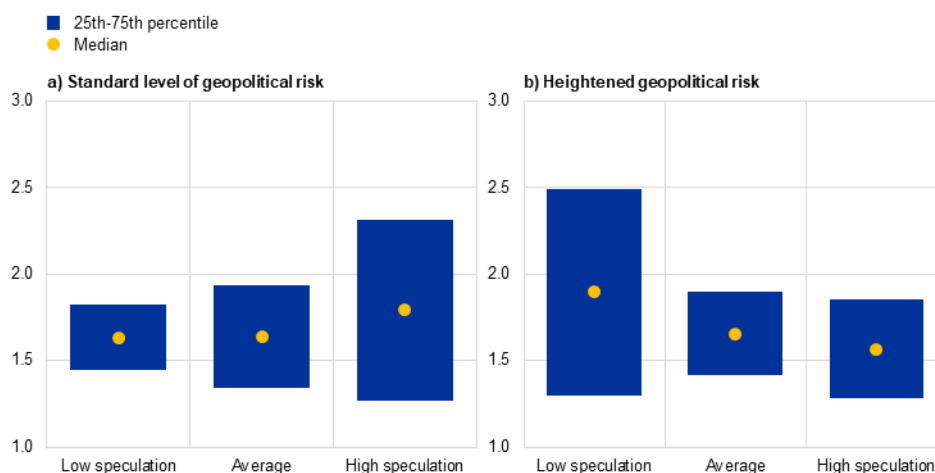
Sources: LSEG, Caldara and Iacoviello[1], Gazzani et al.[2] and ECB staff calculations.
Notes: Panel a): The chart uses structural oil shocks identified by Gazzani et al., normalised to increase oil prices on impact. More precisely, a negative supply shock increases oil prices by around 1.2% on impact and 1.8% after one week. The chart plots the percentage change in the oil price for the same shock when net open positions are at the average level in the sample (average), one standard deviation below the average (low speculation) or one standard deviation above the average (high speculation). The sample period is 2008-22; data are weekly. Panel b): The chart repeats the same analysis using only periods of high geopolitical uncertainty, measured as periods when the daily geopolitical risk index calculated by Caldara and Iacoviello is above its long-run average. The sample period is 2008-22; data are weekly.
1) Caldara, D. and Iacoviello, M., "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No 4, 2022, pp. 1194-1225.
2) Gazzani, A., Venditti, F. and Veronese, G., "Oil price shocks in real-time", *Journal of Monetary Economics*, forthcoming.

Speculation is also found not to amplify the transmission of fundamental shocks in periods of heightened geopolitical risk. Geopolitical tensions may influence oil prices through two different, opposing channels. First, greater geopolitical uncertainty acts as a negative global demand shock by raising doubts about the economic outlook with knock-on effects on consumption, investment and international trade. Via this channel, geopolitical uncertainty ultimately dampens global oil demand and oil prices. Second, geopolitical tensions may pose risks to future oil supply, increasing the cash value of holding oil contracts – also known as the convenience yield – thereby putting upward pressure on prices. These two channels push oil prices in opposite directions, and which one prevails is an empirical question.[9] To test whether speculation may become more important as an amplifier of oil price movements in the face of geopolitical tensions, the analysis above is repeated, but focusing on periods of heightened geopolitical tensions (identified as periods when the geopolitical risk index created by Caldara and Iacoviello is above the historical average). The outcome indicates that the elasticity to oil supply shocks remains broadly stable, as confidence intervals between periods of low and high speculation overlap completely (Chart C, panel b). These results suggest that speculation – as measured by the level of net investor positioning in oil markets – also has limited effect in amplifying price reactions to fundamental shocks in periods of heightened geopolitical tensions.

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9   See Caldara, D. and Iacoviello, M., "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No 4, 2022, pp. 1194-1225.

2 How geopolitics is changing trade

Prepared by Costanza Bosone, Ernest Dautović, Michael Fidora and Giovanni Stamato

Rising trade tensions and a spate of policies aiming to bring national security concerns to bear in trade relations have sparked growing concern about the potential implications of geo-economic fragmentation.[1] Since the global financial crisis, trade has been growing more slowly than GDP, ushering in an era of "slowbalisation" (Chart A, panel a).[2] This process has been attributed, among other factors, to: diminishing marginal benefits of global value chain integration, a structural shift in demand from manufacturing to services, and weakening political support for open trade. Indeed, a surge in trade restriction measures has been evident in recent years.[3] Concerns about trade resilience and national security have been heightened in the wake of Russia's invasion of Ukraine, with growing debate about the need for protectionism, near-shoring, or friend-shoring. Some recent industrial policies contain provisions that aim at providing incentives to domestic producers, especially those in technologically advanced sectors – possibly to the detriment of foreign producers. At the same time, model-based assessments illustrate that restrictions on trade in intermediate inputs between countries belonging to opposing geopolitical blocs could entail sizeable economic costs in terms of lower trade and welfare as well as higher prices.[4]

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[1] See, for example, Aiyar, S., Chen, J., Ebeke, C. H., Garcia-Saltos, R., Gudmundsson, T., Ilyina, A. and Trevino, J. P. (2023), "Geoeconomic Fragmentation and the Future of Multilateralism", *Staff Discussion Notes*, No 2023/001, International Monetary Fund, Washington, DC.

[2] See Antràs, P. (2021), "De-globalisation? Global Value Chains in the Post-COVID-19 Age", in Central *Banks in a Shifting World*: Conference Proceedings – ECB Forum.

[3] See ICC (2023), "ICC 2023 Trade Report: A fragmenting world", International Chamber of Commerce.

[4] See Attinasi, M. G., Boeckelmann, L., and Meunier, B. (2023), "The economic costs of supply chain decoupling", *Working Paper Series*, ECB, No 2023/2389.

Chart A

Evolution of world trade and geopolitical distance between selected country pairs
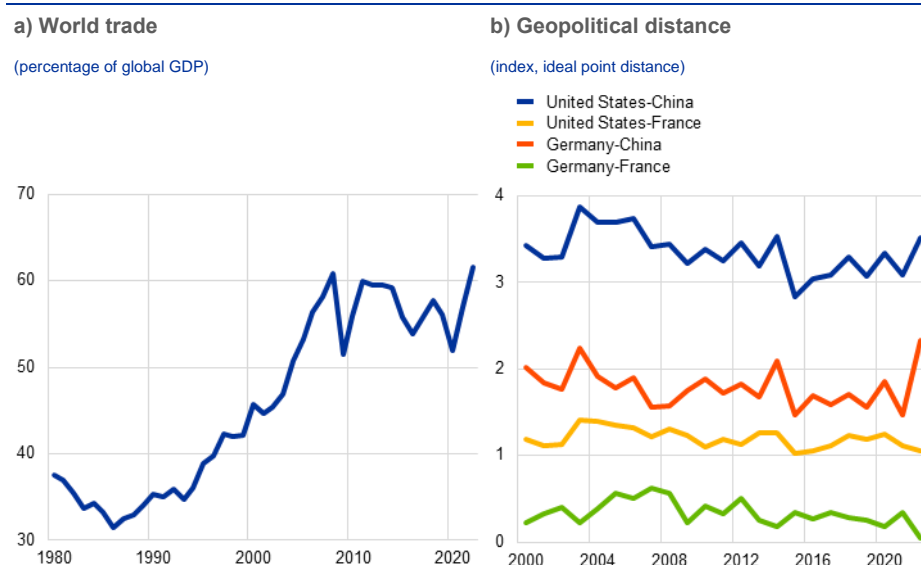
a) World trade	b) Geopolitical distance
(percentage of global GDP)	(index, ideal point distance)

United States-China
United States-France
Germany-China
Germany-France

With so far only limited available empirical evidence that geopolitical concerns are already materially affecting trade patterns, this box investigates the role played by geopolitical tensions in shaping international trade over the last decade. The analysis uses a structural gravity model to assess the effect of geopolitical distance on international trade patterns. Trade gravity models assume that the level of trade between two countries is determined by their economic mass and relative trade frictions, which can be a function of both tariff and non-tariff barriers to trade.[5] Typically, non-tariff barriers are proxied by geographical distance between countries and other features that might promote or hinder trade between countries, such as a common language or trade agreements. In addition to these non-tariff variables, which are standard in the literature, this analysis introduces a proxy for the role of geopolitics. The analysis focuses on manufacturing goods and thus excludes energy products and trade in services.

A standard gravity model of international trade is augmented to include a measure of geopolitical distance. This variable, available over time and for country pairs, measures countries' foreign policy misalignment, based on their voting patterns in the UN General Assembly. It does so by transforming the observed voting behaviours of countries into a bilateral geopolitical distance measure which reflects the average disagreement between any two countries in the UN General Assembly.[6] As an illustration, Chart A, panel b) plots the evolution over time of the geopolitical distance between four country pairs: United States-China, United States-France, Germany-China and Germany-France. This chart shows a consistently higher

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[5] See Anderson, J. and Van Wincoop, E. (2003), "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review*, Vol. 93(1), pp. 170-192.

[6] See Bailey, M.A., Strezhnev, A. and Voeten, E. (2017), "Estimating Dynamic State Preferences from United Nations Voting Data", *Journal of Conflict Resolution*, Vol. 61(2), pp. 430-456.

distance from China for both the United States and Germany, as well as a further increase in that distance over recent years.

Geopolitical distance is found to play an increasingly important role in determining global trade flows (Chart B, panel a). The estimated elasticity of trade to geopolitical distance turns negative and significant from 2018 onwards, broadly at the time that trade disputes between the United States and China intensified.[7] The impact of geopolitical distance is economically significant: as an example, a 10% increase in geopolitical distance is found to decrease bilateral trade flows by about 2%, or about a tenth of the trade effect that can be attributed to a free trade agreement. The results are not exclusively driven by US trade patterns, as the estimates remain significant when excluding the United States from the sample (Chart B, panel b).

Chart B

Time-varying effect of geopolitical distance on bilateral trade flows

a) Effect on bilateral trade

b) Effect on bilateral trade excluding the United States

(elasticities of trade to geopolitical distance, percentages)

(elasticities of trade to geopolitical distance, percentages)
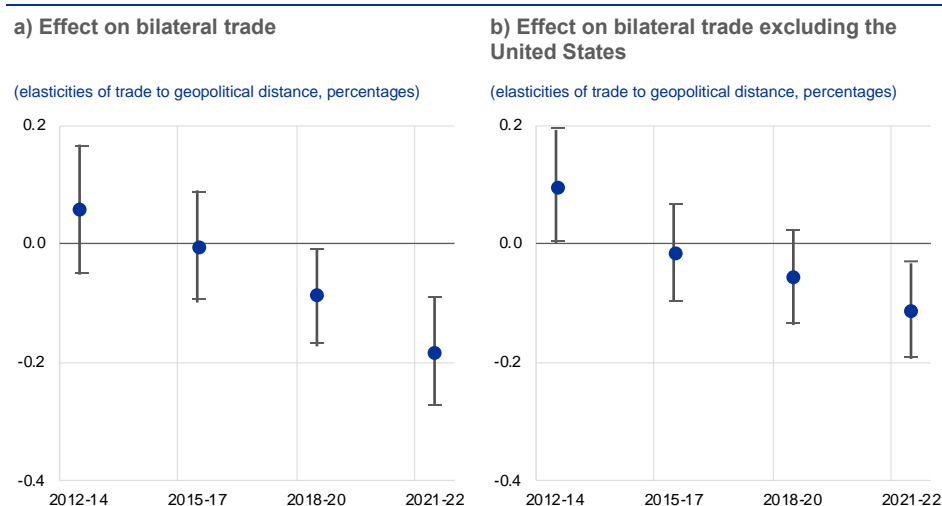
Sources: Trade Data Monitor (TDM), IMF, Bailey et al. (2017), World Integrated Trade Solution (WITS), Eurostat and ECB calculations.
Notes: Dots represent the coefficient of geopolitical distance interacted with a time dummy, using three-year averages of data, and based on a gravity model estimated for 67 countries from 2012 to 2022. Geopolitical distance is measured by the logarithm of the ideal point distance proposed by Bailey et al. (2017). The whiskers represent 95% confidence bands. The dependent variable is nominal trade in manufacturing goods, excluding energy. Estimation is performed using the Poisson pseudo-maximum likelihood (PPML) estimator. The estimation accounts for bilateral time-varying controls, exporter/importer-year fixed effects and pair fixed effects. Standard errors are clustered by country pair and year. Estimations in panel b) are based on a sample of 66 countries, since the United States is excluded.

Geopolitics appears to have a heterogeneous impact on trade patterns. To understand the heterogeneity in the impact of geopolitics, bilateral trade flows are regressed on a set of four dummy variables that identify the four quartiles of the distribution of geopolitical distance across country pairs. In addition, to capture the effect of growing geopolitical tensions over time, each quartile dummy is interacted with a time dummy that equals one in the post-2017 period. Geopolitics has boosted trade among "friends" (i.e. the first quartile) in the post-2017 period. By contrast, it has hampered trade among "rivals" (i.e. fourth quartile; Chart C, panel a). Trade

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[7]   These results are robust to all global shocks, such as the COVID-19 pandemic, due to the inclusion of time-varying border effects in trade costs, which controls for all global unobservable factors affecting international trade as compared with domestic trade (see Beverelli, C., Keck, A., Larch, M., and Yotov, Y. V. (2023), "Institutions, trade, and development: identifying the impact of country-specific characteristics on international trade", *Oxford Economic Papers*).

between "rivals" is about 4% lower than it would have been if geopolitical tensions had not increased after 2017, while trade between "friends" is around 6% higher. Overall, while geopolitics reduces trade between geopolitically distant countries it may also strengthen trade links between geopolitically aligned countries.

Chart C

Effect of geopolitical distance on country groups and on EU imports

a) Effect on country groups since 2017

(semi-elasticity of trade to country group)

b) Effect on EU imports

(elasticity of trade to geopolitical distance)
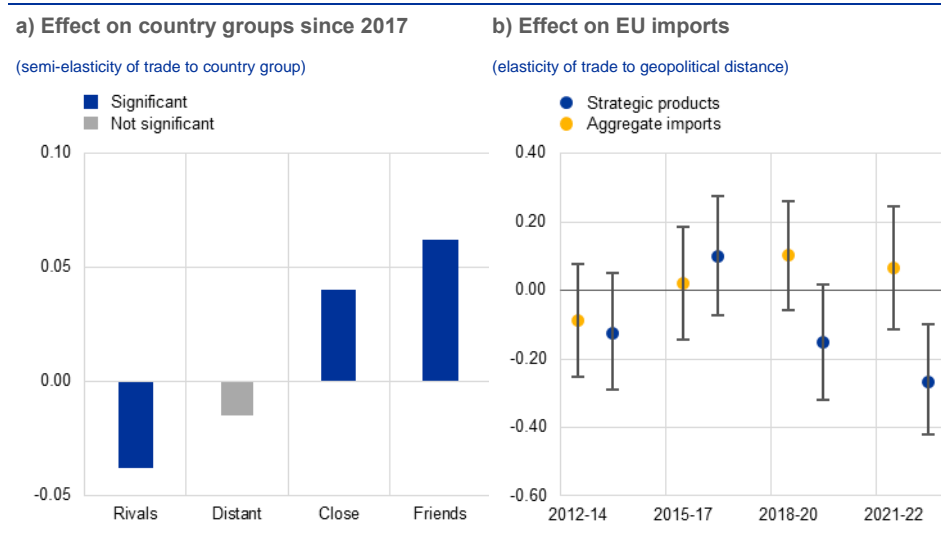
Sources: TDM, IMF, Bailey et al. (2017), Egger and Larch (2008), WITS, Eurostat, European Commission and ECB calculations.
Notes: Results based on a structural gravity model, estimated for 67 countries for the period 2012-22 using annual data. Please refer to Chart B for details on the estimation. Panel a): the effects on each group are identified based on a dummy for quartiles of the distribution of geopolitical distance across country pairs. The dummy becomes 1 in the case of trade between country pairs belonging to the same quartile since 2017. A semi-elasticity β corresponds to a percentage change of 100*(exp(β)-1). Panel b): dots represent the coefficient of geopolitical distance interacted with a time dummy and with a dummy for EU imports, using three-year averages of data. Yellow dots refer to estimates based on bilateral trade as the dependent variable. Blue dots refer to estimates based on bilateral trade in strategic products, defined by the European Commission. The lines represent 95% confidence bands.

There is limited evidence of significant near-shoring or friend-shoring trends in EU aggregate imports. Within the same gravity model, the impact of time-varying effects of geopolitical distance for the EU is isolated by interacting geopolitical distance with a dummy for EU imports. The estimation controls for effects relative to the impact of EU trade integration across countries. It is found that EU imports of manufacturing goods are not significantly affected by geopolitics (Chart C, panel b). This result is robust to alternative specifications and may reflect the EU's high degree of global supply chain integration, the fact that production structures are highly inflexible to changes in prices, at least in the short-term, and that such rigidities increase when countries are deeply integrated into global supply chains.[8]

Nonetheless, there is evidence of de-risking in the EU in strategic sectors. Strategic goods (military equipment, raw materials, battery packs, high-tech and medical goods, etc.) represent around 9% of total extra-EU imports and are particularly relevant for areas such as security, public health, and the green and digital transition. When trade in strategic products, as defined by the European Commission, is used as the dependent variable, geopolitical distance is found to significantly reduce EU imports (Chart C, panel b). The empirical evidence suggests

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8   See for example Bayoumi, T., Barkema, J. and Cerdeiro, D. (2019), "The Inflexible Structure of Global Supply Chains", *IMF Working Papers*, No 2019/193. International Monetary Fund.

that the EU is selectively decoupling by reducing its dependency on geopolitically distant suppliers in strategic sectors.

The reorientation of euro area exports toward geopolitically aligned countries has been accelerated by Russia's invasion of Ukraine. An event analysis suggests that Russia's invasion of Ukraine has resulted in a reduction of euro area exports to Russia by more than half (Chart D). At the same time, trade flows to Russia's neighbours have picked up, possibly due to a re-ordering of supply chains. Euro area trade with geopolitically aligned countries is estimated to have been about 13% higher following the war compared with the counterfactual scenario of no war, mostly driven by the increase in trade with the United States. At the same time, there is moderate evidence of near-shoring, as the level of intra-euro area trade is estimated to have risen by around 4% in response to Russia's invasion of Ukraine relative to the counterfactual scenario. Yet there are no signs of trade reorientation away from China, possibly reflecting China's market power in a number of key industries. However, when China is dropped from the group of geopolitically distant countries, the impact of Russia's invasion of Ukraine on euro area exports becomes strongly significant and negative.

Chart D

Effect of Russia's invasion of Ukraine on euro area exports

(semi-elasticity)
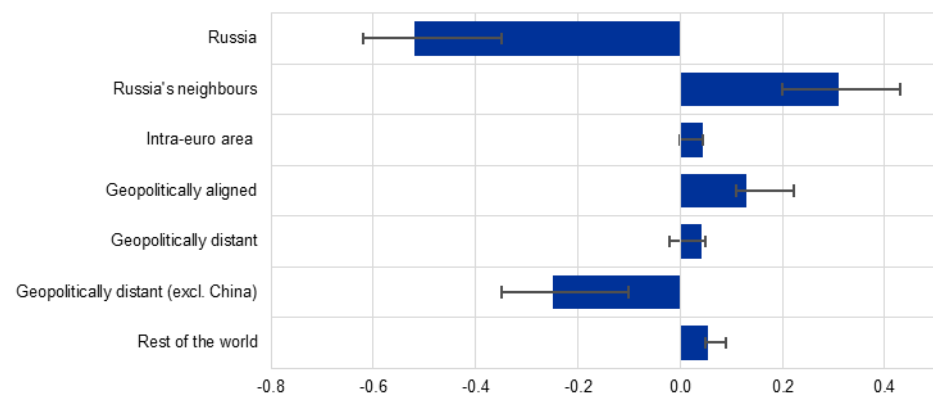
Sources: TDM, IMF, UN, Eurostat and ECB calculations.
Notes: Estimated coefficients of a gravity model, quarterly data for 2012-22. The sample includes 67 exporters and 118 importers. Effects on the level of euro area exports are identified by a dummy variable for dates after Russia's invasion of Ukraine. Trading partners are Russia; Russia's neighbours Armenia, Kazakhstan, the Kyrgyz Republic and Georgia; geopolitical friends, distant and neutral countries are respectively those countries that voted against or in favour of Russia or abstained at both fundamental UN resolutions, 7 April and 11 October 2022. Intra-euro area trade is also included. Estimation performed using Poisson pseudo-maximum likelihood (PPML). The estimation accounts for bilateral time-varying controls, exporter/importer-time fixed effects and exporter-importer fixed effects. Standard errors are clustered by country pair and time. The bars represent average effects for significant coefficients. The whiskers represent minimum and maximum coefficients estimated across several robustness checks.

3 How have households adjusted their spending and saving behaviour to cope with high inflation?

Prepared by Alina-Gabriela Bobasu, Evangelos Charalampakis and Omiros Kouvavas

Households have faced several shocks over the last few years and have adjusted their behaviour through different margins. The episode of high inflation over the past couple of years was triggered by a combination of factors, including supply bottlenecks caused by the pandemic and the surge in energy prices following Russia's invasion of Ukraine. The inflationary shock affected consumers' behaviour and weighed on their spending. In general, consumers employ different strategies to cope with higher prices – by adjusting their consumption, reducing their savings and/or increasing their income. This box uses evidence from the ECB's Consumer Expectations Survey (CES) to investigate how households have reacted to the recent inflationary episode through these margins of adjustment.

Evidence from the CES indicates that the primary strategy used by consumers to cope with inflation is to adjust their consumption (Chart A).[1] CES participants were asked which actions they had taken in the past 12 months to cope with inflation. Apart from reducing their consumption, these included borrowing, tapping into their savings, working more hours, taking on an additional job or asking for a pay rise. In January 2024 most CES respondents (69%) had modified their consumption, but adjustments made through the saving/credit (43%) and income (31%) channels were also noteworthy.[2] The predominant response to elevated prices was to shop around (50%), followed by trading down to lower quality product varieties (33%) and reducing the quantities purchased (28%).[3] 35% of respondents reported having reduced their savings to support consumption while, in terms of income, around 15% reported having negotiated a pay rise and 17% reported working more hours or taking on an additional job. Households facing budget constraints – defined as those with a high share of spending on necessities relative to their income – were more likely to adjust their shopping and saving patterns compared with households with unconstrained budgets (Chart A).[4] The percentages

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[1]   It is well documented that consumers adjust their consumption behaviour in response to large shocks. See, for example, the boxes entitled "Consumption patterns and inflation measurement issues during the COVID-19 pandemic", *Economic Bulletin*, Issue 7, ECB, 2020, "Inflation measurement in times of economic distress", *Economic Bulletin*, Issue 3, ECB, 2020, and "2021 HICP weights and their implications for the measurement of inflation", *Economic Bulletin*, Issue 2, ECB, 2021. Adjustments in consumption behaviour can involve changing overall consumption or changing its composition by (i) switching away from a given product and/or brand category, (ii) searching for better prices and promotions, and/or (iii) trading down to different product varieties.

[2]   The percentages refer to an average figure given that responses are split into households facing budget constraints – defined as those with a high share of spending on necessities relative to their income – and those not facing such constraints.

[3]   Google searches corroborate this evidence, suggesting that since mid-2022 consumers have been actively exploring more budget-friendly retailer options and displaying a greater interest in promotions, especially for food (for example, "food promotions", "menus with prices", "discounts on food").

[4]   Different households also have different strategies for adjusting to inflationary shocks, depending on their consumption basket, income and balance sheet characteristics. For a recent analysis of the implications of the energy price shock in heterogenous agent models, see Auclert, A., Monnery, H., Rognlie, M. and Straub, L., "Managing an Energy Shock: Fiscal and Monetary Policy", *mimeo*, 2023.

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were similar across the two groups for income adjustment measures.[5] The consumers' responses showed increases across all margins compared with the last time the question was asked (August 2023). Consumption options showed the largest increase (9 percentage points) followed by saving (7 percentage points) and income strategies (7 percentage points).

Chart A

Consumers' responses across all margins in the CES

Responses in January 2024 (for the previous 12 months)

(percentages)
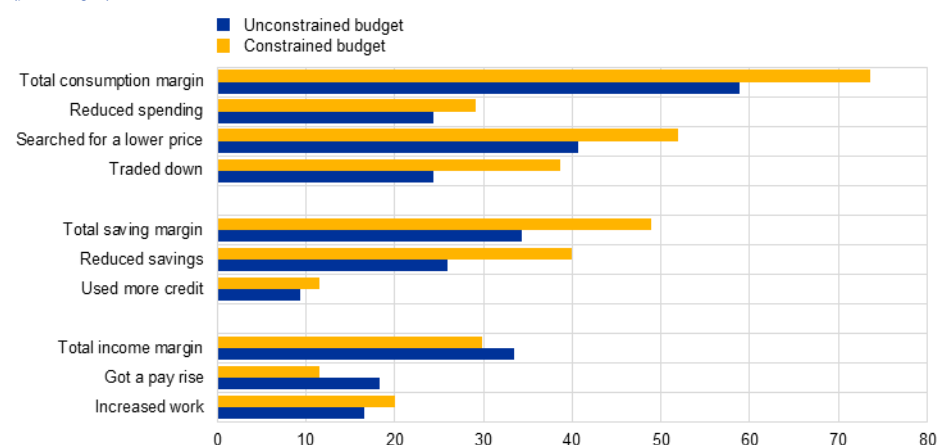
Sources: CES and ECB calculations.
Notes: The question in the CES reads as follows: "Please think about your expectations for changes in prices in general over the past 12 months. Which of the following actions, if any, have you taken, over the past 12 months because of these price changes? Please select all options that apply. 1. Brought forward major purchases of durable goods. 2. Reduced usual spending and put aside more money. 3. Shopped around more actively to find the best price for the same exact product or service. 4. Substituted goods and services with cheaper alternatives. 5. Saved less than usual or liquidated (some or all) savings to finance spending. 6 Used more credit than usual to finance spending (e.g. increased balance on credit cards or other consumer loans). 7. Got a pay rise from your current employer or found a higher paying job. 8. Increased your income in other ways (e.g. took on a second job, worked more hours with current employer). 9. None of the above."

The composition of the household expenditure basket showed bigger adjustments for categories that had experienced a larger relative price change. Chart B, panel a) shows the composition of the consumption basket for 2023 compared with 2021. Categories with larger relative price increases have seen more significant adjustments in their share of total spending over the past two years. This is in line with the literature indicating that households substitute away from products that are becoming relatively more expensive.[6] Notably, the consumption of items such as food and equipment has experienced a substantial downward adjustment in response to the larger price increases. This quantitative evidence is in line with the qualitative responses in Chart A. Nevertheless, additional shocks have also affected the consumption behaviour of households. The sustained expansion of leisure services, such as restaurants, and recreation and travel (Chart B, panel b), was driven by a shift in preferences following the lifting of social restrictions in the

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[5]   A possible explanation for the similar percentages in the two groups is that causality is reversed and therefore households that manage to increase their income become unconstrained – as in this case income is the conditioning factor in determining the groups and the margin of adjustment.

[6]   See Argente, D. and Lee, M., "Cost of living inequality during the Great Recession", *Journal of the European Economic Association*, Vol. 19, No 2, 2021, pp. 913-952, and "Grocery prices in the euro area: findings from the analysis of a disaggregated price dataset", *Economic Bulletin*, Issue 1, ECB, 2015.

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aftermath of the pandemic. This led the share of these categories in total spending to increase from 7.4% in 2021 to 12.9% in 2023. Additionally, the share of transport (including vehicle purchases) started to decrease at the beginning of 2022, as a result of supply constraints on semiconductors, but rebounded to some extent in 2023.

Chart B

Consumption basket adjustment and decomposition of consumption by spending category

a) Relative changes in spending (2023 vs 2021)

(share of total spending, percentages)
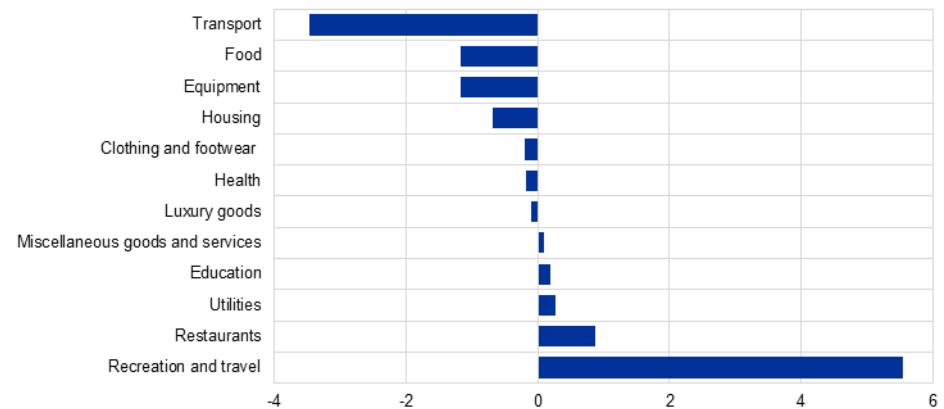
b) Nominal consumption

(annual percentage changes and percentage point contributions)
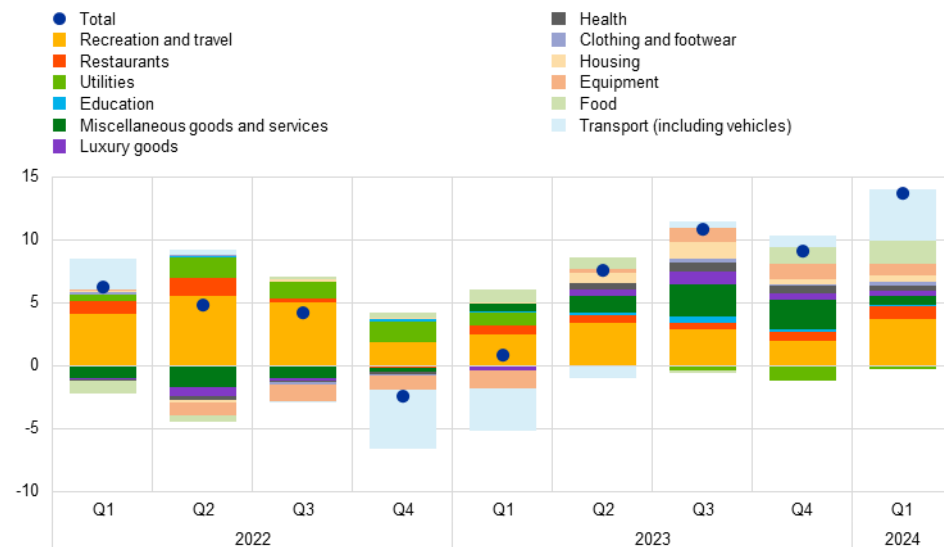
Sources: CES and ECB calculations.
Notes: Panel a) shows the relative changes in spending for each spending category (transport, food, equipment, housing, clothing and footwear, health, luxury goods, miscellaneous goods and services, education, utilities, restaurants, and recreation and travel) for 2023. The sample comprises the EA-11 countries: Belgium, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal and Finland. In panel b), the decomposition is based on nominal values with the annual growth rates rescaled based on the share of each item in total nominal consumption spending. The latest observations are for 2023 in panel a) and for the first quarter of 2024 in panel b).

Turning to the saving margin, evidence indicates a drop in the saving rate in the past two years. By combining the information contained in the CES on consumption and income, household-level saving rates and quarterly aggregates

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can both be computed in a timely manner. The movements in the aggregate saving rate (as a share of net income) of the CES closely mirror those observed in the (non-seasonally adjusted) aggregate saving rate of the Eurostat quarterly sector accounts (QSA) (Chart C, panel a). In 2022 and 2023 there is a decline in the CES saving rate which is slightly more pronounced than the decline shown by the QSA indicator. Nevertheless, the Eurostat saving rate moved closer to its long-term average in the third quarter of 2023.

A decomposition of the saving rate shows that the drop was mainly driven by increased spending on recreation and travel, rather than on necessities. CES microdata allow a detailed breakdown to be made of the change in the saving rate over the last two years, considering income and consumption categories across different income groups. The recent drop in the saving rate can largely be attributed to an increased preference among households for spending on recreation and travel following the pandemic, driven predominantly by households in higher-income groups (Chart C, panel b). Increased spending on durable goods, driven largely by lower-income households, following the normalisation of production bottlenecks, also contributed to the drop in the saving rate in 2023, albeit to a lesser extent. By contrast, spending on essential items, including housing, food and energy, had a relatively modest downward impact on households' savings in 2022 and 2023, despite the substantial price increases. This outcome reflects a reduction in both the quantity and quality of purchases of these necessities, in line with the changes in households' spending behaviour.

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Chart C

Euro area saving rate

a) Household saving rate

(percentage of income)

- CES saving rate
- Eurostat saving rate
- Eurostat long-term average saving rate (1999-2019)
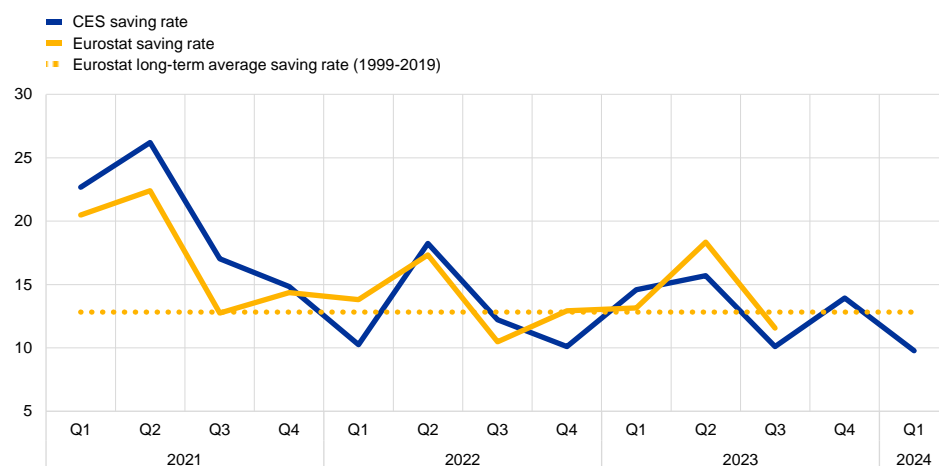
b) Decomposition of the saving rate by income quintile and type of consumption in the CES (2023 vs 2022)

(percentage point change)

- Income
- Necessities
- Recreation and travel
- Durables
- Other
- Change in the saving rate
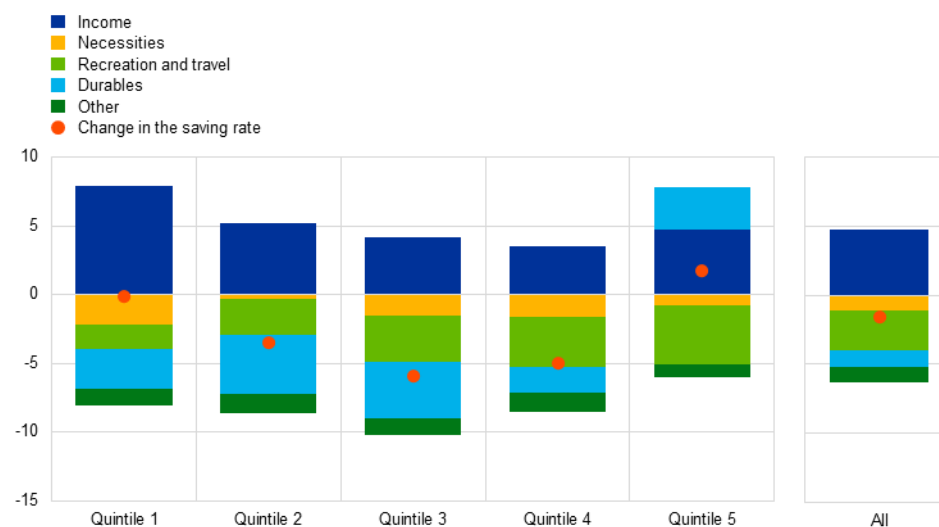
Sources: CES, Eurostat and ECB calculations.
Notes: In panel a), the CES saving rate is defined as the ratio of savings to household net income; savings are computed as household net income minus consumption. The Eurostat saving rate is computed as the ratio of gross savings to households' gross disposable income. The dotted line refers to the long-term average over 1999-2019. All series are non-seasonally adjusted. In panel b), the chart shows the decomposition of the saving rate by income quintile in 2023 on the left and the decomposition of the aggregate saving rate for 2023 on the right. For CES data, the sample comprises the EA-11 countries: Belgium, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal and Finland. The latest observations are for the first quarter of 2024 for the CES and for the third quarter of 2023 for the Eurostat QSA in panel a), and for 2023 in panel b).

With regard to the income margin, more than half of the respondents reported nominal income increases lower than inflation in 2023. Qualitative evidence from the CES indicates that most consumers (54%) reported their income rising slower than inflation, while 21% said that their income had risen faster than inflation and 25% reported that their income had fallen.[7] Based on the quantitative evidence from

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[7]   See the box entitled "A primer on measuring household income", *Economic Bulletin*, Issue 8, ECB, 2023.

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the decomposition of the saving rate, the increased contribution of income in 2023 largely counterbalances the increase in spending (Chart C, panel b). Nevertheless, adjustments to income are usually last to occur, as they are under the direct control of households to a lesser extent. With regard to distributional aspects, the largest income gains were reported by consumers in the lower-income quintiles, in line with increases in the minimum wage in euro area countries over the past two years.[8]

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[8] See also the box entitled "Minimum wages and their role for euro area wage growth", *Economic Bulletin*, Issue 3, ECB, 2022.

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4 What were the drivers of euro area food price inflation over the last two years?

Prepared by Friderike Kuik, Eliza Magdalena Lis, Joan Paredes and Ieva Rubene

Food price inflation was one of the main contributors to the strong rise in euro area headline inflation in 2022 and, once food inflation started to decline, also to the disinflation thereafter. Food inflation increased to a historical peak of around 15% in March 2023, surpassed only by the earlier surge in energy inflation (Chart A). Since then, food inflation has declined, falling to 5.7% in January 2024, but is still above its pre-pandemic long-term average of 2.1%.[1] Food accounts for around 20% of expenditure in the overall Harmonised Index of Consumer Prices (HICP) basket and largely represents consumption "necessities". This means that the surge in HICP food inflation had implications for household purchasing power, affecting those with lower incomes in particular. This box examines the main factors behind recent food price developments.

Chart A

Developments in euro area consumer food prices
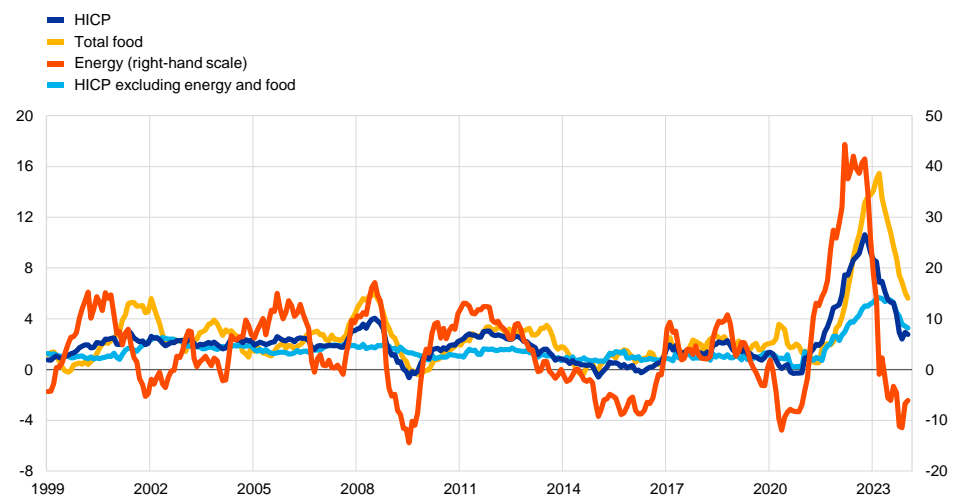
(annual percentage changes)

Sources: Eurostat and ECB calculations.
Note: The latest observations are for January 2024.

The strong rise in consumer food inflation from mid-2021 until early 2023 was observed for both main components: processed and unprocessed food. Processed food products make up the largest share of consumer expenditure on food (75%), with unprocessed food accounting for the rest. Input-output tables from

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[1] Previous peaks in annual food price inflation reflected health concerns associated with animal diseases (5.6% in early 2002) and a rise in global food commodity and fertiliser prices (6.1% in 2008). For a review of food price developments during the COVID-19 pandemic, see the box entitled "Recent developments in euro area food prices", *Economic Bulletin*, Issue 5, ECB, 2020, and the box entitled "The surge in euro area food inflation and the impact of the Russia-Ukraine war", *Economic Bulletin*, Issue 4, ECB, 2022.

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Eurostat suggest that the cost structures for the processed and unprocessed food sectors are fairly similar, but there are some important differences. For processed food production, direct energy inputs account for around 2% of non-labour inputs, whereas for unprocessed food they account for around 7%. At the same time, gas and electricity (as opposed to oil) make up a larger share of energy inputs for processed food (around 80%) than for unprocessed food (around 50%). In addition, fertiliser inputs for unprocessed food production are almost as important as energy inputs. Furthermore, prices of unprocessed food are usually more strongly influenced by seasonal factors, including adverse weather conditions. Finally, for both components, intermediate food inputs comprise a large share of non-labour input costs (around 40% for unprocessed food and 50% for processed food), which means that food price developments can have important intra-sector spillover effects.

An extraordinary surge in energy costs was the main factor behind the increase in consumer food inflation in 2021 and 2022. In the course of 2021 oil prices picked up strongly as the global economy started to recover from the effects of the coronavirus (COVID-19) pandemic while oil supply was constrained. In addition, in the summer of 2021 European gas wholesale prices rose sharply, reflecting a combination of supply and demand factors. These developments were aggravated in early 2022 by the Russian invasion of Ukraine.[2] The surge in energy commodity prices led to a subsequent strong increase in energy producer prices and in fertiliser prices, which are closely linked to the gas price (Chart B). The extent of this increase in energy producer prices was exceptionally large from a historical perspective. The rise was especially strong for gas and electricity, with gas wholesale prices peaking in September 2022 at 440% above their December 2020 level. According to the Eurostat input-output tables for 2019, energy costs are estimated to account for around 3% of the total non-labour input costs of the food sector. While this share may seem small, the sheer size of the energy price shock implied sizeable increases in overall costs of production. At their peak, producer prices for energy (which mainly comprises electricity, gas and air conditioning) rose by almost 280% compared to the level in December 2020. Such an increase would imply an increase in total food sector non-labour input costs of around 9% (just for this specific input cost shock).

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[2] For a more detailed analysis of energy price developments in 2021-22, see the article entitled "Energy price developments in and out of the COVID-19 pandemic – from commodity prices to consumer prices", *Economic Bulletin*, Issue 4, ECB, 2022.

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Chart B

Developments in the main input costs for consumer food prices

(index: January 2021 = 100)

- Producer price index for energy excluding gas
- Producer price index for gas
- Producer price index for fertilisers
- Euro area farm gate prices
- Global food commodity prices
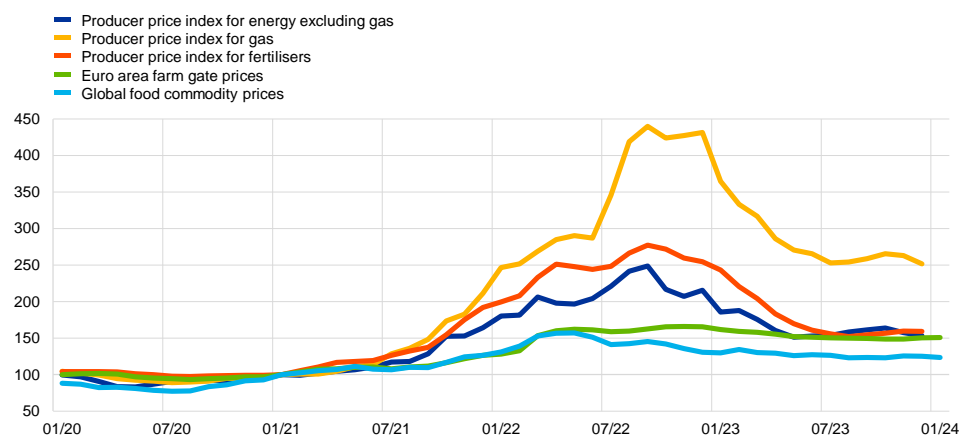
Sources: Eurostat, Hamburg Institute of International Economics (HWWI), ECB and ECB calculations.
Notes: Producer price indices refer to the euro area; global food commodity prices are in euro. The latest observations are for December 2023 for the producer price indices, and January 2024 for euro area farm gate prices and global food commodities.

Increases in global food commodity prices and in euro area farm gate prices also contributed significantly, partly reflecting the indirect effects of higher global energy prices, but also other factors.[3] After falling to low levels during the initial phase of the pandemic, prices for global food commodities, in particular maize, wheat and soybeans, began to recover in the second half of 2020 and continued to increase sharply in the course of 2021. This increase reflected a rebound in demand for feed in China, supply shortages driven partly by weather conditions in South America, and rising energy costs.[4] Wheat prices surged, particularly after the outbreak of Russia's war against Ukraine, which caused global concerns about the grain supply from these two countries. Consequently, and reflecting developments in global food commodities as well as higher energy and fertiliser costs, euro area farm gate prices rose strongly. The increase was strongest for cereals, predominantly reflecting wheat prices, followed by higher prices for meat and dairy, as maize is an important feed for farm animals. These increases in euro area farm gate prices contributed to the rise in producer prices for the food industry, which was already facing higher direct energy costs of production. As energy and global food commodity prices started to ease in the middle of 2022, input price pressures softened. However, euro area farm gate prices remained elevated, which in part may have reflected persistently higher meat prices but also other domestic factors.[5] Additional upward pressure on global food commodity prices and euro area farm gate prices came from unfavourable global and local weather events, the frequency of which is gradually rising owing to climate change. Part of this upward pressure

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[3] The main difference between global food commodities and euro area farm gate prices is that the former are traded in global financial markets whereas the latter are prices paid to farmers in the euro area at the "farm gate" (i.e. as products leave the farm). Farm gate prices are reported to the European Commission's Directorate-General for Agriculture and Rural Development by EU Member States and aggregated for the euro area by the ECB.

[4] See "Commodity Markets Outlook: Urbanization and Commodity Demand", World Bank Group, Washington, DC, October 2021. Licence: Creative Commons Attribution CC BY 3.0 IGO.

[5] Prices for pigmeat and for beef and veal have remained elevated owing to declining domestic supply.

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was subsequently passed on to consumer prices.[6] Overall, while the increase in consumer food prices was broad-based across various items, it was strongest for those more closely linked to food commodity inputs and with high energy use.

The important role of energy costs and, to a lesser extent, food commodities is corroborated by model results (Chart C). According to a Bayesian vector autoregression (BVAR) model, the deviation of food inflation from its longer-term average over the last two years was significantly driven by higher energy costs. Global food commodity prices (in euro) and euro area farm gate prices were also important drivers.[7] The impact of euro area farm gate prices shown in the model is what remains after the impact of energy producer prices has been accounted for. Similarly, the impact of euro area food sector producer prices shows the contribution from this sector to consumer prices after the impacts of energy, global food commodity and farm gate prices are accounted for. This means that the contribution from food sector producer prices shown in Chart C reflects factors stemming from the manufacturing leg of consumer food prices that are not related to energy and food input prices. Overall, taking this contribution together with the remaining unexplained contribution of the model, a significant part of the surge in food inflation remains unexplained.[8] This may reflect features that are not explicitly modelled owing to a scarcity of suitable data, for example for domestic factors such as wages and profits. These factors are relevant for both the manufacturing leg and the distribution and retailing leg of consumer food prices. The model may also fail to capture any non-linear impacts on food prices of the surge in energy costs.

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[6] The effect of extreme weather may partially materialise through food commodity prices, especially if it is related to events outside of Europe. For example, there is evidence that the 2023-24 El Niño (a naturally occurring climate phenomenon which can result in extreme weather) is affecting global food commodity prices (see the box entitled "Risks to global food commodity prices from El Niño", *Economic Bulletin*, Issue 6, ECB, 2023). However, extreme weather in Europe can also have direct impacts on consumer food prices, especially for products without a global market. This could concern, for example, prices of fresh fruit or vegetables. For example, extreme heat across Europe in the summer of 2022 is estimated to have added around 0.8 percentage points to euro area consumer food prices after one year (see Kuik, F., Modery, W., Nickel, C. and Parker, M., "The price of inaction: what a hotter climate means for monetary policy", *The ECB Blog*, 12 December 2023). For more evidence, see also the box entitled "Main findings from the ECB's recent contacts with non-financial companies", *Economic Bulletin*, Issue 1, ECB, 2024.

[7] The contribution from global food commodity prices may, however, also partly reflect higher global energy prices. In addition, since for the model analysis global food commodities are denominated in euro, the contribution according to the model may also reflect the impact of exchange rate fluctuations.

[8] Even after accounting for a higher number of identified shocks (including energy and food commodity prices), a recent paper also finds that a large part of the surge in food inflation remains unexplained (see Bańbura, M., Bobeica, E. and Hernández, C.M., "What drives core inflation? The role of supply shocks", *Working Paper Series*, No 2875, ECB, November 2023).

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Chart C

A model-based view of the drivers of euro area consumer food prices

(percentage point contributions to deviations from the long-term average)

- Euro area producer prices for energy
- Global food commodity prices
- Euro area farm gate prices
- Euro area producer prices for the food industry
- Unexplained
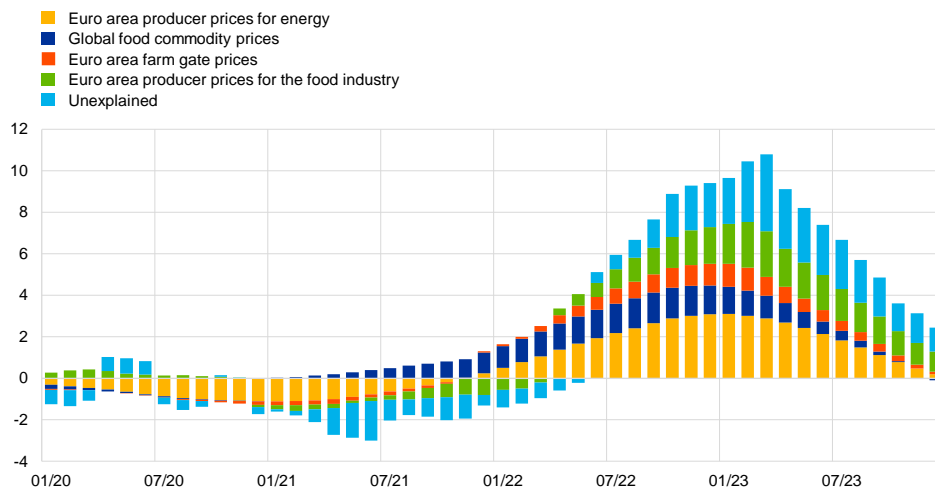
Source: ECB calculations.
Notes: The chart shows a BVAR-based decomposition of the drivers behind the deviation in euro area food inflation from its long-term average (and initial condition) using the ECB's BEAR toolbox. Energy costs are proxied by the euro area producer price index for the energy sector. Global food commodity prices (in euro) are from HWWI; euro area farm gate prices are from the ECB, based on European Commission data. Identification of the drivers follows the Choleski decomposition as in Ferrucci, G., Jiménez-Rodríguez, R. and Onorante, L., "Food Price Pass-Through in the Euro Area: Non-Linearities and the Role of the Common Agricultural Policy", *International Journal of Central Banking*, Vol. 8, March 2012, pp. 179-218, which imposes the following order of innovations: global food commodity prices, euro area producer prices for energy, euro area farm gate prices, producer prices in the food sector, consumer prices. This ordering is consistent with the pricing chain assumption. Estimation sample from December 1996 to December 2023.

Domestic factors – such as wage and profit developments – have gradually emerged as increasingly important factors behind the rise in consumer food prices. The model-based decomposition suggests that energy and food-related input prices cannot fully explain the surge in and subsequent high levels of consumer food inflation from around the second half of 2022 onwards (see "unexplained" in Chart C). As discussed above, one likely explanation is the contribution of domestic factors. For example, to compensate for workers' real income losses, wages in the agricultural and food manufacturing sectors rose by 6.2% and 3.5% respectively year-on-year in 2022 and further by slightly above 5% in both sectors in the first three quarters of 2023 (Chart D).[9] Similarly, wages in the transportation and storage sector, which is an important leg of the food retail chain, increased by 4.3% in 2022 and 6.3% in the first three quarters of 2023. This means that wage growth in these sectors, partly reflecting increases in minimum wages, was somewhat above wage growth for the total economy.[10] While national accounts data show that unit profits in the agricultural sector rose strongly, profit data for the food manufacturing and food retail sectors are scarce. Even though volumes sold (measured by the retail sales deflated turnover index for food and beverages) declined somewhat over the period of high inflation, at the end of 2023 they stood only 1% below the level in 2019, but

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[9] This compares to an average annual increase in wages and salaries for the agriculture and food manufacturing sectors of 1.6% and 1.9% respectively between 2009 and 2019. Calculations are based on Eurostat data.

[10] In 2022 and in particular in 2023 minimum wages in many euro area countries increased and contributed to the overall wage growth. See the Box entitled "Minimum wages and their role for euro area wage growth", *Economic Bulletin*, Issue 3, ECB, 2022.

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the price level was on average 26% higher than in 2019. This could suggest a sluggish demand reaction to price changes in the food sector.

Chart D

Developments in wages for selected sectors relevant for consumer food prices
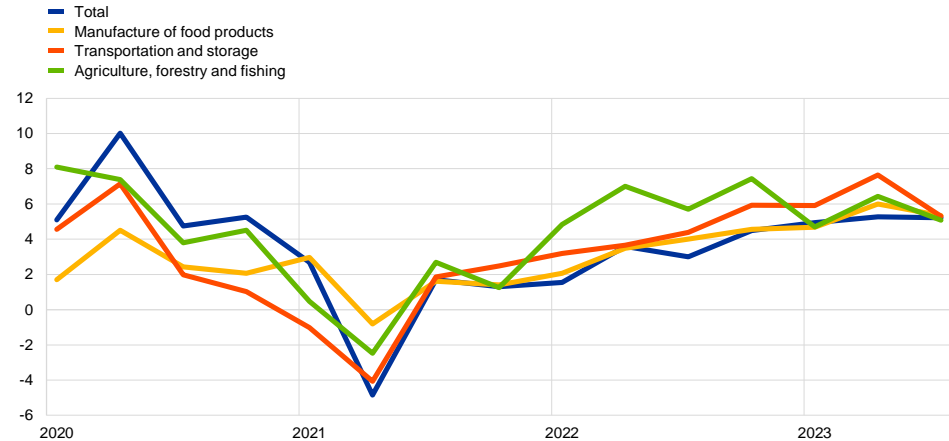
(annual percentage changes)

- Total
- Manufacture of food products
- Transportation and storage
- Agriculture, forestry and fishing

Sources: Eurostat and ECB calculations.
Notes: The latest observations are for the third quarter of 2023. The data for the manufacturing and transportation and storage sectors refer to gross wages and salaries per hour worked (from Eurostat short-term statistics), whereas the data for the total and for the agriculture, forestry and fishing sector refer to compensation per hour worked (from national accounts).

To sum up, euro area food inflation initially rose sharply owing to high energy and food commodity prices, while domestic factors have contributed towards keeping it elevated more recently. The exceptional, largely externally driven shocks to energy and food commodity prices are fading, and this is expected to contribute to a moderation in food inflation in the course of this year. This slowdown is expected to be gradual given the strong wage growth, particularly with rises in minimum wages.

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5 An update on the accuracy of recent Eurosystem/ECB staff projections for short-term inflation

Prepared by Mohammed Chahad, Anna Hofmann-Drahonsky, Catalina Martínez Hernández and Adrian Page

Forecasting inflation has been extremely challenging in recent years given the large shocks hitting the euro area economy. The extraordinary series of shocks seen post-2019 – including the coronavirus (COVID-19) pandemic and Russia's war against Ukraine – led to a surge in inflation. These shocks were exceptional in nature and so large in scale that assessing their transmission through the economy and into consumer prices in real time posed significant challenges. Importantly, several of the shocks were outside the historical distributions, severely limiting extrapolation from past patterns. In order to provide a better indication of the uncertainty involved, Eurosystem/ECB staff projections began setting out alternative scenarios during this period.[1]

Errors in staff projections for short-term inflation increased as of the second half of 2021, before declining significantly in 2023. In 2022, the ECB published analysis of the reasons for the deterioration seen in the forecast performance of staff inflation projections as of mid-2021.[2] In 2023, further analysis took stock of the impact that the war in Ukraine and the resulting energy supply shocks had had on the accuracy of projections in 2022.[3] Those analyses emphasised the existence of large broad-based errors in inflation projections – not only across forecasters, but also across economies. This highlighted the dominant role played by global factors in the context of the unprecedented spikes in commodity prices (especially for energy). However, the proportion of total projection errors that stemmed from energy commodity prices or other conditioning assumptions (as quantified by standard Eurosystem/ECB tools) declined in the course of 2022. This emphasised the role of other exceptional shocks, such as those stemming from the reopening of the economy post-pandemic and global supply chain bottlenecks, which mainly affected HICP inflation excluding food and energy (HICPX). The current box updates those analyses, focusing on the most recent period. Chart A plots one-quarter-ahead errors (calculated as the data outturn for a given quarter minus the relevant projection) for both HICP and HICPX inflation. It shows that the sharp deterioration

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[1] In 2020 and 2021, each set of quarterly staff projections included scenario analyses based on alternative assumptions regarding the future evolution of the COVID-19 pandemic and its economic consequences. In 2022, alternative scenarios focused on the economic consequences of the war in Ukraine, especially as regards uncertainties about energy supply. More recently, the scenario analysis has focused on more specific risks, such as a slowdown in the Chinese economy or a potential escalation of the conflict in the Red Sea area.

[2] See the box entitled "What explains recent errors in the inflation projections of Eurosystem and ECB staff?", *Economic Bulletin*, Issue 3, ECB, 2022. See also the article entitled "The performance of the Eurosystem/ECB staff macroeconomic projections since the financial crisis", *Economic Bulletin*, Issue 8, ECB, 2019. In addition, a full database of past Eurosystem/ECB staff macroeconomic projections is available to the public via the ECB Data Portal, which allows researchers to easily assess the performance of these projections. The processes and tools used to produce staff projections are described in a guide available on the ECB's website.

[3] See the box entitled "An updated assessment of short-term inflation projections by Eurosystem and ECB staff", *Economic Bulletin*, Issue 1, ECB, 2023.

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observed in forecast performance lasted from mid-2021 until the beginning of 2023. Since then, the accuracy of staff projections has, broadly speaking, returned to the levels seen pre-COVID, especially for HICP inflation.[4] For HICPX inflation, the errors observed in 2023 were smaller, but still somewhat elevated by historical standards. Given the available data for the first two months of 2024, if inflation is assumed to remain unchanged in March 2024, that will result in a forecast error of -0.2 percentage points for HICP inflation in the first quarter of 2024, while the outturn for HICPX inflation will be in line with Eurosystem/ECB staff projections.

Chart A

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

(percentage points)
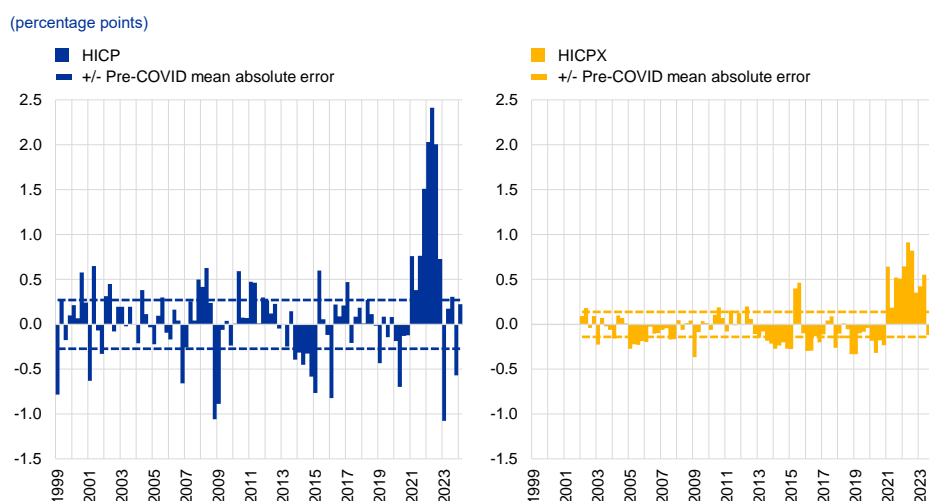
Sources: Eurosystem/ECB staff macroeconomic projections for the euro area and Eurostat.
Notes: An error is defined as the outturn for a given quarter minus the projection made for that quarter in the previous quarter (for example, the outturn for the fourth quarter of 2022 minus the figure projected for that quarter in the September 2022 ECB staff macroeconomic projections). Data for the first quarter of 2024 represent average errors based on available published data (which only cover January and February 2024) and assume that inflation rates remain unchanged in March 2024.

Euro area inflation forecasts produced by other international institutions and private forecasters have also improved in terms of accuracy over the last year. Projections made by Eurosystem/ECB staff and other forecasters have been very similar in terms of both the sign and the magnitude of forecast errors for short-term inflation (Chart B). When comparing such projections, it is important to account for differences in the publication dates of the various forecasts (which imply differences in terms of the information sets available to forecasters), as indicated by the arrows in Chart B. All major forecasters strongly under-predicted the surge in inflation in 2021-22, before being surprised by the speed of its decline in the first quarter of 2023, with considerably smaller and less systematic errors being observed since then.

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[4]   Similar developments can be observed at the four-quarter-ahead horizon. Four-quarter-ahead errors in HICP – and, to a lesser extent, HICPX – inflation also declined in 2023 and now stand close to pre-pandemic levels.

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Chart B

One-quarter-ahead errors in the HICP inflation projections of different forecasters

(percentage points)

- Eurosystem/ECB staff
- European Commission
- Survey of Monetary Analysts
- OECD
- Consensus Economics
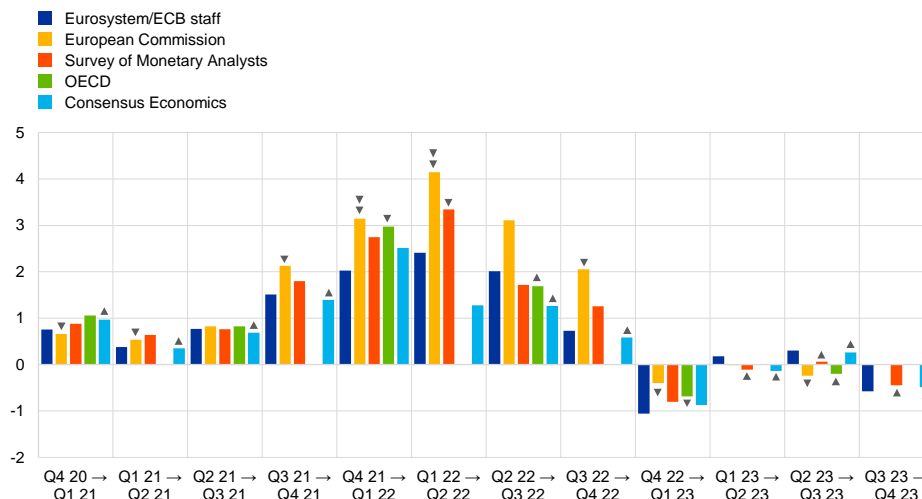
Sources: Eurosystem/ECB staff projections, Consensus Economics, Survey of Monetary Analysts (SMA), European Commission, OECD and Eurostat.
Notes: Errors are calculated as the outturn minus the projection. The labels on the horizontal axis indicate the quarter in which the projections were published and the quarter to which those projections relate (i.e. "Q4 20 → Q1 21" denotes projections for the first quarter of 2021 that were published in the fourth quarter of 2020). For forecasters other than Eurosystem/ECB staff, errors are shown for publications with a cut-off date close to that of the relevant Eurosystem/ECB staff projections. For the SMA, data represent the median of survey respondents' replies, while for Consensus Economics, data represent the mean. The arrows above/below the bars indicate differences in the number of months of HICP data that are available on the cut-off date for each publication relative to the Eurosystem/ECB staff projections: one upward arrow indicates one additional month of data, one downward arrow means one month less, and two downward arrows means two months less. Quarterly projections by the OECD are only available twice per year, so no errors are shown in the first and third quarters. As regards forecasts for the fourth quarter of 2023, the European Commission did not publish quarterly projections in its summer 2023 forecast, so no error is shown for that quarter. The cut-off date for the September 2023 ECB staff projections was 30 August 2023. Although this was one day before the publication of the flash estimate of euro area HICP inflation in August 2023, flash releases for five euro area countries (covering 45% of total euro area HICP) were included, with the result that the figure used did not ultimately deviate from Eurostat's flash release for headline HICP inflation.

The drivers of projection errors have changed over time. Chart C breaks the projection errors for HICP inflation down by driver. Energy prices accounted for most of the errors up until the start of 2022. At that point, an unexpected surge in food prices also started to play an important role (as shown by the dark grey bars, which indicate, on the basis of standard elasticities, the contribution made by errors in HICP food inflation that are not explained by errors in assumptions).[5] Errors in HICPX inflation also had a considerable impact up to the second quarter of 2023. In 2023, energy prices began causing significant errors again, but this time it was the speed of their decline which was unexpected.

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[5] See the box entitled "What were the drivers of euro area food price inflation over the last two years?" in this issue of the Economic Bulletin.

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Chart C

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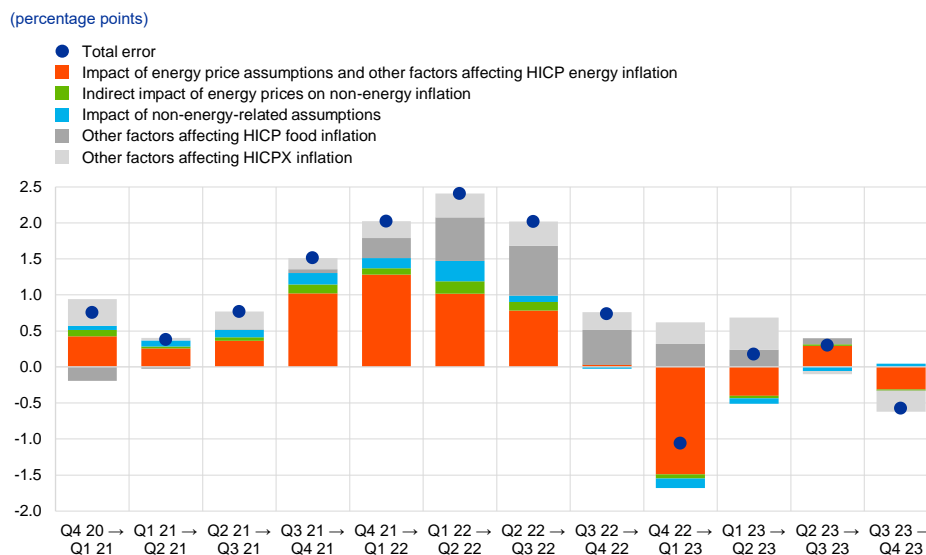
(percentage points)

- ● Total error
- ■ Impact of energy price assumptions and other factors affecting HICP energy inflation
- ■ Indirect impact of energy prices on non-energy inflation
- ■ Impact of non-energy-related assumptions
- ■ Other factors affecting HICP food inflation
- ■ Other factors affecting HICPX inflation

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 → Q1 21" denotes projections for the first quarter of 2021 that were published in the fourth quarter of 2020). "Indirect impact of energy prices on non-energy inflation" is the sum of the indirect effects of oil, gas and electricity prices. For oil, these are based on the elasticities derived from Eurosystem staff macroeconomic models; and for gas and electricity, these assume an elasticity proportionate to the oil price shock. "Impact of non-energy-related assumptions" relates to assumptions for short and long-term interest rates, stock market prices, foreign demand, competitors' export prices, food prices and the exchange rate.

Initially, errors in assumptions regarding commodity prices explained most of the errors in HICP energy inflation, but later the increasingly complex nature of the pass-through of energy prices began to play more of a role. When staff projections are produced, market expectations for several key variables (including those embedded in futures prices for energy commodities) are used as conditioning assumptions. In less exceptional times, these "technical assumptions" – particularly assumptions regarding oil prices – explain the vast majority of the errors seen when forecasting energy inflation.[6] As gas prices have increasingly become decoupled from oil prices, Eurosystem staff projection models have been updated to include gas prices as a distinct channel, separate from oil prices. Chart D provides a breakdown of the errors in energy inflation projections (mirroring the red bars shown in Chart C) on the basis of these adjusted models. In contrast to previous periods, oil prices have played a relatively limited role in explaining errors over recent years, while errors in conditioning assumptions for gas prices have been significant. Nevertheless, Chart D also shows that, even with perfect foresight regarding the paths of oil and gas commodity prices, the models would still have significantly under-predicted energy inflation in 2022 and strongly over-predicted it in the first quarter of 2023 (as illustrated by the blue bars, which cover all errors not explained by technical assumptions). This probably reflects the complexity of price setting for consumer gas and electricity prices across euro area countries, which was

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[6] From the fourth quarter of 2001 to the fourth quarter of 2019 (i.e. pre-COVID), the median share of total one-quarter-ahead projection errors for HICP energy inflation that was explained by errors in oil price assumptions was about 90%; from the first quarter of 2020 to the fourth quarter of 2023, that median share was down to around 40%.

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compounded by extensive fiscal policy measures aimed at limiting the impact of the energy price shocks.[7] It may also reflect non-linearities in the pass-through from commodity prices to consumer prices, which may have been sizeable during this period.

Chart D

Decomposition of recent one-quarter-ahead HICP energy inflation errors in Eurosystem/ECB staff projections
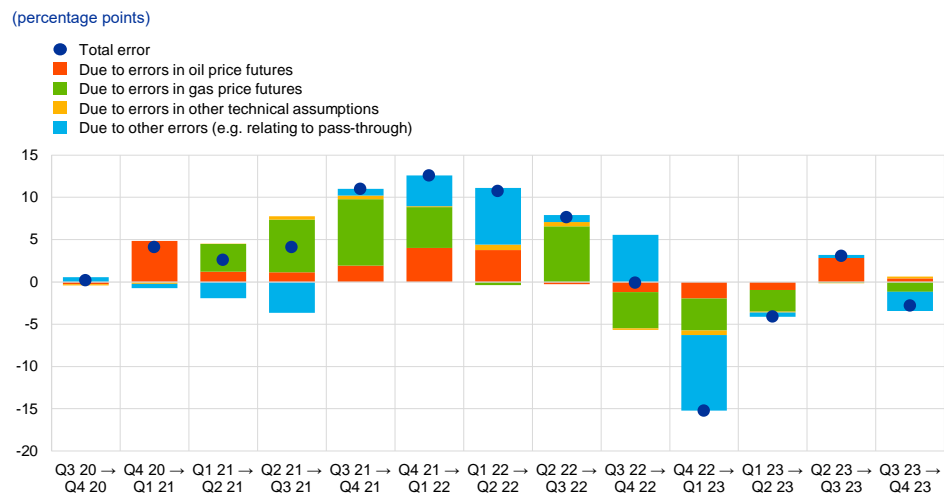
(percentage points)

- ● Total error
- Due to errors in oil price futures
- Due to errors in gas price futures
- Due to errors in other technical assumptions
- Due to other errors (e.g. relating to pass-through)

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 → 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.

A historical decomposition of HICPX inflation confirms the large contribution made by indirect effects of the post-pandemic spikes in energy prices and hints at unprecedented transmission of those exceptionally large shocks. In the light of the unexpectedly strong increases in HICPX inflation in the recent past, ECB staff have developed a large structural BVAR model which identifies a wide range of demand and supply shocks.[8] A historical decomposition based on this model shows that the post-pandemic surge in HICPX inflation stemmed from a perfect storm of shocks (Chart E). Supply-side shocks – particularly indirect effects stemming from the unprecedented spikes in gas prices and disruption to global supply chains – accounted for most of the post-pandemic rise in HICPX inflation. However, demand shocks were also an important driver of those post-pandemic dynamics, owing to the recovery in domestic and global demand following the reopening of the economy – albeit only from 2022 onwards. Following monetary policy action on the part of the ECB, the contribution made by aggregate demand shocks started to decline in 2023, helping the disinflation process. As Chart E shows,

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[7] See the article entitled "Energy price developments in and out of the COVID-19 pandemic – from commodity prices to consumer prices", *Economic Bulletin*, Issue 4, ECB, 2022; the box entitled "Climate-related policies in the Eurosystem/ECB staff macroeconomic projections for the euro area and the macroeconomic impact of green fiscal measures", *Economic Bulletin*, Issue 1, ECB, 2023; and the box entitled "Fiscal policy measures in response to the energy and inflation shock and climate change", *Economic Bulletin*, Issue 1, ECB, 2024.

[8] See Bańbura, M., Bobeica, E. and Martínez Hernández, C., "What drives core inflation? The role of supply shocks", *Working Paper Series*, No 2875, ECB, 2023.

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the share of total HICPX dynamics that cannot be explained by the model (labelled "other factors") increases significantly from 2022 onwards. This could potentially point to a non-linear transmission of the large shocks seen in 2021 that cannot be captured by standard linear models. The evidence from this model demonstrates the importance of including indicators of global supply chains and gas prices when modelling and forecasting euro area inflation, as well as considering alternative modelling approaches.

Chart E

Model-based decomposition of HICPX inflation

(annual percentage changes; deviations from the mean implied by the model)
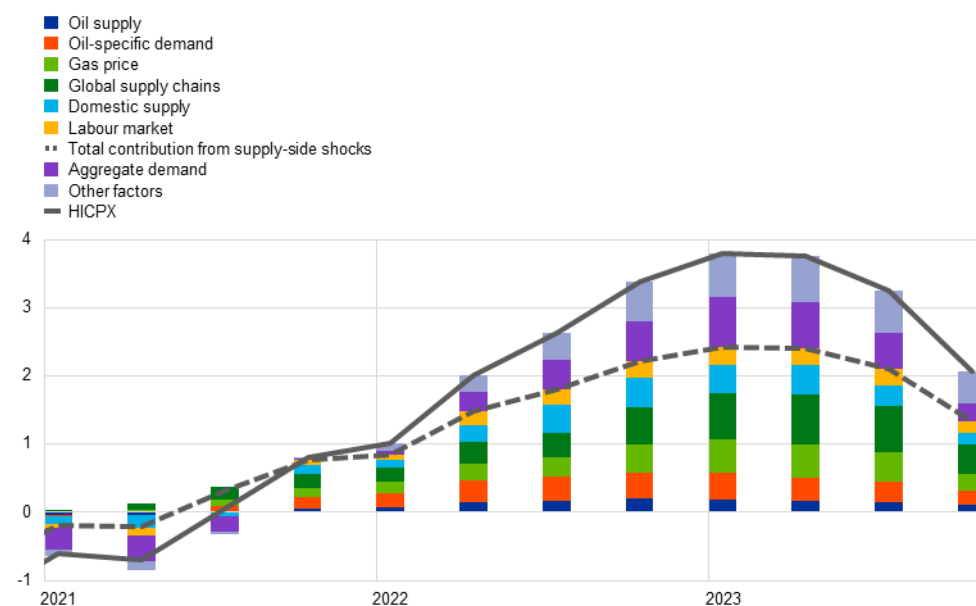
Sources: Eurostat and ECB calculations.
Notes: This chart shows the point-wise mean of the posterior distribution of the historical decomposition of HICPX inflation based on a large structural BVAR model with shocks identified using sign and zero restrictions. The last breakdown relates to the fourth quarter of 2023.

Although inflation projection errors have now returned to more normal levels, staff continue to refine their forecasting toolkits, providing additional analysis that can inform projections in times of high uncertainty. Staff continue to work on keeping their forecasting toolkits in line with state-of-the-art techniques and developing a more diverse set of models. This process is supported by regular exchanges within the Eurosystem's technical forums and discussions with academics. One example of this is the more elaborate modelling of gas prices and global supply chains that is discussed above. Another example is the development of machine learning models that seek to capture some of the non-linearities mentioned above, with one such model being included in the suite of tools that staff use for regular cross-checks of their baseline projections.[9] Moreover, staff also continue to develop tools aimed at assessing risks surrounding baseline scenarios, using a wide range of sensitivity analyses and alternative scenarios. Since March 2023, staff projections have been presented using fan charts, which highlight the uncertainty

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[9]   See Lenza, M., Moutachaker, I. and Paredes, J., "Density forecasts of inflation: a quantile regression forest approach", *Working Paper Series*, No 2830, ECB, 2023.

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involved, especially at longer horizons.[10] Such additional analysis serves as an important input for the ECB's monetary policy decisions, complementing the baseline projections and other analysis by staff.

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[10] See, for instance, Chart 4 in "ECB staff macroeconomic projections for the euro area", March 2024.

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6 Liquidity conditions and monetary policy operations from 1 November 2023 to 30 January 2024

Prepared by Nikolaus Solonar and María González da Silva

This box describes liquidity conditions and the Eurosystem monetary policy operations during the seventh and eight reserve maintenance periods of 2023. Together, these two maintenance periods ran from 1 November 2023 to 30 January 2024 (the "review period").

Excess liquidity in the euro area banking system continued to decline during the review period. This was due to the maturing of the sixth operation under the third series of targeted longer-term refinancing operations (TLTRO III.6) and early repayments by banks of other TLTRO funds on 20 December 2023. Liquidity provision also declined, owing to lower asset purchase programme (APP) holdings as a result of the discontinuation of APP reinvestments at the beginning of July 2023. The reduction in liquidity provision was partly offset by the continuing fall in net autonomous factors – owing mainly to lower government deposits – seen since the ECB's policy rates were lifted out of negative territory in July 2022.

Liquidity needs

The average daily liquidity needs of the banking system, defined as the sum of net autonomous factors and reserve requirements, decreased by €104.1 billion to €1,630.9 billion over the review period. This was due almost entirely to a €102.3 billion fall in net autonomous factors to €1,467.7 billion (see the section of Table A entitled "Other liquidity-based information"), driven by a decline in liquidity-absorbing autonomous factors and an increase in liquidity-providing autonomous factors. Minimum reserve requirements fell by €1.8 billion to €163.2 billion.

Liquidity-absorbing autonomous factors decreased by €67.1 billion to €2,653.5 billion over the review period, owing primarily to a decline in government deposits and other autonomous factors. Government deposits (see the section of Table A entitled "Liabilities") fell by €40.3 billion on average over the review period, down to €182.3 billion. This reflects the continued normalisation of the overall volume of cash buffers held by national treasuries and their greater propensity to place those holdings in the market in response to changes in the remuneration of government deposits with the Eurosystem, as well as lower government deposits, which typically decline at the end of the year. The normalisation of repo market conditions and higher repo rates relative to the euro short-term rate (€STR) also made market investment a more attractive option than deposits with the Eurosystem. The average value of banknotes in circulation decreased by €6.1 billion over the review period to €1,553.7 billion, reflecting the ongoing reduction in banknote holdings observed since the ECB's policy rates were lifted out of negative territory in July 2022.

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Liquidity-providing autonomous factors rose by €35.4 billion, to stand at €1,186.2 billion (see the section of Table A entitled "Assets").[1] Net assets denominated in euro increased by €18.1 billion over the review period. This was largely the result of a continued fall in liabilities to non-euro area residents denominated in euro. This, in turn, reflects changes in the cash management strategies of customers of the Eurosystem reserve management services (ERMS), given the downward revision on 1 May 2023 of the remuneration of deposits held under the ERMS framework. Net foreign assets increased by €17.3 billion, reflecting the reallocation by some national central banks of own assets to foreign reserves.

Table A
Eurosystem liquidity conditions

Liabilities

(averages; EUR billions)

	Current review period: 1 November 2023-30 January 2024						Previous review period: 2 August-31 October 2023	
	Seventh and eighth maintenance periods		Seventh maintenance period: 1 November-19 December 2023		Eighth maintenance period: 20 December 2023-30 January 2024		Fifth and sixth maintenance periods	
Liquidity-absorbing autonomous factors	2,653.5	(-67.1)	2,656.2	(-47.1)	2,650.3	(-5.8)	2,720.6	(-83.0)
Banknotes in circulation	1,553.7	(-6.1)	1,551.1	(-3.6)	1,556.7	(+5.6)	1,559.8	(-5.5)
Government deposits	182.3	(-40.3)	194.1	(-28.6)	168.4	(-25.7)	222.6	(-32.8)
Other autonomous factors (net)[1]	917.5	(-20.7)	910.9	(-14.9)	925.1	(+14.2)	938.2	(-44.7)
Current accounts above minimum reserve requirements	8.1	(-1.4)	8.1	(-1.9)	8.1	(+0.0)	9.5	(-5.1)
Minimum reserve requirements[2]	163.2	(-1.8)	163.9	(-0.7)	162.3	(-1.6)	165.0	(-0.0)
Deposit facility	3,520.5	(-94.6)	3,548.8	(-28.6)	3,487.4	(-61.4)	3,615.1	(-300.3)
Liquidity-absorbing fine-tuning operations	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in parentheses denote the change from the previous review or maintenance period.
1) Computed as the sum of the revaluation accounts, other claims and liabilities of euro area residents, capital and reserves.
2) Memo item that does not appear on the Eurosystem balance sheet and should therefore not be included in the calculation of total liabilities.

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[1]   For further details on autonomous factors, see the article entitled "The liquidity management of the ECB", *Monthly Bulletin*, ECB, Frankfurt am Main, May 2002.

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Assets

(averages; EUR billions)

	Current review period: 1 November 2023-30 January 2024			Previous review period: 2 August-31 October 2023
	Seventh and eighth maintenance periods	Seventh maintenance period: 1 November-19 December 2023	Eighth maintenance period: 20 December 2023-30 January 2024	Fifth and sixth maintenance periods
Liquidity-providing autonomous factors	1,186.2 (+35.4)	1,159.2 (-4.8)	1,217.7 (+58.4)	1,150.8 (+18.0)
Net foreign assets	944.8 (+17.3)	933.3 (+2.0)	958.3 (+25.1)	927.5 (-10.5)
Net assets denominated in euro	241.4 (+18.1)	226.0 (-6.8)	259.3 (+33.4)	223.3 (+28.5)
Monetary policy instruments	5,159.4 (-200.0)	5,218.2 (-73.2)	5,091.0 (-127.3)	5,359.5 (-406.7)
Open market operations	5,159.4 (-200.0)	5,218.2 (-73.2)	5,090.9 (-127.3)	5,359.4 (-406.7)
Credit operations	457.4 (-110.8)	503.2 (-20.4)	404.1 (-99.0)	568.2 (-329.3)
MROs	7.6 (+0.8)	7.3 (-0.9)	7.9 (+0.6)	6.8 (+0.5)
Three-month LTROs	4.4 (-3.8)	4.7 (-2.7)	4.0 (-0.7)	8.2 (+4.3)
TLTRO III	445.5 (-107.8)	491.2 (-16.8)	392.3 (-98.9)	553.3 (-334.2)
Outright portfolios[1]	4,702.0 (-89.3)	4,715.0 (-53.0)	4,686.8 (-28.2)	4,791.2 (-77.3)
Marginal lending facility	0.0 (+0.0)	0.0 (+0.0)	0.0 (+0.0)	0.0 (+0.0)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in parentheses denote the change from the previous review or maintenance period. MROs denotes main refinancing operations, LTROs denotes longer-term refinancing operations and TLTRO III denotes the third series of targeted longer-term refinancing operations.
1) With the discontinuation of net asset purchases, the individual breakdown of outright portfolios is no longer shown.

Other liquidity-based information

(averages; EUR billions)

	Current review period: 1 November 2023-30 January 2024			Previous review period: 2 August-31 October 2023
	Seventh and eighth maintenance periods	Seventh maintenance period: 1 November-19 December 2023	Eighth maintenance period: 20 December 2023-30 January 2024	Fifth and sixth maintenance periods
Aggregate liquidity needs[1]	1,630.9 (-104.1)	1,661.2 (-42.9)	1,595.5 (-65.8)	1,735.0 (-101.3)
Net autonomous factors[2]	1,467.7 (-102.3)	1,497.3 (-42.2)	1,433.1 (-64.2)	1,570.0 (-101.3)
Excess liquidity[3]	3,528.5 (-96.0)	3,556.9 (-30.5)	3,495.4 (-61.5)	3,624.5 (-305.3)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in parentheses denote the change from the previous review or maintenance period.
1) Computed as the sum of net autonomous factors and minimum reserve requirements.
2) Computed as the difference between autonomous liquidity factors on the liabilities side and autonomous liquidity factors on the assets side. For the purposes of this table, items in the course of settlement are also added to net autonomous factors.
3) Computed as the sum of current accounts above minimum reserve requirements and the recourse to the deposit facility minus the recourse to the marginal lending facility.

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Interest rate developments

(averages; percentages and percentage points)

| | Current review period: 1 November 2023-30 January 2024 | | | Previous review period: 2 August-31 October 2023 | |
	Seventh maintenance period: 1 November- 19 December 2023	Eighth maintenance period: 20 December- 30 January 2024		Fifth maintenance period	Sixth maintenance period
MROs	4.50 (+0.00)	4.50 (+0.00)		4.25 (+0.25)	4.50 (+0.25)
Marginal lending facility	4.75 (+0.00)	4.75 (+0.00)		4.50 (+0.25)	4.75 (+0.25)
Deposit facility	4.00 (+0.00)	4.00 (+0.00)		3.75 (+0.25)	4.00 (+0.25)
€STR	3.903 (+0.002)	3.901 (-0.002)		3.652 (+0.250)	3.900 (+0.248)
RepoFunds Rate Euro	3.945 (+0.019)	3.905 (-0.040)		3.687 (+0.286)	3.926 (+0.239)

Sources: ECB, CME Group and Bloomberg.
Notes: Figures in parentheses denote the change in percentage points from the previous review or maintenance period. MROs denotes main refinancing operations and €STR denotes the euro short-term rate.

Liquidity provided through monetary policy instruments

The average amount of liquidity provided through monetary policy instruments decreased by €200 billion to €5,159.4 billion over the review period (Chart A). This decline is attributable to both a reduction in the amount of liquidity provided through credit operations and the roll-off of monetary policy portfolios.

The average amount of liquidity provided through credit operations fell by €110.8 billion to €457.4 billion over the review period. This decrease largely reflects the decline in outstanding TLTRO III amounts as a result of the maturing of TLTRO III.6 (€37.3 billion), together with early repayments of other TLTRO funds (€61.7 billion) on 20 December 2023, i.e. at the beginning of the eighth maintenance period. At the same time, the overall outstanding amounts of standard Eurosystem refinancing operations – main refinancing operations (MROs) and three-month longer-term refinancing operations (LTROs) – fell slightly. This decline is mainly attributable to the outstanding amounts for three-month LTROs falling by €3.8 billion, on average, while those for MROs remained broadly unchanged, at €7.6 billion, compared with the fifth and sixth maintenance periods of 2023. Banks' limited participation in these operations, together with their ability to repay sizeable amounts of TLTRO funds without switching to regular refinancing operations, reflects their comfortable liquidity positions, on aggregate, and the availability of alternative funding sources at attractive rates.

The average amount of liquidity provided through holdings of outright portfolios decreased by €89.3 billion over the review period. This decline was due to the discontinuation, on 1 July 2023, of reinvestments of principal payments from maturing securities under the APP. Under the pandemic emergency purchase programme, the principal payments from maturing securities have been fully reinvested since net purchases were discontinued at the end of March 2022.[2] In

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[2]   Securities held in the outright portfolios are carried at amortised cost and revalued at the end of each quarter, which also has an impact on the total averages and the changes in the outright portfolios.

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December 2023 the Governing Council announced that full reinvestment of principal payments would come to an end in the second half 2024.

Chart A

Changes in liquidity provided through open market operations and excess liquidity

(EUR billions)

- Credit operations
- Outright portfolios
- Excess liquidity
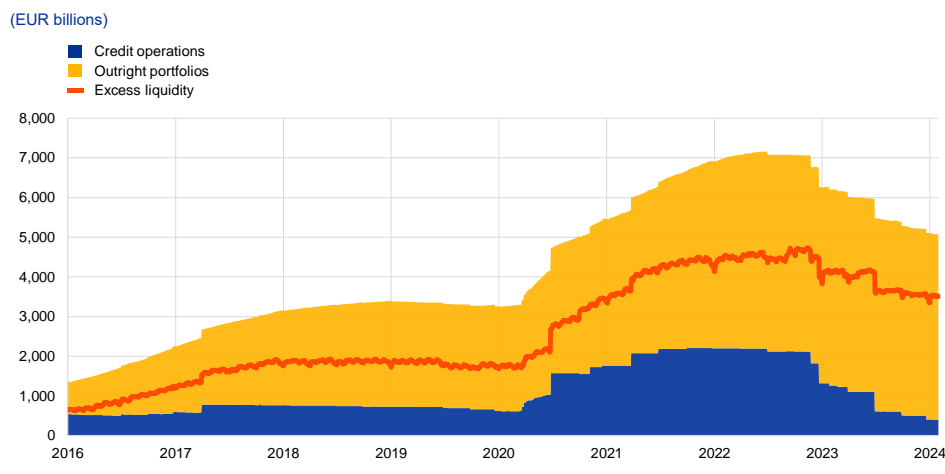
Source: ECB.
Note: The latest observations are for 30 January 2024.

Excess liquidity

Average excess liquidity decreased by €96 billion, to reach €3,528.5 billion (Chart A) over the review period. Excess liquidity is the sum of the reserves that banks hold in excess of their reserve requirements and their recourse to the deposit facility net of their recourse to the marginal lending facility. It reflects the difference between the total liquidity provided to the banking system and the liquidity needs of banks to meet their minimum reserves requirements. After peaking in November 2022 at €4,748 billion, average excess liquidity has declined steadily, owing mainly to the maturing and early repayment of TLTRO III operations, with the discontinuation of reinvestments under the APP also being a contributing factor since July 2023.

Interest rate developments

The Governing Council kept the three key ECB interest rates unchanged during the review period. The rates on the deposit facility, the MROs and the marginal lending facility stood at 4.00%, 4.50% and 4.75% respectively.

The average €STR remained broadly unchanged during the review period, while maintaining a stable spread with the key ECB interest rates. The €STR traded, on average, 10.2 basis points below the deposit facility rate throughout the review period, close to the average of 9.9 basis points for the reserve maintenance periods of 2023. The lower excess liquidity has therefore not had any upward impact

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on the €STR so far. The 1.8 basis point end-of-year decline in the €STR was only slightly more pronounced than the 2022 end-of-year effect (-1.5 basis points).

The average euro area repo rate, as measured by the RepoFunds Rate Euro index, continued to trade closer to the deposit facility rate, except around the year-end. The repo rate was, on average, 7.3 basis points below the deposit facility rate over the review period. The 2023 end-of-year decline of 25.5 basis points was significantly less than the 226.8 basis point fall seen at the end of 2022. This reflects the orderly functioning of the repo market, which is due to several factors, including higher net issuance since the beginning of the year, the release of mobilised collateral on the back of maturing TLTROs, a change in market positioning that resulted in lower demand for securities in the repo market, and the decline in outstanding APP holdings.

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7   The euro as a global currency: a payments perspective

Prepared by Oana Furtuna, Patrick Papsdorf, Livia Polo Friz and Sara Testi

The ECB monitors developments in the international role of the euro and publishes the resulting information on a regular basis. The ECB's most recent report on this topic (which was published in June 2023) showed no significant change in the international role of the euro in 2022 relative to 2021, with the share of the euro in total international currency use averaging close to 20% across various indicators, in line with the previous year.[1] The report showed that the euro was continuing to play an important role in the international monetary system, as it remained the second most important currency in various market segments, such as official holdings of foreign exchange reserves and international bond issuance.

Payments can also indicate global use of a currency. For a given currency, such an indicator can be computed as the value of cross-border payments between banks denominated in that currency relative to total payments between banks across all currencies.[2] Payments between banks can be handled using different mechanisms – e.g. multilateral arrangements (i.e. payment systems), bilateral arrangements (i.e. the use of correspondent banks) or a combination of the two.[3] These payments are typically carried out using standardised messages exchanged via the Swift network.[4]

Several payment systems around the world (including large-value payment systems for the euro, such as T2) use Swift as a communication network for their participants.[5] T2 – like its predecessor, TARGET2 – is the Eurosystem's real-time gross settlement system for euro-denominated payments, processing and settling payments in central bank money. In 2023 it accounted for 92% of all euro-denominated payments settled by large-value payment systems in value terms and 70% in volume terms. T2 traffic is therefore a key determinant of the total value of euro payments processed by large-value payment systems – and thus also a major component of the total value of euro payment messages exchanged and recorded in the Swift network.

After March 2023 the share of the euro in total Swift payment messages showed a decline in value terms. For the most used currencies worldwide (a group which includes the euro), Swift publishes a monthly indicator showing each currency's use in global payments, as measured by the value of the payment

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[1] See "The international role of the euro", ECB, 2023.

[2] Throughout this box, the term "payments between banks" covers both customer payments (i.e. payments made by banks on behalf of their customers) and interbank payments (i.e. payments made by banks for their own business).

[3] Payments originated via correspondent banking arrangements can be settled bilaterally between banks or channelled through payment systems. See "Eleventh survey on correspondent banking in euro", ECB, 2020.

[4] Swift is the world's leading provider of secure financial messaging services, with more than 11,000 financial institutions using it worldwide. Swift allows for standardised, secure and efficient communication.

[5] T2 uses both Swift and Nexi as network service providers.

messages that financial institutions send via the network.[6] According to this Swift indicator, euro-denominated payment messages exchanged via Swift accounted, on average, for 36.0% of total messages across all currencies between January 2020 and February 2023 (Chart A); this share then dropped to 32.6% in March 2023 and 31.7% in April 2023. By the fourth quarter of 2023, the euro's share had stabilised at a lower level, averaging 22.6%.[7]

Chart A

Share of the euro in total payments processed via Swift in value terms and T2 traffic

(left-hand scale: percentages; right-hand scale: EUR trillions; monthly totals)

■ Share of the euro in total Swift messages in value terms
■ Customer and interbank payments in T2 (right-hand scale)
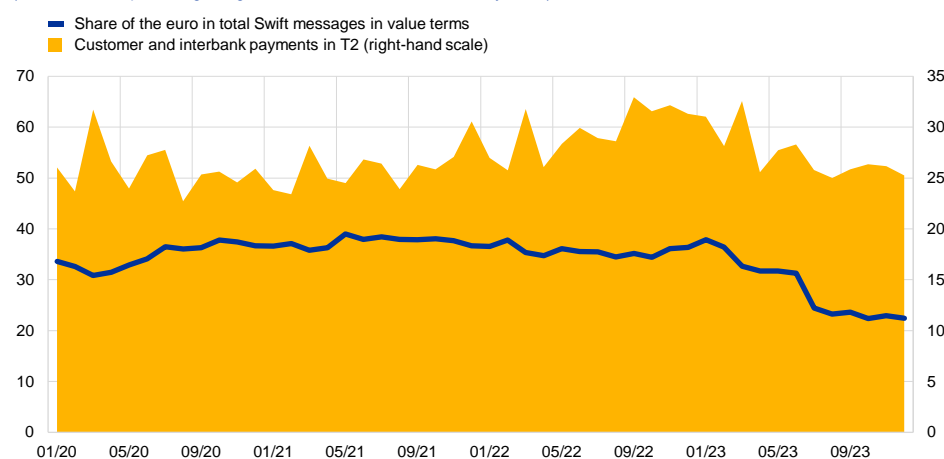
Sources: Swift, TARGET2, T2 and ECB calculations.
Notes: The last data point relates to December 2023. The Swift indicator captures messages exchanged via Swift as live and delivered on the basis of the MT103 and MT202 message types (customer and interbank payments respectively) and their ISO equivalents. The T2 statistics may be subject to revision owing to methodological changes resulting from the launch of the consolidated T2-T2S platform.

The apparent drop in the share of the euro in total payment messages exchanged via Swift coincided with a major infrastructure change in Europe and a move to a new Swift message standard. On 20 March 2023 the Eurosystem launched its consolidated T2-T2S platform – the new central bank-operated backbone infrastructure for the euro, which has increased the efficiency of liquidity management and payment practices, allowing participants to streamline their payment activities.[8] At the same time, financial institutions in the euro market also migrated from the legacy message standard (MT) to the new ISO 20022 message standard (pacs) in the Swift network. This shift supports greater interoperability, straight-through processing and more granular classification of financial data.

Both changes had an impact on euro-denominated payment messages exchanged via Swift – thus, ceteris paribus, affecting the share of the euro in total messages processed via Swift. The new set-up under the consolidated T2-T2S platform and the new message standard have changed the ways in which euro payments are made and euro liquidity is managed, with a particularly significant

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[6] This indicator (which is based on a subset of all payment messages exchanged via Swift) is included in Swift's monthly RMB Tracker.

[7] Data for the months of March, April, May and June 2023 do not include an ex post correction that was applied by Swift in July 2023 and communicated in its operational newsletter.

[8] See the ECB press release of 21 March 2023. The analysis presented in this box uses T2 data as of 20 March 2023 and TARGET2 data before that date.

impact in the area of liquidity management for intra- and interbank flows. Some transactions now carried out using the new message standard, which are typically large in value, are actually excluded from the computation of the Swift indicator, which is why the indicator fell post-March 2023.[9]

This technical explanation for the drop in the share of the euro in total payment messages processed via Swift is confirmed by developments in the value of euro payments settled between banks in T2, which show different dynamics (Chart A). The average monthly value of euro-denominated customer and interbank payments settled in T2 rose to more than €27.3 trillion in 2023, compared with €25.9 trillion in TARGET2 in 2020. Moreover, those values only saw a slight adjustment – rather than a full level shift – as a result of the new liquidity management arrangements in March 2023. A similar trend can be observed in the average monthly volume of customer and interbank payments processed via T2, which rose to 7.8 million transactions in 2023 (compared with 6.3 million transactions in TARGET2 in 2020).[10]

Another indicator of the euro's role as a global currency is the percentage of euro payments in T2 (in value terms) where the instructing bank and/or the beneficiary bank is located outside the euro area. T2 – like its predecessor, TARGET2 – allows banks around the world to make cross-border payments in euro, with banks outside the euro area generally being reliant on correspondent banks with direct access to euro area payment systems for this.[11]

That indicator of global euro payments in T2 did not see a break post-March 2023, confirming that euro payments involving at least one bank located outside the euro area have remained stable. The monthly value of such global customer and interbank payments in T2 averaged €11.6 trillion between March and December 2023, in line with previous years. These payments accounted for 43.0% of all payments between banks in T2 in that period, with no sign of any decline post-March 2023 (Chart B).

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9   Prior to the migration to ISO 20022, interbank payments were sent as MT202 messages, while payments on behalf of customers were sent as MT103 messages. These are now sent as pacs.009 and pacs.008 messages respectively. Moreover, with the migration to the ISO 20022 standard, at least some of the MT messages relating to liquidity transfers, cash management and reporting have changed to camt messages. The Swift indicator only captures MT202 and MT103 messages and their pacs equivalents, while camt messages are excluded.

10   See also the statistics on traffic settled in TARGET services.

11   These payments are settled in the account of a direct T2 participant. See "Eleventh survey on correspondent banking in euro", ECB, 2020.

Chart B

Global customer and interbank payments in T2

(left-hand scale: EUR trillions; right-hand scale: percentages; monthly totals)

■ Global customer and interbank payments in T2
━ As a share of total customer and interbank payments in T2 (right-hand scale)
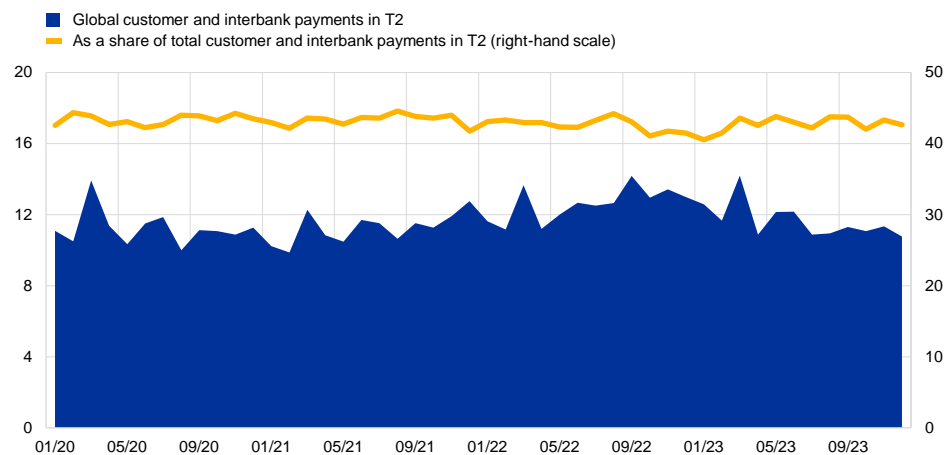
Sources: TARGET2, T2 and ECB calculations.
Notes: The last data point relates to December 2023. "Global" payments are those where the instructing bank and/or the beneficiary bank is located outside the euro area. The T2 statistics may be subject to revision owing to methodological changes resulting from the launch of the consolidated T2-T2S platform.

In conclusion, the apparent drop in the share of the euro in total Swift messages post-March 2023 does not stem from a decline in the value of payments made via T2 or a reduction in its global reach. As the backbone financial market infrastructure for the euro, T2 continues to be a major component of total euro payments processed via Swift in value terms. Instead, the decline in the share of the euro in total Swift messages in value terms appears to reflect the launch of the consolidated T2-T2S platform and the market's move to the new ISO 20022 message standard. This has resulted in changes to banks' liquidity management practices and the message types used, with some payments no longer being included in the Swift indicator. Thus, when monitoring the global role of the euro, single indicators based on payment traffic need to be interpreted with caution.

8   The ECB's climate and nature plan 2024-2025

Prepared by Sara Skjeggestad Meyer and Carolin Nerlich

On 30 January 2024 the ECB published its climate and nature plan 2024-2025, which identifies three new focus areas that will guide its climate actions over the next two years. This box explains the economic reasoning behind the ECB's decision to advance its work in these three areas.[1]

Climate change is increasingly affecting the euro area economy. The world is way off-track in terms of meeting the climate targets consistent with the 2015 Paris Agreement.[2] 2023 was the warmest year ever recorded, and several extreme weather events caused economic damage in Europe and across the world. In parallel, accelerated biodiversity loss and degradation of habitats are contributing to a rapidly evolving crisis for nature, partially owing to the inextricable links between climate and nature. Climate change and the related need to foster the green transition are increasingly affecting the economy and the financial system. This may have implications for price stability, financial stability and the transmission of monetary policy. Climate change also affects the value and risk profile of assets on the Eurosystem balance sheet. It is essential for the ECB to account for these effects in order to deliver on its primary objective of price stability.

Since 2021 the ECB has broadened its commitment to integrating climate change considerations into its activities. Following the review of its monetary policy strategy, in 2021 the ECB announced its first climate action plan, in which it committed to including climate change considerations in activities related to monetary policy implementation, macroeconomic analysis and statistics.[3] In 2022 the scope of the plan was expanded to cover climate activities in other areas of the bank's activities, including financial stability and banking supervision.[4] After completing an in-depth stock-take of its climate actions, in January 2024 the ECB published an updated plan for the period 2024-2025. For the first time, this plan includes the commitment to analyse nature-related issues. It identifies three focus areas that will guide the ECB's climate-related activities for the next two years (Table A).

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[1]   See the ECB's climate and nature plan 2024-2025, ECB, January 2024.

[2]   Under the Paris Agreement signed in 2015, 196 countries agreed to do their part to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C. Under the agreement, Europe committed to reducing its carbon emissions to net-zero by 2050 and by 55% by 2030 compared to 1990 levels. To achieve the 2030 target, the European Union agreed on the Green Deal and a climate mitigation package, also known as the "Fit-for-55" package. Despite these efforts, estimates indicate that global warming under current national determined contributions will reach 2.9°C, see United Nations Environment Programme, "Emissions Gap Report 2023", Report, November 2023.

[3]   See "ECB presents action plan to include climate change considerations in its monetary policy strategy", *press release*, ECB, 8 July 2021.

[4]   See the ECB climate agenda 2022, ECB, 4 July 2022.

Table A

Focus areas for the ECB's climate and nature plan 2024-2025

	Three focus areas	What we will do
	1. Navigating the transition towards a green economy	• Assess green investment needs and their funding. • Analyse the structural consequences stemming from the transition. • Analyse the effects of transition funding and transition risks on the monetary policy transmission mechanism. • Advance the macroeconomic modelling framework with a focus on climate aspects.
	2. Addressing the increasing physical impact of climate change	• Take further steps to integrate climate change impacts into climate scenarios and the analytical framework used for macroeconomic projections. • Explore the impact of climate adaptation, including the insurance protection gap. • Improve the availability of data to support physical risk analysis.
	3. Advancing work on nature-related risks	• Further explore the economic and financial implications of biodiversity loss and the degradation of nature.

Source: ECB.

The first focus area looks at the challenges involved in navigating the transition towards a green economy. To comply with its 2050 net zero target, Europe will need to implement dedicated policy measures until 2030 to incentivise a shift towards energy-efficient production processes and consumption patterns, and to replace fossil fuels with renewable energy sources.[5] This will result in profound structural changes to the euro area economy, with implications for employment and skill requirements. It may cause a reallocation of capital with ambiguous long-run effects on potential growth.[6] The green transition will have an impact on trade and capital flows in the euro area economy and pose risks to its external competitiveness. The euro area may also become more vulnerable to supply chain risks and interruptions to the supply of critical minerals needed for the transition. It is important for the ECB to have a thorough understanding of these structural changes and challenges, and how they could impact the macroeconomic outlook for the euro area. To do so, macroeconomic models need to be adapted accordingly.

Green investment, technological innovation and green funding are key to moving towards a low-carbon economy. The estimates by various institutions of how much green investment is needed to achieve climate goals vary widely. For instance, according to the European Commission, the transition will require additional annual investment of €620 billion until 2030 for the EU to reach its 55% emission reduction target.[7] The ECB will take a closer look at the different estimates available to better understand the underlying assumptions and driving factors, including the role of climate change policies. It will look at the framework conditions

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[5] For an overview, see the box entitled "Assessing the macroeconomic effects of climate change transition policies", *Economic Bulletin*, Issue 1, ECB, 2024.

[6] See the article entitled "How climate change affects potential output", *Economic Bulletin*, Issue 6, ECB 2023.

[7] See European Commission, "Sustainability and wellbeing at the heart of Europe's Open Strategic Autonomy, *Communication from the Commission to the European Parliament and the Council*, 6 July 2023.

required to facilitate the necessary investments, including the need to foster an environment conducive to high levels of research and development and innovation capacity, and a market infrastructure that encourages risk-taking. Close attention will be paid to the funding side of green investment needs. Although there has been strong growth in green finance instruments in recent years, they still only account for a small share of total debt securities issued in the euro area (Chart A). Specifically, the ECB will analyse whether the supply of funding is meeting demand, what lending conditions firms are facing for green investment projects, and how public policies can help mobilise more private funding, including through better disclosure requirements. These are all relevant issues for monetary policy and its transmission mechanism.

Chart A

Euro area issuance of sustainable debt securities

(left-hand scale: EUR billions, outstanding amounts at face value; right-hand scale: percentages of total euro area-issued debt securities)
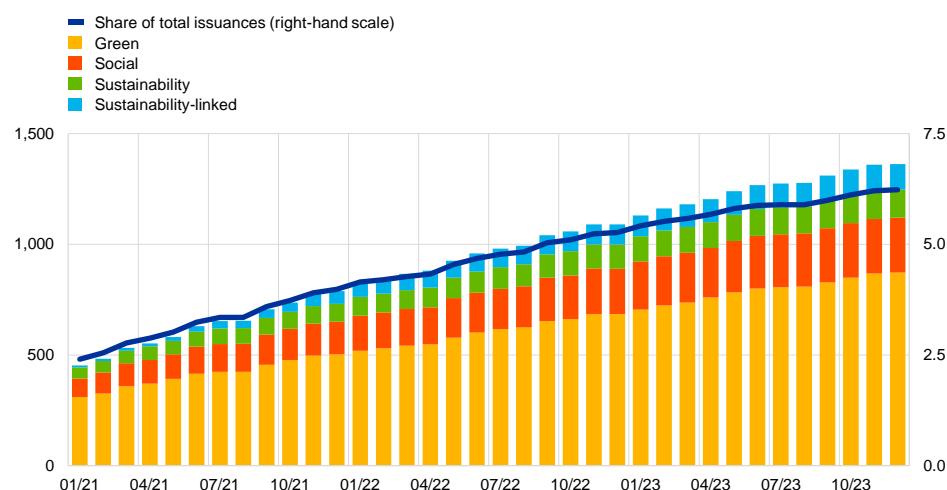
Sources: Centralised Securities Database and ECB calculations.
Notes: The chart shows euro area issuance of environmental, social and governance debt securities for all levels of assurance. The "Share of total issuance" refers to the amount of all sustainable securities as a share of all debt securities issued in the euro area.

The second focus area aims to address the increasing physical impact of climate change. Extreme weather events are becoming more frequent and their costs increasingly clear.[8] Together with changes in weather patterns, they affect the macroeconomy and financial sector through various channels. Changes to the climate particularly affect the agriculture, tourism and, via food prices, the retail and restaurant sectors. After the heatwave of summer 2022, food price inflation in Europe is estimated to have risen by 0.67 percentage points a year later.[9] Increased global heating is found to have non-linear effects on food prices, posing risks to heightened inflation dynamics going forward. Empirical analyses find that increases in temperature above certain thresholds reduce labour productivity and economic growth.[10] It is essential for the ECB to enhance its assessment of how a changing

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[8]   See Diffenbaugh, N. S., "Verification of extreme event attribution: Using out-of-sample observations to assess changes in probabilities of unprecedented events", *Science Advances*, Vol. 6(12), No 2368, 2020.

[9]   See Kotz, M., Kuik, F., Lis, E. and Nickel, C., "The impact of global warming on inflation: averages, seasonality and extremes", *Working Paper Series,* No 2821, ECB, 2023.

[10] See, for example, "Climate change and climate policy: analytical requirements and options from a central bank perspective", *Monthly Report*, Deutsche Bundesbank, January 2022, p.33.

climate affects inflation and the economy. Besides access to high-quality data, this will require further exploration of how to integrate the physical impacts of climate change into climate scenarios and the analytical framework used for the macroeconomic projections.

Adaptation finance will be a major area of new research. The costs associated with the physical impact of climate change pose financial and fiscal risks, yet only a quarter of climate-related catastrophic losses are insured.[11] However, adaptation investment to limit exposure to physical climate risks will divert resources away from more productive investment opportunities.[12] The ECB will explore the economic and financial implications of climate adaptation measures and the associated funding needs required to make the economy more resilient to a changing climate.

The third focus area explores nature-related risks. There is growing evidence that climate change has adverse implications for nature, while the degradation of nature in the form of intensive land use, pollution and overexploitation of resources amplifies the climate crisis. Degradation of nature leads to reduced capacity for carbon uptake and storage and lowers the resilience of soil to the impacts of extreme weather events and a changing climate. In Europe, more than 80% of habitats are already in poor condition.[13] Nature loss poses a serious risk to humanity, as it threatens vital functions, such as the supply of food and medicines.

Degradation of nature affects the economy and leads to financial risks. According to the survey on the access to finance of enterprises (SAFE), 48% of euro area firms are very concerned about the implications of environmental degradation for their business.[14] This is in line with recent research finding that 72% of euro area non-financial corporations are strongly dependent on at least one ecosystem service, such as healthy soils, clean water and protection against floods. As these firms account for 75% of the corporate loan exposures of euro area banks, nature-related risks pose a clear risk to banks (Chart B). The ECB will study the implications of nature and biodiversity loss for the economy, their interplay with climate change and how they can affect macroeconomic variables relevant for its mandate.

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[11] See EIOPA-ECB, "Policy options to reduce the climate insurance protection gap", *Discussion Paper*, April 2023.

[12] See "The price of inaction: what a hotter climate means for monetary policy", *The ECB Blog*, ECB, 18 December 2023.

[13] See European Environmental Agency, "Conservation status of habitats under the EU Habitats Directive", 18 November 2011.

[14] See the box entitled "Climate change and euro area firms' green investment and financing – results from the SAFE", *Economic Bulletin*, Issue 6, ECB, 2023.

Chart B

Dependencies of euro area non-financial corporations and loan portfolios on ecosystem services

(percentages)

- ■ Direct
- ■ Upstream
- ● High dependency, total
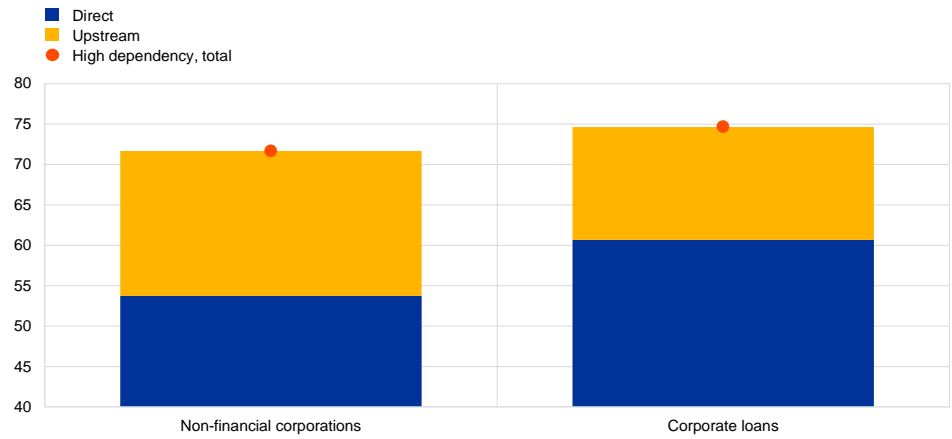
Sources: ENCORE, EXIOBASE, AnaCredit and ECB calculations.
Notes: Share of euro area non-financial corporations (NFCs) that have a high total dependency with a score greater than 0.7 for at least one ecosystem service, and the share of euro area banks' corporate loan portfolios in these ecosystem services. A loan is labelled as highly dependent when the borrowing NFC has a sufficiently high dependency score. Chart B depicts the averages of the dependency scores of euro area NFCs and the corporate loan portfolios of euro area banks. It also shows the direct dependencies of NFCs on ecosystem services, their upstream dependencies, i.e. the dependencies of their suppliers. Latest available data are for December 2021. See Boldrini, S., Ceglar, A., Lelli, C., Parisi, L. and Heemskerk, I., "Living in a world of disappearing nature: Physical risk and the implications for financial stability", *Occasional Paper Series*, No 333, ECB, 2023.

Articles

1 The impact of recent shocks and ongoing structural changes on euro area productivity growth

Prepared by Paloma Lopez-Garcia, Brindusa Anghel, Gert Bijnens, Simon Bunel, Tibor Lalinsky, Wolfgang Modery and Maria T. Valderrama

1 Introduction

The COVID-19 pandemic and the energy crisis have interacted with the ongoing transition to a greener and more digital economy, with uncertain impacts on productivity growth. During the acute phase of the pandemic, productivity per employee fell as a result of labour hoarding and reduced capacity utilisation. The rapid policy responses to the pandemic-induced crisis at the national and European levels prevented a wave of bankruptcies, but also possibly inhibited productivity-enhancing reallocation of resources. The pandemic changed the ways in which firms invest and produce and people consume and work, triggering an acceleration of the ongoing digitalisation of the euro area economy, also supported by the Next Generation EU (NGEU) funds. These changes can have substantial and positive impacts on productivity, but further investments in complementary skills and intangibles are needed to reap their full benefits. In addition, the energy price shock that followed the Russian invasion of Ukraine and the transition to a greener economy are changing relative prices of inputs and affecting the production and investment decisions of firms, with a bearing on their productivity. The impact is expected to be negative over the short term but, given the need for production processes to adapt, green innovation might lift productivity prospects over the longer term.

This article summarises the key results of recent work on productivity by a group of experts from the European System of Central Banks (ESCB).[1] The analysis builds on previous work undertaken in the context of the ECB monetary policy strategy review.[2]

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[1] The analysis has been published as Anghel, B., Bunel, S. et al., "Digitalisation and productivity: a report by the ESCB expert group on productivity, innovation and technological change", *Occasional Paper Series*, No 339, ECB, Frankfurt am Main, February 2024; Bijnens, G. et al., "The impact of climate change and policies on productivity: a report by the ESCB expert group on productivity, innovation and technological change", *Occasional Paper Series*, No 340, ECB, Frankfurt am Main, February 2024; Lalinsky, T. et al., "The impact of the COVID-19 pandemic and policy support on productivity: a report by the ESCB expert group on productivity, innovation and technological change", *Occasional Paper Series*, No 341, ECB, Frankfurt am Main, February 2024.

[2] See Work stream on productivity, innovation and technological progress, "Key factors behind productivity trends in EU countries", *Occasional Paper Series*, No 268, ECB, Frankfurt am Main, September 2021.

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The article is organised into four sections. After this introduction, Section 2 studies the impact of the pandemic and support policies on productivity and resource reallocation across and within sectors of activity. Section 3 analyses the potential productivity impact of the digital and green transitions: the section first explores whether and through which channels digital technologies could be a game changer for productivity growth in the euro area, and then examines the impact of the change in relative input prices brought about by the green transition and recent energy shock on innovation and productivity-enhancing resource reallocation. Section 4 concludes this article.

2 The impact of the COVID-19 pandemic

The pandemic differed from previous crises in at least three ways: (1) the broad impact of the crisis across countries, sectors and firms; (2) the measures taken to contain the spread of the virus, such as lockdowns and changes in the way people work and consume; and (3) the scope and magnitude of the policy support granted.[3]

Job retention schemes (JRS) were one important part of the policy response and could be a reason for differing productivity developments during the pandemic, depending on whether productivity is measured per employee or per hour worked. Job retention schemes set incentives to keep workers employed by their firms, even if they worked fewer hours. This enabled firms to adjust to the shock by reducing working time rather than laying people off. As a result, productivity in 2020 increased if measured as GDP per hour worked and declined if measured as GDP per employee (Chart 1). The analysis in this article, based on firm-level data, will focus on labour productivity measured as output per employee, given the lack of information on hours worked at the firm level.

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[3]   See the box entitled "The impact of the COVID-19 pandemic on labour productivity growth", *Economic Bulletin*, Issue 7, ECB, 2021.

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Chart 1

Productivity developments in the euro area

a) Labour productivity per employee

(annual percentage changes)

- ■ Contact-intensive services
- ■ Other sectors
- ■ Labour reallocation
- ● Total
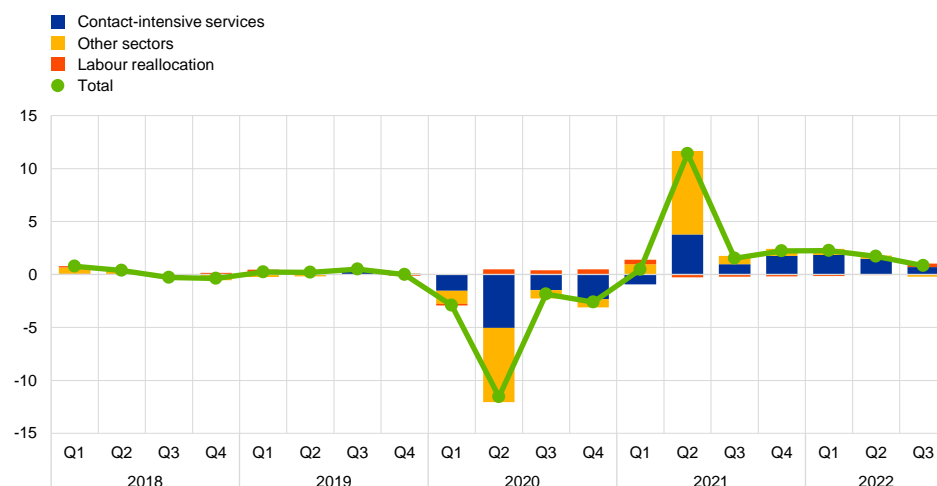
b) Labour productivity per hour worked

(annual percentage changes)

- ■ Contact-intensive services
- ■ Other sectors
- ■ Labour reallocation
- ● Total
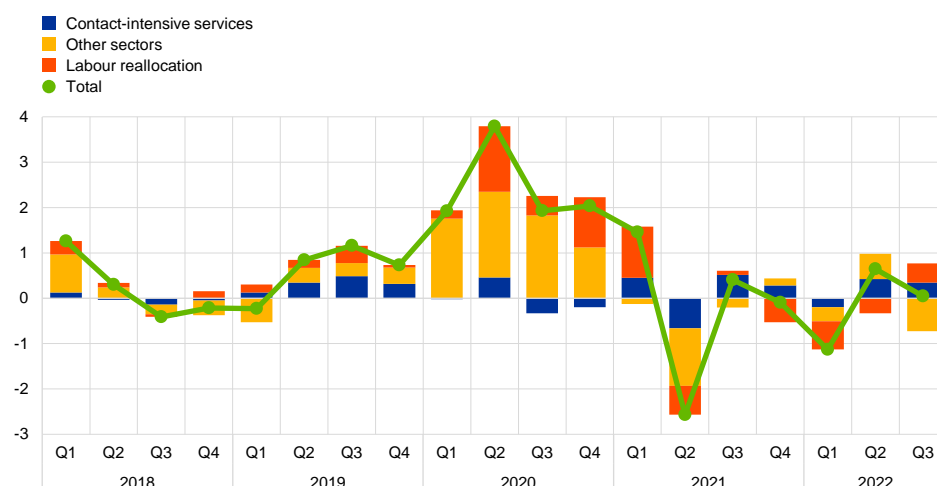
Source: Authors' calculations based on Eurostat data.
Note: The aggregate labour productivity growth is decomposed into growth originating from within economic sectors (within-sector component) and from change in the employment shares of the sectors (between-sector labour reallocation component). Furthermore, the within-sector component can be decomposed into the contribution of sectors less and more exposed to the COVID-19 shock. The latter are the contact-intensive services and include the following sectors under the NACE classification: wholesale and retail trade, repair of motor vehicles and motorcycles (code G in the NACE classification), transportation and storage (H), accommodation and food service activities (I), arts, entertainment and recreation (R) and other activities (S-U).

Short-term impact and reallocation of resources

The decline in productivity per employee in 2020 was driven by the strong decline in within-firm productivity growth. Chart 2 decomposes sectoral labour productivity growth in selected euro area countries between 2019 and 2020 into the contributions of the within-firm component and the reallocation of labour across firms

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in the sector (between-firm component).[4] In most countries there was a strong decline in within-firm productivity growth. This reflects the effect of the reduced capital utilisation, the JRS and the consequent larger drop in output relative to the number of employees.

The pandemic and the related policies possibly inhibited but did not prevent the productivity-enhancing reallocation of resources across and within sectors. Crises can have a "cleansing effect", which is understood to be the disproportionate impact of adverse economic shocks on low productivity firms. The resulting reallocation of resources from low to high productivity firms can mitigate the negative productivity developments during busts caused by low capacity utilisation and labour hoarding. However, this reallocation process could have been altered during the pandemic because both low and high productivity firms operating in the most contact-intensive sectors were similarly affected. Also, the wide reach and vast magnitude of supporting measures to protect the corporate sector, both at the national and European levels, could have prevented the contraction and exit of low productivity firms and thereby inhibited the cleansing effect. Chart 2 shows that the contribution of the reallocation of resources across existing firms (between-firm component) was positive for productivity growth for the group of countries considered, and mitigated the aggregate decline in labour productivity in 2020.[5] This means that low productivity firms contracted relatively more than their high productivity counterparts. In addition, Chart 3 below shows that relatively low productivity firms exited the market in 2020. Both pieces of evidence point to the pandemic having a cleansing effect. However, as will be shown, the cleansing effect was less pronounced than in other crises.

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[4]   The countries covered are Estonia, Greece, Spain, France, Croatia, Italy, Luxembourg, Netherlands, Portugal, Slovenia, Slovakia and Finland.

[5]   In Greece the contribution of the reallocation of resources across firms is slightly negative. However, Greece is the only country in which productivity is measured as revenue per employee, rather than value added per employee. This could affect the comparability of the results with the other countries.

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Chart 2

Contributions to sector labour productivity growth in 2020

(annual percentage changes)

- ■ Within-firm margin
- ■ Between-firm margin
- ● Labour productivity growth
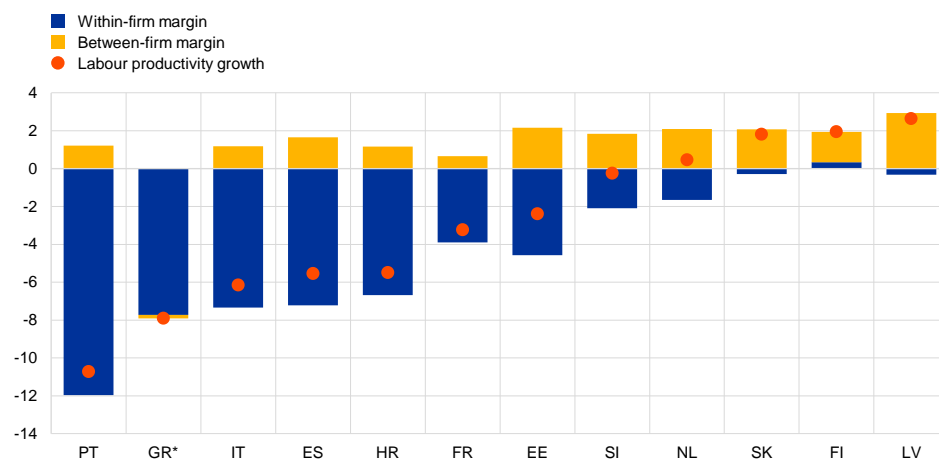
Source: Authors' calculations based on individual firm data from the included countries.
Notes: Productivity measured as real value added per employee, with the exception of Greece, where it is calculated as revenue per employee. This is a shift-share analysis of sector productivity growth, distinguishing between the contribution of the change of productivity of each firm, given initial market shares (within-firm margin), and the change of market shares of firms with different productivity levels (between-firm margin).

Less productive firms exited the market during the first year of the pandemic, contributing to the cleansing effect. Resources can also be reallocated across firms because of firm entry into, and exit from, the market. When less productive firms are substituted by new, more productive firms, firm dynamism is productivity-enhancing. As shown in Chart 3, the productivity distribution of firms that exited the market in 2020 was skewed to the left when compared with the productivity distribution of survivors in their sector. That is, firms exiting the market had on average lower productivity than incumbent firms, contributing to the productivity-enhancing reallocation of resources.

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Chart 3

Distribution of productivity of firms that exited compared with survivors in the same sector in 2020

(density)
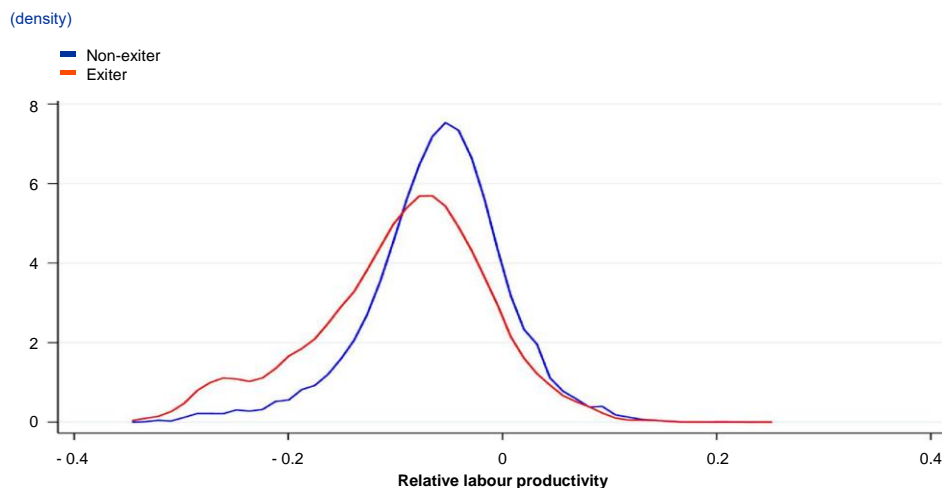
Source: Authors' calculations based on Orbis-iBACH firm-level data.
Notes: The data refer to Belgium, Germany, Spain, France, Italy and Portugal. Labour productivity is defined as real value added per employee.

However, when the economy contracted sharply in 2020, fewer firms exited than in other crisis episodes, which mitigated the cleansing effect. To test if firm exits were different in 2020 to previous crises, the estimated historical reaction of firm exits to the decline in economic activity is compared with the dynamics observed during the acute phase of the pandemic in the five largest euro area economies. The results presented in Table 1 show that the pandemic reaction was much smaller than in previous crises: the correlation between firm exit and economic activity (-0.031) decreased to about -0.01 during the pandemic (as suggested by the sum of estimated coefficients: -0.031+0.024). This was the result of several factors, including bankruptcy freezes that resulted either from lockdowns that stalled administrative procedures or from policy decisions taken to avoid a wave of bankruptcies in some countries.[6] The policy support to the corporate sector also contributed to fewer firms exiting, as shown below.

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[6] The lower rate of firm exits during the acute phase of the pandemic could also reflect the expectation that the COVID-19 crisis would be short-lived.

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Table 1
Firm exits in relation to changes in economic activity

Dependent variable: firm exit rate

Regressor	Estimated coefficient
Sector activity	-0.031 ***
COVID-19 dummy (2020=1)	-0.490 *
Sector activity x COVID-19 dummy	0.024 **
Observations	3,209
R-squared	0.57

Source: Authors' calculations based on sector-level Eurostat data.
Notes: The table presents the results of an OLS regression with sector, country and year fixed effects, using data from Germany, Spain, France, Italy and the Netherlands over the period 2004-2020 and across 50 two-digit sectors. The dependent variable is the country-sector-year firm exit ratio and the main regressor is the country-sector-year value added growth, as a proxy for the cyclical position of the sector. The interaction with the COVID-19 dummy (2020=1) shows fewer firm exits as a reaction to a 1 percentage point drop in value added growth during the COVID-19 period. Errors are clustered at the sector level. *** significant at 1% level, ** significant at 5%, * significant at 10%.

The role of policy support

The rapid policy support provided to corporates and households prevented a wave of bankruptcies and preserved households' incomes. The support was thus a key factor behind the rapid economic recovery of the euro area economy following the pandemic-induced crisis. However, it is important to examine whether the unprecedented policy support during the pandemic had undesired impacts on aggregate productivity growth.

Firm-based evidence from several euro area countries suggests that policy support did not significantly distort resource reallocation across existing firms in 2020. In order to analyse the allocation of policy support across firms during the pandemic, it is necessary to merge data on a firm's characteristics with information on the support received by that firm in the form of subsidies, loan moratoria and guarantees. This merged dataset, available for six euro area countries, shows that firms in the middle of the productivity distribution had the highest probability of being supported in 2020 (Chart 4, dark blue line).[7] In addition, the size of support increased with firm productivity.[8] Therefore, at the onset of the crisis, policy support was not specifically allocated to low productivity firms and consequently did not contribute to the misallocation of resources.

However, the relative probability of low productivity firms receiving support increased significantly during the second year of the pandemic crisis. Highly productive firms exited the support schemes early in the pandemic. Therefore, during the second year of the pandemic, the probability of firms with low productivity receiving support increased compared with more productive firms in all countries that

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[7] The countries for which 2020 data are available are: Estonia, Spain, Croatia, Portugal, Slovenia and Slovakia.

[8] For cross-country and other details, please see Lalinsky, T. et al., "The impact of the COVID-19 pandemic and policy support on productivity: a report by the ESCB expert group on productivity, innovation and technological change", *Occasional Paper Series*, No 341, ECB, Frankfurt am Main, February 2024.

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have available data (Chart 4, yellow line). Hence the allocation of subsidies became more distortionary over time, despite unchanged eligibility criteria.[9]

Probability of receiving wage subsidies by productivity of the firm, 2020 and 2021

(percentage point difference in the probability of receiving support relative to the reference category (first decile))
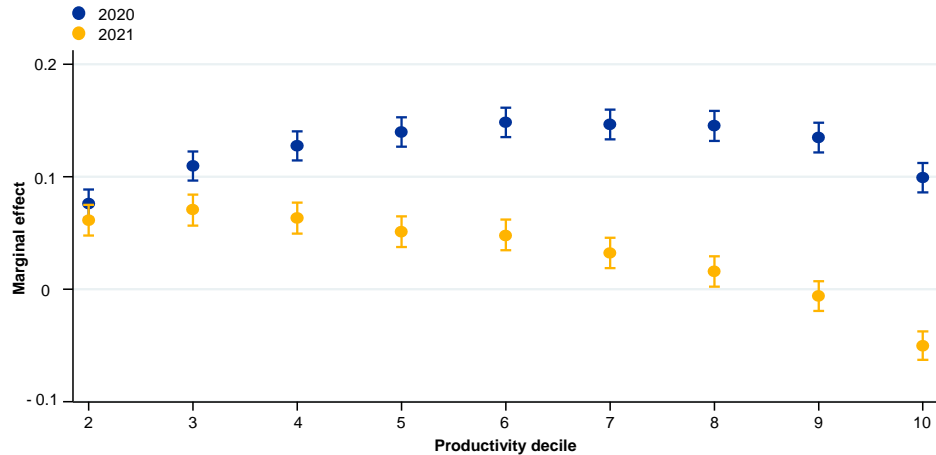
Source: Authors' calculations based on firm-level data from Croatia, Latvia and Slovakia.
Notes: Changes in the probability of receiving subsidies for a firm in a given productivity decile with respect to the lowest productivity decile (first decile). The whiskers represent confidence intervals. An average of the results for Croatia, Latvia and Slovakia is presented.

Complementary analysis shows that, compared with other crises, the muted exit rate of firms in 2020 could to some extent be attributed to low productivity firms having large cash buffers (Chart 5). Low productivity firms, defined as those in the bottom half of the productivity distribution in each sector, enjoyed relatively healthy cash buffers in 2020. This could explain their greater capacity to stay in the market during the pandemic compared with other crises such as the global financial crisis (GFC). There could be different reasons for the healthier cash buffers. Firms may have had healthier balance sheets prior to the pandemic, or they may have benefited from fiscal support during the pandemic. To disentangle these factors, Chart 5 shows the cash holding distribution in 2020 (in red) and in 2009, the peak year of the GFC (in blue), and during the year preceding both crises (in light red and light blue). It is apparent that the cash buffers of low productivity firms in 2020 were higher than in 2009, and that the increase occurred in 2020, not in 2019. This suggests that support policies may have played a key role in the muted exit rate of firms in 2020.

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9   Note that only Croatia, Latvia and Slovakia had firm-level data on wage subsidies and firm characteristics for 2021. Therefore, the results referring to the allocation of support in 2021 are based on a small sample of countries and should be treated with caution.

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Chart 5

Cash holding distribution of low productivity firms during the global financial crisis and the pandemic

(density)

Legend:
- Low productivity firms GFC
- Low productivity firms pre-GFC
- Low productivity firms COVID-19
- Low productivity firms pre-COVID-19

Cash holdings (log): sector weighted
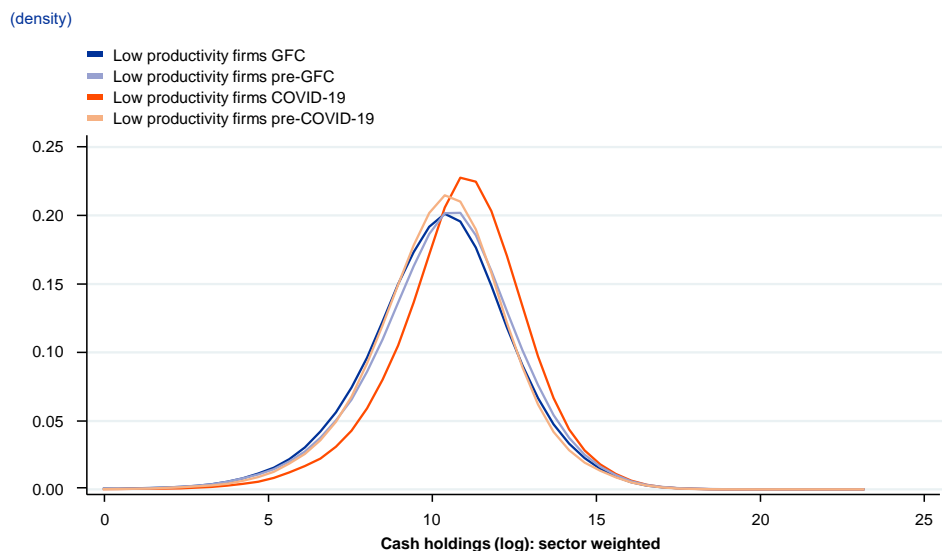
Source: Authors' calculations based on Orbis-iBACH data from Belgium, Germany, Spain, France, Italy and Portugal.
Notes: Low productivity firms are defined as those in the bottom half of the productivity distribution in each country-sector. Sectors are then aggregated using value added weights. GFC is 2009, pre-GFC is 2008, COVID-19 is 2020 and pre-COVID-19 refers to 2019. Productivity is measured as real value added per employee.

Monetary policy also played a role in mitigating the adverse effects of the crisis brought on by the COVID-19 pandemic. At the time of writing, it was not yet possible to quantify the impact of monetary policy on firm-level productivity growth as firm-level data were not yet available for the period following 2020/2021. However, an analysis of historical data can give some indication of the possible effects of monetary policy during the pandemic. In general, monetary policy has an impact on productivity by positively affecting the business cycle, but also by reducing financial frictions of relatively high productivity firms.[10]

Long-term productivity impacts of the pandemic

It is still too early to gauge the long-term consequences of the pandemic on productivity growth. Identifying the impacts is also difficult because other shocks with potentially large effects on productivity growth have hit the economy since the pandemic. This section highlights the main structural changes with a possible impact on productivity growth over the long term and leaves the precise quantification of their impact for future analysis, as data become available.

The pandemic and related lockdowns accelerated e-commerce and online shopping. Early on in the pandemic, deflated retail trade turnover dropped by approximately 20% (Chart 6, panel a). Online shopping, in contrast, increased sharply and was still approximately 30-40% above pre-COVID-19 levels in 2022. The

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[10] See the analysis reported in Valderrama, M.T. et al., "The impact of monetary policy on productivity: A report of the ESCB Expert Group on Productivity, Innovation and Technological Change", *Occasional Paper Series*, 2024, forthcoming.

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impact of such a surge in online sales on productivity growth is not clear-cut and the effect differs across firm characteristics and other determinants. The literature has found that the spread of online platforms has had a positive impact on incumbent firms' productivity growth.[11] These productivity gains are the result of increases in value added rather than reductions in employment, indicating that online platforms generate larger business opportunities.

In similar fashion, teleworking increased sharply in the spring of 2020 with the introduction of social distancing measures. The percentage of employees working frequently or occasionally from home increased sharply in 2020 and rose further to almost 25% in 2021 (Chart 6, panel b). The surge in teleworking may affect productivity growth through various channels. First, teleworking may lead to greater efficiency, thanks to the time saved on commuting, which partly translates into longer working hours.[12] Second, it may result in a reduction in the stock of capital, especially real estate, needed by firms to operate.[13] Third, teleworking has the potential to accelerate digitalisation. And fourth, teleworking may have an adverse impact on the way teams work together, as working from home is perceived by some to decrease interaction, team spirit and synergies among colleagues. The available data show that the negative productivity impacts of teleworking increase with teleworking intensity. For that reason, the literature suggests an inverted U-shaped relationship between the amount of telework and worker efficiency, implying that productivity growth is maximised at moderate levels of teleworking.[14] The exact form of this relationship likely varies with the relative importance of these factors by sector and by occupation.

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[11] Organisation for Economic Co-operation and Development, "One year of SME and entrepreneurship policy responses to COVID-19: Lessons learned to 'build back better'", *OECD Policy Responses to Coronavirus (COVID-19)*, 2021.

[12] Aksoy, C.G., Barrero, J.M., Bloom, N., Davis, S.J., Dolls, M. and Zarate, P., "Time Savings When Working from Home", *NBER Working Paper*, No 30866, January 2023.

[13] Bergeaud, A. and Ray, S., "The macroeconomics of teleworking", *Banque de France Bulletin*, No 231/2, 2020.

[14] See, for example, Behrens K., Kichko, S. and Thisse, J.-F., "Working From Home: Too Much of a Good Thing?", *CESifo Working Papers*, No 8831, 2021 and Albanesi, S., Dias da Silva, A., Jimeno, J.F., Lamo, A. and Wabitsch, A., "New technologies and jobs in Europe", *Working Paper Series*, No 2831, ECB, Frankfurt am Main, 2023.

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Chart 6

E-commerce and teleworking

a) Retail trade turnover

(deflated; index 2019 = 100)

- Retail trade, excluding motor vehicles and motorcycles
- Retail sales via mail order or internet
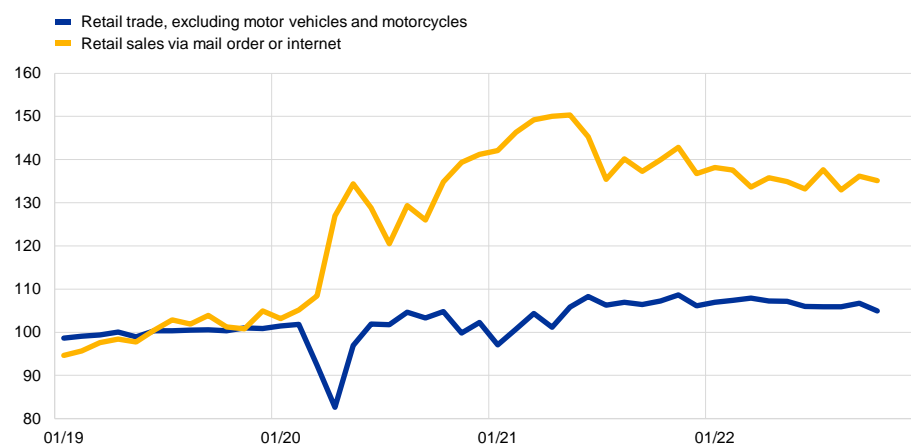
b) Share of employees teleworking

(% of employed persons aged 15 years and older)

- Usually
- Sometimes
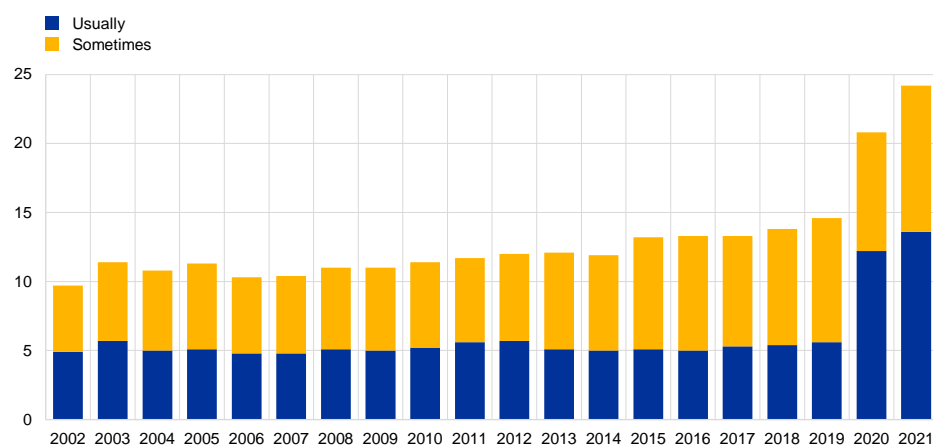
Source: Authors' calculations based on Eurostat data.
Notes: Retail sales via mail order or internet includes retail sale activities where the buyer makes their choice on the basis of advertisements, catalogues, information provided on a website, models or any other means of advertising and places their order by mail, phone or over the internet. Latest observation: October 2022.

The pandemic may have affected the labour force with longer-lasting scarring that extends beyond the acute phase. First, school shutdowns and disruptions to education during the pandemic may have had an impact on the human capital of future workers. Second, in the current workforce, pandemic containment measures and sharply reduced output may have raised unemployment rates, disrupted firm-worker relationships and potentially reduced skills and human capital. Finally, some people infected by COVID-19 may have acquired a chronic health condition that impairs their ability to work for a prolonged period. That said, job retention schemes and the provision of online schooling likely reduced the impact of the pandemic crisis

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on the labour force, and the return of the euro area labour force to its long-run pre-pandemic trend in 2023 argues against substantial permanent effects.[15]

3　The impact of the digital and green transitions

The ongoing digital and green transformations of the economy are high on the policy agenda in Europe. The NGEU funds support the adoption of greener technologies and the digitalisation of the economy, which have been accelerated by the pandemic and the recent increase in energy prices. This twin transition is expected to affect euro area productivity growth in the short and medium term. Furthermore, the ongoing development and spread of artificial intelligence (AI) in euro area economies gives rise to a host of opportunities and new challenges to exploit AI's productivity-enhancing potential. The EU Fit for 55 package[16] was designed to accelerate the green transition, and along with the recent energy shock in the context of the Russian invasion of Ukraine, is altering the relative prices of the various energy inputs. Although the costs of the transition to a low-carbon economy will always be lower than inaction, it is important to understand how these changes affect the production decisions and performance of the corporate sector. Higher input costs from increasing energy and carbon prices are likely to dampen short-term productivity growth. This negative impact could be offset in the longer term by adopting new, greener and more digitally adept technologies.

The digital transition

The digital transition has become a policy priority for the European Union.[17] Moreover, the pandemic has accelerated digitalisation. In addition, generative AI has been showcasing the potential – which is still to be seen – of new digital technologies to alter the ways in which people live and work.

One of the main reasons that the European Union has an interest in the digital transition is because of the productivity-enhancing potential of digitalisation. Digitalisation affects firm productivity growth through various channels. On the workers' side, the literature shows that the adoption of digital technologies leads to a boost in workers' efficiency by complementing their tasks, while non-core tasks are more likely to be outsourced after the arrival of the new technology.[18] Various studies have also documented the impact of digitalisation on markets: digital

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[15]　See Lam, W.R. and Solovyeva, A., "How effective were job-retention schemes during the COVID-19 pandemic? A microsimulation approach for European countries", *IMF Working Paper 2023/003*, International Monetary Fund, 2023 and the article entitled "The euro area labour force: recent developments and drivers", *Economic Bulletin*, Issue 6, ECB, 2023.

[16]　Fit for 55 is a set of proposals that aims to reduce the EU's net greenhouse gas emissions by at least 55% (compared with 1990) by 2030.

[17]　As documented by various policy initiatives such as the European Union's Digital Single Market Strategy and Next Generation EU project.

[18]　See, for example, Gal, P. et al., "Digitalization and Productivity: In Search of the Holy Grail - Firm-level Empirical Evidence from European Countries", *International Productivity Monitor*, Centre for the Study of Living Standards, Vol. 37, 2019, pp. 39-71.

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technologies allow firms to grow quickly and achieve scale without mass[19], increase competitiveness and market size through the potential of e-commerce and access wider choices of imported goods.[20]

Investing in digital technologies increases firm-level productivity. Firm-level data analysis from France and Austria shows that, after an adjustment period, firms that invested more in digital technologies enjoyed sustained and significantly higher productivity growth than firms that invested less in digital technologies (Chart 7).[21] In the very short term, adopting these new technologies implies structural changes in the production process, which could be detrimental to productivity. Indeed, employment rates react faster than production because firms need to hire employees able to perform new tasks, such as IT jobs. This explains the initial drop in labour and, above all, total factor productivity (TFP) growth in the year of the technology investment.

However, the estimated effect of digital uptake on firm-level productivity in the two countries included in the analysis is small (Chart 7). The estimated reaction of firm productivity to the uptake of digital technology indicates that, on average, a 1% increase in investment in digital technologies would lead to a 0.06% increase in labour productivity and a 0.007% increase in TFP after six years. These estimates probably represent a lower bound for at least four reasons: (1) they are micro-based elasticities estimated at the firm level, which means that spillovers and general equilibrium effects are not included, although they can be important, as will be discussed below; (2) the data for the exercise refer to the period before the introduction of the latest generation of AI technologies, and in particular generative AI, which might have a higher productivity impact; (3) new digital technologies may require investment in the complementary skills of workers and managers, appropriate infrastructure and legal frameworks, and intangibles (e.g. data and software) to deliver full productivity benefits; and (4) the average impact masks heterogeneous impacts across sectors and across firms within the same sector.

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[19] "Scale without mass" refers to the possibility of carrying out significant business activities without meeting criteria for a permanent establishment in the jurisdiction.

[20] See, for example, Haskel, J. and Westlake, S., *Capitalism without Capital: The Rise of the Intangible Economy*, Princeton University Press, 2017.

[21] The analysis uses an event methodology in which the event is a large investment (within the top 10% of the distribution) in digital technology. The specification includes controls for time-invariant unobservable country, sector and firm-specific variables as well as industry-year fixed effects to address some of the potential correlated demand or supply shocks. For more information on the methodology, refer to Aghion, P., Antonin, C., Bunel, S. and Jaravel, X., "What Are the Labor and Product Market Effects of Automation? New Evidence from France*", Sciences Po publications*, 2020.

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Chart 7

Impact of digital uptake on firm-level productivity growth over time

a) Labour productivity

(estimated semi-elasticity)
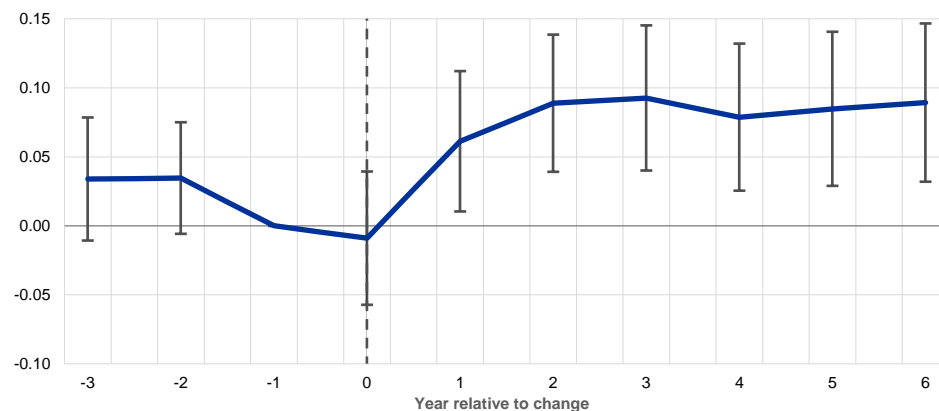
b) Total factor productivity

(estimated semi-elasticity)
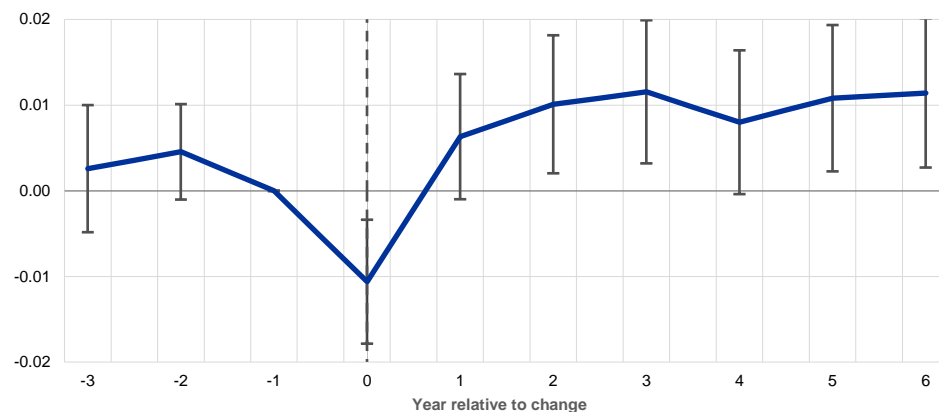
Source: Authors' calculations based on FIBEN dataset (France).
Note: The chart refers to the results based on French firm-level data, although results for Austria are qualitatively similar. The chart shows the average difference in productivity growth up to six years after the investment between two groups of firms: firms that invested a lot in digitalisation and firms that invested less in digitalisation. The whiskers represent a 95% confidence interval.

Analysis using firm-level data for 13 euro area countries confirms that the productivity gains from digitalisation are highly heterogeneous across sectors and firms. The estimates suggest that a 1 percentage point higher digital investment intensity in a sector is associated with an acceleration the next year of roughly 0.02 percentage points in TFP growth of the average firm in that sector. Hence, the magnitude of the impact of digital investment seems rather small, corroborating the previous results for France and Austria. However, average impacts mask high heterogeneity across sectors: the impact in sectors able to benefit from digitalisation (blue and yellow dots in Chart 8, panel a) is 17 times larger than the average productivity impact estimated across all sectors.

Only the most productive firms benefit in terms of TFP growth from higher digital intensity (Chart 8, panel b). Only about 30% of firms, the most productive ones in the sector, manage to use new digital technologies in innovative and even disruptive ways to increase their productivity over time. Indeed, these firms already

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have internal processes that are highly productive, and digitalisation is another advantage that gives them a competitive edge. For other firms, digitalisation has no significant impact on their productivity.[22]

However, aggregate impacts of digitalisation on productivity growth, after taking into account spillovers and general equilibrium effects, can be sizeable. To understand the importance of general equilibrium effects, a multi-sector dynamic stochastic general equilibrium model calibrated for the four largest euro area economies is used. In this model, sectoral output is used not only for consumption or investment purposes, but also as an intermediate input to capture inter-sector linkages.[23] Labour productivity growth resulting from observed TFP growth in each sector between 1997 and 2018 is compared with a counterfactual scenario in which TFP growth in digital sectors is set to zero from 1997[24]; that is, a counterfactual with no digitalisation.[25] It is found that in Germany and France, respective labour productivity growth would have been about 50% and 40% lower, respectively, in cumulative terms since 1997, without digitalisation-related efficiency increases.[26] Aggregate labour productivity in Italy would have stagnated. Overall, the simulation results highlight the high impact of TFP growth in digital sectors – as a proxy for digitalisation – on aggregate labour productivity growth, and the importance of spillovers and general equilibrium effects.[27]

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[22] The analysis uses Orbis data for 13 euro area countries between 2000 and 2019, including about 2.5 million firms, to estimate the impact of sector digital intensity on firm-level TFP growth after controlling for other possible determinants of productivity growth at the firm level. For details refer to Anderton, R., Botelho, V. and Reimers, P., "Digitalisation and productivity: gamechanger or sideshow?", *Working Paper Series*, No 2794, ECB, Frankfurt am Main, March 2023.

[23] A detailed description of the model can be found in Deutsche Bundesbank, "The impact of digitalisation on labour productivity growth", *Monthly Report*, Vol. 75, No 3, March 2023, pp. 43-65.

[24] Digital sectors comprise the economic sectors "Manufacture of computer, electronic and optical products" (NACE division C26), "Manufacture of electrical equipment" (NACE division C27) and "Information and communication" (NACE section J).

[25] Note that this is a very strong assumption as TFP growth in digital sectors could be related to reasons other than digitalisation.

[26] Results for Spain are not shown as the model deviates noticeably in some parts from the actual path of labour productivity. One reason for this is probably the fact that labour productivity in Spain increased considerably as a result of the disproportionately large reduction in labour input in the wake of the global financial and economic crisis and the subsequent sovereign debt crisis. However, this dramatic development is not triggered by TFP and therefore cannot be inferred from the model.

[27] The micro-based elasticities of productivity to digitalisation are much smaller than the ones implied by the model because they do not account for entry and exit, sector spillovers and other equilibrium effects.

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Chart 8

Heterogeneous impacts of digitalisation on TFP growth across sectors and firms

a) Estimated impact of digitalisation on TFP growth in different sectors

(percentage points)
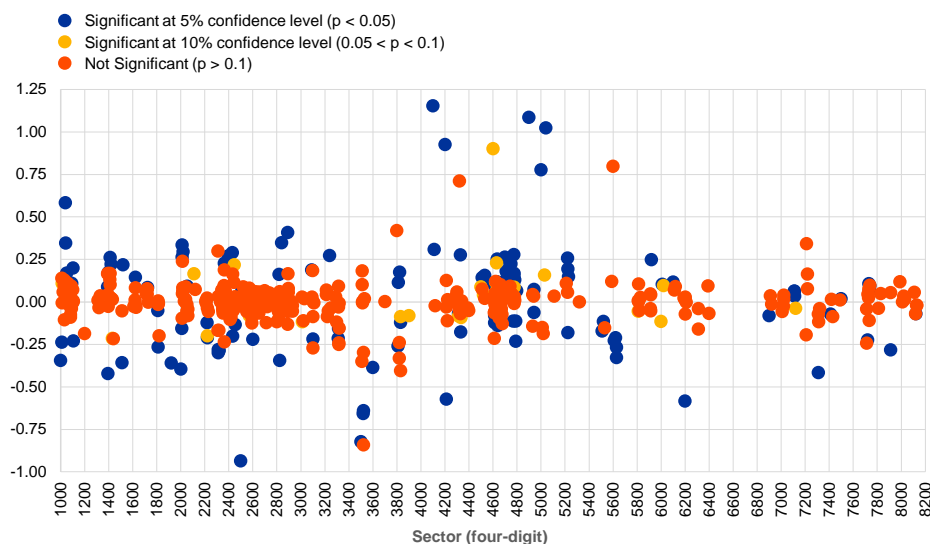
b) Estimated impact of digitalisation on TFP growth in firms with different initial TFP levels

(percentage points)
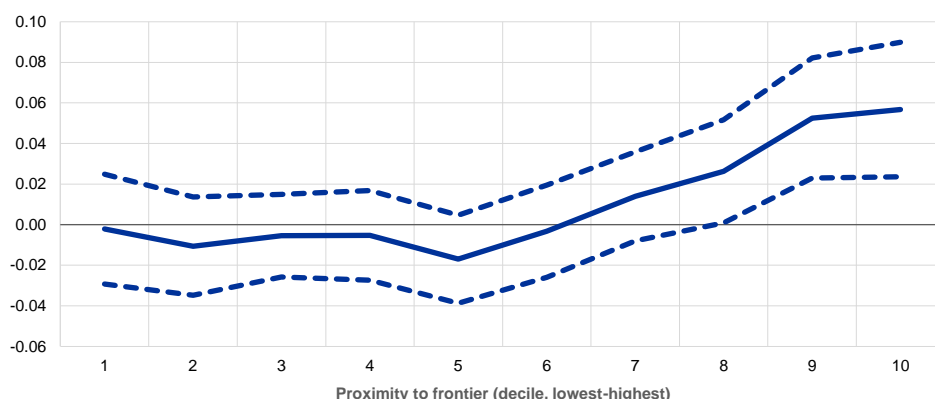
Source: Anderton et al.[1]
Notes: Panel a) shows the impact of digitalisation on sector TFP growth; sectors are defined at the 4-digit NACE level. Panel b) shows the sector-specific impact of digitalisation on firm TFP growth, depending on the position of the firm in the TFP distribution (1 is the lowest decile of the TFP distribution and 10 is the highest).
1) Anderton, R., Botelho, V. and Reimers, P., "Digitalisation and productivity: gamechanger or sideshow?", *Working Paper Series*, No 2794, ECB, Frankfurt am Main, March 2023.

The green transition

Transition risks refer to the impacts of mitigation policies that are needed to achieve a greener society. Such policies, which implement carbon reduction objectives, lead to changes in the energy and industrial system and have impacts throughout the economy. For example, firms involved in fossil fuel production and those with a high emission intensity could face higher business costs and/or high costs to invest in carbon mitigating technologies. Also, higher prices of intermediate

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inputs can result in a notable rise in the production costs of less polluting firms. Overall, the entire economy will have to adjust.

A "disorderly transition" would reduce aggregate productivity over the long term. Green capital requires technological development and investment, which itself is a gradual process that depends on resource availability. The pace of the transition therefore matters. If carbon prices increase in a gradual and predictable manner ("orderly transition"), obsolete capital can be replaced with new green capital when it has depreciated. If the investment effort is uncertain, and transition policies unpredictable or pushed to the future, carbon prices will have to rise sharply to reach carbon neutrality ("disorderly transition"). This can result in substantial losses of capital, output and productivity in the long term.

While transition policies are aimed at greenhouse gas (GHG) emission reduction, they can also have an impact on short- to medium-term productivity growth.[28] There are multiple potential channels for this impact. First, transition policies can reduce the flexibility with which firms operate. Second, new green technologies might be less efficient than existing carbon-intensive ones. Third, investment in green technologies might crowd out other productivity-enhancing investment. Fourth, the green transition may result in the reallocation of resources from high-polluting sectors and firms to low-polluting sectors and firms, which might differ in their average productivity level. Fifth, higher investment in green technologies and innovation could have a positive impact on aggregate productivity growth over the long term. Sixth, the green transition could affect the skill composition of the labour force, with a possible bearing on aggregate productivity growth.

Observed changes in firm productivity may be partly a measurement issue. Carbon-intensive technologies currently underestimate their climate change impact in productivity calculations. This is because environmental degradation and the increased risk of climate-related disasters are not included as costs in traditional accounting frameworks. Therefore, green technology that avoids these unaccounted costs may only appear less productive. Similarly, capital put in place solely to abate carbon emissions does not have a measured output. If carbon abatement is achieved by adding a step (e.g. carbon capture) to the existing production process, there is, by definition, a need for more capital and inputs to reach the same measured output. Assessing productivity based on GDP per employee or per hour worked falls short in capturing the full benefits of embracing green technology. This limitation becomes evident, particularly as these metrics fail to account for the relevant counterfactual scenario of a probable escalation in climate-related physical risks.

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[28] See also the article entitled "How climate change affects potential output", *Economic Bulletin*, Issue 6, ECB, 2023.

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Transition policies, firm productivity growth and innovation

A potential positive aspect of the green transition is that an increase in investments in green innovations and technologies could lift productivity growth over the medium to long term. This is known as the Porter hypothesis.[29] The "strong" version of the Porter hypothesis states that increases in environmental regulation stringency raise overall productivity, while the "weak" version holds that optimally designed environmental regulation spurs innovation. A third, "narrow" version predicts market-based tools to be more effective in boosting innovation than "command-and-control" policies. Although there are many empirical analyses that test the validity of the versions of the Porter hypothesis, results remain inconclusive.

Firm-level data from six euro area countries have been used to test the Porter hypothesis. Results show that the productivity growth of high-polluting firms declines as environmental policy becomes more stringent.[30] The impact can be relatively large: a one standard deviation tightening of the regulation decreases TFP growth by about one-third over five years. However, the impacts are different across policy types. Technology support policies (green R&D subsidies) only have a short-term negative effect in a transition period before boosting TFP growth.[31] In contrast, market policies – for example, the Emissions Trading System or taxes – have persistent and negative, albeit quantitatively small, effects. Conversely, non-market tools such as emission limits reduce TFP growth the most over the horizon of five years. Compared with market-based policies, the significant negative impacts of non-market policies on TFP could result from their more discretionary nature.[32]

More stringent environmental policies increase the amount of green patent applications from polluting firms (Chart 9, panel a). Moreover, the increase in investment in green innovation does not crowd out other types of innovations, as shown by the non-significant impact of more stringent policies on other non-green patent applications (Chart 9, panel b). These results confirm the weak version of the Porter hypothesis, which states that stringent environmental policy can increase overall innovation.

The analysis shows that market-based instruments, such as carbon taxes, are necessary but not sufficient to spur investment in green innovation and

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[29] Porter, M.E. and van der Linde, C., "Toward a New Conception of the Environment-Competitiveness Relationship", *The Journal of Economic Perspectives*, Vol. 9, No 4, 1995, pp. 97-118.

[30] Data for Belgium, Germany, Spain, France, Italy and Portugal between 2003 and 2019. The reported findings draw on the results of two ECB working papers: Benatti, N., Groiss, M., Kelly, P. and Lopez-Garcia, P., "Environmental regulation and productivity growth in the euro area: testing the Porter hypothesis", *Working Paper Series*, No 2820, ECB, Frankfurt am Main, 2023 and Benatti, N., Groiss, M., Lopez-Garcia, P. and Kelly, P., "Environmental regulation and innovation: are there crowding out effects?", forthcoming. The analysis uses estimated firm-level CO_2-equivalent emissions to identify firms most exposed to environmental policy changes, and thereby identify causal impacts. The changes in environmental policy are measured with the OECD Environmental Policy Stringency Index (EPS) and take into account information on three different types of environmental policies: market-based policies, non-market-based policies and green R&D support policies. A large set of controls for unobserved heterogeneity are included to minimize omitted variable bias.

[31] The initial negative impact of investment in new technology and innovation on TFP is also found in the context of investment in digital technologies (see Chart 7).

[32] Blanchard, O., Gollier, C. and Tirole, J., "The portfolio of economic policies needed to fight climate change", *Annual Review of Economics*, Vol. 15, 2023, pp. 689-722.

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productivity growth. The green transition also requires stepping up green R&D efforts and non-market policies such as standards and regulations. Similarly, survey-based evidence[33] shows that other factors related to reputational risks and demand are also important in driving corporate green performance.

The impact of environmental policies on TFP growth varies across firms. Firm-level data on the same six euro area countries show that small firms bear significantly higher TFP growth costs than large firms when environmental policy becomes tighter. This difference is shown to reflect, among other things, the capacity of large firms to access the required financial resources to successfully replace carbon-intensive capital.[34]

Chart 9

Change in green and non-green patent applications of polluting firms after tightening environmental policy

a) Green patents (by year of first filing)

(percentage points)

b) Other patents (by year of first filing)

(percentage points)
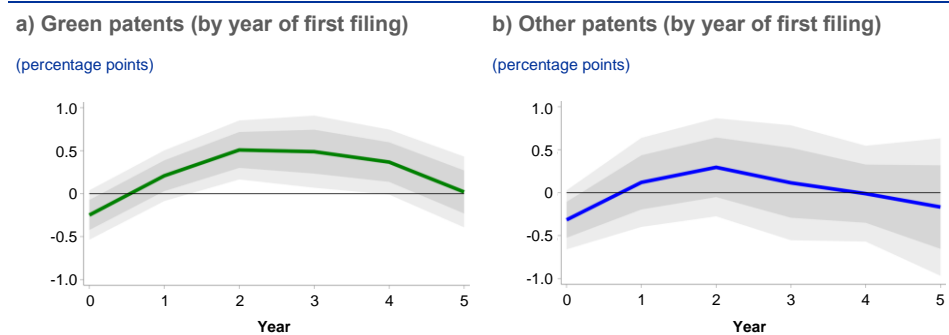
Source: Benatti et al.[1]
Notes: Firm-level impulse response functions of positive environmental policy stringency (EPS) changes on green patent families filed by polluting firms in Belgium, Germany, Spain, France, Italy and Portugal, estimated using local projections.[35] Data on patent applications are from the Orbis IP database. Patent information was matched with firm-level performance indicators for about 100,000 firm-year observations in the initial dataset, given that only a minority of firms apply for patents. The Cooperative Patent Classification (CPC) is used to classify the patented technologies in different groups. Green innovations refer to climate change mitigation technologies.
1) Benatti, N., Groiss, M., Lopez-Garcia, P. and Kelly, P., "Environmental regulation and innovation: are there crowding out effects?", forthcoming as an ECB Working Paper.

Transition policies and resource reallocation

Climate-driven reallocation of resources may also affect aggregate productivity growth. Emission reduction can be achieved by incentivising the adoption of greener technologies and through green reallocation, i.e. by shifting economic activity away from the most polluting firms towards the least polluting ones. The impact of green reallocation on aggregate productivity depends on the productivity of carbon-intensive sectors and firms compared with that of their greener counterparts.

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[33] Based on analysis of Eurostat's Community Innovation Survey 2020.

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

[35] Jordà, Ò., "Estimation and Inference of Impulse Responses by Local Projections", *The American Economic Review*, Vol. 95, No 1, 2005, pp. 161-182.

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High carbon-intensive sectors are, on average, relatively more productive than greener ones. Sectors such as mining and refineries are expected to shrink due to increasing relative prices and have a higher level of labour productivity than sectors that are involved in making buildings more energy-efficient and are expected to grow. Therefore, the reallocation of production factors across sectors during the green transition will mechanically, at current productivity levels, decrease aggregate productivity.

The effects of within-sector reallocation of resources are less clear and vary across sectors. Firm-level carbon intensity and labour productivity are not necessarily correlated. Therefore, reallocating output from high to low carbon-intensive firms does not necessarily lead to increased productivity. Firm-level information from the EU Emissions Trading System (ETS) for the period 2005-2020 shows that in the majority of sectors, the most carbon-efficient firms are also the most productive ones. At current firm-level productivity levels, reallocation of output towards greener firms will result in increases in labour productivity growth in those sectors, all other things being equal. However, for other sectors such as pulp, paper and ferrous metals, the contrary is the case, and the reallocation will be productivity-decreasing (Chart 10, panel a).[36]

Reallocation of factors of production within firms away from energy may lead to lower productivity. Models that include energy in the production function show that higher energy prices can result in firms substituting away from energy and increasing their use of capital and labour. Due to diminishing marginal returns, the overall impact would be lower productivity and output. Indeed, recent OECD work estimates that a 5% increase in energy prices leads to firm productivity dropping by approximately 0.4% one year later as a result of the downward adjustment of the firm's capacity utilisation.[37] The firms most affected are those operating in energy-intensive sectors, as well as firms that are financially constrained.

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[36] Transition policies might also affect reallocation of resources through entry and exit of firms. Model-based analysis shows that higher carbon taxes raise the productivity threshold for entering the market and increase firm exit rates; see Chafwehe, B., Colciago, A. and Priftis, A., "Carbon Taxation, Monetary Policy and Productivity", forthcoming. In addition, empirical analysis using matched data from EU ETS and Orbis shows that a sharp increase in carbon prices to €150 for all emissions within the EU ETS, assuming constant carbon intensity and no pass-through of the increased carbon cost, could put at least one-tenth of manufacturing firms currently covered by the ETS in major euro area economies at risk of making losses. See Bijnens, G. et al., "The impact of climate change and policies on productivity: a report by the ESCB expert group on productivity, innovation and technological change", *Occasional Paper Series*, No 340, ECB, Frankfurt am Main, February 2024.

[37] André, C. et al., "Rising energy prices and productivity: short-run pain, long-term gain?", *OECD Economics Department Working Papers*, No 1755, OECD Publishing, Paris, 2023.

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Chart 10

Reallocation of resources and labour productivity

Labour productivity of the 20% most carbon-efficient firms versus labour productivity of the 20% least carbon-efficient firms in each sector

(ratio)
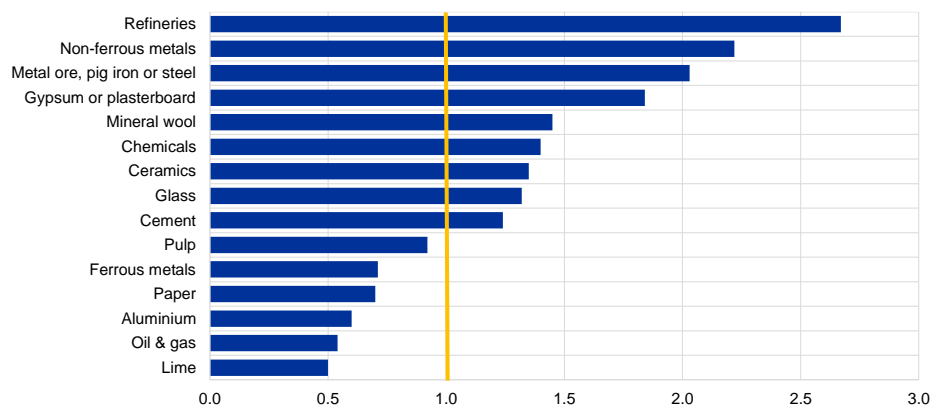
Source: Authors' calculations based on ETS-Orbis data.[38]
Note: "Firms" refers to firms within the EU ETS. Sectors where the blue bar passes the yellow line will benefit from a carbon driven reallocation as the least carbon-intensive firms are the most productive. For the sectors that do not pass the yellow line, the opposite is the case.

4 Concluding remarks: euro area productivity growth over the medium term

Over the past few years, the euro area economy has been hit by a series of shocks. The COVID-19 pandemic and the energy shock following Russia's invasion of Ukraine have interacted with other current structural trends, including the ongoing green and digital transitions. The overall impact of these shocks on the medium-term productivity prospects of the euro area is uncertain and varies depending on the time horizon.

The generous and swift policy responses at the national and European levels to the pandemic and the related lockdown measures helped to contain the size and duration of scarring effects on households and firms. Although productivity-enhancing reallocation of resources was not severely distorted in 2020, the pandemic and the policy support reduced the cleansing effect of the crisis compared with previous crises.

The pandemic accelerated the digitalisation of the economy and NGEU funds provided support in this regard. Digital adoption by corporates has been shown to foster productivity growth. However, firm-level impacts of digitalisation have been relatively modest to date. One of the main reasons for this is that only few firms – the ones closer to the technology frontier – have benefited most from digitalisation. Other firms need to invest more in relevant digital skills and complementary

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[38] Bijnens, G. and Swartenbroekx, C., "Carbon emissions and the untapped potential of activity reallocation: lessons from the EU ETS", *NBB Economic Review*, 2022, pp. 1-28.

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intangibles to fully reap the productivity gains from digitalisation. This process will only be reflected in aggregate productivity gains over the longer term.

The green transition may still boost productivity growth, but it will take time. In the short to medium term, the adjustment of firms to the change in relative input prices driven by carbon taxes or by geopolitical tensions, in addition to new limits and standards, and the scrapping of carbon-intensive capital, will reduce emissions as intended but is also likely to reduce productivity growth. Also, the reallocation of resources away from carbon-intensive sectors and firms might have a negative short-term impact on productivity. However, more stringent environmental policies are expected to trigger a new wave of green innovation and new environmental technologies that raise productivity growth over the long term.

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2 Is there a digital divide in payments? Understanding why cash remains important for so many

Prepared by Alejandro Zamora-Pérez, Andrea Marini and Juha Honkkila

1 Introduction

Is the constant trend towards the digitalisation of payments creating a binary world of digital "haves" and analogue "have-nots"? By assessing payment patterns in the euro area using detailed survey data, the results presented in this article challenge two prevailing assumptions. First, we contest the idea that cash is only used by people who are less connected to the digital world, by illustrating high cash usage across people with access to digital payment tools. Second, we revisit the notion that the digitalisation of payments is a uniform process, by showing that people with more limited access to digital payment tools have diverse sociodemographic profiles. Furthermore, results show that adoption of digital payment tools is not driven solely by supply-side limitations, hinting at the significant role of personal choice and the persistence of habits. The insights gained enrich our understanding beyond a one-size-fits-all approach to everyday payments in the digital age. The findings are in line with the approach adopted by the Eurosystem to cash and payments, which aims to ensure the availability and acceptance of cash while embracing digital innovation.

2 Cash and its persistence in a digitalising world

Assessing the digitalisation of payments beyond surface-level trends reveals a more nuanced reality, with cash use remaining persistent among a broad spectrum of the population despite increasing digital adoption. Despite having a highly developed financial system and growing digitalisation, the euro area contains a significant number of people across most demographics who opt to use cash for everyday transactions. Survey data from the ECB's Study on payment attitudes of consumers in the euro area (SPACE) provide valuable insights into the diverse ways in which different segments of the population interact with cash.[39] According to the SPACE findings, there has been a marked decline in the proportion of point-of-sale transactions conducted in cash, down from 79% in 2016 and 72% in 2019 to 59% in 2022. This figure does, however, mask the existence of mixed users, with up to 74% of people conducting at least one transaction in cash on any given day in 2022, which underscores the continued importance of cash alongside digital payment options. Contrary to other developed economies with lower cash usage, the euro area can be seen as a distinct example where the tangible benefits of cash seem to be widely perceived by the population. However, the reasons behind the persistent usage of cash in the digital age are not fully understood as they are

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complex and multifaceted, spanning from practical constraints to ingrained habits and preferences, which has recently prompted academic research on the matter.[40]

But are these cash usage patterns in the euro area driven by people less connected to the digital world, or are they the result of a more complex reality of individual preferences and behaviours? As digitalisation has advanced, it has often given rise to a digital divide in access to technology.[41] This phenomenon has been extensively explored in the context of internet and computer access but less so in payment methods.[42] In the digital divide literature, the "access divide" is typically referred to as the "first-level" digital divide. This is contrasted with the "second-level" divide that involves disparities in digital skills and similar aspects.[43] Access to digital payments in the euro area is primarily facilitated by having debit and credit cards or payment accounts. In this article, instead of access, we adopt a narrower measure than the traditional literature to assess a potential digital divide in payments: reported ownership of tools enabling digital payments, namely credit and debit cards and payment accounts.[44] Throughout our discussion, we use the term "digital payment tools" to specifically refer to these primary enablers of digital payments.

The group we will focus on, which for the sake of simplicity we will refer to as the "less digitalised group", comprises individuals who report not having either a debit or credit card or a payment account. To analyse this group's payment behaviour, we used representative SPACE data collected by the ECB in 2022, encompassing a one-day payment diary and a survey questionnaire

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[40] There is an emerging literature, extending beyond the euro area, that aims to explain the persistence of cash usage despite financial innovation. See, for example, Alvarez, F. and Argente, D., "On the Effects of the Availability of Means of Payments: The Case of Uber", *The Quarterly Journal of Economics*, Vol. 137, No 3, 2022, pp. 1737-1789; Alvarez, F., Argente, D., Jiménez, R. and Lippi, F., "Cash: A Blessing or a curse?", *Journal of Monetary Economics*, Vol. 125, 2022, pp. 85-128; Brown, M., Hentschel, N., Mettler, H. and Stix, H., "The convenience of electronic payments and consumer cash demand", *Journal of Monetary Economics*, Vol. 130, 2022, pp. 86-102.

[41] A related question is what is driving connectedness to the digital world more generally, which is mostly addressed by the literature on the digital divide. This literature, primarily focusing on information and communication technology (such as computers and the internet) is vast and started in the 1990s. Originally seen as a gap in technology access ("first-level" divide), the digital divide is now understood as a multifaceted process encompassing not only access but also motivation, skills and actual usage. See, for example, Van Dijk, J., "Digital Divide: Impact of Access", *The International Encyclopedia of Media Effects*, 2017.

[42] While the financial inclusion literature is an important exception in examining inequalities in the adoption of digital payment tools (particularly bank account ownership and with a focus on developing countries), it often overlooks the potential benefits of cash, as highlighted by critics. Our analysis of payment patterns in the euro area offers a unique perspective, situated between widespread cash usage in developing economies and the move towards cashless societies in some developed countries. For an overview of financial inclusion research and its shortcomings, see Demirgüç-Kunt, A., Klapper, L. and Singer, D., "Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence", *Policy Research Working Papers*, No 8040, The World Bank Group, 2017, and Mader, P., "Contesting Financial Inclusion", *Development and Change*, Vol. 49, No 2, 2018, pp. 461-483.

[43] Recent research sheds light on differing financial and payment behaviours related to literacy and age, but less so regarding ownership of payment tools. See van der Cruijsen, C. and Reijerink, J., "Uncovering the digital payment divide: understanding the importance of cash for groups at risk", *Working Papers*, No 781, De Nederlandsche Bank, 2023, and Doerr, S., Frost, J., Gambacorta, L. and Qiu, H., "Population ageing and the digital divide", *SUERF Policy Brief,* No 270, 2022.

[44] The questionnaire of the SPACE survey includes questions referring to "debit and credit cards" and "payment accounts", without explicitly defining them for respondents. Generally, debit and credit cards exclude prepaid cards. A payment account typically refers to an account that enables the making of payment transactions, such as placing, transferring, or withdrawing funds. These two tools (cards and accounts) enable other types of digital payment means or channels, including online payments, linkages to online payment platforms (e.g. PayPal), or credit transfers.

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completed by nearly 40,000 consumers across 17 euro area countries.[45] As shown in Chart 1, the main observation is that nearly a fifth of the respondents report not having at least one of these two common digital payment tools. This share, extrapolated to the whole adult population in these 17 countries, would amount to around 40 million individuals. This implies that the influence of this group on the payments landscape is far from negligible.

Chart 1

Lack of ownership of common digital payment tools

Nearly one in five adults (19.5%) in the euro area reports not having either debit or credit cards or payment accounts

(share of population)

No debit or credit card
8.6%

1.2%

No payment account
12.0%
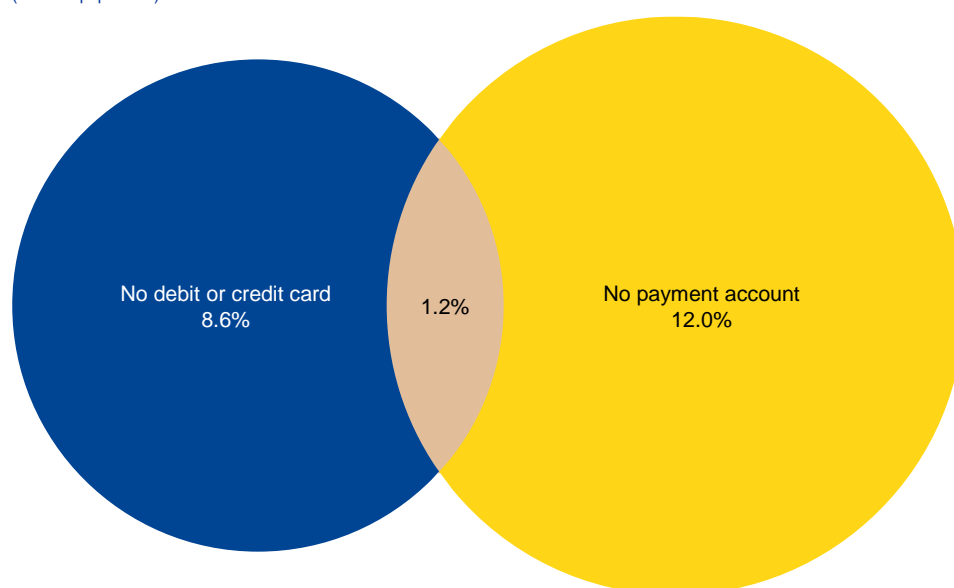
Source: ECB (SPACE 2022 survey).
Notes: The data encompass all euro area countries apart from Germany, Croatia and the Netherlands. The sample is representative and consists of nearly 40,000 respondents. The results vary across countries, although in most countries, the group of people reporting not having either cards or payment accounts represents between 13% and 27% of the national population.

The high share for the less digitalised group may stem partly from the nature of the reported data and may encompass not only people not having digital payment tools but also individuals unaware that they have such tools. Hence, reported figures mainly include individuals without cards or accounts, but could also point to a lack of awareness or low usage of either payment tool. For example, in the case of individuals reporting not having payment accounts, it is likely that these include a portion of the "underbanked": people who have payment accounts but rarely use them. Another reason for the high number is the surprisingly small overlap

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45   The SPACE report covers the entire euro area, but the data for Germany and the Netherlands are taken from national payment surveys and are consequently not used in this detailed analysis. Croatia is not included as it only joined the euro area in 2023. The sizes of the samples from each country were set to achieve specific numbers of point-of-sale transactions, reflecting the country's size. To guarantee representation of the population and every day of the week, the sampling approach incorporated quotas based on gender, age group and the day that transactions were documented in the payment diary.

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between the two subgroups, as shown in Chart 1.[46] This overlap between people lacking both an account and a card could be explained by several factors: some may rely on other people for financial transactions (for example, their cards may be linked to a family member's account) or use alternative forms of payment card not linked to accounts (such as prepaid cards), while others may simply have different financial strategies that do not fit conventional patterns. For example, 25.9% of non-account holders made a payment with a card during the day of the survey.

3 Beyond the binary: payment spectrum rather than payment divide?

In this section, we examine whether there really is a sharp divide in the use of payment methods or whether the situation is in fact more nuanced. In the broader literature on access to digital technology like computers and the internet, the term "digital divide" has been attacked for oversimplifying a complex reality.[47] We find that this critique applies to digital payments as well. The idea of a stark divide in ownership of digital payment tools does not fully capture the reality of everyday payments. First, we assess differences in the cash habits and sociodemographic profiles of individuals without either cards or payment accounts. The analysis suggests certain differences but, as with the broader digital divide, variations are a matter of degree. Then, we also study the possible reasons why people might be inclined not to have a common digital payment tool, focusing on aspects like physical banking presence and the persistence of cash usage.

Assessing cash habits and sociodemographic profiles

A comparison of cash-related behaviours reveals more similarities than differences between people with and without cards or accounts, albeit with the latter expected to have a greater preference for cash. Chart 2 shows how notable cash habits, preferences and attitudes towards cash attributes compare among both groups. Of those making payments during the day of the survey, 80% of people without a card or account conducted at least one cash payment, compared with 73% of the remaining population. Regarding store of value, 43% of the less digitalised group kept cash reserves at home against 38% for others. The gap widens when it comes to receiving part of their income in cash: 32% for those without cards or accounts against 15% for the rest. In terms of reported preferences, 65% of the less digitalised group consider cash important, a view echoed by 56% of others. Interestingly, individuals stating to have no clear preference between cash and cashless methods stands evenly at 22% across both groups, but the less digitalised

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[46] This small overlap is also confirmed by World Bank microdata (Global Findex Database 2021). Respondents were asked to report whether they have "an account at a bank or at another type of financial institution (...) or (…) a debit card". According to these data, those reporting to have neither a bank account nor a debit card (a subset similar to the overlap subset of Chart 1) represent around 2% of the euro area population. As the SPACE data make it possible to assess these two groups separately (not having a debit or credit card and not having a payment account), we are able to evaluate those not having at least one of these tools.

[47] Van Dijk, J., *op. cit.*

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group are nearly twice as likely to strictly prefer cash (31%) than the broader population (17%). When it comes to the perceived advantages of cash, the less digitalised group are more likely to prefer the ease and safety of cash over cards, at rates of 26% and 22% respectively, compared with 18% and 16% among the rest. Yet, they are less likely to cite cash as helping them to keep track of their spending or protecting their privacy – the most popular attributes of cash among the general population. Hence, despite the greater relative preference for cash among the less digitalised group, especially in income partly paid in cash and preferred tools, a substantial portion of the broader population also shows high cash usage patterns.

Chart 2

Differences in habits and preferences towards cash

(share of population in each group, percentages)

■ People reporting not having cards or accounts
■ Rest of population
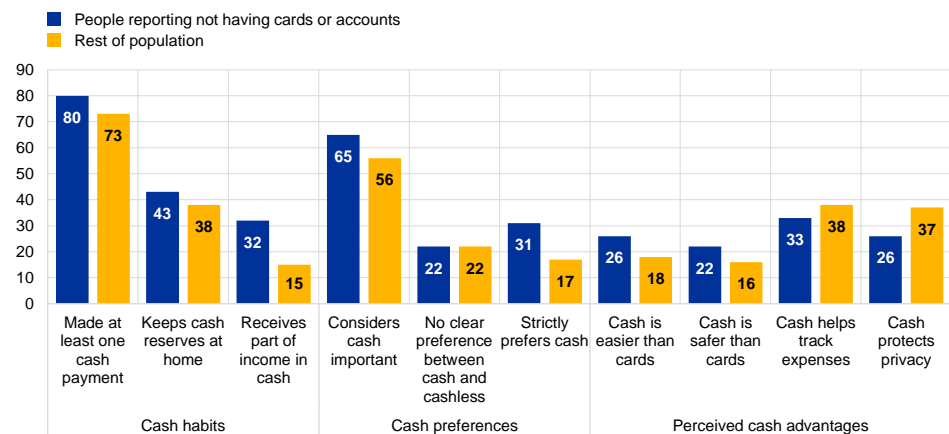
Source: ECB (SPACE 2022 survey).
Notes: These graphs show the differences in the averages of cash-related variables (expressed as percentages) between the less digitalised group and the rest of the population in the 17 countries analysed. For the variable "Made at least one cash payment", the individuals taken into consideration are those saying they made payments at a point-of-sale on the day of the survey.

But can we link the lack of cards or accounts to a specific demographic profile? The descriptive analysis summarised in Chart 3 suggests that while there is not an absolute divide in sociodemographic characteristics, notable gaps emerge in financial literacy and digital skills. For instance, 18% of individuals without digital payment tools earn a high income (defined as over €3,000 monthly) compared with 31% of the rest of the population.[48] And while education levels are relatively close, with an average of 13.4 years of education for the less digitalised group against 13.8 years of education for others, there is a lower share of individuals holding a university degree without cards or accounts.[49] While very similar percentages of both groups live in urban areas, those not having cards or accounts tend to be younger – 25% of people aged between 18 and 30 against 15% of their older counterparts – indicating that the less digitalised group are younger than the rest.[50,51] This might be because younger individuals – often students or people just starting

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[48] Income refers to net monthly household income.

[49] Years of education are calculated in line with the highest education level achieved by the respondent, running from primary school to PhD and higher.

[50] This difference may be attributed to the employment status of younger people, as they are more likely to still be students or unemployed, and hence do not have a card or bank account.

[51] An urban area is defined as an agglomeration with at least 50,000 inhabitants.

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their careers – are relying on family support or still gaining financial independence, impacting their ownership of digital payment tools.[52] The differences become more pronounced in financial literacy, where only 12% of less digitalised people have financial investments, as opposed to 28% of the broader population, and a similar pattern is seen with pension funds. This tendency extends to proxies for digital skills: 78% of the less digitalised group use the internet daily, less than the 87% of the general population that do so, and a larger gap exists in online banking, with 41% against 64% respectively.

Chart 3
Differences in sociodemographic profiles, financial literacy and digital skills

(share of population in each group, percentages)

■ People reporting not having cards or accounts
■ Rest of population
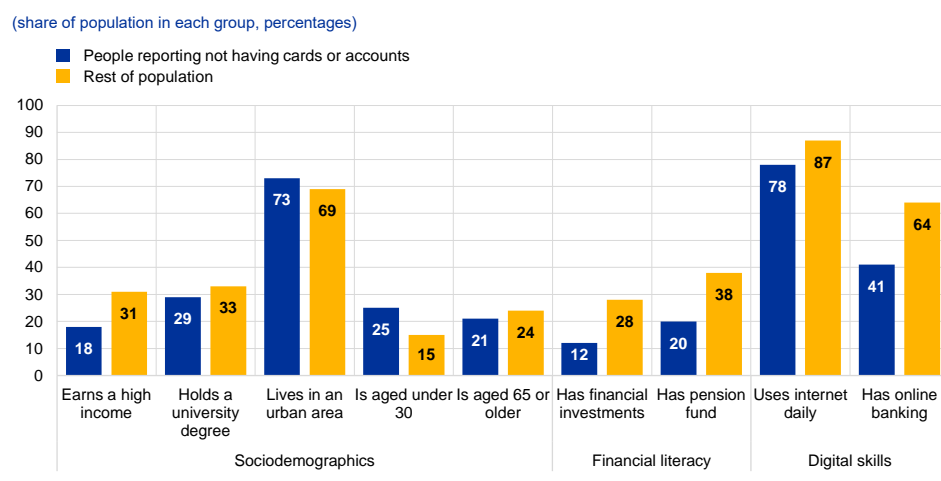
Source: ECB (SPACE 2022 survey).
Notes: These graphs show the differences in the averages of demographic variables (expressed as percentages) between the less digitalised group and the rest of the population in the 17 countries analysed. Income refers to net monthly household income. An urban area is defined as an agglomeration with at least 50,000 inhabitants.

Hence, evidence shows that individuals who report not having at least one digital payment tool (whether cards or accounts) are a diverse group, proving that there is no one-size-fits-all profile. This group includes younger, mostly urban individuals who tend to use more cash on average, as well as people with lower levels of financial and digital know-how. The diversity of this group undermines the idea that digitalisation results in a homogeneous, marginalised segment, presenting a picture far from a stark digital divide.[53] So far, we have examined average differences between the two groups across various factors, but these differences do not account for how these factors interact with each other, and to what extent they influence the likelihood of lacking digital payment tools. For example, we showed that the less digitalised group tend to be younger, but this does not demonstrate

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52 Another possibility is that emerging patterns among this demographic are signalling a departure from the traditional reliance on both cards and accounts. For example, the need for a card may be less pronounced for people under 30 – a group characterised by higher online payment use – because having just an account can facilitate mobile payments or enable transactions through services like PayPal. Although these alternatives are not yet dominant in online payments, their use has been increasing.

53 While vulnerable groups are proven to be more reliant on cash and struggle digitally (see references below), our results show that it does not follow that all cash users or people lacking a digital payment tool are part of a vulnerable group. For work on the reliance of cash in groups of vulnerable people, see Broekhoff, M.-C., van der Cruijsen, C., Jonker, N., Reijerink, J., Umuhire, G. and Vinken, W., "Digitalisation of the payment system: a solution for some, a challenge for others", De Nederlandsche Bank, 2023, and van der Cruijsen, C. and Reijerink, J., *op. cit.*

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whether being less digitalised is solely due to their age. A young consumer might not have a bank account not just because they are young, but also because of factors typically associated with youth, such as education level, income or employment status. For a clearer idea of how these factors combine in influencing a person's likelihood of belonging to the less digitalised group, Chart 4 presents a simplified view of our regression analysis. Each bar in the chart represents the impact of a different factor: bars extending to the right indicate a positive association (meaning the factor increases the likelihood of a person belonging to the less digitalised group, relative to the rest of the population), while bars to the left show a negative association. This analysis confirms and reinforces previous findings.[54] It reveals that interaction with cash (blue bars), urban living, lack of employment, youth and lower incomes (yellow bars), low financial literacy (green bars) and digital skills (light blue bars) collectively influence being considered in the less digitalised group.[55] Despite the long list of factors analysed, however, other determinants could also be influential in determining ownership of digital payment tools. Two interesting factors added in Chart 4 – the persistence of cash habits and the non-influence of perceived physical banking presence – will be explored further in the next section.

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[54] As a robustness check, we conducted parallel analyses for two separate subgroups: those without debit or credit cards and those without bank accounts. The outcomes of these additional checks align with our main findings presented in Chart 4, with the estimated coefficients having the same direction and similar magnitude across these subsets and the less digitalised group. This consistency indicates that all three subsets of the population – including the combined less digitalised group analysed in Chart 4 – exhibit similar patterns.

[55] Although the concept of a fixed cost for setting up payment accounts suggests a potential income threshold for account ownership, our analysis – including visual inspection and statistical tests – does not confirm such threshold behaviour. This indicates that factors beyond the direct costs of account setup, possibly including various income-related variables, might influence the decision to use digital payment tools, suggesting a more nuanced relationship than initially proposed.

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Chart 4

Combined effect of variables on the decision to not have a card or payment account

(standardised "marginal effects" of population in each group)
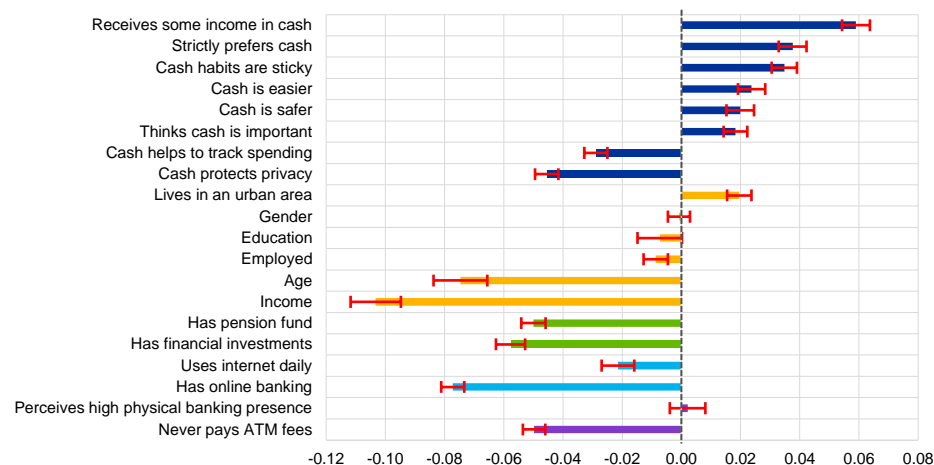
Source: ECB (SPACE 2022 survey).
Notes: The chart shows simplified results of the marginal effects from a probit regression, showing which factors are linked to decreased ownership of digital payment tools. The vertical zero dotted line serves as a reference point; red confidence bars that do not cross this line indicate a statistically significant effect. The estimates are relative: for instance, the negative direction for the privacy factor suggests that it is valued less by this group compared with the general population, not that they do not value privacy at all. The results for categorical and continuous variables have been standardised, making it possible to directly compare the magnitude of the impact of all variables on the likelihood of not having common digital payment tools. The estimates suggest that while the marginal effects are noticeable, they are not overwhelmingly large, which may indicate that other unaccounted factors could also be influential in determining ownership of digital payment tools. Additionally, these estimates do not confirm whether any single factor directly causes lack of ownership. This is important because of potential issues like reverse causation (it is unclear whether A causes B or B causes A) or where outside factors not considered could affect the results. The regression was calculated with a sample size of 37,262 individuals, using robust standard errors and country fixed effects.

Cash habits and lack of digital payment tools: economic necessity or personal choice?

Personal choice, together with the diversity of individual situations, may be more important than external constraints to explain cash usage and having digital payment tools in the euro area. As shown in Chart 2, the prominent use of cash in the euro area by individuals both with and without digital payment tools implies that the preference for cash extends beyond mere availability and could represent a deliberate choice in many cases. Yet, questions remain about not having digital payment tools like cards or accounts, where factors like habit stickiness, personal barriers and external constraints may play a role, as shown in Chart 4. For example, while personal constraints like financial and digital literacy or lower income certainly influence these decisions for some people, they alone do not capture the diverse reasons among different demographic groups. And unlike global trends, where distance from financial institutions and service costs are key barriers, these issues might be less influential in the euro area's advanced financial system.[56] Indeed, our analysis below points to the limited influence of two external factors

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[56] Globally, "lack of money", "financial services are too expensive" and "financial services being too far" are the three most cited reasons for not having a bank account. See Demirgüç-Kunt, A., Klapper, L., Singer, D. and Ansar, S., "The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19", The World Bank Group, 2021.

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(physical banking presence and the reported changes in behavioural patterns after the pandemic), hinting that personal choice is of greater importance.[57]

Physical banking presence is not significantly different for people lacking cards or accounts compared with the rest of the population, indicating that they do not seem to face a stronger supply-side barrier. Survey data provide a good proxy for physical banking presence, capturing whether people find it easy or difficult to reach a bank branch or an ATM to withdraw cash.[58] As shown in Chart 4 above, physical banking presence has no statistical effect on the decision not to have a card or account. This suggests that in the euro area, unlike less well developed regions (Box 1), the distance from bank branches has little impact, indicating a stronger role for personal preference and personal constraints.[59] This idea is further reinforced as illustrated in Chart 5, panel a) below, where a small, statistically insignificant difference is observed between the two groups. Additionally, no average difference emerges when analysing the population coverage of branch and ATM networks in the regions where individuals reside.[60,61]

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[57] Another important external factor not directly considered in the text is the degree of merchant acceptance of cash and cards. In terms of averages, there are no large differences between the two groups (cash acceptance is at 97% for the less digitalised group and 96% for the rest of the population, and for card acceptance the figures are 82% and 84% respectively). However, when these variables are included in a regression like the one shown Chart 4, higher card acceptance seems to slightly reduce the likelihood of not having at least one digital payment tool, while cash acceptance has no effect statistically.

[58] Despite the rise of online services, banks' physical outlets are still an important mechanism for consumers to adopt digital means of payment.

[59] However, nuances emerge when examining the intensity of use and adaptation strategies to the monetary costs associated with cash access. The less digitalised group tends to use the cash infrastructure more frequently and exhibits a pronounced tendency to avoid transaction fees associated with cash withdrawals (as seen in the last factor of Chart 4, "Never pays ATM fees"). This behaviour implies an adaptation to avoid direct monetary costs yet it potentially incurs other, less visible, expenses, such as the cost of travelling to access cash, the time spent travelling to access cash and the effort required to adapt to varying cash access points.

[60] The regions are defined at the NUTS 2 level, for a total of 111 regions in the 17 countries considered. A description of this coverage indicator used for these regions is the average share of the population with bank branch or an ATM within 5 km of their residence as the crow flies. The Eurosystem calculates these and more sophisticated metrics to monitor access to cash; see the article entitled "Guaranteeing freedom of payment choice: access to cash in the euro area", *Economic Bulletin*, Issue 5, ECB, 2022. Other more refined metrics, such as 1 and 2 km coverage, mean distance or ATM density, all show similar results.

[61] These insights are, however, a snapshot of the current situation and cannot be interpreted causally. In the face of an external shock to supply, reduced access to cash could increase the likelihood of people adopting digital payment tools. We were able to isolate this causal effect using the instrumental variable approach and exploiting the pandemic as a natural experiment. In particular, a random subset of individuals experiencing limited cash access during the pandemic was more likely to shift perceptions of physical banking presence, which in turn nudged some towards adopting digital payments more often. This shows that, while the less digitalised group perceives as much physical banking presence as the rest of the population as shown in the main text, a supply restriction from the retail banking sector (particularly on access to cash) could force some individuals to adopt debit or credit cards and payment accounts more often.

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Chart 5

Physical banking presence and persistence of cash habits: two factors with little influence on belonging to the less digitalised group

a) Physical banking presence

(share of population in each group, percentages)
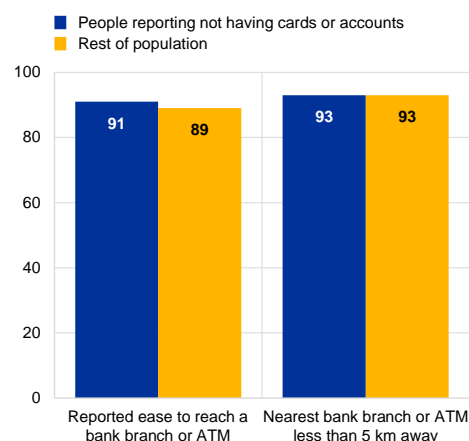
b) Persistence of cash habits after the pandemic

(share of population in each group, percentages)

■ People reporting not having cards or accounts
■ Rest of population
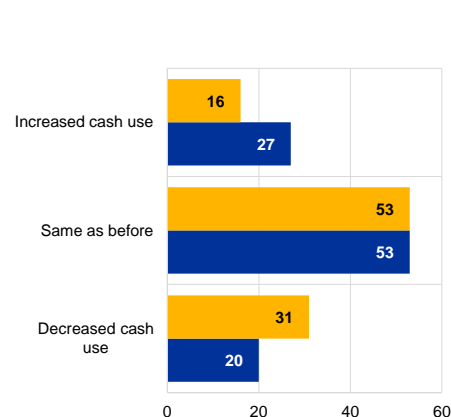
Source: ECB (SPACE 2022 survey) and Eurosystem data on population coverage of bank branches and ATMs.
Notes: Panel a) shows (i) the share of the population that report finding it easy to reach a bank branch or an ATM when they need to withdraw cash, and (ii) the share of the population living in a region with a bank branch or ATM located within 5 km of their home on average. By contrast, panel b) shows the share of individuals that have increased, maintained or decreased their cash usage compared with just before the pandemic.

Half of less digitalised individuals report continuing to use cash as much as before the pandemic, with almost a third even increasing their usage, indicating a significant persistence of cash habits. The pandemic was a significant disruptor of financial habits and provided a unique opportunity to observe how individuals change behaviour when conditions change. Typically, behaviour changes from within – gradually and subtly, driven by personal preferences, like starting to use new payment tools in certain circumstances for the sake of convenience. However, external (or exogenous) shocks like the pandemic often precipitate abrupt shifts in behaviour, offering a clear window to understand the stickiness of certain habits. Chart 5, panel b) shows that not only half of the less digitalised group maintained their usage of cash in physical payments, but almost a third of the group increased such usage.[62] This finding contrasts with the rest of the population, where only about 16% reported increased use of cash, indicating that the less digitalised group's behaviour is notably distinct. The persistence of cash usage among some individuals, even in the face of external shocks, underscores the

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[62] Recent literature highlights that despite the growth of e-commerce, physical stores are set to remain relevant in the future. Physical stores are adapting to offer unique sensory experiences not replicable online and increasingly embrace omnichannel trends, where physical stores expand online and online outlets establish a physical presence. This trend, seen especially in smaller stores and areas with significant customer footfall, positions bricks-and-mortar stores as hubs for customer engagement and experiential retail. The diversity of consumer preferences, as documented in our article, might be a reason why online and offline shopping options (and hence physical payments) will retain relevance in the future. See von Briel, F., "The future of omnichannel retail: A four-stage Delphi study", *Technological Forecasting and Social Change*, Vol. 132, 2018, pp. 217-229, and Reinartz, W., Wiegand, N. and Imschloss, M., "The impact of digital transformation on the retailing value chain", *International Journal of Research in Marketing*, Vol. 36, No 3, 2019, pp. 350-366.

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resilience of cash habits and casts doubt on preconceived notions about the inevitability of a universal digital transition.

Box 1
Unbanked beyond the euro area: do digital ownership patterns differ abroad?

Prepared by Andrea Marini, Alejandro Zamora-Pérez and Elisabeth Beckmann

How does the use of euro cash as a foreign currency differ between banked and unbanked individuals outside the euro area? So far, our main analysis has focused on factors influencing the likelihood of people being less digitalised in banking terms in the euro area. But it is important to assess if these results also hold in economies with different financial market conditions. The OeNB Euro Survey conducted by the Oesterreichische Nationalbank collects information on cash holding and saving behaviour for a group of countries in central, eastern and south-eastern Europe (CESEE). [63,64] This makes it possible to assess differences in patterns between the euro area and the CESEE region and facilitates the study of the determinants of the decision to hold a bank account, along similar lines to the main analysis.

The findings for the CESEE region reveal two key differences from the euro area: bank account holders are more likely to hold euro cash, and there is a notable disparity in perceptions of banking access between banked and unbanked individuals. Specifically, 30.2% of individuals with bank accounts also hold euro cash reserves, while only 10.4% of people without bank accounts do so. This suggests that banked individuals may view euro cash as a stable savings option or a safeguard against local currency fluctuations, or they may simply have easier access to it. Furthermore, banked individuals tend to have connections abroad, possibly as a result of receiving remittances, working temporarily in the euro area or travelling on holiday. There is a marked difference from the euro area regarding physical banking presence or proximity to banking services, with 47% of unbanked individuals reporting that it takes a long time to reach the nearest bank branch compared with 36% of those with bank accounts.

A statistical analysis similar to the one shown in Chart 4 confirms that the two previous findings affect the likelihood of an individual holding an account and reveals further determinants of the probability of being unbanked in these countries. Sociodemographic factors like higher income, higher education and older age are linked to holding a bank account, similar to trends observed in the euro area. Additionally, confidence in financial institutions plays an important role: a belief in the safety of bank deposits and trust in the national central bank increase the likelihood of someone holding an account.

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[63] For more on motivations to hold cash in CESEE countries, see Stix, H., "Why do people save in cash? Distrust, memories of banking crises, weak institutions and dollarization", *Journal of Banking and Finance*, Vol. 37, No 11, 2013, pp. 4087-4106. For more on motivations to hold euro cash in CESEE, see Backé, P. and Beckmann, E., "Euro adoption in CESEE: How do financial literacy and trust in institutions affect people's attitudes", *OeNB Focus on European Economic Integration*, Q1, 2022.

[64] The sample covers six EU Member States (Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania) and four non-EU countries (Albania, Bosnia and Herzegovina, North Macedonia and Serbia). The data used refer to 2021, before Croatia joined the euro area, and reported results are consistent with previous years.

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4 Acknowledging diversity: ensuring access to cash in an increasingly digital economy

Based on the findings set out above, we see a nuanced picture of cash use and digital payment tool ownership in the euro area, casting doubt on the idea of a binary digital divide in payments. First, the prevalence of cash usage – observed in both the less digitalised group and the rest of the population – highlights the continued relevance of cash in an increasingly digital economy, although it has suffered a relative decline in use in transactions. Second, the demographic profile of those not having a digital payment tool is very diverse, indicating a broad and varied – rather than a small, homogeneous, marginalised – group. Third, the seemingly limited role of perceived physical banking presence in influencing ownership of cards or accounts points to there being a complex range of issues behind decision-making. This complexity is further illustrated by the persistence of cash habits by a significant share of the population, even after the pandemic.

These insights collectively underscore the multifaceted nature of financial and payments behaviour in the euro area. This understanding makes it necessary to acknowledge the importance of choice and personal circumstances in financial and payment decisions, as well as the crucial role of maintaining access to cash alongside digital options.

This is why, in this fast-evolving and diverse digital landscape, the Eurosystem's role is to support and respect the diverse payment preferences across the euro area. This approach acknowledges the value of choice in financial transactions, where cash continues to play a significant role for a considerable portion of the population. The Eurosystem's cash strategy involves regular assessments of cash services and infrastructure to identify areas where access might be diminishing.[65] This includes monitoring the distribution and availability of bank branches and ATMs and identifying remote or underserved areas. Despite this not being a factor that differentiates the less digitalised group from the rest of the population, access to cash is an important aspect that may affect payment choices and have major consequences for consumers.[66] By ensuring that cash remains easily accessible, the Eurosystem aims to provide a safety net that respects and supports those who, by choice or circumstance, opt for cash as a payment option.

These efforts are about maintaining a balanced financial ecosystem where all preferences are catered for rather than compensating for a lack of digital adaptation. While encouraging and facilitating digital innovation in payments, the Eurosystem remains equally committed to ensuring that cash continues to be a viable, efficient and secure payment option.[67] This dual approach reflects an understanding that a healthy financial ecosystem is one where digital progress and cash coexist, both serving the needs of society. This balanced perspective is crucial

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[65] See European Central Bank, "The Eurosystem cash strategy".

[66] See footnote **Error! Bookmark not defined.**.

[67] See the article entitled "The Eurosystem policy response to developments in retail payments", *Economic Bulletin*, Issue 1, ECB, 2024. Exploring options for introducing a digital euro is part of this broader strategy, aimed at enhancing consumer choice in a changing payments environment and complementing rather than substituting cash. See European Central Bank, "Digital euro".

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at a time when financial behaviours are diverse and evolving, ensuring that all preferences are respected and supported as the euro area economies navigate a complex and uneven digitalisation process.

5   Conclusion

While the term "divide" in the ownership of digital payment tools suggests a stark separation, our analysis reveals a more nuanced reality in the euro area where cash remains integral alongside digital options. Many individuals with and without digital payment tools frequently use cash, indicating that the division is not as clear-cut as is often implied. Though some people may struggle digitally, it would be a fallacy to believe that because some less digitalised groups are reliant on cash, then all cash users are necessarily less digitalised. This misconception is challenged by the diverse sociodemographic profiles within the approximately 20% of the population enjoying limited access to at least one common digital payment tool, challenging preconceived notions about their uniformity. The persistence of cash habits, even amid external shocks like the pandemic, and the seemingly little influence of perceived physical banking presence on having digital payment tools illustrate the complexity of financial behaviours. Against this backdrop, the Eurosystem is committed not only to preserving cash in recognition of these varied circumstances but also to enhancing the payment ecosystem. This includes exploring options for a digital euro. This approach aims to bolster resilience and diversity in the financial landscape, ensuring that all payment preferences are taken into consideration in the euro area.

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Explanations of terms and abbreviations can be found in the ECB's statistics glossary: http://www.ecb.europa.eu/home/glossary/html/glossa.en.html

Conventions used in the tables

-     data do not exist/data are not applicable

.   data are not yet available

...   nil or negligible

(p)   provisional

s.a.   seasonally adjusted

n.s.a.   non-seasonally adjusted

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP [1] (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area [2] (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2021	6.5	5.8	8.7	2.6	8.4	5.9	4.0	2.9	4.7	2.6	-0.3	0.9	2.6
2022	3.2	1.9	4.3	1.0	3.0	3.4	9.5	6.7	8.0	9.1	2.5	1.9	8.4
2023	.	2.6	.	1.9	.	.	.	.	4.1	7.4	3.3	0.3	5.4
2023 Q1	1.0	0.6	0.2	1.1	2.3	0.1	8.6	7.2	5.8	10.2	3.6	1.3	8.0
Q2	0.6	0.5	0.0	1.0	0.5	0.1	6.5	6.9	4.0	8.4	3.3	0.1	6.2
Q3	0.7	1.2	-0.1	-0.8	1.3	-0.1	6.2	6.7	3.5	6.7	3.2	-0.1	5.0
Q4	.	0.8	-0.3	-0.1	.	0.0	.	.	3.2	4.2	2.9	-0.1	2.7
2023 Sep.	-	-	-	-	-	-	6.2	6.6	3.7	6.7	3.0	0.0	4.3
Oct.	-	-	-	-	-	-	5.6	6.5	3.2	4.6	3.3	-0.2	2.9
Nov.	-	-	-	-	-	-	5.4	6.3	3.1	3.9	2.8	-0.5	2.4
Dec.	-	-	-	-	-	-	.	.	3.4	4.0	2.6	-0.3	2.9
2024 Jan.	-	-	-	-	-	-	.	.	3.1	4.0	.	.	2.8
Feb. [3]	-	-	-	-	-	-	.	.	.	.	.	.	2.6

Sources: Eurostat (col. 6, 13); BIS (col. 9, 10, 11, 12); OECD (col. 1, 2, 3, 4, 5, 7, 8).
1) Quarterly data seasonally adjusted; annual data unadjusted.
2) Data refer to the changing composition of the euro area.
3) The figure for the euro area is an estimate based on provisional national data, as well as on early information on energy prices.

1.2 Main trading partners, Purchasing Managers' Index and world trade

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports [1]		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index [2]					
	Global [2]	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders	Global	Advanced economies	Emerging market economies
	1	2	3	4	5	6	7	8	9	10	11	12
2021	54.7	59.6	55.9	49.4	52.0	54.9	53.7	55.0	52.1	11.3	9.9	12.8
2022	50.6	50.7	53.0	48.2	51.4	51.4	49.9	51.0	47.8	2.7	4.2	1.0
2023	52.0	51.2	51.2	51.8	52.5	49.7	49.8	52.3	47.6	-2.5	-3.8	-1.0
2023 Q1	51.7	49.7	51.3	51.6	53.3	52.0	50.1	52.2	48.3	-1.3	-1.3	-1.2
Q2	54.0	53.6	53.9	53.1	53.9	52.3	51.1	54.9	48.3	-0.3	-1.4	0.8
Q3	51.5	50.8	49.3	52.3	51.5	47.5	50.3	51.8	48.1	-0.7	-0.7	-0.7
Q4	51.0	50.8	50.5	50.0	51.4	47.2	50.2	51.3	48.8	1.4	1.3	1.6
2023 Sep.	51.0	50.2	48.5	52.1	50.9	47.2	49.8	50.7	47.6	-0.7	-0.7	-0.7
Oct.	50.6	50.7	48.7	50.5	50.0	46.5	48.9	50.4	47.5	0.5	0.4	0.5
Nov.	50.9	50.7	50.7	49.6	51.6	47.6	49.9	50.6	48.1	0.9	1.1	0.6
Dec.	51.6	50.9	52.1	50.0	52.6	47.6	49.4	51.6	48.1	1.4	1.3	1.6
2024 Jan.	52.5	52.0	52.9	51.5	52.5	47.9	50.3	52.3	48.8	.	.	.
Feb.	52.6	52.5	53.0	50.6	52.5	49.2	51.2	52.4	49.4	.	.	.

Sources: Markit (col. 1-9); CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations (col. 10-12).
1) Global and advanced economies exclude the euro area. Annual and quarterly data are period-on-period percentages; monthly data are 3-month-on-3-month percentages. All data are seasonally adjusted.
2) Excluding the euro area.

2 Economic activity

2.1 GDP and expenditure components
(quarterly data seasonally adjusted; annual data unadjusted)

		GDP								External balance [1]		
	Total	Domestic demand										
		Total	Private consumption	Government consumption	Gross fixed capital formation				Changes in inventories [2]	Total	Exports [1]	Imports [1]
						Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
Current prices (EUR billions)												
2020	11,517.2	11,106.0	5,951.3	2,579.7	2,534.3	1,236.1	689.6	601.8	40.6	411.2	5,222.9	4,811.7
2021	12,474.8	11,979.4	6,352.2	2,737.4	2,728.4	1,390.3	761.3	570.3	161.4	495.5	6,171.6	5,676.2
2022	13,491.9	13,248.2	7,062.9	2,899.2	3,019.6	1,561.8	847.0	603.8	266.4	243.7	7,436.2	7,192.5
2022 Q4	3,457.8	3,383.6	1,828.1	742.7	774.7	398.4	219.0	155.6	38.1	74.2	1,912.7	1,838.5
2023 Q1	3,526.3	3,393.6	1,854.0	738.6	783.5	405.1	223.5	153.1	17.5	132.7	1,894.7	1,762.0
Q2	3,570.5	3,435.1	1,871.4	752.0	787.9	404.2	226.3	155.6	23.7	135.4	1,858.5	1,723.1
Q3	3,592.2	3,457.0	1,894.7	761.0	794.4	406.3	228.9	157.3	6.9	135.2	1,829.1	1,693.9
as a percentage of GDP												
2022	100.0	98.2	52.3	21.5	22.4	11.6	6.3	4.5	2.0	1.8	-	-
Chain-linked volumes (prices for the previous year)												
quarter-on-quarter percentage changes												
2023 Q1	0.1	-0.6	0.1	-0.5	0.4	0.8	2.0	-2.8	-	-	-0.4	-1.7
Q2	0.1	0.8	0.0	0.2	-0.1	-0.9	0.2	1.4	-	-	-1.1	0.0
Q3	-0.1	-0.1	0.3	0.4	0.0	-0.4	0.4	0.5	-	-	-1.2	-1.2
Q4	0.0	.	.	.	.	.	.	.	-	-	.	.
annual percentage changes												
2020	-6.1	-5.7	-7.7	1.0	-5.9	-3.4	-11.6	-3.9	-	-	-9.1	-8.5
2021	5.9	4.7	4.4	4.2	3.5	5.9	8.0	-6.5	-	-	11.5	9.2
2022	3.4	3.5	4.2	1.6	2.6	1.4	4.9	2.8	-	-	7.2	7.9
2023 Q1	1.3	0.6	1.4	-0.2	1.8	-1.0	5.7	3.5	-	-	2.5	1.4
Q2	0.6	0.7	0.6	0.2	1.1	-1.3	4.7	2.4	-	-	-0.6	-0.4
Q3	0.0	-0.4	-0.4	0.6	-0.1	-1.0	1.8	-0.4	-	-	-3.0	-4.0
Q4	0.1	.	.	.	.	.	.	.	-	-	.	.
contributions to quarter-on-quarter percentage changes in GDP; percentage points												
2023 Q1	0.1	-0.6	0.0	-0.1	0.1	0.1	0.1	-0.1	-0.6	0.7	-	-
Q2	0.1	0.7	0.0	0.1	0.0	-0.1	0.0	0.1	0.7	-0.6	-	-
Q3	-0.1	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.3	0.0	-	-
Q4	0.0	.	.	.	.	.	.	.	.	.	-	-
contributions to annual percentage changes in GDP; percentage points												
2020	-6.1	-5.5	-4.1	0.2	-1.3	-0.4	-0.8	-0.2	-0.3	-0.6	-	-
2021	5.9	4.8	2.4	1.0	0.9	0.7	0.5	-0.3	0.6	1.4	-	-
2022	3.4	3.5	2.2	0.3	0.6	0.2	0.3	0.1	0.3	0.0	-	-
2023 Q1	1.3	0.6	0.7	0.0	0.4	-0.1	0.3	0.2	-0.4	0.6	-	-
Q2	0.6	0.7	0.3	0.0	0.3	-0.2	0.3	0.1	0.1	-0.1	-	-
Q3	0.0	-0.5	-0.2	0.1	0.0	-0.1	0.1	0.0	-0.4	0.5	-	-
Q4	0.1	.	.	.	.	.	.	.	.	.	-	-

Sources: Eurostat and ECB calculations.
1) Exports and imports cover goods and services and include cross-border intra-euro area trade.
2) Including acquisitions less disposals of valuables.

2 Economic activity

2.2 Value added by economic activity
(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Const-ruction	Trade, transport, accom-modation and food services	Infor-mation and com-munica-tion	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
Current prices (EUR billions)												
2020	10,378.7	175.2	2,009.2	549.4	1,807.3	546.9	486.6	1,210.9	1,203.5	2,066.4	323.2	1,138.5
2021	11,191.7	186.6	2,220.1	594.6	2,021.5	598.5	515.1	1,247.2	1,297.7	2,173.0	337.6	1,283.1
2022	12,152.7	213.1	2,456.6	655.3	2,330.1	633.2	523.6	1,304.0	1,396.7	2,269.7	370.4	1,339.2
2022 Q4	3,134.3	55.8	639.1	169.3	600.9	161.8	138.2	335.5	359.8	579.7	94.2	323.5
2023 Q1	3,197.7	56.3	663.7	178.1	604.7	164.0	144.3	344.5	364.1	581.2	96.7	328.6
Q2	3,232.5	54.4	662.9	179.1	610.7	168.4	149.2	349.1	370.9	589.5	98.2	338.0
Q3	3,245.1	55.0	652.8	180.7	612.2	169.9	151.7	352.6	373.2	597.6	99.5	347.1
as a percentage of value added												
2022	100.0	1.8	20.2	5.4	19.2	5.2	4.3	10.7	11.5	18.7	3.0	-
Chain-linked volumes (prices for the previous year)												
quarter-on-quarter percentage changes												
2022 Q4	-0.1	0.2	-0.3	-0.2	-0.7	0.2	0.4	0.2	0.2	0.3	-1.2	0.0
2023 Q1	0.2	1.0	-1.1	1.9	0.2	0.9	-0.3	0.9	0.1	0.3	2.0	-0.7
Q2	0.0	0.0	-0.4	-0.8	0.0	1.4	0.6	-0.2	0.5	0.1	0.6	1.0
Q3	-0.1	-1.0	-1.0	-0.1	0.0	1.0	0.3	0.1	0.0	0.2	1.6	-0.7
annual percentage changes												
2020	-5.9	-1.8	-6.0	-5.3	-13.9	2.2	-0.5	-0.9	-5.4	-2.9	-18.1	-7.3
2021	5.8	1.1	8.7	2.9	7.9	9.3	5.6	1.9	6.6	3.5	4.3	7.1
2022	3.5	-3.2	1.3	1.1	7.5	5.8	0.2	2.3	4.7	1.9	11.9	2.5
2022 Q4	2.2	-3.1	1.5	-0.6	2.9	4.2	0.4	1.7	3.0	2.1	7.4	-0.9
2023 Q1	1.7	0.3	-0.1	0.7	2.5	5.1	0.3	1.9	1.8	1.7	6.7	-2.5
Q2	0.7	0.9	-1.0	-0.2	0.2	4.7	0.7	1.1	1.4	1.2	3.2	-0.5
Q3	0.1	0.1	-2.8	0.7	-0.5	3.5	0.9	1.1	0.9	0.8	2.9	-0.4
contributions to quarter-on-quarter percentage changes in value added; percentage points												
2022 Q4	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	-
2023 Q1	0.2	0.0	-0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-
Q2	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	-
Q3	-0.1	0.0	-0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	-
contributions to annual percentage changes in value added; percentage points												
2020	-5.9	0.0	-1.2	-0.3	-2.6	0.1	0.0	-0.1	-0.6	-0.5	-0.6	-
2021	5.8	0.0	1.8	0.2	1.4	0.5	0.3	0.2	0.8	0.7	0.1	-
2022	3.5	-0.1	0.3	0.1	1.4	0.3	0.0	0.3	0.5	0.4	0.4	-
2022 Q4	2.2	-0.1	0.3	0.0	0.5	0.2	0.0	0.2	0.4	0.4	0.2	-
2023 Q1	1.7	0.0	0.0	0.0	0.5	0.3	0.0	0.2	0.2	0.3	0.2	-
Q2	0.7	0.0	-0.2	0.0	0.0	0.2	0.0	0.1	0.2	0.2	0.1	-
Q3	0.1	0.0	-0.6	0.0	-0.1	0.2	0.0	0.1	0.1	0.2	0.1	-

Sources: Eurostat and ECB calculations.

2 Economic activity

2.3 Employment [1]
(quarterly data seasonally adjusted; annual data unadjusted)

| | Total | By employment status | | By economic activity | | | | | | | | | |
		Employ- ees	Self- employed	Agricul- ture, forestry and fishing	Manufac- turing, energy and utilities	Con- struc- tion	Trade, transport, accom- modation and food services	Infor- mation and com- munica- tion	Finance and insur- ance	Real estate	Professional, business and support services	Public adminis- tration, edu- cation, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
as a percentage of total persons employed													
2021	100.0	86.1	13.9	3.0	14.4	6.3	24.1	3.1	2.4	1.0	14.0	25.0	6.6
2022	100.0	86.2	13.8	2.9	14.2	6.4	24.4	3.2	2.3	1.0	14.1	24.8	6.5
2023	100.0	.	.	.	.	.	.	.	.	.	.	.	.
annual percentage changes													
2021	1.4	1.6	0.4	0.2	0.0	3.2	0.3	4.5	0.6	0.4	2.9	2.1	0.9
2022	2.3	2.4	1.2	-0.9	1.2	3.1	3.4	5.8	0.0	2.9	3.0	1.6	1.4
2023	1.4	.	.	.	.	.	.	.	.	.	.	.	.
2023 Q1	1.6	1.7	1.4	-1.4	1.3	1.5	2.3	4.7	1.2	2.6	2.0	1.2	1.1
Q2	1.4	1.4	1.4	-2.4	1.1	0.7	2.0	3.8	1.2	2.7	2.1	1.1	0.3
Q3	1.3	1.2	1.5	-1.1	0.8	1.1	2.1	2.4	1.3	1.7	1.4	1.2	-0.1
Q4	1.2	.	.	.	.	.	.	.	.	.	.	.	.
Hours worked													
as a percentage of total hours worked													
2020	100.0	82.0	18.0	4.3	15.1	7.0	24.1	3.3	2.6	1.1	13.7	23.1	5.7
2021	100.0	81.8	18.2	4.1	15.0	7.3	24.3	3.4	2.5	1.1	14.0	22.6	5.8
2022	100.0	81.9	18.1	3.9	14.6	7.3	25.2	3.5	2.4	1.1	14.1	22.0	5.9
annual percentage changes													
2020	-8.0	-7.3	-11.2	-3.5	-7.6	-6.1	-14.7	-1.8	-2.2	-5.4	-8.2	-2.0	-12.7
2021	5.9	5.7	6.7	1.1	5.1	9.8	6.8	7.9	3.0	5.9	8.2	3.9	6.5
2022	3.4	3.5	3.0	-1.5	0.9	3.2	7.5	5.9	-0.1	4.6	4.0	0.7	5.8
2022 Q4	2.1	2.2	1.9	-1.3	1.1	3.0	3.1	5.0	1.2	3.7	2.8	1.0	2.6
2023 Q1	1.9	2.2	0.6	-1.0	1.6	1.3	2.8	4.3	1.3	1.9	2.3	1.2	2.1
Q2	1.5	1.6	1.0	-2.7	1.3	1.1	1.7	3.8	1.5	2.2	2.3	1.5	1.0
Q3	1.3	1.3	1.1	-1.3	0.6	1.4	1.8	1.8	1.3	2.0	1.6	1.4	0.9
Hours worked per person employed													
annual percentage changes													
2020	-6.7	-5.9	-10.2	-0.9	-5.8	-6.7	-11.3	-3.7	-2.6	-6.0	-6.4	-3.1	-10.0
2021	4.4	4.1	6.3	0.9	5.1	6.4	6.4	3.2	2.3	5.4	5.1	1.7	5.6
2022	1.1	1.1	1.7	-0.5	-0.3	0.1	4.0	0.2	-0.1	1.7	1.0	-0.9	4.3
2022 Q4	0.6	0.5	1.1	0.0	0.1	0.8	1.3	0.3	0.7	0.5	0.8	-0.4	1.7
2023 Q1	0.3	0.5	-0.8	0.5	0.4	-0.2	0.5	-0.3	0.1	-0.7	0.3	0.1	1.0
Q2	0.1	0.2	-0.4	-0.3	0.2	0.4	-0.3	0.0	0.3	-0.4	0.2	0.4	0.7
Q3	0.0	0.1	-0.4	-0.2	-0.1	0.3	-0.3	-0.6	0.0	0.3	0.2	0.2	1.0

Sources: Eurostat and ECB calculations.
1) Data for employment are based on the ESA 2010.

2 Economic activity

2.4 Labour force, unemployment and job vacancies
(seasonally adjusted, unless otherwise indicated)

	Labour force, millions	Under-employ-ment, % of labour force	Unemployment [1]											Job vacancy rate [3]
			Total		Long-term unemploy-ment, % of labour force [2]	By age				By gender				
			Millions	% of labour force		Adult		Youth		Male		Female		
						Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	% of total posts
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
% of total in 2020	100.0					80.1		19.9		51.2		48.8		
2021	165.020	3.4	12.790	7.8	3.2	10.305	6.9	2.485	16.9	6.517	7.4	6.273	8.1	2.4
2022	167.789	3.1	11.339	6.8	2.7	9.080	6.0	2.259	14.6	5.686	6.4	5.653	7.2	3.1
2023	.	.	.	6.5	.	.	5.7	.	14.4	.	6.2	.	6.9	2.9
2023 Q1	169.462	3.0	11.132	6.6	2.5	8.929	5.8	2.203	13.9	5.596	6.2	5.536	7.0	3.1
Q2	169.827	3.0	11.033	6.5	2.3	8.765	5.7	2.268	14.3	5.567	6.2	5.466	6.9	3.0
Q3	169.965	2.9	11.167	6.6	2.3	8.851	5.7	2.316	14.6	5.634	6.2	5.533	6.9	2.9
Q4	.	.	.	6.5	.	.	5.7	.	14.7	.	6.2	.	6.9	2.7
2023 Aug.	-	-	11.055	6.5	-	8.727	5.7	2.328	14.6	5.602	6.2	5.452	6.8	-
Sep.	-	-	11.126	6.5	-	8.783	5.7	2.343	14.7	5.620	6.2	5.505	6.9	-
Oct.	-	-	11.155	6.5	-	8.763	5.7	2.392	15.0	5.620	6.2	5.534	6.9	-
Nov.	-	-	11.097	6.5	-	8.782	5.7	2.315	14.6	5.625	6.2	5.472	6.8	-
Dec.	-	-	11.043	6.5	-	8.723	5.6	2.319	14.5	5.565	6.1	5.477	6.8	-
2024 Jan.	-	-	11.009	6.4	-	8.694	5.6	2.315	14.5	5.534	6.1	5.475	6.8	-

Sources: Eurostat and ECB calculations.
1) Where annual and quarterly Labour Force Survey data have not yet been published, they are estimated as simple averages of the monthly data. There is a break in series from the first quarter of 2021 due to the implementation of the Integrated European Social Statistics Regulation. Owing to technical issues with the introduction of the new German system of integrated household surveys, including the Labour Force Survey, the figures for the euro area include data from Germany, starting in the first quarter of 2020, which are not direct estimates from Labour Force Survey microdata, but based on a larger sample including data from other integrated household surveys.
2) Not seasonally adjusted.
3) The job vacancy rate is equal to the number of job vacancies divided by the sum of the number of occupied posts and the number of job vacancies, expressed as a percentage. Data are non-seasonally adjusted and cover industry, construction and services (excluding households as employers and extra-territorial organisations and bodies).

2.5 Short-term business statistics

	Industrial production						Con-struction produc-tion	Retail sales				Services production [1]	New passenger car regis-trations
	Total (excluding construction)		Main Industrial Groupings					Total	Food, beverages, tobacco	Non-food	Fuel		
		Manu-facturing	Inter-mediate goods	Capital goods	Consumer goods	Energy							
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	88.7	32.1	34.5	21.8	11.6	100.0	100.0	40.4	52.5	7.1	100.0	100.0
						annual percentage changes							
2021	8.9	9.8	9.6	11.7	8.1	1.5	6.0	5.1	0.9	7.8	9.6	8.2	-2.9
2022	2.3	3.0	-1.3	5.5	5.4	-3.7	2.3	0.7	-2.8	2.5	6.4	10.0	-4.3
2023	-2.4	-2.1	-5.2	0.3	-1.9	-4.9	0.1	-1.7	-2.9	-0.5	-2.4	.	14.5
2023 Q1	0.3	1.1	-5.1	5.1	4.0	-6.2	0.3	-2.6	-5.4	-0.9	2.7	4.7	18.3
Q2	-1.2	-0.6	-6.0	5.4	-1.9	-7.4	0.1	-1.9	-3.3	-0.6	-1.4	3.5	22.6
Q3	-4.8	-4.6	-5.0	-5.6	-3.2	-5.9	0.5	-1.8	-1.8	-0.7	-5.2	2.8	15.4
Q4	-3.9	-4.2	-4.4	-3.1	-6.1	-0.3	-0.3	-0.7	-1.0	0.3	-5.2	.	4.2
2023 Aug.	-5.3	-5.0	-5.2	-7.0	-2.7	-5.8	-0.1	-1.7	-2.4	0.1	-7.3	2.8	18.3
Sep.	-6.7	-6.8	-4.6	-9.5	-5.5	-6.0	0.3	-2.8	-0.8	-3.4	-6.6	2.2	12.2
Oct.	-6.7	-7.1	-4.1	-9.8	-7.2	-0.9	-0.7	-0.8	-1.2	0.2	-5.9	1.7	7.8
Nov.	-5.4	-6.1	-5.4	-6.7	-6.8	1.8	-1.9	-0.4	-0.7	0.5	-3.3	1.1	5.3
Dec.	1.2	1.5	-3.6	9.4	-4.0	-1.7	1.9	-0.8	-1.0	0.1	-6.2	.	-0.3
2024 Jan.	.	.	.	.	.	.	.	.	.	.	.	.	7.1
					month-on-month percentage changes (s.a.)								
2023 Aug.	0.6	0.2	-0.3	0.5	0.4	-0.3	-0.9	-0.6	-0.5	-0.6	-2.4	0.2	4.6
Sep.	-1.0	-0.5	-0.4	0.2	-1.1	-1.4	0.4	-0.1	1.0	-1.1	0.6	-0.4	-0.3
Oct.	-0.7	-0.7	-0.7	-1.4	-1.2	0.6	-0.5	0.4	-0.9	1.1	0.1	-0.3	-2.3
Nov.	0.4	0.6	-0.7	0.8	1.1	1.7	-0.4	0.3	-0.1	0.3	1.8	-0.4	0.7
Dec.	2.6	7.6	-1.2	20.5	1.2	0.3	0.8	-1.1	-1.6	-1.0	-0.5	.	-1.1
2024 Jan.	.	.	.	.	.	.	.	.	.	.	.	.	-0.9

Sources: Eurostat, ECB calculations and European Automobile Manufacturers Association (col. 13).
1) Excluding trade and financial services.

2 Economic activity

2.6 Opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confid-ence indicator	Service industries		Purchasing Managers' Index (PMI) for manu-facturing	Manu-facturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-20	99.9	-4.3	80.7	-10.8	-12.4	-7.0	7.3	-	51.4	52.5	52.7	52.6
2021	111.2	9.6	81.9	-7.5	4.1	-1.5	8.5	87.8	60.2	58.3	53.6	54.9
2022	102.1	5.0	82.1	-21.9	5.2	-3.5	9.2	90.1	52.1	49.3	52.1	51.4
2023	96.4	-5.6	80.3	-17.4	-2.0	-4.0	6.7	90.2	45.0	45.8	51.2	49.7
2023 Q1	99.2	0.3	81.4	-19.6	1.5	-0.9	8.3	90.1	48.2	49.8	52.8	52.0
Q2	97.1	-4.8	80.7	-17.0	-0.5	-3.8	7.3	90.3	44.7	46.4	54.5	52.3
Q3	94.2	-8.9	79.9	-16.3	-4.7	-4.6	5.0	90.4	43.2	43.1	49.2	47.5
Q4	94.8	-9.0	79.4	-16.7	-4.2	-6.5	6.2	89.9	43.9	44.0	48.4	47.2
2023 Sep.	93.9	-8.4	-	-17.7	-5.5	-5.4	4.8	-	43.4	43.1	48.7	47.2
Oct.	93.9	-8.9	79.6	-17.9	-5.1	-7.2	5.2	90.1	43.1	43.1	47.8	46.5
Nov.	94.2	-9.2	-	-17.0	-4.1	-6.9	5.4	-	44.2	44.6	48.7	47.6
Dec.	96.4	-9.0	-	-15.1	-3.6	-5.5	8.0	-	44.4	44.4	48.8	47.6
2024 Jan.	96.1	-9.3	79.2	-16.1	-4.6	-5.6	8.4	89.7	46.6	46.6	48.4	47.9
Feb.	95.4	-9.5	-	-15.5	-5.4	-6.7	6.0	-	46.5	46.6	50.2	49.2

Sources: European Commission (Directorate-General for Economic and Financial Affairs) (col. 1-8) and Markit (col. 9-12).

2.7 Summary accounts for households and non-financial corporations
(current prices, unless otherwise indicated; not seasonally adjusted)

	Households							Non-financial corporations					
	Saving rate (gross)	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth [2]	Hous-ing wealth	Profit rate [3]	Saving rate (gross)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Finan-cing
	Percentage of gross disposable income (adjusted) [1]		Annual percentage changes					Percentage of gross value added		Percent-age of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2020	19.6	95.5	-0.2	4.2	-1.5	5.5	4.9	45.8	24.6	78.5	3.8	-11.9	2.6
2021	17.5	95.2	2.0	3.7	19.3	8.8	8.9	49.1	27.1	76.0	5.5	9.8	3.4
2022	13.7	92.8	-0.2	2.5	12.2	2.2	8.2	48.9	24.8	71.7	3.0	8.6	1.9
2022 Q4	13.7	92.8	-0.4	2.5	5.3	2.2	8.2	48.9	24.8	71.7	3.0	0.9	1.9
2023 Q1	13.5	90.9	1.2	2.3	5.5	2.5	5.1	48.5	24.8	69.7	2.5	-0.3	1.3
Q2	13.9	89.3	1.3	2.0	1.4	3.1	2.3	48.3	24.5	68.8	1.7	19.4	0.8
Q3	14.1	88.1	0.4	1.8	0.9	2.3	0.9	47.9	24.2	68.1	1.5	-9.9	0.6

Sources: ECB and Eurostat.
1) Based on four-quarter cumulated sums of saving, debt and gross disposable income (adjusted for the change in pension entitlements).
2) Financial assets (net of financial liabilities) and non-financial assets. Non-financial assets consist mainly of housing wealth (residential structures and land). They also include non-financial assets of unincorporated enterprises classified within the household sector.
3) The profit rate is gross entrepreneurial income (broadly equivalent to cash flow) divided by gross value added.
4) Defined as consolidated loans and debt securities liabilities.

2 Economic activity

2.8 Euro area balance of payments, current and capital accounts
(EUR billions; seasonally adjusted unless otherwise indicated; transactions)

	Current account												Capital account [1]	
	Total			Goods		Services		Primary income		Secondary income				
	Credit	Debit	Balance	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	
	1	2	3	4	5	6	7	8	9	10	11	12	13	
2023 Q1	1,370.7	1,338.1	32.6	733.2	689.1	319.2	295.0	277.2	278.4	41.1	75.5	35.5	30.8	
Q2	1,394.9	1,327.9	67.0	723.5	664.8	325.1	290.3	302.9	288.1	43.5	84.6	25.7	21.5	
Q3	1,405.1	1,328.2	76.9	718.6	644.1	327.5	294.7	317.1	305.0	41.9	84.4	28.2	17.4	
Q4	1,412.8	1,329.7	83.1	738.4	642.0	331.6	283.3	300.4	320.2	42.4	84.2	52.9	34.6	
2023 July	467.5	439.1	28.4	238.7	216.1	109.5	97.0	105.4	97.6	13.8	28.4	7.1	7.0	
Aug.	470.5	443.9	26.6	241.6	214.3	108.6	98.0	106.3	103.7	14.0	28.0	7.9	5.5	
Sep.	467.1	445.2	21.9	238.2	213.7	109.4	99.7	105.3	103.7	14.1	28.1	13.2	4.9	
Oct.	470.1	441.4	28.7	244.4	214.9	108.5	93.6	103.4	104.4	13.7	28.4	10.8	7.8	
Nov.	472.5	450.1	22.5	245.9	213.8	112.9	95.7	99.8	113.1	13.8	27.5	9.2	5.6	
Dec.	470.2	438.2	31.9	248.1	213.3	110.1	94.0	97.2	102.6	14.8	28.2	32.9	21.3	
	12-month cumulated transactions													
2023 Dec.	5,583.5	5,323.9	259.6	2,913.7	2,640.1	1,303.4	1,163.4	1,197.6	1,191.7	168.8	328.7	142.4	104.4	
	12-month cumulated transactions as a percentage of GDP													
2023 Dec.	39.5	37.6	1.8	20.6	18.7	9.2	8.2	8.5	8.4	1.2	2.3	1.0	0.7	

1) The capital account is not seasonally adjusted.

2.9 Euro area external trade in goods [1], values and volumes by product group [2]
(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)				Memo item:	Imports (c.i.f.)					Memo items:	
			Total					Total						
	Exports	Imports		Intermediate goods	Capital goods	Consumption goods	Manu-facturing		Intermediate goods	Capital goods	Consumption goods	Manu-facturing	Oil	
	1	2	3	4	5	6	7	8	9	10	11	12	13	
	Values (EUR billions; annual percentage changes for columns 1 and 2)													
2023 Q1	8.6	1.0	722.4	347.2	138.4	224.4	596.9	730.1	430.4	114.6	161.9	503.6	78.6	
Q2	-1.9	-13.8	708.3	331.9	143.9	216.8	588.8	706.2	411.0	113.4	164.8	502.1	74.1	
Q3	-5.4	-22.2	702.5	332.3	141.6	214.6	583.7	677.5	390.6	111.2	158.5	486.0	82.5	
Q4	-5.3	-17.3	705.3	.	.	.	584.4	666.1	.	.	.	468.8	.	
2023 July	-2.7	-18.1	232.9	109.5	46.3	71.4	193.0	228.7	131.7	37.8	54.0	165.4	26.6	
Aug.	-3.7	-24.4	236.0	110.8	49.0	72.0	197.0	224.4	128.8	36.7	53.0	161.1	27.3	
Sep.	-9.2	-23.9	233.7	112.0	46.2	71.2	193.7	224.4	130.1	36.7	51.5	159.5	28.6	
Oct.	-2.4	-16.3	234.6	111.4	47.2	70.4	195.4	223.5	129.0	35.6	52.5	158.5	29.5	
Nov.	-5.0	-16.9	236.3	111.4	48.3	71.5	196.7	221.3	127.4	34.6	51.8	155.1	26.6	
Dec.	-8.8	-18.7	234.3	.	.	.	192.3	221.3	.	.	.	155.2	.	
	Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2023 Q1	0.8	-2.1	106.5	102.8	107.0	119.1	106.3	117.1	115.3	122.1	117.1	118.2	146.1	
Q2	-2.8	-6.6	105.0	100.6	110.2	115.7	105.6	116.2	115.4	123.2	119.1	119.8	159.8	
Q3	-3.9	-10.4	104.0	100.6	107.8	112.7	104.2	112.5	111.6	119.2	117.1	117.1	173.2	
Q4	.	.	.	.	.	.	.	.	.	.	.	.	.	
2023 June	0.2	-7.0	105.0	101.1	108.0	115.1	105.6	112.5	112.4	117.1	116.1	116.4	164.7	
July	-1.2	-5.3	103.1	100.2	105.9	112.8	103.3	115.4	114.9	121.6	119.1	119.3	169.9	
Aug.	-1.8	-12.0	105.2	100.8	112.1	113.6	105.6	111.5	110.0	118.2	117.9	116.8	174.8	
Sep.	-8.2	-13.5	103.7	101.0	105.3	111.7	103.9	110.7	109.9	117.9	114.4	115.1	174.9	
Oct.	-1.0	-7.4	103.4	99.7	106.7	110.2	103.5	110.0	108.5	114.7	115.9	114.7	163.7	
Nov.	-3.5	-9.9	104.0	99.2	107.3	113.2	104.3	109.1	107.5	107.7	114.3	112.0	162.9	

Sources: ECB and Eurostat.
1) Differences between ECB's b.o.p. goods (Table 2.8) and Eurostat's trade in goods (Table 2.9) are mainly due to different definitions.
2) Product groups as classified in the Broad Economic Categories.

3 Prices and costs

3.1 Harmonised Index of Consumer Prices [1]
(annual percentage changes, unless otherwise indicated)

| | Total | | | | | Total (s.a.; percentage change vis-à-vis previous period) [2] | | | | | | Administered prices | |
	Index: 2015 = 100	Total	Total excluding food and energy	Goods	Services	Total	Processed food	Unpro-cessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Admini-stered prices
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2023	100.0	100.0	69.8	56.5	43.5	100.0	15.5	4.5	26.3	10.2	43.5	86.8	13.2
2021	107.8	2.6	1.5	3.4	1.5	-	-	-	-	-	-	2.5	3.1
2022	116.8	8.4	3.9	11.9	3.5	-	-	-	-	-	-	8.5	7.8
2023	123.2	5.4	4.9	5.7	4.9	-	-	-	-	-	-	5.5	4.9
2023 Q1	121.3	8.0	5.5	10.3	4.7	0.9	3.3	3.1	1.7	-6.0	1.3	8.1	7.3
Q2	123.2	6.2	5.5	6.8	5.2	0.6	1.8	0.7	0.6	-4.3	1.3	6.1	6.8
Q3	123.9	5.0	5.1	4.5	5.3	0.9	1.1	1.1	0.6	1.3	0.9	5.0	4.5
Q4	124.1	2.7	3.7	1.7	4.2	0.3	0.7	0.9	0.0	-1.1	0.6	3.0	1.3
2023 Sep.	124.4	4.3	4.5	4.0	4.7	0.3	0.4	0.2	-0.1	1.5	0.3	4.6	2.2
Oct.	124.5	2.9	4.2	1.7	4.6	0.1	0.2	0.2	0.0	-1.2	0.3	3.2	0.6
Nov.	123.9	2.4	3.6	1.3	4.0	-0.2	0.1	0.8	0.0	-2.2	-0.1	2.5	1.5
Dec.	124.1	2.9	3.4	2.1	4.0	0.0	0.1	0.2	0.2	-1.6	0.3	3.1	1.7
2024 Jan.	123.6	2.8	3.3	1.8	4.0	0.4	0.5	0.5	0.2	1.2	0.4	3.0	1.9
Feb. [3]	124.4	2.6	3.1	.	3.9	0.4	0.3	-0.8	0.1	1.5	0.5	.	.

| | Goods | | | | | | Services | | | | |
| | Food (including alcoholic beverages and tobacco) | | | Industrial goods | | | Housing | | Transport | Communi-cation | Recreation and personal care | Miscel-laneous |
	Total	Processed food	Unpro-cessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2023	20.0	15.5	4.5	36.5	26.3	10.2	9.5	5.6	7.3	2.2	15.2	9.2
2021	1.5	1.5	1.6	4.5	1.5	13.0	1.4	1.2	2.1	0.3	1.5	1.6
2022	9.0	8.6	10.4	13.6	4.6	37.0	2.4	1.7	4.4	-0.2	6.1	2.1
2023	10.9	11.4	9.1	2.9	5.0	-2.0	3.6	2.7	5.2	0.2	6.9	4.0
2023 Q1	14.9	15.4	13.3	7.8	6.7	10.0	3.6	2.5	5.8	0.2	7.2	3.8
Q2	12.5	13.5	9.5	3.7	5.8	-1.8	3.7	2.7	6.1	0.4	7.5	4.1
Q3	9.8	10.3	7.9	1.7	4.6	-4.6	3.7	2.7	5.7	0.0	7.2	4.2
Q4	6.8	7.1	5.9	-1.1	2.9	-9.8	3.5	2.7	3.2	0.4	5.9	4.0
2023 Sep.	8.8	9.4	6.6	1.4	4.1	-4.6	3.7	2.7	3.9	0.0	6.7	4.1
Oct.	7.4	8.4	4.5	-1.4	3.5	-11.2	3.6	2.8	3.9	0.3	6.4	4.1
Nov.	6.9	7.1	6.3	-1.7	2.9	-11.5	3.5	2.7	2.5	0.2	5.9	4.0
Dec.	6.1	5.9	6.8	-0.1	2.5	-6.7	3.5	2.7	3.3	0.5	5.2	3.8
2024 Jan.	5.6	5.2	6.9	-0.2	2.0	-6.1	3.4	2.8	3.5	-0.3	5.4	3.8
Feb. [3]	4.0	4.5	2.2	.	1.6	-3.7	.	.	.	.	.	.

Sources: Eurostat and ECB calculations.
1) Data refer to the changing composition of the euro area.
2) In May 2016 the ECB started publishing enhanced seasonally adjusted HICP series for the euro area, following a review of the seasonal adjustment approach as described in Box 1, *Economic Bulletin*, Issue 3, ECB, 2016 (https://www.ecb.europa.eu/pub/pdf/ecbu/eb201603.en.pdf).
3) Flash estimate.

3 Prices and costs

3.2 Industry, construction and property prices
(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction [1]										Con-struction [2]	Residential property prices [3]	Experimental indicator of commercial property prices [3]
	Total (index: 2015 = 100)	Total		Industry excluding construction and energy						Energy			
			Manu-facturing	Total	Intermediate goods	Capital goods	Consumer goods						
							Total	Food, beverages and tobacco	Non-food				
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	100.0	77.3	72.1	28.9	20.7	22.5	16.6	5.9	27.9			
2021	100.0	12.2	7.5	6.0	11.0	2.6	2.1	3.3	1.8	30.6	5.8	8.1	0.5
2022	134.4	34.4	16.9	14.3	20.2	7.2	12.1	16.4	7.7	85.2	12.0	7.1	0.6
2023	130.3	-3.1	2.0	3.3	-0.7	5.0	8.2	8.4	5.5	-15.0	6.6	.	.
2023 Q1	136.5	10.9	9.0	9.7	8.7	7.1	14.1	17.4	8.5	11.4	10.7	0.4	-4.9
Q2	128.8	-1.3	0.9	3.5	-1.1	5.7	9.4	9.6	6.5	-12.2	7.5	-1.5	-9.9
Q3	127.8	-10.3	-0.3	0.9	-4.4	4.3	6.4	5.5	4.5	-27.9	4.8	-2.1	.
Q4	127.9	-9.7	-1.2	-0.4	-5.1	3.2	3.6	2.2	2.7	-25.2	3.7	.	.
2023 Aug.	127.8	-11.1	0.0	0.9	-4.5	4.3	6.4	5.5	4.5	-29.3	-	-	-
Sep.	128.5	-12.2	0.0	0.3	-4.7	4.0	5.4	4.3	3.9	-30.6	-	-	-
Oct.	128.7	-9.5	-1.4	-0.3	-5.3	3.6	4.2	2.8	3.0	-24.5	-	-	-
Nov.	128.1	-9.0	-1.4	-0.5	-5.1	3.1	3.5	2.0	2.7	-23.8	-	-	-
Dec.	127.0	-10.7	-0.8	-0.5	-4.8	2.8	3.2	1.7	2.3	-27.3	-	-	-
2024 Jan.	125.9	-8.6	-1.9	-1.5	-5.8	2.1	.	.	.	-21.3	-	-	-

Sources: Eurostat, ECB calculations, and ECB calculations based on MSCI data and national sources (col. 13).
1) Domestic sales only.
2) Input prices for residential buildings.
3) Experimental data based on non-harmonised sources (see https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html for further details).

3.3 Commodity prices and GDP deflators
(annual percentage changes, unless otherwise indicated)

	GDP deflators								Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)					
	Total (s.a.; index: 2015 = 100)	Total	Domestic demand				Exports [1]	Imports [1]		Import-weighted [2]			Use-weighted [2]		
			Total	Private consump-tion	Govern-ment consump-tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% of total										100.0	45.4	54.6	100.0	50.4	49.6
2021	109.7	2.2	2.9	2.2	1.8	3.9	5.9	7.9	59.8	29.5	21.4	37.1	29.0	22.0	37.0
2022	114.8	4.6	6.8	6.7	4.3	7.8	12.5	17.6	95.0	18.3	28.8	9.6	19.4	27.7	10.9
2023	.	.	.	.	.	.	.	.	76.4	-13.0	-11.6	-14.3	-13.8	-12.5	-15.3
2023 Q1	119.6	6.1	5.6	8.0	4.1	6.5	5.3	4.1	75.8	-10.5	-5.8	-14.6	-11.5	-7.7	-15.6
Q2	121.0	6.1	4.1	6.9	4.5	4.6	0.3	-3.6	71.6	-18.0	-16.1	-19.9	-18.4	-16.4	-20.8
Q3	121.8	5.9	3.1	5.8	3.9	3.5	-1.9	-7.0	79.8	-13.8	-14.5	-13.0	-14.9	-15.2	-14.5
Q4	.	.	.	.	.	.	.	.	78.5	-9.0	-9.3	-8.8	-10.1	-10.4	-9.6
2023 Sep.	-	-	-	-	-	-	-	-	88.1	-12.1	-14.0	-10.1	-13.1	-14.4	-11.4
Oct.	-	-	-	-	-	-	-	-	86.2	-12.2	-13.9	-10.4	-13.1	-14.3	-11.7
Nov.	-	-	-	-	-	-	-	-	76.9	-8.9	-9.6	-8.1	-10.0	-11.0	-8.8
Dec.	-	-	-	-	-	-	-	-	71.4	-5.8	-3.7	-7.9	-6.8	-5.5	-8.2
2024 Jan.	-	-	-	-	-	-	-	-	73.5	-5.8	-1.8	-9.6	-6.6	-3.8	-9.7
Feb.	-	-	-	-	-	-	-	-	77.5	-4.4	0.2	-8.9	-4.3	-0.2	-9.1

Sources: Eurostat, ECB calculations and Bloomberg (col. 9).
1) Deflators for exports and imports refer to goods and services and include cross-border trade within the euro area.
2) Import-weighted: weighted according to 2009-11 average import structure; use-weighted: weighted according to 2009-11 average domestic demand structure.

3 Prices and costs

3.4 Price-related opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past	Input prices		Prices charged	
	Manu-facturing	Retail trade	Services	Construction	12 months	Manu-facturing	Services	Manu-facturing	Services
	1	2	3	4	5	6	7	8	9
1999-20	4.4	5.5	-	-2.9	27.9	56.5	56.1	-	50.0
2021	31.7	23.9	10.3	19.7	30.4	84.0	61.9	66.8	53.4
2022	48.6	52.9	27.4	42.4	71.6	77.1	75.4	69.6	62.0
2023	9.5	28.5	19.2	13.9	74.5	43.7	64.6	50.0	57.4
2023 Q1	23.8	43.3	26.0	27.3	78.4	51.3	69.9	57.8	61.2
Q2	7.2	29.8	17.9	11.9	76.9	41.6	64.3	49.2	58.0
Q3	3.6	22.1	15.3	6.6	73.3	39.1	62.0	45.7	55.5
Q4	3.6	18.8	17.6	9.7	69.5	42.8	62.0	47.5	54.8
2023 Sep.	4.4	20.7	14.6	7.3	73.6	41.9	62.7	45.8	54.7
Oct.	4.0	19.7	15.9	8.0	72.6	42.5	62.0	46.4	54.1
Nov.	3.4	18.3	18.0	9.3	68.9	42.7	62.5	47.2	54.5
Dec.	3.5	18.4	18.9	11.8	66.9	43.1	61.6	48.9	55.6
2024 Jan.	4.4	18.6	20.2	10.2	66.1	42.8	62.6	48.6	56.3
Feb.	3.8	16.5	17.5	4.4	65.3	45.5	62.9	48.3	56.6

Sources: European Commission (Directorate-General for Economic and Financial Affairs) and Markit.

3.5 Labour cost indices
(annual percentage changes, unless otherwise indicated)

	Total (index: 2020 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages [1]
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2020	100.0	100.0	75.3	24.7	69.0	31.0	
2021	100.9	0.9	1.1	0.5	0.9	1.0	1.3
2022	105.7	4.7	3.9	7.0	4.9	4.0	2.9
2023	.	.	.	.	.	.	4.5
2023 Q1	102.7	5.3	5.0	6.3	5.7	4.4	4.3
Q2	113.8	4.5	4.6	4.1	4.6	4.2	4.4
Q3	107.4	5.2	5.3	5.1	5.8	4.1	4.7
Q4	.	.	.	.	.	.	4.5

Sources: Eurostat and ECB calculations.
1) Experimental data based on non-harmonised sources (see https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html for further details).

3 Prices and costs

3.6 Unit labour costs, compensation per labour input and labour productivity
(annual percentage changes, unless otherwise indicated; quarterly data seasonally adjusted; annual data unadjusted)

	Total (index: 2015 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu-facturing, energy and utilities	Con-struction	Trade, transport, accom-modation and food services	Information and commu-nication	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
					Unit labour costs							
2020	110.3	4.6	2.4	2.0	5.2	7.9	-0.2	0.8	1.3	3.4	6.2	16.7
2021	110.1	-0.2	1.8	-3.7	5.6	-1.9	1.2	-1.5	5.0	1.1	0.9	-0.1
2022	113.8	3.4	7.4	3.5	6.2	2.1	3.2	2.9	4.7	3.5	3.4	-3.0
2022 Q4	116.5	4.7	7.8	3.0	7.8	4.2	4.0	3.3	4.2	5.1	4.9	-1.3
2023 Q1	118.9	5.9	4.2	7.1	5.5	6.5	4.5	6.0	4.7	7.2	3.6	0.0
Q2	119.6	6.3	2.7	7.4	6.4	7.9	4.7	4.8	5.7	6.9	4.9	3.1
Q3	121.6	6.7	4.3	9.7	5.7	8.0	4.3	4.7	4.2	6.8	4.9	3.3
					Compensation per employee							
2020	107.1	-0.3	3.2	-2.3	-1.0	-3.3	0.0	-0.2	-0.2	-0.2	2.1	-1.5
2021	111.6	4.2	2.7	4.7	5.2	5.5	5.8	3.3	6.6	4.7	2.3	3.3
2022	116.6	4.5	5.0	3.6	4.1	6.2	3.3	3.0	4.2	5.2	3.8	7.0
2022 Q4	119.1	5.0	5.8	3.5	4.9	5.4	3.5	3.1	2.6	6.1	5.7	5.1
2023 Q1	121.1	5.5	6.0	5.6	4.6	6.7	5.0	4.9	4.0	7.0	4.2	5.5
Q2	121.8	5.5	6.1	5.2	5.5	6.0	5.6	4.3	4.1	6.2	5.0	6.1
Q3	123.4	5.3	5.5	5.8	5.3	5.2	5.4	4.3	3.5	6.3	4.5	6.4
					Labour productivity per person employed							
2020	97.1	-4.7	0.8	-4.2	-5.9	-10.4	0.2	-0.9	-1.5	-3.5	-3.9	-15.6
2021	101.4	4.4	0.9	8.7	-0.3	7.5	4.6	4.9	1.5	3.6	1.3	3.4
2022	102.5	1.1	-2.3	0.1	-2.0	4.0	0.1	0.2	-0.5	1.7	0.4	10.3
2022 Q4	102.3	0.3	-1.9	0.5	-2.6	1.1	-0.4	-0.1	-1.5	1.0	0.7	6.5
2023 Q1	101.8	-0.4	1.7	-1.3	-0.9	0.2	0.4	-1.0	-0.7	-0.2	0.5	5.5
Q2	101.8	-0.8	3.4	-2.1	-0.8	-1.7	0.8	-0.5	-1.5	-0.6	0.1	2.9
Q3	101.5	-1.3	1.2	-3.6	-0.4	-2.6	1.1	-0.4	-0.6	-0.5	-0.4	3.0
					Compensation per hour worked							
2020	114.0	5.9	5.9	3.3	5.1	7.6	3.1	1.8	4.9	5.9	4.9	7.1
2021	114.1	0.1	0.5	-0.1	-0.5	-0.6	2.7	1.2	2.2	0.1	0.8	-1.5
2022	118.0	3.4	6.3	4.0	4.4	1.9	3.2	3.1	2.9	3.9	4.8	3.4
2022 Q4	120.7	4.5	7.4	3.3	4.3	3.9	3.5	2.6	1.9	5.2	6.1	3.8
2023 Q1	122.1	4.9	4.7	5.3	4.5	5.6	5.2	4.9	4.4	6.3	4.0	4.5
Q2	122.7	5.3	6.4	4.9	5.1	6.2	5.5	4.2	4.7	6.0	4.5	4.9
Q3	124.6	5.2	5.1	5.7	5.1	5.5	5.5	4.6	4.7	6.1	4.4	5.0
					Hourly labour productivity							
2020	104.7	2.1	1.7	1.6	0.8	1.0	4.1	1.7	4.8	3.1	-0.9	-6.2
2021	104.7	0.0	0.0	3.5	-6.3	1.0	1.3	2.5	-3.7	-1.5	-0.4	-2.1
2022	104.7	0.0	-1.7	0.4	-2.1	0.0	-0.1	0.3	-2.3	0.7	1.3	5.8
2022 Q4	104.6	-0.3	-1.9	0.3	-3.5	-0.2	-0.7	-0.8	-2.0	0.2	1.1	4.7
2023 Q1	103.8	-0.6	1.3	-1.7	-0.7	-0.3	0.7	-1.0	0.0	-0.5	0.4	4.5
Q2	103.6	-0.9	3.7	-2.3	-1.3	-1.5	0.8	-0.8	-1.1	-0.9	-0.3	2.2
Q3	103.6	-1.3	1.4	-3.4	-0.7	-2.2	1.7	-0.3	-0.9	-0.7	-0.6	2.0

Sources: Eurostat and ECB calculations.

4 Financial market developments

4.1 Money market interest rates
(percentages per annum; period averages)

	Euro area [1]					United States	Japan
	Euro short-term rate (€STR)	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	Secured overnight financing rate (SOFR)	Tokyo overnight average rate (TONAR)
	1	2	3	4	5	6	7
2021	-0.57	-0.56	-0.55	-0.52	-0.49	0.04	-0.02
2022	-0.01	0.09	0.35	0.68	1.10	1.63	-0.03
2023	3.21	3.25	3.43	3.69	3.86	5.00	-0.04
2023 Aug.	3.64	3.63	3.78	3.94	4.07	5.30	-0.06
Sep.	3.75	3.76	3.88	4.03	4.15	5.31	-0.05
Oct.	3.90	3.86	3.97	4.11	4.16	5.31	-0.02
Nov.	3.90	3.84	3.97	4.06	4.02	5.32	-0.02
Dec.	3.90	3.86	3.93	3.92	3.67	5.33	-0.01
2024 Jan.	3.90	3.87	3.92	3.89	3.61	5.32	-0.01
Feb.	3.91	3.87	3.92	3.90	3.67	5.31	-0.01

Source: LSEG and ECB calculations.
1) Data refer to the changing composition of the euro area.

4.2 Yield curves
(End of period; rates in percentages per annum; spreads in percentage points)

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area [1,2]					Euro area [1,2]	United States	United Kingdom	Euro area [1,2]			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2021	-0.73	-0.72	-0.68	-0.48	-0.19	0.53	1.12	0.45	-0.69	-0.58	-0.12	0.24
2022	1.71	2.46	2.57	2.45	2.56	0.09	-0.84	-0.24	2.85	2.48	2.47	2.76
2023	3.78	3.05	2.44	1.88	2.08	-0.96	-0.92	-1.20	2.25	1.54	1.76	2.64
2023 Aug.	3.46	3.38	2.95	2.52	2.57	-0.81	-1.30	-0.80	2.96	2.24	2.39	2.77
Sep.	3.70	3.51	3.16	2.78	2.88	-0.64	-0.89	-0.63	3.14	2.56	2.69	3.17
Oct.	3.82	3.39	2.99	2.68	2.82	-0.56	-0.53	-0.48	2.87	2.41	2.67	3.19
Nov.	3.78	3.26	2.81	2.41	2.53	-0.74	-0.83	-0.72	2.67	2.14	2.33	2.88
Dec.	3.78	3.05	2.44	1.88	2.08	-0.96	-0.92	-1.20	2.25	1.54	1.76	2.64
2024 Jan.	3.81	3.05	2.47	2.05	2.27	-0.79	-0.81	-1.03	2.26	1.67	2.06	2.76
Feb.	3.82	3.33	2.90	2.43	2.48	-0.85	-0.76	-0.46	2.79	2.24	2.20	2.79

Source: ECB calculations.
1) Data refer to the changing composition of the euro area.
2) ECB calculations based on underlying data provided by Euro MTS Ltd and ratings provided by Fitch Ratings.

4.3 Stock market indices
(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2021	448.3	4,023.6	962.9	289.8	183.0	95.4	164.4	819.0	874.3	377.7	279.6	886.3	4,277.6	28,836.5
2022	414.6	3,757.0	937.3	253.4	171.3	110.0	160.6	731.7	748.4	353.4	283.2	825.8	4,098.5	27,257.8
2023	452.0	4,272.0	968.5	292.7	169.2	119.2	186.7	809.8	861.5	367.8	283.1	803.6	4,285.6	30,716.6
2023 Aug.	453.9	4,296.8	966.3	297.6	167.8	115.8	188.6	816.5	867.9	362.6	269.1	828.5	4,457.4	32,167.4
Sep.	447.3	4,227.2	963.8	286.2	161.2	123.9	189.5	787.3	835.7	363.4	280.6	825.2	4,409.1	32,725.6
Oct.	430.8	4,104.0	922.9	274.1	155.6	123.1	186.7	748.8	810.5	344.5	269.0	775.7	4,269.4	31,381.0
Nov.	448.0	4,275.0	963.3	282.6	162.0	123.3	192.5	790.5	885.3	368.0	279.3	742.2	4,460.1	32,960.3
Dec.	472.0	4,508.6	1,019.9	298.5	163.4	122.7	202.0	862.9	950.4	390.0	282.2	749.5	4,688.4	33,118.0
2024 Jan.	471.8	4,505.8	998.5	289.2	163.2	120.2	204.7	875.3	963.2	381.9	288.4	762.5	4,804.5	35,451.8
Feb.	489.4	4,758.9	989.4	315.9	165.3	119.0	207.3	916.0	1,085.4	353.4	283.8	747.9	5,012.0	37,785.2

Source: LSEG.

4 Financial market developments

4.4 MFI interest rates on loans to and deposits from households (new business) [1], [2]
(Percentages per annum; period average, unless otherwise indicated)

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase					Composite cost-of-borrowing indicator
	Over-night	Redeem-able at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3]		By initial period of rate fixation				APRC [3]	
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2023 Feb.	0.11	1.17	1.91	2.20	6.54	16.14	7.21	7.08	7.78	4.58	3.67	3.48	3.52	2.94	3.55	3.24
Mar.	0.14	1.20	2.11	2.26	6.71	16.14	7.63	7.23	7.90	4.70	3.88	3.78	3.56	3.14	3.72	3.37
Apr.	0.17	1.25	2.28	2.42	6.97	16.29	8.06	7.43	8.11	4.91	4.12	3.85	3.61	3.19	3.81	3.48
May	0.21	1.30	2.47	2.48	7.14	16.34	8.16	7.60	8.31	5.08	4.24	3.98	3.65	3.31	3.93	3.58
June	0.23	1.37	2.71	2.59	7.27	16.35	7.02	7.49	7.99	5.11	4.39	4.07	3.71	3.41	4.05	3.70
July	0.27	1.42	2.82	2.86	7.49	16.40	8.38	7.73	8.41	5.23	4.54	4.14	3.72	3.46	4.09	3.76
Aug.	0.31	1.50	3.04	3.11	7.59	16.47	8.72	7.83	8.49	5.36	4.69	4.21	3.79	3.51	4.16	3.85
Sep.	0.33	1.54	3.08	3.12	7.77	16.54	8.47	7.83	8.55	5.40	4.72	4.24	3.86	3.57	4.25	3.89
Oct.	0.35	1.59	3.27	3.31	7.97	16.54	8.25	7.87	8.54	5.58	4.81	4.28	3.78	3.60	4.27	3.91
Nov.	0.36	1.62	3.32	3.41	7.97	16.66	7.27	7.90	8.54	5.56	4.88	4.31	3.89	3.70	4.35	4.01
Dec.	0.37	1.65	3.28	3.46	8.04	16.78	7.54	7.71	8.43	5.38	4.86	4.23	3.81	3.63	4.33	3.97
2024 Jan. (p)	0.38	1.67	3.20	3.15	8.15	16.79	7.99	8.02	8.72	5.39	4.80	4.10	3.67	3.52	4.15	3.87

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Including non-profit institutions serving households.
3) Annual percentage rate of charge (APRC).

4.5 MFI interest rates on loans to and deposits from non-financial corporations (new business) [1], [2]
(Percentages per annum; period average, unless otherwise indicated)

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Over-night	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2023 Feb.	0.31	2.30	2.81	3.81	4.40	4.54	4.71	4.06	4.10	3.70	3.69	3.54	3.58	3.86
Mar.	0.41	2.57	2.95	4.11	4.70	4.83	4.88	4.33	4.48	3.84	4.07	4.32	3.87	4.22
Apr.	0.45	2.80	3.11	4.39	4.87	4.74	4.96	4.60	4.58	3.98	4.32	4.37	3.69	4.39
May	0.49	2.96	3.13	4.56	5.04	5.07	5.16	4.76	4.84	4.01	4.47	4.58	4.01	4.57
June	0.55	3.20	3.10	4.78	5.24	5.43	5.26	4.95	4.99	4.14	4.71	4.88	4.10	4.78
July	0.61	3.31	3.58	4.88	5.52	5.52	5.43	5.13	5.02	4.30	4.86	5.01	4.32	4.94
Aug.	0.66	3.42	3.53	5.02	5.46	5.64	5.55	5.24	5.16	4.38	5.00	4.89	4.01	4.99
Sep.	0.75	3.59	3.79	5.19	5.58	5.72	5.64	5.40	5.22	4.40	5.04	4.99	4.20	5.09
Oct.	0.80	3.70	3.81	5.31	5.66	5.87	5.73	5.49	5.28	4.52	5.23	5.08	4.54	5.27
Nov.	0.83	3.71	3.92	5.33	5.70	5.91	5.79	5.50	5.30	4.55	5.12	5.17	4.40	5.23
Dec.	0.83	3.71	4.08	5.57	5.48	5.72	5.68	5.41	5.10	4.51	5.25	5.09	4.37	5.25
2024 Jan. (p)	0.89	3.69	3.32	5.37	5.80	5.69	5.65	5.45	5.22	4.43	5.15	5.00	4.18	5.22

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector.

4 Financial market developments

4.6 Debt securities issued by euro area residents, by sector of the issuer and original maturity
(EUR billions; transactions during the month and end-of-period outstanding amounts; market values)

	Outstanding amounts							Gross issues [1]						
	Total	MFIs	Non-MFI corporations			General government		Total	MFIs	Non-MFI corporations			General government	
			Financial corpo-rations other than MFIs	FVCs	Non-financial corpo-rations		of which central govern-ment			Financial corpo-rations other than MFIs	FVCs	Non-financial corpo-rations		of which central govern-ment
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
							Short-term							
2021	1,406.9	427.2	127.1	50.1	87.9	764.7	674.9	387.1	138.4	79.1	26.3	32.1	137.6	104.8
2022	1,372.8	467.6	143.6	51.9	94.6	667.0	621.7	481.0	182.6	116.4	48.2	48.1	133.9	97.1
2023	1,504.7	588.3	131.7	50.8	85.8	698.8	659.0	499.1	211.3	111.7	37.9	48.8	127.4	103.9
2023 Aug.	1,513.7	593.1	141.1	51.5	99.1	680.4	647.9	518.7	230.3	121.9	40.2	40.5	126.0	108.3
Sep.	1,532.6	591.9	137.4	50.7	92.1	711.3	676.2	522.4	214.0	117.1	42.5	46.8	144.5	126.5
Oct.	1,519.9	577.3	138.2	49.5	95.1	709.2	671.7	486.9	197.9	116.3	37.5	51.2	121.6	92.2
Nov.	1,529.9	590.8	134.7	48.3	95.7	708.7	667.8	479.4	187.6	120.7	40.8	45.0	126.2	100.2
Dec.	1,504.7	588.3	131.7	50.8	85.8	698.8	659.0	329.6	144.0	79.4	35.8	32.2	74.0	60.6
2024 Jan.	1,497.0	604.9	131.9	45.3	86.0	674.2	641.6	520.1	211.8	121.5	37.7	43.7	143.0	121.1
							Long-term							
2021	19,917.7	4,181.3	3,374.5	1,341.1	1,599.0	10,762.9	9,941.9	316.3	67.9	83.5	33.6	23.1	141.8	128.3
2022	17,896.7	3,971.0	3,257.9	1,339.0	1,395.8	9,271.0	8,559.2	298.8	78.5	73.1	29.5	16.6	130.6	121.2
2023	19,562.9	4,497.3	3,458.4	1,347.4	1,504.1	10,103.0	9,362.8	326.7	95.9	71.6	24.5	20.6	138.6	130.1
2023 Aug.	18,814.4	4,307.2	3,367.4	1,367.8	1,427.7	9,712.0	8,989.6	206.0	52.3	47.9	12.4	8.4	97.4	93.9
Sep.	18,670.1	4,294.9	3,401.0	1,372.7	1,429.9	9,544.4	8,830.7	350.1	91.2	91.8	21.4	29.3	137.8	127.8
Oct.	18,712.2	4,341.6	3,402.3	1,374.4	1,430.8	9,537.4	8,825.0	336.1	93.4	70.7	22.0	14.4	157.6	151.4
Nov.	19,081.1	4,412.2	3,417.1	1,345.7	1,463.9	9,787.9	9,066.6	303.9	84.1	88.5	21.0	25.2	106.1	101.2
Dec.	19,562.9	4,497.3	3,458.4	1,347.4	1,504.1	10,103.0	9,362.8	215.4	69.3	59.6	16.9	17.3	69.1	67.6
2024 Jan.	19,671.5	4,577.5	3,503.4	1,351.7	1,502.9	10,087.7	9,340.0	466.9	162.9	95.8	28.9	22.5	185.7	165.0

Source: ECB.
1) In order to facilitate comparison, annual data are averages of the relevant monthly data.

4.7 Annual growth rates and outstanding amounts of debt securities and listed shares
(EUR billions and percentage changes; market values)

	Debt securities							Listed shares			
	Total	MFIs	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non-financial corporations
			Financial corporations other than MFIs	FVCs	Non-financial corporations		of which central government				
	1	2	3	4	5	6	7	8	9	10	11
					Outstanding amount						
2021	21,324.6	4,608.5	3,501.6	1,391.2	1,686.9	11,527.6	10,616.8	10,366.1	600.0	1,544.3	8,220.9
2022	19,269.5	4,439.5	3,401.5	1,391.0	1,490.5	9,938.0	9,180.9	8,711.0	524.9	1,351.1	6,834.3
2023	21,067.6	5,085.7	3,590.1	1,398.2	1,589.9	10,801.8	10,021.8	9,696.2	621.5	1,476.0	7,598.2
2023 Aug.	20,328.1	4,900.4	3,508.5	1,419.3	1,526.8	10,392.4	9,637.5	9,526.3	582.1	1,493.1	7,450.5
Sep.	20,202.7	4,886.8	3,538.3	1,423.4	1,522.0	10,255.7	9,506.9	9,159.1	576.0	1,424.2	7,158.4
Oct.	20,232.0	4,918.9	3,540.6	1,423.9	1,526.0	10,246.6	9,496.7	8,780.2	558.5	1,367.2	6,854.0
Nov.	20,611.0	5,003.0	3,551.8	1,394.0	1,559.6	10,496.6	9,734.4	9,397.5	611.1	1,462.0	7,323.9
Dec.	21,067.6	5,085.7	3,590.1	1,398.2	1,589.9	10,801.8	10,021.8	9,696.2	621.5	1,476.0	7,598.2
2024 Jan.	21,168.5	5,182.3	3,635.3	1,396.9	1,589.0	10,761.9	9,981.5	9,845.4	640.6	1,504.6	7,699.8
					Growth rate [1]						
2023 June	5.3	10.2	4.3	4.1	0.9	4.3	5.1	-1.0	-2.4	1.6	-1.3
July	6.1	12.1	4.1	2.8	1.8	4.7	5.3	-1.0	-2.1	0.9	-1.3
Aug.	5.9	12.1	4.0	2.3	1.1	4.6	5.3	-1.0	-2.0	1.0	-1.2
Sep.	6.4	11.0	5.1	4.5	1.6	5.5	6.2	-0.9	-3.1	0.8	-1.1
Oct.	6.1	10.6	5.1	4.5	2.1	5.0	5.5	-1.3	-3.0	0.6	-1.5
Nov.	5.5	10.0	3.8	0.9	2.1	4.5	4.9	-1.2	-3.3	0.8	-1.4
Dec.	5.8	11.4	3.6	0.3	1.8	4.6	5.0	-1.3	-3.1	0.7	-1.6
2024 Jan.	5.8	10.4	5.0	1.1	1.5	4.6	5.0	-1.4	-3.0	0.6	-1.7

Source: ECB.
1) For details on the calculation of growth rates, see the Technical Notes.

4 Financial market developments

4.8 Effective exchange rates [1]
(period averages; index: 1999 Q1=100)

	EER-18						EER-41	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2021	99.6	93.7	93.6	89.4	68.1	87.2	120.5	94.3
2022	95.3	90.8	93.5	84.2	63.4	82.5	116.1	90.9
2023	98.1	94.0	98.0	.	.	.	121.8	94.7
2023 Q1	97.1	93.0	96.9	86.8	65.8	85.1	119.4	93.4
Q2	98.2	93.8	98.0	88.0	64.8	85.6	121.4	94.6
Q3	98.9	94.9	98.8	88.8	66.1	87.2	123.5	95.9
Q4	98.3	94.2	98.1	.	.	.	123.0	95.1
2023 Sep.	98.5	94.6	98.6	-	-	-	123.0	95.5
Oct.	98.0	94.1	98.0	-	-	-	122.5	95.0
Nov.	98.7	94.6	98.4	-	-	-	123.4	95.3
Dec.	98.2	93.9	98.0	-	-	-	123.2	94.8
2024 Jan.	98.4	94.3	98.1	-	-	-	123.6	95.1
Feb.	98.1	94.1	97.9	-	-	-	123.3	94.8
			Percentage change versus previous month					
2024 Feb.	-0.3	-0.2	-0.3	-	-	-	-0.2	-0.3
			Percentage change versus previous year					
2024 Feb.	1.1	1.1	1.1	-	-	-	3.4	1.5

Source: ECB.
1) For a definition of the trading partner groups and other information see the "Methodology" section of the ECB Data Portal.

4.9 Bilateral exchange rates
(period averages; units of national currency per euro)

	Chinese renminbi	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11
2021	7.628	25.640	7.437	358.516	129.877	4.565	0.860	4.9215	10.146	1.081	1.183
2022	7.079	24.566	7.440	391.286	138.027	4.686	0.853	4.9313	10.630	1.005	1.053
2023	7.660	24.004	7.451	381.853	151.990	4.542	0.870	4.9467	11.479	0.972	1.081
2023 Q1	7.342	23.785	7.443	388.712	141.981	4.708	0.883	4.9202	11.203	0.992	1.073
Q2	7.644	23.585	7.450	372.604	149.723	4.537	0.869	4.9488	11.469	0.978	1.089
Q3	7.886	24.126	7.453	383.551	157.254	4.499	0.860	4.9490	11.764	0.962	1.088
Q4	7.771	24.517	7.458	382.125	159.118	4.420	0.867	4.9697	11.478	0.955	1.075
2023 Sep.	7.797	24.380	7.457	386.429	157.795	4.598	0.862	4.9656	11.842	0.960	1.068
Oct.	7.720	24.584	7.460	385.333	158.038	4.512	0.868	4.9682	11.647	0.955	1.056
Nov.	7.809	24.485	7.458	379.195	161.844	4.402	0.870	4.9703	11.547	0.963	1.081
Dec.	7.787	24.478	7.456	381.803	157.213	4.334	0.862	4.9707	11.203	0.944	1.090
2024 Jan.	7.820	24.716	7.457	382.042	159.458	4.365	0.859	4.9749	11.283	0.937	1.091
Feb.	7.765	25.232	7.455	388.039	161.377	4.326	0.855	4.9746	11.250	0.946	1.079
				Percentage change versus previous month							
2024 Feb.	-0.7	2.1	0.0	1.6	1.2	-0.9	-0.5	0.0	-0.3	1.0	-1.0
				Percentage change versus previous year							
2024 Feb.	6.0	6.4	0.1	0.8	13.3	-8.8	-3.5	1.3	0.7	-4.5	0.7

Source: ECB.

4 Financial market developments

4.10 Euro area balance of payments, financial account
(EUR billions, unless otherwise indicated; outstanding amounts at end of period; transactions during period)

	Total [1]			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
	Outstanding amounts (international investment position)											
2022 Q4	31,081.0	30,811.8	269.2	12,269.1	10,087.5	11,099.7	12,824.9	18.4	6,579.6	7,899.5	1,114.2	15,838.2
2023 Q1	31,597.9	31,462.3	135.6	12,277.8	10,022.2	11,332.6	13,396.9	-9.4	6,863.4	8,043.2	1,133.5	16,089.2
Q2	31,742.7	31,558.7	184.1	12,170.2	9,895.0	11,711.0	13,708.1	-34.9	6,790.7	7,955.6	1,105.7	16,057.7
Q3	31,882.7	31,556.1	326.7	12,247.4	9,999.7	11,762.3	13,707.3	-57.7	6,816.7	7,849.1	1,114.1	16,042.7
	Outstanding amounts as a percentage of GDP											
2023 Q3	225.4	223.1	2.3	86.6	70.7	83.2	96.9	-0.4	48.2	55.5	7.9	113.4
	Transactions											
2023 Q1	405.4	366.0	39.4	50.5	16.5	63.3	159.7	15.3	295.0	189.8	-18.6	-
Q2	4.7	-45.1	49.8	-108.7	-116.7	205.7	138.0	-4.8	-89.4	-66.4	1.9	-
Q3	102.5	2.1	100.4	6.4	-4.1	86.5	112.5	-3.4	15.2	-106.3	-2.2	-
Q4	-123.0	-264.5	141.5	-105.0	-103.6	20.1	11.4	17.3	-61.8	-172.3	6.4	-
2023 July	136.7	103.8	32.9	0.5	26.8	52.5	5.1	-8.9	92.3	71.9	0.4	-
Aug.	99.0	77.6	21.5	16.5	4.6	32.7	44.9	3.3	45.3	28.1	1.3	-
Sep.	-133.3	-179.3	46.0	-10.5	-35.5	1.3	62.5	2.2	-122.4	-206.2	-3.9	-
Oct.	8.4	-12.7	21.1	-47.9	-64.2	-19.3	-7.4	17.1	54.8	58.9	3.7	-
Nov.	89.5	42.3	47.2	15.4	27.9	59.1	19.7	1.2	12.4	-5.3	1.5	-
Dec.	-220.9	-294.1	73.1	-72.4	-67.3	-19.7	-0.8	-0.9	-129.0	-226.0	1.2	-
	12-month cumulated transactions											
2023 Dec.	389.6	58.5	331.1	-156.7	-207.9	375.5	421.6	24.4	158.9	-155.2	-12.5	-
	12-month cumulated transactions as a percentage of GDP											
2023 Dec.	2.8	0.4	2.3	-1.1	-1.5	2.7	3.0	0.2	1.1	-1.1	-0.1	-

Source: ECB.
1) Net financial derivatives are included in total assets.

5.1 Monetary aggregates [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

		M2					M3				M3-M2			
	M1			M2-M1										M3
	Currency in circulation	Overnight deposits		Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months			Repos	Money market fund shares	Debt securities with a maturity of up to 2 years		
	1	2	3	4	5	6	7	8	9	10	11	12
					Outstanding amounts								
2021	1,470.4	9,822.6	11,292.9	918.8	2,504.9	3,423.7	14,716.7	118.7	644.1	25.3	788.1	15,504.8
2022	1,539.5	9,763.6	11,303.1	1,382.1	2,563.9	3,946.0	15,249.1	124.2	646.1	49.5	819.8	16,068.9
2023	1,536.5	8,834.3	10,370.9	2,309.8	2,458.5	4,768.3	15,139.1	186.8	739.0	72.0	997.9	16,137.0
2023 Q1	1,542.2	9,456.6	10,998.7	1,633.7	2,548.0	4,181.7	15,180.4	102.6	676.7	91.5	870.7	16,051.1
Q2	1,535.3	9,179.2	10,714.5	1,865.1	2,517.8	4,382.9	15,097.4	114.4	695.9	83.7	894.0	15,991.4
Q3	1,535.7	8,985.8	10,521.5	2,085.9	2,465.8	4,551.6	15,073.2	131.0	714.4	75.7	921.2	15,994.3
Q4	1,536.5	8,834.3	10,370.9	2,309.8	2,458.5	4,768.3	15,139.1	186.8	739.0	72.0	997.9	16,137.0
2023 Aug.	1,534.1	9,009.3	10,543.4	1,993.8	2,485.1	4,478.9	15,022.3	122.0	699.5	83.6	905.1	15,927.4
Sep.	1,535.7	8,985.8	10,521.5	2,085.9	2,465.8	4,551.6	15,073.2	131.0	714.4	75.7	921.2	15,994.3
Oct.	1,536.1	8,869.0	10,405.1	2,169.7	2,453.3	4,622.9	15,028.0	144.3	711.2	87.8	943.2	15,971.3
Nov.	1,534.0	8,835.1	10,369.1	2,232.6	2,446.9	4,679.5	15,048.7	161.4	719.2	73.7	954.3	16,003.0
Dec.	1,536.5	8,834.3	10,370.9	2,309.8	2,458.5	4,768.3	15,139.1	186.8	739.0	72.0	997.9	16,137.0
2024 Jan. (p)	1,533.0	8,733.0	10,265.9	2,360.6	2,446.8	4,807.4	15,073.3	182.7	750.0	86.8	1,019.5	16,092.8
					Transactions								
2021	107.7	908.1	1,015.8	-121.0	65.7	-55.3	960.5	12.3	20.3	13.2	45.8	1,006.3
2022	69.2	-46.8	22.4	428.9	55.5	484.3	506.7	3.9	2.4	76.6	82.8	589.5
2023	-4.4	-954.4	-958.8	925.6	-100.0	825.6	-133.2	40.9	93.4	25.0	159.3	26.1
2023 Q1	1.3	-346.4	-345.1	245.9	-10.8	235.1	-110.0	-22.1	30.4	43.7	52.1	-57.9
Q2	-6.9	-275.8	-282.7	226.7	-30.2	196.5	-86.2	11.9	19.2	-5.5	25.6	-60.6
Q3	0.3	-202.7	-202.4	224.0	-52.1	171.9	-30.5	16.0	18.2	-8.7	25.5	-5.0
Q4	0.8	-129.5	-128.6	228.9	-6.8	222.2	93.5	35.0	25.6	-4.5	56.0	149.6
2023 Aug.	-0.4	-82.6	-83.0	75.9	-21.7	54.2	-28.8	-0.1	4.8	4.3	8.9	-19.9
Sep.	1.6	-28.5	-26.9	89.5	-19.4	70.1	43.2	8.5	14.8	-7.9	15.4	58.6
Oct.	0.4	-114.6	-114.2	84.3	-12.3	72.0	-42.3	13.3	-3.3	10.8	20.8	-21.5
Nov.	-2.0	-27.4	-29.4	66.4	-6.2	60.2	30.8	17.8	8.0	-14.3	11.5	42.2
Dec.	2.5	12.5	15.0	78.3	11.7	90.0	105.0	3.8	20.9	-0.9	23.8	128.8
2024 Jan. (p)	-3.0	-106.3	-109.3	48.1	-11.8	36.3	-73.0	-1.7	10.9	21.2	30.3	-42.6
					Growth rates								
2021	7.9	10.2	9.9	-11.7	2.7	-1.6	7.0	12.1	3.3	158.5	6.2	6.9
2022	4.7	-0.5	0.2	45.7	2.2	14.1	3.4	3.1	0.4	457.8	11.1	3.8
2023	-0.3	-9.7	-8.5	66.7	-3.9	20.9	-0.9	32.9	14.4	47.4	19.5	0.2
2023 Q1	1.4	-5.7	-4.7	69.2	1.3	20.0	1.0	-17.6	15.2	538.5	23.8	2.0
Q2	0.4	-9.3	-8.0	85.7	-0.3	24.0	-0.6	-2.4	14.4	325.0	22.4	0.5
Q3	-0.2	-11.4	-9.9	76.3	-3.3	21.9	-2.2	10.3	18.4	64.9	19.9	-1.2
Q4	-0.3	-9.7	-8.5	66.7	-3.9	20.9	-0.9	32.9	14.4	47.4	19.5	0.2
2023 Aug.	-0.2	-11.9	-10.4	85.9	-2.3	23.8	-2.4	-1.2	16.9	160.2	20.3	-1.3
Sep.	-0.2	-11.4	-9.9	76.3	-3.3	21.9	-2.2	10.3	18.4	64.9	19.9	-1.2
Oct.	-0.4	-11.5	-10.0	72.9	-3.9	21.4	-2.2	15.9	14.4	254.6	22.5	-1.0
Nov.	-0.5	-10.9	-9.5	68.6	-4.1	20.8	-1.9	18.2	13.0	93.6	17.8	-0.9
Dec.	-0.3	-9.7	-8.5	66.7	-3.9	20.9	-0.9	32.9	14.4	47.4	19.5	0.2
2024 Jan. (p)	-0.5	-9.9	-8.6	62.3	-4.3	19.8	-1.1	24.8	17.6	72.5	22.5	0.1

Source: ECB.
1) Data refer to the changing composition of the euro area.

5 Financing conditions and credit developments

5.2 Deposits in M3 [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

| | Non-financial corporations [2] | | | | | Households [3] | | | | | Financial corporations other than MFIs and ICPFs [2] | Insurance corporations and pension funds | Other general government [4] |
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2021	3,228.3	2,802.7	289.7	128.4	7.4	8,087.9	5,380.8	374.1	2,332.3	0.7	1,272.8	229.0	546.9
2022	3,360.4	2,721.4	497.6	134.9	6.4	8,373.7	5,536.8	444.9	2,391.1	0.9	1,302.0	236.9	560.8
2023	3,335.1	2,423.9	767.6	131.6	12.1	8,425.6	5,111.6	1,021.7	2,290.9	1.4	1,252.2	234.7	541.7
2023 Q1	3,332.6	2,595.7	595.6	132.6	8.6	8,377.5	5,433.2	566.2	2,377.1	0.9	1,227.4	230.5	572.9
Q2	3,333.1	2,502.4	687.7	132.0	11.0	8,364.2	5,311.8	701.6	2,349.9	0.8	1,185.3	229.1	564.9
Q3	3,322.6	2,438.8	737.1	131.9	14.8	8,351.5	5,206.0	847.5	2,297.1	0.8	1,216.1	212.6	565.7
Q4	3,335.1	2,423.9	767.6	131.6	12.1	8,425.6	5,111.6	1,021.7	2,290.9	1.4	1,252.2	234.7	541.7
2023 Aug.	3,314.9	2,452.4	719.7	132.1	10.8	8,360.0	5,238.0	804.5	2,316.7	0.8	1,157.2	217.5	560.6
Sep.	3,322.6	2,438.8	737.1	131.9	14.8	8,351.5	5,206.0	847.5	2,297.1	0.8	1,216.1	212.6	565.7
Oct.	3,326.5	2,413.8	768.5	131.4	12.9	8,346.7	5,150.1	909.6	2,286.3	0.7	1,205.6	210.4	547.0
Nov.	3,326.0	2,405.1	772.6	132.0	16.4	8,365.1	5,115.5	969.9	2,278.8	0.8	1,225.4	223.3	536.3
Dec.	3,335.1	2,423.9	767.6	131.6	12.1	8,425.6	5,111.6	1,021.7	2,290.9	1.4	1,252.2	234.7	541.7
2024 Jan. (p)	3,327.8	2,384.5	803.7	128.4	11.2	8,436.5	5,080.7	1,071.7	2,283.1	1.1	1,210.7	221.8	526.2
Transactions													
2021	248.2	272.8	-21.3	-6.9	3.6	422.2	411.3	-65.0	76.1	-0.2	159.0	-10.4	46.0
2022	121.3	-89.7	206.5	5.9	-1.4	296.5	167.9	74.6	53.9	0.1	1.4	8.2	14.0
2023	-28.8	-302.6	269.3	-1.4	5.9	22.8	-458.0	575.4	-95.1	0.6	-55.3	-0.6	-25.9
2023 Q1	-37.0	-136.3	97.7	-0.6	2.3	-25.3	-132.2	115.9	-9.1	0.1	-74.2	-5.1	8.2
Q2	0.9	-91.8	90.9	-0.6	2.4	-13.2	-121.2	135.2	-27.1	-0.1	-43.2	-1.2	-10.7
Q3	-13.8	-65.7	48.3	-0.1	3.7	-14.8	-111.2	149.3	-52.9	0.0	30.6	-17.3	0.6
Q4	21.0	-8.8	32.4	-0.1	-2.5	76.2	-93.4	174.9	-6.0	0.6	31.5	23.0	-24.1
2023 Aug.	2.9	-16.6	19.1	0.4	0.0	-4.9	-36.7	53.1	-21.3	0.0	-22.9	0.6	-4.2
Sep.	4.1	-15.8	16.2	-0.2	3.9	-9.8	-32.7	42.5	-19.7	0.0	56.2	-5.5	5.0
Oct.	5.7	-23.6	31.6	-0.4	-1.9	-4.5	-55.7	62.1	-10.8	-0.1	-9.8	-2.0	-18.7
Nov.	4.0	-5.9	5.5	0.7	3.7	19.7	-34.0	60.9	-7.4	0.1	24.3	13.4	-10.8
Dec.	11.3	20.7	-4.7	-0.4	-4.3	61.0	-3.8	51.9	12.2	0.6	17.0	11.6	5.4
2024 Jan. (p)	-8.6	-40.8	35.2	-3.2	0.2	9.5	-31.8	49.6	-7.9	-0.3	-43.8	-13.2	-15.5
Growth rates													
2021	8.4	10.8	-6.9	-5.0	103.4	5.5	8.3	-14.8	3.4	-18.4	14.1	-4.3	9.3
2022	3.7	-3.2	70.1	4.6	-16.4	3.7	3.1	20.1	2.3	19.9	0.4	3.6	2.6
2023	-0.9	-11.1	54.0	-1.0	91.8	0.3	-8.2	128.2	-4.0	67.4	-4.1	-0.2	-4.6
2023 Q1	1.2	-9.4	105.8	3.1	-18.7	2.0	-1.3	56.8	1.4	-10.8	-8.4	0.3	3.1
Q2	0.7	-12.7	125.2	2.1	10.4	1.1	-4.4	97.1	-0.3	20.9	-14.2	0.5	-2.3
Q3	-1.2	-14.1	90.6	0.2	83.5	-0.3	-7.4	127.5	-3.4	-14.5	-16.4	-12.3	1.8
Q4	-0.9	-11.1	54.0	-1.0	91.8	0.3	-8.2	128.2	-4.0	67.4	-4.1	-0.2	-4.6
2023 Aug.	-2.3	-15.7	107.5	0.8	37.5	0.2	-6.7	124.2	-2.4	-1.0	-18.6	-7.5	-2.5
Sep.	-1.2	-14.1	90.6	0.2	83.5	-0.3	-7.4	127.5	-3.4	-14.5	-16.4	-12.3	1.8
Oct.	-2.0	-14.2	73.0	0.7	45.8	-0.5	-8.3	134.1	-4.0	-28.7	-10.7	-16.0	-2.9
Nov.	-1.9	-13.0	59.3	1.0	102.4	-0.3	-8.5	132.1	-4.3	-18.6	-8.4	-9.1	-5.1
Dec.	-0.9	-11.1	54.0	-1.0	91.8	0.3	-8.2	128.2	-4.0	67.4	-4.1	-0.2	-4.6
2024 Jan. (p)	-1.0	-11.2	49.9	-3.1	58.3	0.3	-8.3	121.4	-4.3	39.2	-5.4	-4.8	-6.7

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
3) Including non-profit institutions serving households.
4) Refers to the general government sector excluding central government.

5.3 Credit to euro area residents [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corporations [3]	To households [4]	To financial corporations other than MFIs and ICPFs [3]	To insurance corporations and pension funds		
						Adjusted loans [2]						
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2021	6,531.5	994.3	5,535.3	14,805.8	12,340.5	12,722.7	4,864.8	6,372.6	941.9	161.1	1,577.2	888.1
2022	6,361.6	1,004.6	5,332.0	15,390.1	12,990.2	13,183.7	5,131.2	6,632.2	1,079.3	147.6	1,563.7	836.3
2023	6,315.4	994.7	5,295.4	15,491.8	13,035.4	13,262.2	5,126.8	6,647.3	1,122.4	139.0	1,559.0	897.4
2023 Q1	6,353.2	995.3	5,333.0	15,426.3	13,019.5	13,214.7	5,136.0	6,665.6	1,076.5	141.4	1,556.9	849.9
Q2	6,275.3	986.6	5,263.3	15,426.5	12,982.2	13,210.7	5,126.9	6,634.3	1,078.5	142.5	1,575.1	869.3
Q3	6,212.1	989.2	5,197.9	15,429.0	12,977.5	13,194.2	5,114.6	6,633.5	1,092.3	137.2	1,576.9	874.6
Q4	6,315.4	994.7	5,295.4	15,491.8	13,035.4	13,262.2	5,126.8	6,647.3	1,122.4	139.0	1,559.0	897.4
2023 Aug.	6,257.7	987.3	5,245.3	15,414.5	12,963.8	13,186.6	5,119.9	6,632.8	1,079.9	131.2	1,573.7	877.1
Sep.	6,212.1	989.2	5,197.9	15,429.0	12,977.5	13,194.2	5,114.6	6,633.5	1,092.3	137.2	1,576.9	874.6
Oct.	6,197.1	987.3	5,184.7	15,452.2	13,008.9	13,224.5	5,112.9	6,641.8	1,119.1	135.1	1,563.0	880.3
Nov.	6,226.6	986.0	5,215.4	15,471.8	13,033.9	13,243.3	5,118.2	6,652.6	1,129.0	134.1	1,560.0	877.9
Dec.	6,315.4	994.7	5,295.4	15,491.8	13,035.4	13,262.2	5,126.8	6,647.3	1,122.4	139.0	1,559.0	897.4
2024 Jan. (p)	6,248.4	984.1	5,238.8	15,495.3	13,001.0	13,245.1	5,110.7	6,634.0	1,124.7	131.6	1,584.3	909.9
Transactions												
2021	663.0	-0.9	673.6	563.0	475.8	509.2	176.9	261.7	47.4	-10.1	78.0	9.2
2022	175.9	9.4	165.7	634.8	624.3	680.5	269.9	242.0	125.8	-13.4	16.9	-6.4
2023	-160.8	-16.6	-144.4	55.4	23.4	70.0	-5.5	6.3	30.7	-8.1	-13.8	45.8
2023 Q1	-72.9	-17.4	-55.3	2.5	3.7	7.5	-2.1	14.9	-3.0	-5.9	-9.7	8.5
Q2	-75.1	-8.6	-67.0	0.9	-32.0	-0.9	-5.1	-28.6	0.8	1.0	17.6	15.3
Q3	-18.4	1.6	-19.6	8.1	-0.1	-11.6	-8.4	1.6	12.1	-5.3	2.4	5.8
Q4	5.6	7.8	-2.5	44.0	51.7	75.0	10.2	18.5	20.9	2.2	-24.1	16.3
2023 Aug.	14.8	2.4	12.8	-23.6	-24.1	-27.9	-3.9	4.2	-20.2	-4.3	0.3	0.3
Sep.	1.0	1.6	-0.6	16.7	13.0	7.9	-5.2	2.2	10.1	6.0	4.2	-0.5
Oct.	-16.4	0.9	-17.4	32.4	37.1	34.3	2.7	10.0	26.3	-1.8	-12.9	8.2
Nov.	-14.2	-2.1	-12.2	4.9	19.3	26.7	-3.9	11.5	12.5	-0.8	-6.9	-7.5
Dec.	36.3	9.0	27.2	6.7	-4.6	14.0	11.4	-3.0	-17.9	4.9	-4.3	15.6
2024 Jan. (p)	-45.2	-8.4	-37.0	7.1	-29.2	-12.2	-13.5	-12.5	4.2	-7.4	27.7	8.6
Growth rates												
2021	11.3	-0.1	13.8	3.9	4.0	4.2	3.8	4.3	5.2	-4.6	5.2	1.0
2022	2.7	0.9	3.0	4.3	5.0	5.4	5.5	3.8	13.4	-7.9	1.1	-0.6
2023	-2.5	-1.7	-2.7	0.4	0.2	0.5	-0.1	0.1	2.8	-5.4	-0.9	5.4
2023 Q1	-0.1	-1.5	0.1	2.9	3.5	3.9	4.5	2.9	5.0	-9.7	-1.3	2.0
Q2	-2.5	-2.3	-2.5	1.5	1.4	2.0	2.5	1.1	0.6	-12.2	1.0	4.5
Q3	-2.1	-2.1	-2.1	0.2	-0.3	0.2	-0.4	0.2	-0.6	-13.9	1.7	5.0
Q4	-2.5	-1.7	-2.7	0.4	0.2	0.5	-0.1	0.1	2.8	-5.4	-0.9	5.4
2023 Aug.	-2.1	-2.1	-2.1	0.6	0.1	0.7	0.1	0.4	0.4	-13.9	1.7	5.2
Sep.	-2.1	-2.1	-2.1	0.2	-0.3	0.2	-0.4	0.2	-0.6	-13.9	1.7	5.0
Oct.	-2.6	-1.8	-2.7	0.4	0.0	0.4	-0.9	0.2	4.7	-14.2	1.3	5.0
Nov.	-2.8	-1.7	-3.1	0.2	0.0	0.4	-0.7	0.2	3.4	-10.5	-0.2	3.9
Dec.	-2.5	-1.7	-2.7	0.4	0.2	0.5	-0.1	0.1	2.8	-5.4	-0.9	5.4
2024 Jan. (p)	-2.5	-1.0	-2.8	0.4	-0.1	0.4	-0.4	-0.1	2.9	-10.4	1.3	6.4

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.
3) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
4) Including non-profit institutions serving households.

5 Financing conditions and credit developments

5.4 MFI loans to euro area non-financial corporations and households [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Non-financial corporations [2]					Households [3]				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans [4]					Adjusted loans [4]			
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2021	4,864.8	4,995.5	889.0	1,005.2	2,970.7	6,372.6	6,638.3	698.3	4,970.8	703.5
2022	5,131.2	5,137.8	967.2	1,078.9	3,085.1	6,632.2	6,833.5	717.3	5,214.7	700.2
2023	5,126.8	5,150.4	914.0	1,091.1	3,121.7	6,647.3	6,865.2	733.5	5,227.8	685.9
2023 Q1	5,136.0	5,147.9	940.7	1,092.7	3,102.6	6,665.6	6,868.6	723.7	5,236.0	705.9
Q2	5,126.9	5,144.8	924.2	1,088.2	3,114.6	6,634.3	6,867.2	726.0	5,207.9	700.4
Q3	5,114.6	5,130.9	902.8	1,085.4	3,126.5	6,633.5	6,865.0	731.6	5,210.5	691.4
Q4	5,126.8	5,150.4	914.0	1,091.1	3,121.7	6,647.3	6,865.2	733.5	5,227.8	685.9
2023 Aug.	5,119.9	5,125.4	901.9	1,085.1	3,132.9	6,632.8	6,865.0	729.9	5,209.0	693.9
Sep.	5,114.6	5,130.9	902.8	1,085.4	3,126.5	6,633.5	6,865.0	731.6	5,210.5	691.4
Oct.	5,112.9	5,128.3	897.4	1,087.7	3,127.8	6,641.8	6,865.0	731.1	5,222.8	688.0
Nov.	5,118.2	5,137.3	902.1	1,087.5	3,128.6	6,652.6	6,866.7	732.1	5,231.6	688.9
Dec.	5,126.8	5,150.4	914.0	1,091.1	3,121.7	6,647.3	6,865.2	733.5	5,227.8	685.9
2024 Jan. (p)	5,110.7	5,135.8	894.1	1,092.8	3,123.8	6,634.0	6,870.2	734.6	5,215.3	684.1
Transactions										
2021	176.9	208.3	-1.6	2.3	176.1	261.7	267.5	10.7	255.0	-3.9
2022	269.9	308.9	78.6	77.7	113.5	242.0	250.5	22.7	218.5	0.9
2023	-5.5	24.2	-44.4	10.2	28.7	6.3	24.0	19.8	8.6	-22.1
2023 Q1	-2.1	4.3	-24.1	11.0	11.0	14.9	17.9	4.6	15.0	-4.7
Q2	-5.1	-0.9	-15.1	-2.9	12.9	-28.6	0.4	3.9	-27.6	-4.9
Q3	-8.4	-10.0	-21.8	-3.2	16.6	1.6	0.8	7.5	2.8	-8.7
Q4	10.2	30.9	16.6	5.3	-11.7	18.5	4.9	3.8	18.5	-3.8
2023 Aug.	-3.9	-17.0	-18.9	-3.2	18.3	4.2	1.7	2.7	3.9	-2.3
Sep.	-5.2	6.1	0.2	-0.5	-4.9	2.2	1.8	2.6	1.8	-2.2
Oct.	2.7	0.6	-4.1	3.1	3.6	10.0	1.2	0.3	12.3	-2.7
Nov.	-3.9	13.4	7.6	-2.4	-9.1	11.5	2.8	1.5	9.4	0.7
Dec.	11.4	16.9	13.1	4.5	-6.2	-3.0	0.8	2.0	-3.2	-1.9
2024 Jan. (p)	-13.5	-11.6	-19.1	1.7	3.9	-12.5	4.9	1.0	-12.2	-1.2
Growth rates										
2021	3.8	4.3	-0.2	0.2	6.3	4.3	4.2	1.5	5.4	-0.6
2022	5.5	6.4	8.8	7.7	3.8	3.8	3.8	3.3	4.4	0.1
2023	-0.1	0.5	-4.6	0.9	0.9	0.1	0.4	2.8	0.2	-3.1
2023 Q1	4.5	5.3	4.0	9.1	3.1	2.9	2.9	3.1	3.3	-0.8
Q2	2.5	3.1	-1.9	6.3	2.5	1.1	1.7	2.5	1.2	-1.7
Q3	-0.4	0.2	-9.0	2.2	1.4	0.2	0.8	2.9	0.2	-2.7
Q4	-0.1	0.5	-4.6	0.9	0.9	0.1	0.4	2.8	0.2	-3.1
2023 Aug.	0.1	0.7	-7.8	2.6	1.8	0.4	1.0	3.0	0.5	-2.5
Sep.	-0.4	0.2	-9.0	2.2	1.4	0.2	0.8	2.9	0.2	-2.7
Oct.	-0.9	-0.3	-9.6	1.5	1.1	0.2	0.6	2.8	0.3	-3.1
Nov.	-0.7	0.0	-7.9	1.3	0.9	0.2	0.5	2.7	0.3	-3.1
Dec.	-0.1	0.5	-4.6	0.9	0.9	0.1	0.4	2.8	0.2	-3.1
2024 Jan. (p)	-0.4	0.2	-5.8	0.8	0.8	-0.1	0.3	2.8	-0.1	-3.2

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
3) Including non-profit institutions serving households.
4) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.

5 Financing conditions and credit developments

5.5 Counterparts to M3 other than credit to euro area residents [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	MFI liabilities						MFI assets			
	Central government holdings [2]	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total		
									Repos with central counter-parties [3]	Reverse repos to central counter-parties [3]
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2021	736.9	6,886.2	1,838.9	37.1	1,999.2	3,010.9	1,377.6	413.1	128.5	136.8
2022	649.0	6,752.7	1,782.6	45.9	2,121.9	2,802.4	1,333.4	385.4	137.8	147.6
2023	461.3	7,338.4	1,826.4	90.5	2,424.1	2,997.5	1,860.6	268.9	155.0	152.6
2023 Q1	573.9	6,912.1	1,791.9	55.5	2,168.4	2,896.3	1,426.2	331.4	152.1	165.8
Q2	485.0	6,984.3	1,806.8	61.5	2,229.8	2,886.2	1,465.0	293.9	168.6	172.6
Q3	456.0	7,143.7	1,825.0	72.9	2,367.0	2,878.8	1,635.2	317.7	153.8	163.3
Q4	461.3	7,338.4	1,826.4	90.5	2,424.1	2,997.5	1,860.6	268.9	155.0	152.6
2023 Aug.	439.5	7,140.5	1,807.1	68.0	2,342.1	2,923.3	1,579.7	255.4	165.9	161.8
Sep.	456.0	7,143.7	1,825.0	72.9	2,367.0	2,878.8	1,635.2	317.7	153.8	163.3
Oct.	440.0	7,225.5	1,819.7	77.7	2,415.4	2,912.8	1,735.8	251.7	163.1	151.4
Nov.	407.6	7,273.7	1,827.9	83.7	2,414.7	2,947.5	1,794.2	191.7	170.4	162.0
Dec.	461.3	7,338.4	1,826.4	90.5	2,424.1	2,997.5	1,860.6	268.9	155.0	152.6
2024 Jan. (p)	454.6	7,374.7	1,829.6	97.0	2,449.0	2,999.1	1,960.2	218.1	165.7	159.7
Transactions										
2021	26.3	-38.0	-74.9	-5.0	-39.5	81.4	-111.2	-120.3	-8.3	-4.3
2022	-83.9	38.9	-89.7	-4.4	16.0	117.0	-70.5	-195.6	10.5	17.9
2023	-194.4	334.6	25.7	40.0	227.2	41.6	460.6	-189.0	19.8	9.0
2023 Q1	-81.8	80.4	5.9	5.0	58.3	11.3	63.7	-52.6	15.0	18.9
Q2	-88.7	96.7	13.9	6.1	61.8	14.9	92.9	-71.2	16.5	6.7
Q3	-29.1	98.1	17.3	11.4	45.0	24.5	128.3	-54.1	-13.0	-6.0
Q4	5.3	59.4	-11.3	17.6	62.1	-9.0	175.8	-11.1	1.2	-10.7
2023 Aug.	-24.6	28.7	0.1	3.5	17.2	7.9	27.6	-34.6	12.1	5.4
Sep.	16.4	38.2	16.3	4.9	10.5	6.6	58.7	36.8	-10.3	4.8
Oct.	-16.0	34.0	-4.4	4.8	25.6	8.0	58.9	-78.3	9.3	-12.0
Nov.	-32.5	15.6	-4.9	6.0	15.9	-1.5	62.7	-28.0	7.3	10.7
Dec.	53.8	9.8	-2.0	6.8	20.5	-15.5	54.1	95.2	-15.4	-9.4
2024 Jan. (p)	-6.5	60.7	2.4	6.5	37.3	14.6	100.6	-50.8	10.7	7.0
Growth rates										
2021	3.7	-0.5	-3.9	-11.9	-2.0	2.7	-	-	-6.0	-3.0
2022	-11.4	0.6	-4.8	-13.0	0.6	4.1	-	-	7.9	12.7
2023	-29.8	4.9	1.4	80.1	10.6	1.5	-	-	14.4	5.9
2023 Q1	-22.6	2.3	-3.4	-0.5	4.9	4.0	-	-	-4.2	1.3
Q2	-37.6	3.5	-2.2	25.0	8.7	3.0	-	-	1.7	10.2
Q3	-30.3	5.0	1.4	48.7	10.5	2.4	-	-	5.7	14.1
Q4	-29.8	4.9	1.4	80.1	10.6	1.5	-	-	14.4	5.9
2023 Aug.	-34.9	4.5	-0.4	37.0	10.1	3.0	-	-	5.9	11.5
Sep.	-30.3	5.0	1.4	48.7	10.5	2.4	-	-	5.7	14.1
Oct.	-34.5	5.6	1.7	57.7	11.1	3.0	-	-	14.9	-0.6
Nov.	-40.3	5.3	1.3	68.4	10.3	2.9	-	-	7.5	-2.7
Dec.	-29.8	4.9	1.4	80.1	10.6	1.5	-	-	14.4	5.9
2024 Jan. (p)	-20.7	5.2	1.6	85.3	10.3	2.0	-	-	8.4	4.2

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Comprises central government holdings of deposits with the MFI sector and of securities issued by the MFI sector.
3) Not adjusted for seasonal effects.

6 Fiscal developments

6.1 Deficit/surplus
(as a percentage of GDP; flows during one-year period)

	Total	Central government	State government	Local government	Social security funds	Memo item: Primary deficit (-)/ surplus (+)
	1	2	3	4	5	6
2019	-0.6	-1.0	0.1	0.1	0.3	1.0
2020	-7.1	-5.8	-0.4	0.0	-0.9	-5.5
2021	-5.2	-5.2	0.0	0.1	0.0	-3.8
2022	-3.6	-3.9	0.0	0.0	0.3	-1.9
2022 Q4	-3.6	.	.	.	.	-1.9
2023 Q1	-3.7	.	.	.	.	-2.0
Q2	-3.8	.	.	.	.	-2.1
Q3	-3.5	.	.	.	.	-1.7

Sources: ECB for annual data; Eurostat for quarterly data.

6.2 Revenue and expenditure
(as a percentage of GDP; flows during one-year period)

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				Compen-sation of employees	Intermediate consumption	Interest	Social benefits	
	1	2	3	4	5	6	7	8	9	10	11	12	13
2019	46.3	45.8	12.9	13.1	15.0	0.5	46.9	43.2	9.9	5.4	1.6	22.4	3.8
2020	46.4	45.9	12.9	12.7	15.5	0.5	53.5	48.9	10.6	5.9	1.5	25.3	4.6
2021	47.0	46.2	13.2	13.1	15.1	0.8	52.2	47.2	10.2	5.9	1.5	23.9	5.0
2022	46.9	46.1	13.5	12.9	14.8	0.8	50.5	45.4	9.9	5.9	1.7	22.8	5.1
2022 Q4	46.9	46.1	13.5	12.9	14.8	0.8	50.5	45.4	9.9	5.9	1.7	22.8	5.1
2023 Q1	46.6	45.8	13.4	12.8	14.8	0.8	50.3	45.2	9.8	5.8	1.7	22.7	5.1
Q2	46.4	45.6	13.4	12.7	14.8	0.8	50.2	45.1	9.8	5.8	1.7	22.7	5.1
Q3	46.4	45.6	13.4	12.6	14.8	0.8	49.8	44.8	9.8	5.8	1.7	22.6	5.0

Sources: ECB for annual data; Eurostat for quarterly data.

6.3 Government debt-to-GDP ratio
(as a percentage of GDP; outstanding amounts at end of period)

	Total	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors		Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren-cies
						MFIs								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2019	84.1	3.0	13.2	67.8	45.8	30.8	38.3	7.7	76.3	15.6	27.9	40.6	82.7	1.3
2020	97.2	3.2	14.5	79.5	54.6	39.1	42.5	11.1	86.0	18.9	30.9	47.3	95.5	1.7
2021	94.7	3.0	13.8	77.9	55.2	41.3	39.5	9.8	84.9	17.5	30.1	47.1	93.3	1.4
2022	90.9	2.7	13.2	75.0	53.4	40.2	37.5	8.8	82.1	16.3	28.9	45.7	90.0	0.9
2022 Q4	90.9	2.7	13.2	75.0	.	.	.	.	.	.	.	.	.	.
2023 Q1	90.7	2.5	12.8	75.3	.	.	.	.	.	.	.	.	.	.
Q2	90.3	2.5	12.5	75.3	.	.	.	.	.	.	.	.	.	.
Q3	89.9	2.5	12.2	75.1	.	.	.	.	.	.	.	.	.	.

Sources: ECB for annual data; Eurostat for quarterly data.

6 Fiscal developments

6.4 Annual change in the government debt-to-GDP ratio and underlying factors [1]
(as a percentage of GDP; flows during one-year period)

	Change in debt-to-GDP ratio [2]	Primary deficit (+)/ surplus (-)	Deficit-debt adjustment								Interest-growth differential	Memo item: Borrowing requirement
			Total	Transactions in main financial assets					Revaluation effects and other changes in volume	Other		
				Total	Currency and deposits	Loans	Debt securities	Equity and investment fund shares				
	1	2	3	4	5	6	7	8	9	10	11	12
2019	-2.0	-1.0	0.1	0.2	0.1	0.0	0.0	0.2	-0.1	0.0	-1.2	0.9
2020	13.1	5.5	2.2	2.5	2.0	0.4	-0.1	0.1	-0.3	0.0	5.3	9.6
2021	-2.4	3.8	-0.2	0.6	0.4	0.1	0.0	0.1	-0.1	-0.7	-6.0	5.1
2022	-3.8	1.9	-0.3	-0.2	-0.7	0.2	0.1	0.2	0.6	-0.6	-5.4	2.7
2022 Q4	-3.8	1.9	-0.3	-0.2	-0.7	0.2	0.1	0.2	0.6	-0.6	-5.4	2.7
2023 Q1	-3.8	2.0	-0.7	-0.7	-1.1	0.1	0.1	0.1	0.7	-0.7	-5.1	2.3
Q2	-3.2	2.1	-0.7	-1.0	-1.4	0.1	0.2	0.1	0.7	-0.4	-4.5	2.4
Q3	-2.3	1.7	0.0	-0.5	-0.7	-0.2	0.2	0.1	0.6	-0.1	-4.1	2.8

Sources: ECB for annual data; Eurostat for quarterly data.
1) Intergovernmental lending in the context of the financial crisis is consolidated except in quarterly data on the deficit-debt adjustment.
2) Calculated as the difference between the government debt-to-GDP ratios at the end of the reference period and a year earlier.

6.5 Government debt securities [1]
(debt service as a percentage of GDP; flows during debt service period; average nominal yields in percentages per annum)

	Debt service due within 1 year [2]					Average residual maturity in years [3]	Average nominal yields [4]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate	Maturities of up to 1 year	Issuance	Redemption
	1	2	3	4	5	6	7	8	9	10	11	12	13
2021	14.0	12.7	4.2	1.2	0.3	7.9	1.6	1.1	-0.4	1.9	1.9	-0.1	0.5
2022	13.1	11.9	4.2	1.2	0.3	8.0	1.6	1.2	0.4	1.9	2.0	1.1	0.5
2023	13.9	12.5	4.5	1.4	0.3	8.1	2.0	1.2	1.9	2.0	1.6	3.6	1.9
2022 Q4	13.1	11.9	4.2	1.2	0.3	8.0	1.6	1.2	0.4	1.9	2.0	1.1	0.5
2023 Q1	13.5	12.3	4.2	1.2	0.3	8.1	1.8	1.2	1.0	1.9	2.0	2.1	0.7
Q2	13.6	12.3	3.6	1.3	0.3	8.1	1.9	1.3	1.5	1.9	2.0	2.8	1.1
Q3	13.8	12.4	3.8	1.3	0.3	8.1	1.9	1.1	1.8	2.0	1.7	3.3	1.5
2023 Aug.	13.5	12.2	4.0	1.3	0.3	8.1	1.9	1.3	1.7	2.0	1.9	3.2	1.4
Sep.	13.8	12.4	3.8	1.3	0.3	8.1	1.9	1.1	1.8	2.0	1.7	3.3	1.5
Oct.	13.4	12.0	3.5	1.4	0.3	8.2	2.0	1.1	2.0	2.0	1.7	3.5	1.7
Nov.	13.6	12.3	3.8	1.4	0.4	8.2	2.0	1.2	2.0	2.0	1.7	3.6	1.8
Dec.	13.9	12.5	4.5	1.4	0.3	8.1	2.0	1.2	1.9	2.0	1.6	3.6	1.9
2024 Jan.	13.3	11.9	4.1	1.4	0.4	8.2	2.0	1.2	2.0	2.0	1.6	3.6	2.1

Source: ECB.
1) At face value and not consolidated within the general government sector.
2) Excludes future payments on debt securities not yet outstanding and early redemptions.
3) Residual maturity at the end of the period.
4) Outstanding amounts at the end of the period; transactions as 12-month average.

6 Fiscal developments

6.6 Fiscal developments in euro area countries
(as a percentage of GDP; flows during one-year period and outstanding amounts at end of period)

	Belgium	Germany	Estonia	Ireland	Greece	Spain	France	Croatia	Italy	Cyprus
	1	2	3	4	5	6	7	8	9	10
Government deficit (-)/surplus (+)										
2019	-2.0	1.5	0.1	0.5	0.9	-3.1	-3.1	0.2	-1.5	0.9
2020	-8.9	-4.3	-5.4	-5.0	-9.7	-10.1	-9.0	-7.3	-9.6	-5.7
2021	-5.4	-3.6	-2.5	-1.5	-7.0	-6.7	-6.5	-2.5	-8.8	-1.9
2022	-3.5	-2.5	-1.0	1.7	-2.4	-4.7	-4.8	0.1	-8.0	2.4
2022 Q4	-3.5	-2.5	-1.0	1.7	-2.4	-4.7	-4.8	0.1	-8.0	2.4
2023 Q1	-3.9	-3.0	-1.3	2.0	-2.5	-4.4	-4.6	-0.2	-8.1	3.0
Q2	-4.0	-3.1	-1.7	2.2	-2.4	-4.6	-4.9	-0.4	-7.9	3.4
Q3	-4.1	-2.7	-2.2	1.9	-1.2	-4.4	-4.8	0.3	-6.8	3.2
Government debt										
2019	97.6	59.6	8.5	57.1	180.6	98.2	97.4	70.9	134.2	93.0
2020	111.8	68.8	18.6	58.1	207.0	120.3	114.6	86.8	154.9	114.9
2021	108.0	69.0	17.8	54.4	195.0	116.8	112.9	78.1	147.1	99.3
2022	104.3	66.1	18.5	44.4	172.6	111.6	111.8	68.2	141.7	85.6
2022 Q4	104.3	66.1	18.5	44.4	172.6	111.6	111.8	68.2	141.7	85.6
2023 Q1	106.4	65.7	17.2	43.6	169.3	111.2	112.3	69.1	140.9	83.1
Q2	105.9	64.7	18.5	43.2	167.1	111.2	111.8	66.5	142.5	85.1
Q3	108.0	64.8	18.2	43.6	165.5	109.8	111.9	64.4	140.6	79.4

	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	11	12	13	14	15	16	17	18	19	20
Government deficit (-)/surplus (+)										
2019	-0.5	0.5	2.2	0.5	1.8	0.6	0.1	0.7	-1.2	-0.9
2020	-4.5	-6.5	-3.4	-9.6	-3.7	-8.0	-5.8	-7.6	-5.4	-5.6
2021	-7.2	-1.1	0.6	-7.5	-2.2	-5.8	-2.9	-4.6	-5.2	-2.8
2022	-4.6	-0.7	-0.3	-5.7	-0.1	-3.5	-0.3	-3.0	-2.0	-0.8
2022 Q4	-4.6	-0.7	-0.3	-5.6	-0.1	-3.5	-0.3	-3.0	-2.0	-0.5
2023 Q1	-4.4	-1.2	-0.6	-4.8	-0.1	-3.3	0.1	-3.2	-2.6	-0.4
Q2	-3.0	-1.2	-0.7	-4.2	-0.2	-3.6	0.0	-3.2	-3.4	-1.1
Q3	-3.3	-1.1	-0.4	-3.4	0.1	-3.5	0.5	-3.5	-4.7	-1.5
Government debt										
2019	36.7	35.8	22.4	40.0	48.6	70.6	116.6	65.4	48.0	64.9
2020	42.2	46.2	24.6	52.2	54.7	83.0	134.9	79.6	58.9	74.7
2021	44.0	43.4	24.5	54.0	51.7	82.5	124.5	74.4	61.1	72.5
2022	41.0	38.1	24.7	52.3	50.1	78.4	112.4	72.3	57.8	73.3
2022 Q4	41.0	38.1	24.7	51.6	50.1	78.4	112.4	72.3	57.8	73.3
2023 Q1	43.0	38.1	28.3	51.5	48.3	80.2	112.3	72.0	58.0	73.3
Q2	39.5	38.1	28.2	49.6	46.9	78.5	110.0	70.4	59.6	74.5
Q3	41.4	37.4	25.7	49.3	45.9	78.2	107.5	71.4	58.6	73.8

Source: Eurostat.