EUROPEAN CENTRAL BANK

EUROSYSTEM

Annual Report

2022

Contents

The year at a glance

2022 was a turning point for the ECB's monetary policy. The inflation outlook changed abruptly as two types of shock hit the economy at the same time. First, the euro area underwent an unprecedented series of negative supply shocks caused by pandemic-induced supply chain disruptions, Russia's unjustifiable invasion of Ukraine and the ensuing energy crisis. This significantly increased input costs for all sectors of the economy. Second, there was a positive demand shock triggered by the reopening of the economy after the pandemic. That allowed firms to pass their rising costs through to prices much faster and more strongly than in the past.

We had already announced, at the end of 2021, that we would gradually reduce net asset purchases under our asset purchase programme (APP) and would end them under the pandemic emergency purchase programme (PEPP) at the end of March 2022. But our overall policy stance was still highly accommodative, having been tailored to the environment of very low inflation in the past decade and the deflationary risks early in the pandemic. So we took a series of steps to normalise that stance and respond rapidly to the emerging inflation challenge.

In March we speeded up the reduction of net purchases under the APP and in April said we expected to discontinue them in the third quarter. In July we then raised the key ECB interest rates for the first time in 11 years, hiking them again in a series of large steps at the policy meetings that followed. The pace of this adjustment was an important signal to the public of our determination to bring down inflation. That helped anchor inflation expectations even as inflation accelerated.

In parallel, we acted to ensure that – as monetary policy was normalised – our policy stance would continue to be transmitted smoothly via financial markets throughout the euro area. This was achieved via two key measures. First, we decided to apply flexibility in reinvesting maturing securities in the PEPP portfolio to counter risks to the monetary policy transmission mechanism related to the pandemic. Second, we launched a new Transmission Protection Instrument.

But as the inflation outlook evolved it became clear that achieving a broadly neutral monetary policy stance would not in itself suffice. Inflation was projected to be too far above our 2% medium-term target for too long, and we saw signs that it was becoming more persistent, with price pressures broadening and underlying inflation strengthening. In this setting, we needed to bring interest rates into restrictive territory and dampen demand.

So in December, following our last policy meeting of the year, we announced that interest rates would still have to rise significantly at a steady pace to reach levels that were sufficiently restrictive to ensure a timely return of inflation to our target. At the same time, we said that, while the key ECB interest rates were our primary tool for setting the policy stance, we would begin reducing the APP securities portfolio from March 2023 at a measured and predictable pace. This also followed a decision in October to recalibrate the terms and conditions of the third series of our targeted longer-term refinancing operations, removing a deterrent to voluntary early repayment of outstanding funds. Monetary policy assets on our balance sheet declined by around €830 billion between end-June (when net asset purchases ended) and end-December, contributing to the normalisation of our balance sheet.

In addition to our measures to combat high inflation, we continued to examine and address wider threats to our mandate stemming from a changing climate. In 2022 we took further steps to incorporate climate change considerations into our monetary policy operations. This included conducting a first climate stress test of several of the financial exposures on our balance sheet and making progress in better capturing the impact of climate change in our macroeconomic modelling. As of October, we started to decarbonise the corporate bond holdings in our monetary policy portfolios by tilting them towards issuers with a better climate performance. We also decided to limit the share of assets issued by non-financial corporations with a high carbon footprint that counterparties can pledge as collateral when borrowing from the Eurosystem.

In 2022 we continued our efforts to remain at the forefront of technological developments in payment systems and market infrastructures. This involved preparations for the transition from TARGET2 to a new, modernised real-time gross settlement system, as well as several measures to ensure pan-European reachability of payment service providers in the TARGET Instant Payment Settlement (TIPS) system. Instant payment transactions via TIPS increased 17-fold in 2022 compared with 2021.

The year also marked the 20th anniversary of the introduction of euro banknotes and coins, a milestone in European history and a tangible symbol of European integration. To date, cash remains the most frequently used means of payment among Europeans, accounting for almost 60% of payments, and there is no doubt that it will continue to play an important role in people's lives. But as the economy becomes increasingly digital, we need to ensure that Europeans also have access to safe, efficient and convenient digital payment methods. This is why the Eurosystem is exploring the possibility of issuing a digital euro. As part of the ongoing investigation phase, the Eurosystem agreed in 2022 on the main use cases and several key design decisions for a digital euro.

As the year came to a close, the euro area expanded again, with Croatia becoming its newest member on 1 January 2023 – demonstrating that the euro remains an attractive currency that brings stability to its members.

None of the above would have been possible without the dedicated efforts of ECB staff and their collective determination to serve the people of Europe.

Frankfurt am Main, May 2023

Christine Lagarde

President

The year in figures

Economic growth weakened in the euro area

+3.5%

Euro area real GDP grew by 3.5% in 2022, after 5.3% in 2021. The economy continued to recover from the pandemic in the first half of the year, but weakened substantially in the second half.

Inflation rose sharply to high rates

8.4%

Headline inflation in the euro area rose to 8.4% on average in 2022, from 2.6% in 2021. The rise largely reflected surging energy and food prices aggravated by Russia's invasion of Ukraine.

The ECB started to raise its key policy rates

+250 basis points

In July 2022 the Governing Council raised the key ECB interest rates for the first time in more than a decade, putting an end to an era of negative policy rates. Overall, rates were increased by 250 basis points over the second half of 2022, marking a fast response to inflation exceeding the ECB's 2% medium-term target.

Bank lending rates increased substantially for firms

+205 basis points

Bank lending rates increased steeply in 2022 as monetary policy normalised. The composite bank lending rate for loans to firms reached 3.4% at the end of the year, up by 205 basis points. For household mortgages, the bank lending rate rose by 163 basis points to 2.9%.

Many countries introduced or increased macroprudential capital buffers to preserve banking sector resilience

14 decisions to introduce or increase buffers assessed

The ECB assessed a substantial number of decisions taken by national authorities to introduce or further tighten macroprudential capital measures to preserve and strengthen banking sector resilience.

Significant increase in instant payment transaction volumes in TARGET Instant Payment Settlement

17.1 times

The volume of transactions settled via TARGET Instant Payment Settlement (TIPS) in 2022 was 17.1 times larger than in 2021 as additional banks and national communities joined TIPS.

2022 marked the 20th anniversary of the introduction of euro banknotes and coins into circulation

20 years

The introduction of euro banknotes and coins in 2002 was a milestone in European history and put a tangible sign of European integration in our pockets. It was also a historic event globally, as it represented – and still does – the world's largest ever monetary changeover.

New target for reducing in-person meetings with external participants

-50%

In 2022 the ECB decided to limit in-person meetings with external participants by 50% over a two-year cycle. This is one of the ECB's initiatives to reduce the environmental impact of its business operations.

1 High inflation amid growing uncertainty and slowing economic growth

Global growth decelerated in 2022. Russia's invasion of Ukraine, high inflation and tighter financial conditions weighed on both advanced and emerging market economies. Global inflation pressures rose significantly, fuelled by high and volatile commodity prices, global supply bottlenecks and tight labour markets. The euro weakened against the US dollar but appreciated against many other currencies, and was thus more stable in nominal effective terms.

In the euro area inflation increased to 8.4% in 2022 from 2.6% in 2021. The rise mainly reflected a surge in energy and food prices, triggered by the war in Ukraine. Past supply bottlenecks and some pent-up demand from the coronavirus (COVID-19) pandemic, together with high input costs in production due to the rise in energy prices, increased price pressures across many sectors of the economy. After a strong first half of the year, when particularly the services sector benefited from the lifting of pandemic-related restrictions, growth slowed in the euro area, largely owing to the effects of the war in Ukraine.

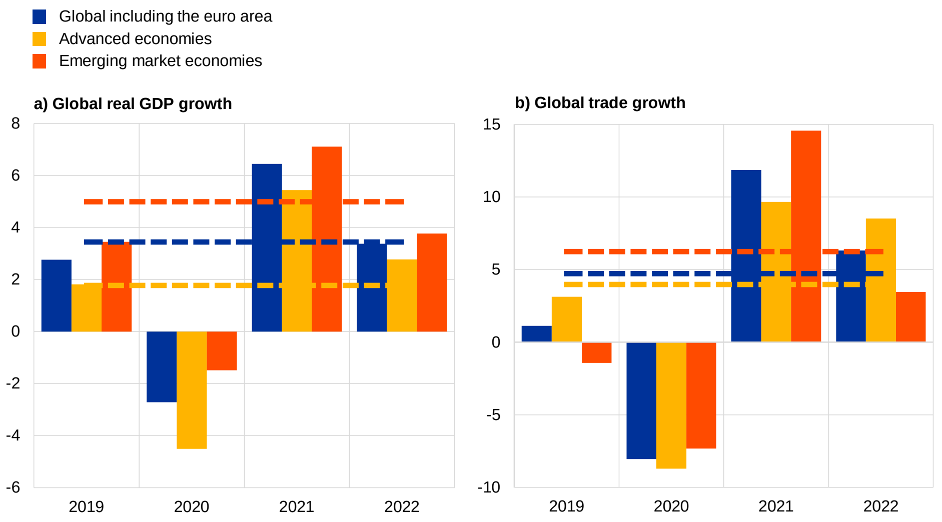
1.1 Slowing economic activity across advanced and emerging market economies

Russia's war in Ukraine weighed on global economic growth, by increasing uncertainty and inflation

Global economic growth dropped to 3.4% in 2022 from 6.4% in 2021, as Russia's war in Ukraine and other geopolitical factors created uncertainty, inflation rose and financial conditions tightened. The slowdown was broad-based across advanced and emerging market economies (Chart 1.1, panel a). It followed a strong recovery in 2021, mainly due to the easing of pandemic-related restrictions and a subsequent rise in global demand. In early 2022 the war in Ukraine inflicted another major shock on the world economy. It led to a surge and very high volatility in commodity prices, and undermined food security, especially for emerging market economies. Rising energy and food prices amplified inflationary pressures globally, reducing households' real disposable incomes and leading central banks to swiftly tighten monetary policy. In an environment of rising interest rates, falling stock market valuations and heightened risk aversion, global financial conditions tightened significantly.

Chart 1.1
Global GDP and trade developments

(annual percentage changes)



Sources: Haver Analytics, national sources and ECB calculations.
Notes: Panel a): the aggregates are computed using GDP adjusted with purchasing power parity weights. The solid bars indicate data. The dashed lines indicate the long-term averages (between 1999 and 2022). The latest observations are for 2022 as updated on 18 April 2023. Panel b): global trade growth is defined as growth in global imports including the euro area. The solid bars indicate data. The dashed lines indicate the long-term averages (between 1999 and 2022). The latest observations are for 2022 as updated on 18 April 2023.

Global trade growth decelerated in 2022

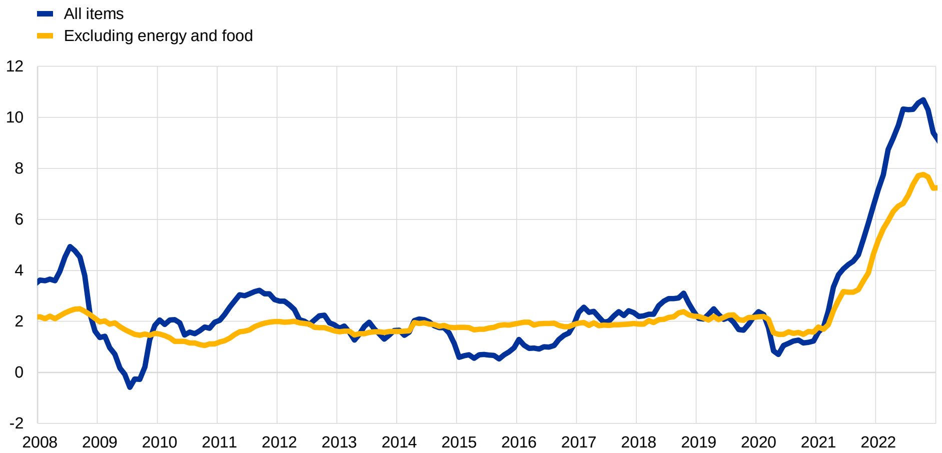
Global trade growth fell in 2022, although it remained above the historical average (Chart 1.1, panel b). The drop was mainly due to weak manufacturing activity. In the first half of the year global trade was still relatively resilient since the effects of Russia's war in Ukraine and lingering global supply bottlenecks were partially compensated by the recovery in travel and transportation services as pandemic-related restrictions were relaxed. In the second half of the year, however, trade slowed significantly, reflecting in particular lower imports from emerging market economies. While global value chain integration has stagnated since the global financial crisis, the pandemic and geopolitical developments have increased incentives for firms to return to domestic production and diversify their suppliers, which could in future lead to a fragmentation of global value chains.

Global headline inflation and inflation excluding energy and food both rose significantly

Global inflationary pressures – as reflected both in headline inflation measures and in measures of inflation excluding energy and food – increased significantly in 2022 (Chart 1.2). Inflationary pressures were fuelled by high and volatile commodity prices, global supply bottlenecks, prolonged reopening effects from the pandemic, and tight labour markets. In the countries belonging to the Organisation for Economic Co-operation and Development (OECD), headline inflation peaked in aggregate at 10.7% in October, then started to decline. Inflation excluding energy and food peaked in the same month, at 7.8%. In most countries the surge in inflation over the first half of the year mainly reflected higher commodity prices. The increase in inflation excluding energy and food later in the year indicated that inflationary pressures had become increasingly broad-based, both in advanced and in emerging market economies. Underlying inflationary pressures were also fuelled by increasing wage pressures, as labour markets across key advanced economies remained tight despite the slowdown in global economic activity.

Chart 1.2
OECD inflation rates

(annual percentage changes, monthly data)



Source: OECD.
Note: The latest observations are for December 2022 as updated on 18 April 2023.

Energy prices rose after Russia's invasion of Ukraine but eased to some extent as energy demand fell and LNG imports increased

Energy prices increased sharply during 2022 but eased to some extent towards the end of the year. Oil prices increased by 6%, driven by supply disruptions, mainly due to Russia's invasion of Ukraine which caused a spike in oil prices in spring. Supply disruptions were partly counterbalanced by lower demand amid the global economic slowdown and lockdowns in China. The invasion of Ukraine and reduced gas supplies to Europe also led to unprecedented spikes in European gas prices, which increased by more than 240% in the immediate aftermath of the Russian invasion relative to the beginning of the year. The surge in gas prices left a significant mark on European energy prices in general as it also led to an increase in wholesale electricity prices. Gas prices moderated in the last quarter, as increased imports of liquified natural gas (LNG) and measures to save gas meant the EU had high gas storage levels at the start of the heating season, leaving gas prices largely similar to pre-invasion levels at the end of 2022 but still 14% higher than at the beginning of the year.

The euro fell against the US dollar but was more stable in nominal effective terms

The euro depreciated by 6% against the US dollar in 2022 but was more stable in nominal effective terms (+0.8%), albeit with considerable within-year variation. The dollar strengthened against most other currencies, as the US Federal Reserve System tightened monetary policy and global risk sentiment was subdued. The euro also came under pressure from high energy prices and the deteriorating economic outlook for the euro area. However, it appreciated against other major currencies, such as the pound sterling, the Japanese yen and Chinese renminbi.

The major risks to the outlook for global economic growth at the end of 2022, amid high uncertainty, included greater repercussions from the war in Ukraine, spillovers from a more significant slowdown of the Chinese economy and tighter financial conditions due to a swifter withdrawal of monetary policy stimulus in key advanced economies. The latter was seen as potentially triggering more significant capital outflows from emerging market economies and disrupting financial markets. In addition, global commodity markets remained sensitive to supply risks. Higher commodity prices and a stronger transmission to consumer price inflation would erode purchasing power more significantly and could weigh on global demand. Renewed pressures in global supply chains and an increasing fragmentation of the global trading system could also hamper growth and fuel inflation.

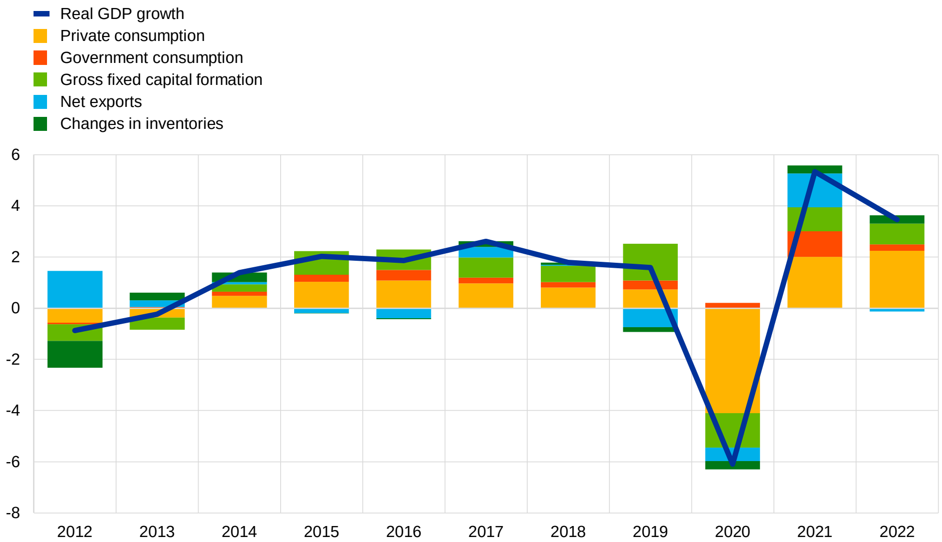
1.2 Growth in the euro area weakened substantially in the course of 2022

Growth continued to recover from the pandemic in the first half of 2022 but weakened in the second half

Euro area real GDP grew by 3.5% in 2022, after growing 5.3% in 2021 as the economy recovered from the pandemic-related recession (Chart 1.3). Growth in 2022 mainly reflected a robust contribution from domestic demand. By the end of the year output in the euro area was 2.4% above its pre-pandemic level, i.e. compared with the final quarter of 2019. However, the growth performance varied markedly across countries, reflecting the different economic structures and the extent to which individual countries benefited from the reopening of the services sector and were affected by Russia's invasion of Ukraine. As the strong rebound in demand for contact-intensive services in the first half of the year lost steam, soaring energy prices started to dampen spending and production throughout the economy. The euro area also felt the impact of the weakening in global demand and tighter monetary policy in many major economies amid high economic uncertainty and falling confidence for businesses as well as households.

Chart 1.3
Euro area real GDP

(annual percentage changes; percentage point contributions)



Source: Eurostat.
Note: The latest observations are for 2022.

Monetary policy support was withdrawn while fiscal policy offered protection against energy price rises

In 2022 monetary policy support was withdrawn while fiscal policies focused on protection against energy price rises. While the normalisation of the monetary policy stance started in December 2021, monetary policy remained accommodative overall, particularly in the first half of the year. In the second half of the year, however, monetary policy support was rapidly withdrawn in unprecedentedly large steps (see

Section 2.1). Euro area governments introduced fiscal policy measures to attenuate the impact of high energy prices. The measures were largely non-targeted, rather than primarily aimed at protecting the most vulnerable households and firms. About half of the measures had an impact on the marginal cost of energy consumption rather than being tailored to preserving incentives to consume less energy. At the same time, structural policies continued to be pursued to increase the euro area's growth potential. The ongoing implementation of countries' investment and structural reform plans under the Next Generation EU (NGEU) programme made an important contribution to these objectives.

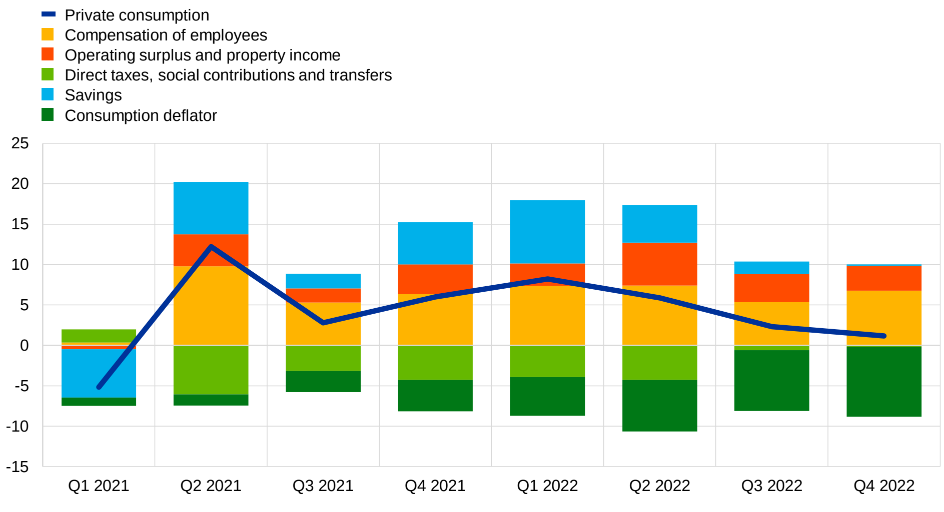
Private consumption was affected by several shocks but was resilient overall

Private consumption growth was resilient in 2022 as labour income remained firm and savings supported pent-up demand (Chart 1.4). The positive dynamics were underpinned mainly by consumption of services, which rose sharply as the pandemic-related restrictions were lifted. Nevertheless, private consumption growth slowed down in the course of the year, owing to weak spending on non-durable goods amid declining real disposable income growth and lingering uncertainty. Overall, household spending increased by 4.3% in 2022. With strong growth in employment and the gradual acceleration in wages, labour income, which is typically used for consumption more than other sources of income, was the main contributor to disposable income growth in 2022. However, rising inflation increasingly dampened real disposable income towards the end of the year, outweighing the favourable effects of the resilient labour market and fiscal support.

Chart 1.4

Euro area real private consumption

(annual percentage changes; percentage point contributions)



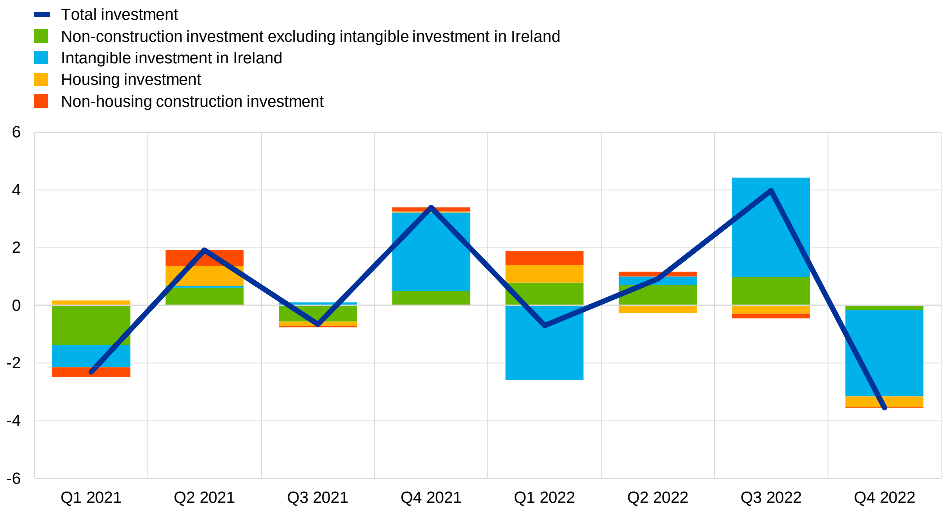
Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2022.

Investment faced rising energy and financing costs amid high uncertainty

Non-construction investment growth – a proxy for private non-housing investment – fluctuated strongly in 2022 (Chart 1.5).[1] Excluding the particularly volatile Irish intangible investment component,[2] non-construction investment growth slowed throughout the year. It started the year on a strong note, spurred by high demand, robust corporate profits and favourable financing conditions, as pandemic-related restrictions were lifted. However, Russia's war in Ukraine and the ensuing energy crisis, together with the reduction of monetary policy stimulus, meant rising energy and financing costs for firms. Alongside slowing domestic and global demand in an environment of high uncertainty, this reduced their incentives to invest. In level terms, non-construction investment was by the end of 2022 well below its level in the fourth quarter of 2019, which had been boosted by a considerable rise in intangible investment. Excluding Irish intangibles, it had already recovered by the end of 2020. Overall, non-construction investment grew by 5.2% in 2022.

Chart 1.5
Euro area real investment

(quarterly percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2022.

Housing investment grew at a strong pace in the first quarter of 2022, as housing demand was sustained by favourable financing conditions, the accumulation of a large stock of savings and income support measures. It recoiled in the following quarters, however, as demand weakened on the back of rising mortgage rates and uncertainty related to the war in Ukraine, while supply suffered from soaring costs stemming from shortages of materials and labour. At the end of 2022 housing investment was around 3% above its pre-pandemic level, having grown by 1.1% in 2022 as a whole.

1 Given that official quarterly data on public investment are not available, this alternative approximation is widely used in ECB publications.

2 The volatility stems from global activities of a limited number of large multinational firms resident in Ireland and reflects tax-optimal international transfers of intangible assets that are essentially unrelated to the business cycle. Such transactions can be sizeable and irregular. They could also be immediate, as intangible investment does not need time to build.

Trade was affected by higher energy costs, supply chain bottlenecks and weakening global demand

The euro area goods trade balance shifted into deficit in 2022, largely owing to the higher cost of energy imports and a subdued export performance. On the imports side, robust growth driven by energy stockpiling and increasing intermediate goods imports was accompanied by strongly rising prices, especially for energy imports. Goods exports were hampered by a re-intensification of supply chain bottlenecks in the first half of 2022. They subsequently remained subdued as global demand weakened while supply chain issues improved only gradually. In contrast, services exports, particularly tourism services, benefited from the easing and gradual elimination of pandemic-related restrictions. Overall, the contribution from trade to euro area GDP growth was broadly neutral in 2022.

Labour markets

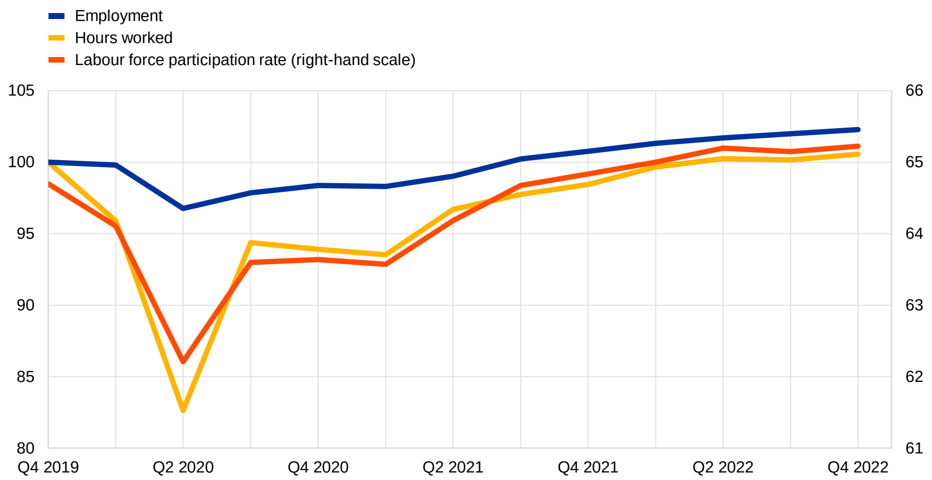
The labour market remained resilient overall in 2022

The labour market continued its marked recovery from the pandemic alongside the rebound in euro area economic activity. By the fourth quarter of 2022 total employment and total hours worked had surpassed their levels in the fourth quarter of 2019 by 2.3% and 0.6% respectively (Chart 1.6). The labour force participation rate in the age group 15-74 years increased to a level of 65.2% in the fourth quarter of 2022, 0.5 percentage points above its level in the fourth quarter of 2019. In line with employment growth, the unemployment rate declined further, from an already historically low level of 6.9% in January 2022 to 6.7% at the end of 2022 (Chart 1.7). There was a drop in recourse to job retention schemes, which had limited job lay-offs during the crisis, and workers under such schemes largely resumed their normal hours.

Chart 1.6

Employment, hours worked and the labour force participation rate

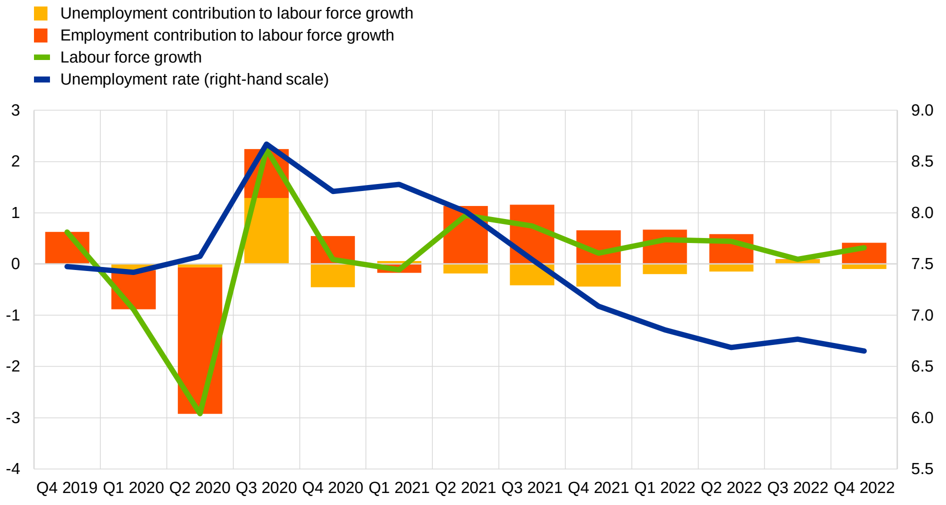
(left-hand scale: index, Q4 2019 = 100; right-hand scale: percentages of the working-age population)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2022.

Chart 1.7
Unemployment and the labour force

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



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2022.

The euro area labour market remained resilient overall in 2022 despite Russia's war in Ukraine, as also indicated by continued high levels of job vacancies towards the end of the year. Still, labour market developments and survey indicators of labour demand moderated in the second half of the year. Box 1 compares the labour market developments in the United States and the euro area with a view to better understanding the differences and similarities in the drivers of the recovery from the pandemic and prospects for developments in employment and wages.

1.3 Fiscal policy measures to address a cost-of-living crisis

The euro area general government deficit ratio decreased in 2022 as pandemic-related measures expired and were only partly offset by new support measures

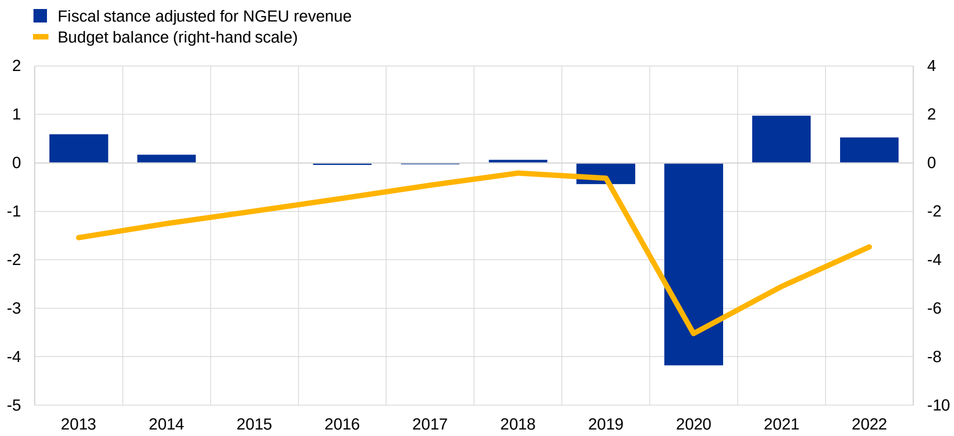
In 2022 euro area governments were confronted, for the third year in a row, with new challenges that required reactive fiscal policies. The euro area's general government deficit ratio decreased to 3.5% of GDP in 2022 from 5.1% in 2021 (Chart 1.8) as support measures related to the pandemic expired and were only partly offset by new support measures. The latter were aimed at countering rising energy prices and their consequences, namely an increased cost of living for households and higher costs for companies. To a smaller extent, they also financed spending related to Russia's war in Ukraine. The same developments are reflected in the fiscal stance, which tightened moderately in 2022 for the second year in a row.[3] As can be seen in the chart below, however, only slightly over a third of the loosening in 2020 has so far been reversed.

[3] 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. For more details on this concept, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

Chart 1.8

Euro area general government balance and fiscal stance

(percentages of GDP)



Sources: Eurosystem staff macroeconomic projections for the euro area, December 2022 and ECB calculations.
Note: The measure of the fiscal stance takes into account expenditures funded by the NGEU Recovery and Resilience Facility and other EU structural funds.

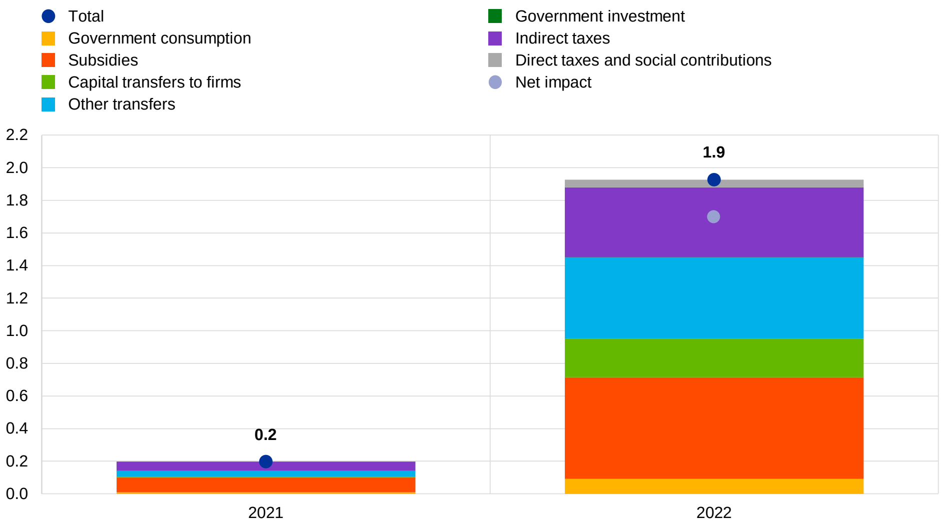
But measures related to inflation and Russia's war in Ukraine were sizeable and broad in scope

When energy prices started to increase more strongly at the end of 2021, euro area governments put in place support measures amounting to around 0.2% of GDP. These comprised subsidies, indirect tax cuts and transfers to households and companies. In 2022, with Russia's invasion of Ukraine, governments swiftly expanded such measures to around 1.9% of GDP (Chart 1.9), which also included capital transfers to energy-producing firms. In addition they increased government support by 0.2% of GDP owing to, inter alia, refugee-related and military spending. The energy and inflation support measures were compensated only to a small extent by new financing measures such as higher direct taxation of energy producers making large windfall profits. This implied that their net budgetary effect remained sizeable, at around 1.7% of GDP. In sum, the gross discretionary support (energy and inflation support plus refugee-related and military spending) was thus 2.1% of euro area GDP and, net of new financing, 1.9% of GDP (Chart 1.10).

Chart 1.9

Euro area budget support related to high energy prices and inflation

(percentages of GDP, levels per year)

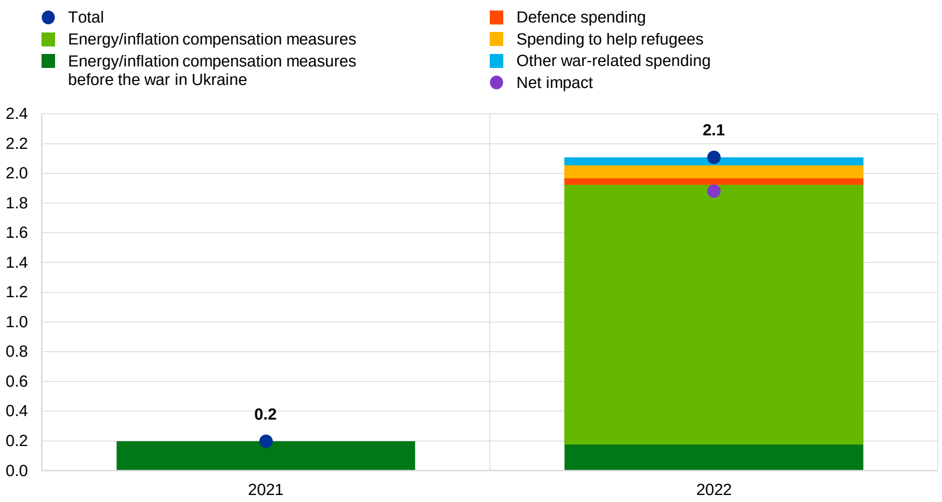


Sources: Eurosystem staff macroeconomic projections for the euro area, December 2022 and ECB calculations.
Notes: Positive numbers denote fiscal support. The bars and totals denote gross fiscal support. The net impact shows the gross support less the discretionary financing measures for the purposes indicated, as identified by Eurosystem staff.

Chart 1.10

Euro area budget support related to high energy prices, inflation and Russia's war in Ukraine

(percentages of 2022 GDP, levels per year)



Sources: Eurosystem staff macroeconomic projections for the euro area, December 2022 and ECB calculations.
Notes: Positive numbers denote fiscal support. The bars and totals denote gross fiscal support. The net impact shows the gross support less the discretionary financing measures for the purposes indicated, as identified by Eurosystem staff.

Targeting of government support measures was limited

Support measures should be temporary, targeted to the most vulnerable households and companies, as well as tailored to preserving incentives to consume less energy. Fiscal measures falling short of these principles are likely to exacerbate inflationary pressures, which would necessitate a stronger monetary policy response, and to weigh on public finances. Given that only a small share of these measures was targeted (12% according to the December 2022 Eurosystem staff projections[4]), it is important that governments adjust these measures accordingly.

Consecutive shocks to public finances increase the need for prudent fiscal policies over the medium term

The pandemic, Russia's war in Ukraine and fiscal expenditures to compensate for high inflation rates represent consecutive major shocks to public finances. These occurred against a background of already elevated government debt-to-GDP ratios. While the pandemic led to high costs for public finances and the war in Ukraine has intensified risks to economic growth prospects, the net impact of the inflationary shock on debt levels is less clear-cut. While higher tax receipts will have some downward effect on the debt ratio, high inflation has prompted a normalisation of monetary policy and thus rising financing costs. Moreover, government expenditures tend to eventually catch up with receipts, while inflation negatively affects output growth.

Pressures on public finances are likely to increase

Pressures on public finances are likely to increase. These will arise from, among other factors, the need to step up the energy transition and to increase investment in a greener and more digital economy, on top of rising fiscal costs due to an ageing population. It is therefore important that the increased vulnerability of euro area public finances is addressed through both growth-enhancing reforms and a gradual reduction in high debt ratios. This will require a swift implementation of the investment and structural reform plans under the Next Generation EU programme and prudent fiscal policies for years to come.

1.4 A sharp increase in euro area inflation

Inflation surged in 2022, exceeding 10% in October and November

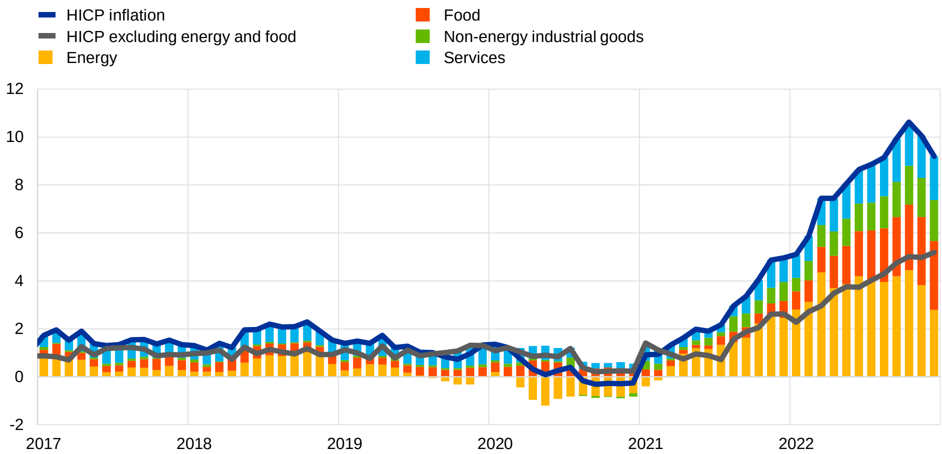
Headline inflation in the euro area as measured by the Harmonised Index of Consumer Prices (HICP) was 8.4% on average in 2022, sharply up from an average of 2.6% in 2021. Inflation surged throughout the year and led to high rates of around 10% year-on-year in the later months. Energy prices were the most important component behind the increase in headline inflation, and food prices also rose increasingly strongly, particularly after Russia's invasion of Ukraine in February. In addition, persistent supply bottlenecks for industrial goods, recovering demand following the easing of pandemic-related restrictions, especially in the services sector, and the depreciation of the euro added to inflationary pressures (Chart 1.11). Overall, price pressures spread across an increasing number of sectors, in part owing to the indirect impact of high energy costs across the whole economy. The divergence of inflation rates across euro area countries also increased significantly, reflecting primarily different degrees of exposure to the commodity and energy price shocks. Most measures of underlying inflation recorded a sizeable rise over the year. At the end of 2022, the factors behind the inflation surge were expected to unwind and inflation was expected to ease over the course of 2023.

4 See the article entitled "Fiscal policy and high inflation", *Economic Bulletin*, Issue 2, ECB, 2023.

Chart 1.11

Headline inflation and its main components

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for December 2022.

Energy and food prices drove inflation

Developments in the energy prices component accounted directly for almost half of the increase in headline inflation over the course of 2022. Energy inflation was already high at the start of the year, then rose sharply further after Russia's invasion of Ukraine owing to concerns that the supply of energy could be disrupted. In October, energy inflation stood at 41.5%, with large contributions from gas and electricity prices, for which the underlying wholesale prices had decoupled from oil prices. Governments adopted sizeable fiscal measures that helped to dampen the short-term impact of rising energy prices somewhat (see Section 1.3). The varying intensity of these measures contributed to the differences in energy inflation among euro area countries, with the Baltic States recording the highest numbers. The surge in energy costs also placed substantial upward pressure on food prices, affecting them with various lags. The war in Ukraine had also a more direct impact on food prices, as both Russia and Ukraine are important exporters of grain and the minerals used in the production of fertilisers.[5] The contribution of total food inflation to headline HICP inflation reached 2.9 percentage points in December 2022, substantially above the level in 2021, reflecting a rise in both the unprocessed and processed components.

Underlying inflation rose strongly, with some signs of levelling off at the end of the year

Indicators of underlying inflation picked up substantially over the course of 2022, although with some signs of flattening towards the end of the year. HICP inflation excluding energy and food was, at 2.3%, already above the ECB's inflation target at the beginning of the year and increased to 5.2% in December. On average, non-energy industrial goods inflation rose to 4.6% in 2022, while services inflation reached 3.5%. Price pressure resulted largely from the same factors: very strong input cost rises, related in part to the increase in energy commodity prices, and pandemic-related factors such as global supply bottlenecks and reopening effects. The depreciation of the euro over most of the year also contributed to inflationary pressures. As supply chain disruptions gradually eased over the second half of 2022

5 On the impact of the war on food inflation, see the box entitled "The surge in euro area food inflation and the impact of the Russia-Ukraine war", *Economic Bulletin*, Issue 4, ECB, 2022.

and commodity prices came down, pressures at the early stages of the pricing chain moderated after the summer. Yet lagged pass-through effects kept inflation high. Pent-up demand after the lifting of pandemic-related restrictions contributed to a favourable pricing environment for firms, in particular for contact-intensive services. Overall, price pressures became increasingly persistent and broad-based. This led all indicators of underlying inflation to increase.

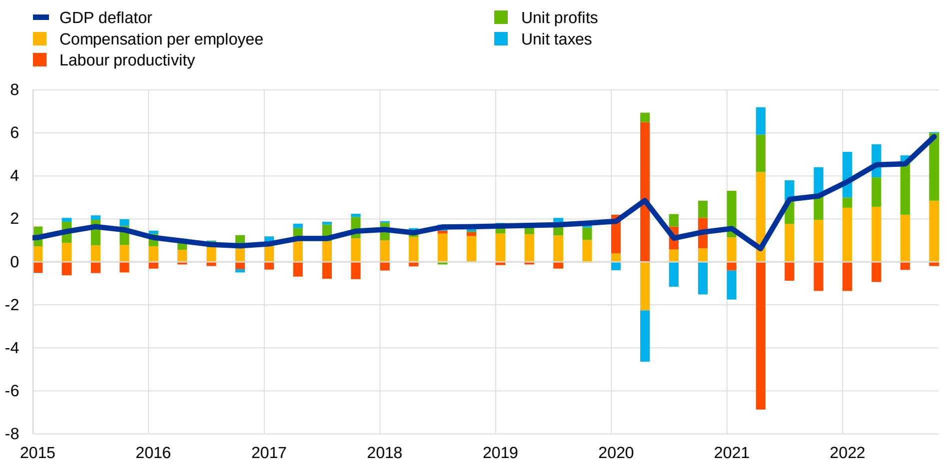
Wage pressures rose towards year-end, amid strong labour markets and some compensation for high inflation

Domestic cost pressures in the euro area, as measured by the growth in the GDP deflator, increased on average by 4.7% in 2022, continuing the path started in 2021 (Chart 1.12). Pressures from wage developments remained moderate in the first half of the year but became more pronounced towards the year-end. Annual growth in compensation per employee rose in 2022, reaching 4.5% on average after 3.9% in 2021 and an average of 1.7% in the pre-pandemic period (between 2015 and 2019). The rise compared with the previous year was partly due to an increase in average hours worked as the impact of job retention schemes faded. Negotiated wages, which were affected to a lesser extent by the impact of government measures, rose by an average annual rate of 2.8% in 2022, slightly below actual wage growth, reflecting the intensification of wage pressures towards the end of the year. Inflation compensation became an increasingly important aspect in wage negotiations during 2022, especially since labour markets remained strong. Increased labour costs were to some extent offset by an increase in labour productivity. Unit profits across sectors contributed positively to the GDP deflator over the year, indicating that firms were able to pass input cost increases through to selling prices.

Chart 1.12

Breakdown of the GDP deflator

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for December 2022.

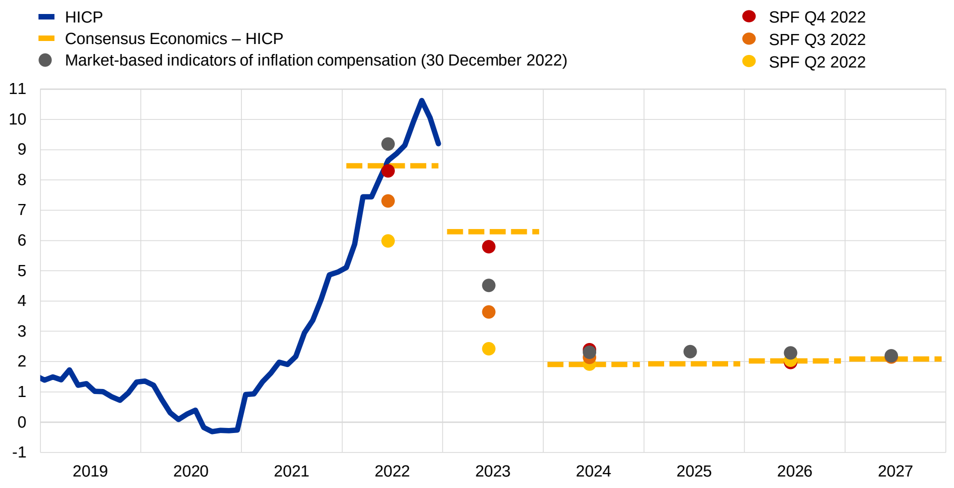
Longer-term inflation expectations rose further but remained broadly anchored at the ECB's target

Longer-term inflation expectations of professional forecasters, which had stood at 1.9% in late 2021, edged up during the year, reaching 2.2% in the fourth quarter of 2022 (Chart 1.13). Other survey data, such as from the ECB Survey of Monetary Analysts and from Consensus Economics, also suggested longer-term inflation expectations were anchored at or just above 2%, despite higher expectations for the shorter term. Market-based measures of longer-term inflation compensation, particularly the five-year inflation-linked swap rate five years ahead, declined at the beginning of the year in anticipation of a tightening of monetary policy but, following the outbreak of Russia's war in Ukraine, gradually picked up, standing at 2.38% in late December. Importantly, however, market-based measures of inflation compensation are not a straightforward measure of market participants' actual inflation expectations, since they incorporate risk premia to compensate for inflation uncertainty.

Chart 1.13

Survey and market-based indicators of inflation expectations

(annual percentage changes)



Sources: Eurostat, Refinitiv, Consensus Economics, ECB Survey of Professional Forecasters (SPF) and ECB calculations.
Notes: The market-based indicators of inflation compensation series is based on the one-year spot inflation-linked swap rate, the one-year forward rate one year ahead, the one-year forward rate two years ahead, the one-year forward rate three years ahead and the one-year forward rate four years ahead. The latest observation for market-based indicators of inflation compensation are for 30 December 2022. The SPF for the fourth quarter of 2022 was conducted between 30 September and 6 October 2022. The cut-off date for the Consensus Economics long-term forecasts was October 2022, while the SPF cut-off date for 2022 and 2023 was December 2022. The latest observation for the HICP is for December 2022.

1.5 Tighter credit and financing conditions as monetary policy normalises

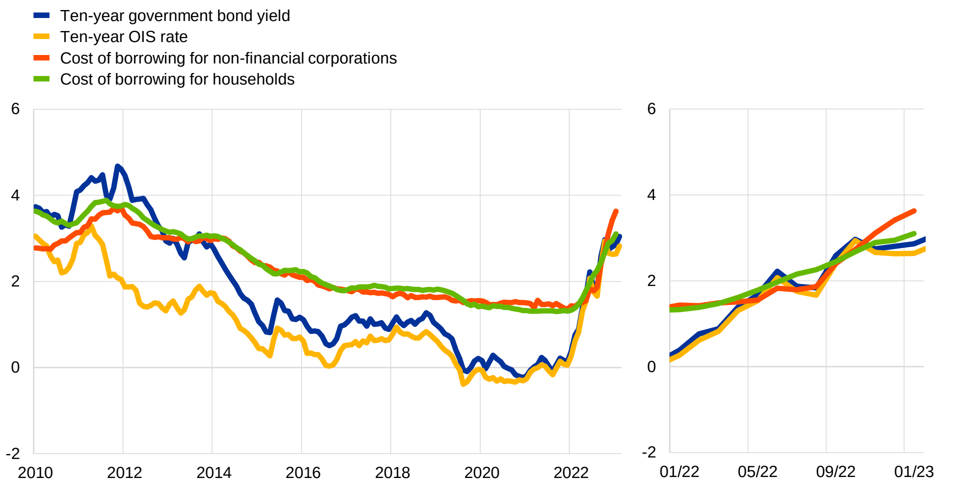
Monetary policy normalisation led to higher bond yields, amid considerable volatility

With inflationary pressures rising throughout the economy (see Section 1.4), the ECB took decisive action in 2022 to normalise monetary policy and prevent longer-term inflation expectations from becoming unanchored above its 2% target (see Section 2.1). Risk-free long-term interest rates were more volatile than in 2021, partly because of very high uncertainty about inflation and the reaction of monetary authorities around the world, including the euro area. Long-term yields increased overall. The euro area ten-year GDP-weighted average of government bond yields closely followed developments in the risk-free rate (Chart 1.14). At the country level, despite some differences, movements in sovereign spreads were contained overall, in part owing to the Governing Council's announcement in June that it would apply flexibility in reinvesting redemptions coming due in the pandemic emergency purchase programme portfolio and the approval in July of the Transmission Protection Instrument (see Section 2.1). The euro area GDP-weighted average of ten-year nominal government bond yields stood at 3.26% on 31 December 2022, almost 300 basis points higher than at the end of 2021.

Chart 1.14

Long-term interest rates, and the cost of borrowing for firms and for households for house purchase

(percentages per annum)



Sources: Bloomberg, Refinitiv and ECB calculations.
Notes: The data refer to the GDP-weighted average of ten-year government bond yields (daily), the ten-year overnight index swap (OIS) rate (daily), the cost of borrowing for non-financial corporations (monthly) and the cost of borrowing for households for house purchase (monthly).The indicators for the cost of borrowing are calculated by aggregating short-term and long-term bank lending rates using a 24-month moving average of new business volumes. The latest observations are for 31 December 2022 for daily data and for December 2022 for monthly data.

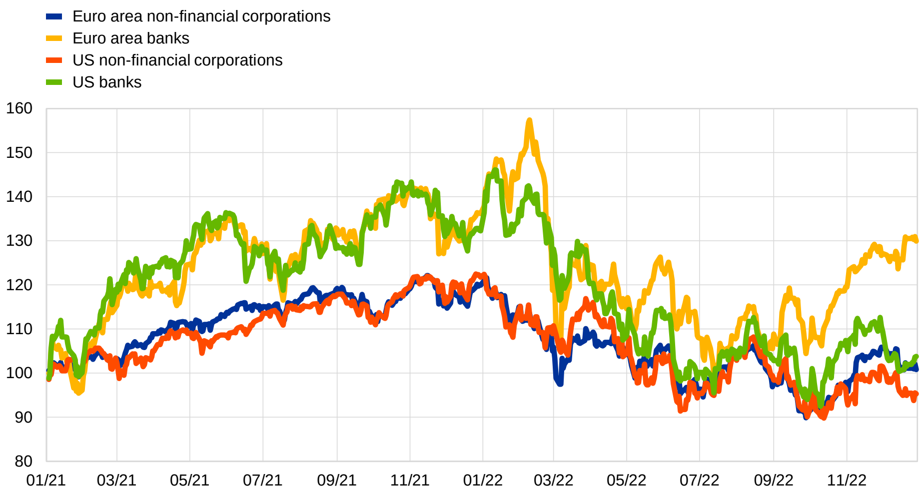
Financing conditions tightened in bond and equity markets

Expectations of higher interest rates and of lower long-term earnings growth put downward pressure on stock prices. Overall, euro area equity prices were very volatile and declined in 2022. The broad indices of euro area non-financial corporation and bank equity prices (Chart 1.15) stood at around 16% and 4.4% below their respective end-2021 levels on 31 December 2022. Since corporate bond yields also increased sizeably, in both the investment grade and high-yield categories, euro area financing conditions tightened considerably.

Chart 1.15

Equity market indices in the euro area and the United States

(index: 1 January 2021 = 100)



Sources: Bloomberg, Refinitiv and ECB calculations.
Notes: The Refinitiv market index for non-financial corporations and the EURO STOXX banks index are shown for the euro area; the Refinitiv market index for non-financial corporations and the S&P banks index are shown for the United States. The latest observations are for 31 December 2022.

Bank lending rates increased substantially for firms and households as monetary policy normalised

Against the background of monetary policy normalisation and general market developments, bank funding costs and bank lending rates increased steeply in 2022. The overall upward trend in bank bond yields, the gradual increase in the remuneration of customer deposits, and a change in the terms and conditions of the third series of targeted longer-term refinancing operations (TLTRO III) towards the end of the year all contributed to an increase in bank funding costs. As a result, nominal bank lending rates increased during 2022 to levels last seen in 2014. The euro area bank lending survey also indicated that banks' credit standards (i.e. internal guidelines or loan approval criteria) for loans to households and firms tightened substantially. The composite bank lending rate for loans to households for house purchase stood at 2.94% at the end of 2022, up by a cumulative 163 basis points since the end of 2021, and the equivalent rate for non-financial corporations stood at 3.41%, up 205 basis points (Chart 1.14). Viewed in relation to the changes in the key ECB interest rates, such developments were broadly in line with past periods of monetary policy tightening, and the differences in lending rates across countries remained contained. This suggested that changes in the ECB's monetary policy were transmitting smoothly across the euro area.

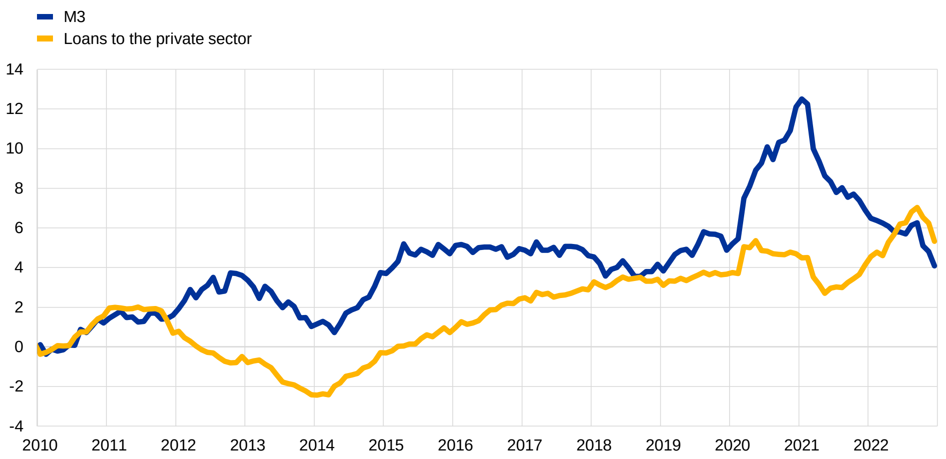
Credit growth increased in the first half of 2022, but then moderated for both households and firms

Credit growth increased in the first half of 2022, but new lending moderated after the summer on the back of tighter credit conditions (Chart 1.16). The annual growth rate of bank loans to households weakened to 3.8% for the year, reflecting rising interest rates, tighter credit standards and lower consumer confidence. The annual growth rate of bank loans to firms still increased in 2022, to 6.3%, although this concealed differing developments in the course of the year. Nominal growth was robust for most of the year, reflecting firms' need to finance working capital and inventories in view of continued supply bottlenecks and elevated costs. In the last months of the year, however, bank lending to firms declined sharply, reflecting the impact of tighter financing conditions on supply and demand factors. Net issuance of debt securities, which had become more expensive for firms, also decreased during the year. In total, the net flows of external financing to non-financial corporations declined in 2022, mainly on account of a reduction in inter-company loans as a form of financing (Chart 1.17). The survey on the access to finance of enterprises indicated, moreover, that firms were increasingly pessimistic about the future availability of most sources of external financing.

Chart 1.16

M3 growth and the growth of credit to non-financial corporations and households

(annual percentage changes)

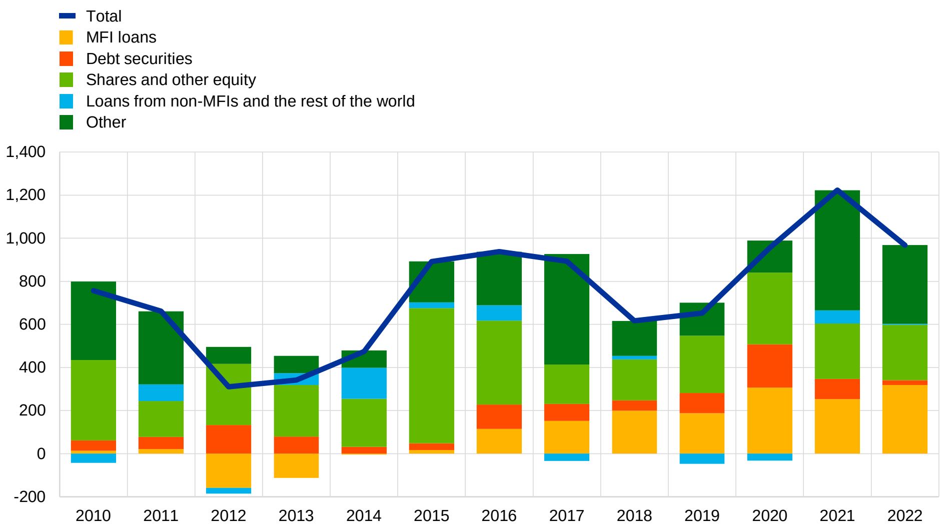


Source: ECB.
Notes: The second line depicts growth of credit to the private sector. Defined as non-monetary financial institutions excluding the general government sector, the private sector comprises essentially non-financial corporations and households. The latest observations are for December 2022.

Chart 1.17

Net flows of external financing to non-financial corporations

(annual flows in EUR billions)



Sources: ECB and Eurostat.
Notes: MFI: monetary financial institution. In "loans from non-MFIs and the rest of the world", non-monetary financial institutions consist of other financial intermediaries, pension funds and insurance corporations. "MFI loans" and "loans from non-MFIs and the rest of the world" are corrected for loan sales and securitisation. "Other" is the difference between the total and the instruments included in the chart and consists mostly of inter-company loans and trade credit. The annual flow for a year is computed as a four-quarter sum of flows. The latest observations are for the fourth quarter of 2022.

Broad money growth moderated as Eurosystem net asset purchases ended and credit creation declined

The pace of deposit accumulation moderated from the high levels recorded during the pandemic, owing primarily to increased expenditure on the back of rising prices and to higher returns on alternative forms of saving in line with the normalisation of monetary policy. The annual growth of broad money (M3) moderated further to 4.1% in 2022 (Chart 1.16), reflecting the end of net asset purchases by the Eurosystem in July, lower credit creation in the last quarter of 2022, and net monetary outflows to the rest of the world linked to the euro area's higher energy bill.

Box 1

Labour market developments in the euro area and the United States in 2022

In a context of high uncertainty in 2022, labour market analyses were an essential element in assessing the state of the economy and its degree of slack. This box examines the similarities and differences between the euro area and the US labour market as regards their recovery from the pandemic.

Developments in total hours worked

In 2022 total hours worked recovered to pre-pandemic levels in both the euro area and the United States, but the recovery reflected different paths of the labour supply and demand components. While unemployment rates were in 2022 back to levels seen before the crisis in the United States and even lower than that in the euro area, the degree of labour market tightness, measured by the ratio of vacancies to unemployment, appeared to be stronger in the United States.[6] These developments

[6] See the box entitled "Comparing labour market developments in the euro area and the United States and their impact on wages" in the article entitled "Wage developments and their determinants since the start of the pandemic", *Economic Bulletin*, Issue 8, ECB, 2022.

can be attributed both to diverging policy responses to the pandemic and to structural differences in labour supply and demand between the two economies.

Developments in labour demand

In 2022 the two economies were at different stages of the business cycle. Cyclical demand for labour was stronger in the United States and therefore partly responsible for the greater labour market tightness. In the euro area economic activity recovered later from its trough during the pandemic than in the United States. Real GDP in the euro area returned to its pre-crisis level in the last quarter of 2021, while in the United States the pre-crisis level had been reached in the first quarter of 2021. To some extent, this reflected more restrictive and widespread lockdown measures in many euro area countries in the second wave of the pandemic than in the United States as well as differences in the speed of vaccination. However, a more important factor was the differing magnitude and focus of the fiscal measures. The fiscal support in the euro area was concentrated on cushioning employment losses by supporting firms, and letting automatic stabilisers operate. The US fiscal support was larger and focused more directly on supporting household income and thus consumption, via pay cheques and enhanced unemployment benefits. Accordingly, private consumption in the euro area returned even later to its pre-crisis level than overall economic activity, i.e. only in the second quarter of 2022.

In addition, from a more structural perspective, the US labour market tends to react to the business cycle more strongly than the euro area labour market. Measures of "churning" show that the US labour market is structurally more dynamic. The term "labour churn" refers to the rate at which employees leave and are replaced within a company or organisation within a certain period of time. A crude measure of churning indicates that on average since the early 2000s around 4% of all US workers changed jobs per month. Indicators of churning are not available for the euro area, and the most comparable statistics refer to recent job leavers and job starters (although these also cover people moving from inactivity/unemployment into employment and vice versa). These point to an increase in the number of job starters in 2022 particularly, but a less pronounced rise than that seen in the United States. These dynamics are also visible in the level of vacancies in the two economic regions: this was higher in 2022 in the United States than it was in the euro area (with considerable variation across euro area countries[7]), where the focus had mainly been on bringing retained staff back to normal working time (Chart A).

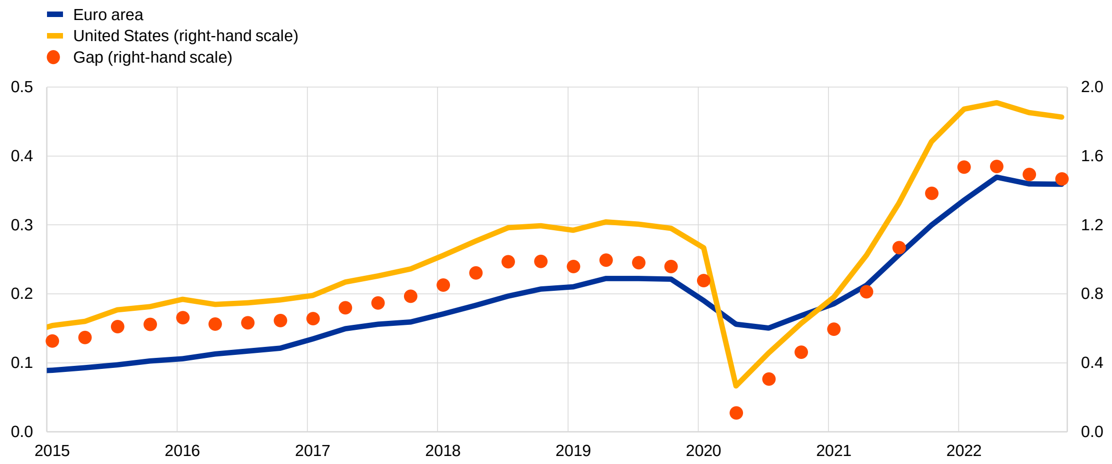
In sum, stronger structural dynamism of the US labour market added pressure to already more robust labour demand.

[7] See Antonopoulos, C. et al., "The Greek labour market before and after the pandemic: Slack, tightness and skills mismatch", *Economic Bulletin*, Issue 56, Bank of Greece, December 2022.

Chart A

Labour market tightness in the euro area and the United States

(ratio of vacancies to unemployment)



Sources: Eurostat, Haver Analytics, US Bureau of Labor Statistics and ECB calculations.
Notes: The gap refers to the figure for the United States minus the figure for the euro area. In France, vacancies are reported only for firms with ten or more employees. Employment losses during the pandemic crisis were cushioned in the euro area by extensive usage of job retention schemes, which had declined to very low levels by mid-2022. The latest observations are for the fourth quarter of 2022.

Developments in labour supply

During the pandemic crisis, labour supply declined more and recovered more slowly from its trough in the second quarter of 2020 in the United States than in the euro area. The difference in the pace of the recovery of labour supply was in part linked to the differences in the implemented policies. First, the recovery of the labour force participation rate was more sluggish in the United States. This reflects in part the fact that higher lay-offs in the United States led some workers to leave the labour force, while the relatively generous income support allowed people to remain outside the labour force for longer or even increase the wage at which they would be prepared to re-enter employment. Throughout 2022 the labour force participation rate in the United States continued to be below its pre-pandemic level, in stark contrast to the euro area, where the participation rate exceeded its pre-pandemic level. Second, the recent developments in labour force participation are also partly shaped by long-term trends. Over time, the share of older workers in the labour force, who usually participate less in labour markets than younger workers, has increased in both areas. In Europe, this shift coincided with a positive trend in participation rates due to greater participation by women and was boosted by pension reforms. The trend continued during the pandemic, and older workers supported the increase in the labour force participation rate over 2022. In the United States, however, demographic developments weighed on the labour force participation rate in 2022. Finally, while the net inflow of migrant workers was negatively affected by the pandemic in both regions, in the United States it had started to moderate earlier, following the tightening of immigration policies between 2017 and 2020. Recently, however, the net inflow of migrant workers has rebounded strongly in both regions.

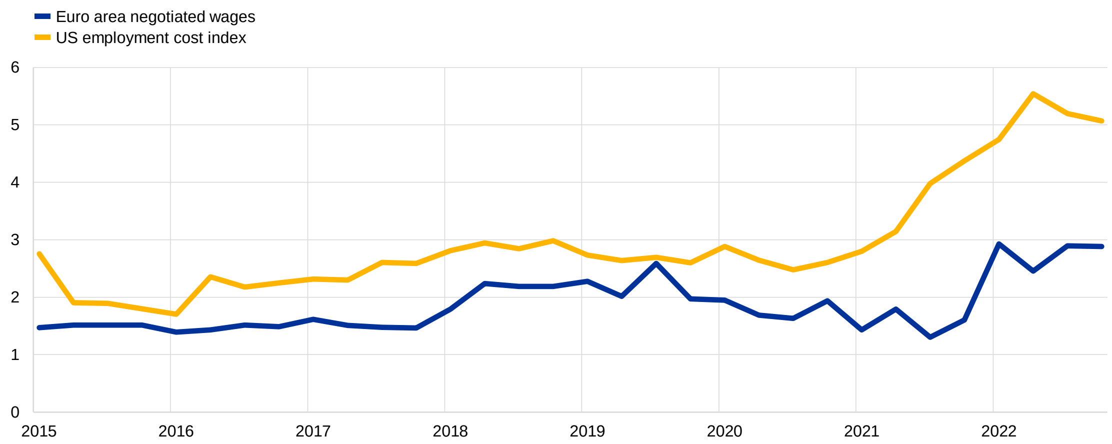
Wage developments

The gap in wage growth between the United States and the euro area has increased in recent years, and this was particularly visible in 2022. To a large extent this can be explained by the different developments in labour supply and demand as explained above. From the second quarter of 2020, US nominal wage growth increased substantially, to 5.5% in the second quarter of 2022, as measured by the employment cost index (private industry). It has moderated since then, but remained high. The rise in euro area wage growth in this period was more gradual and limited, with negotiated wage growth (which is much less affected by job retention schemes than compensation per employee or hour) standing at 2.9% in the fourth quarter of 2022 (Chart B). The structurally more dynamic labour market in the United States may also strengthen the reaction of wages to labour market tightness, as reflected in the higher wage growth of those switching jobs.

Chart B

Measures of wage growth in the euro area and the United States

(annual percentage changes)



Sources: Eurostat, Haver Analytics and ECB staff calculations.
Note: The latest observations are for the fourth quarter of 2022 for both euro area negotiated wages and the US employment cost index (private industry).

2 Monetary policy on a normalisation path

The ECB continued to normalise its monetary policy in 2022 to combat exceptionally high inflation, amid Russia's invasion of Ukraine and lasting effects from the pandemic. In the first phase of normalisation the Governing Council ended net asset purchases under the pandemic emergency purchase programme (PEPP) at the end of March and under the asset purchase programme (APP) at the beginning of July. In the second phase the key ECB rates were raised for the first time in more than a decade, and the deposit facility rate left negative territory for the first time since 2014. Policy rates increased by a cumulative 250 basis points over the last four meetings of the year, which included the largest individual rate hikes on record (Chart 2.1). The Governing Council also approved the Transmission Protection Instrument to ensure an orderly transmission of monetary policy across the euro area. In addition, the flexibility available for reinvestments under the PEPP served as a first line of defence to counter pandemic-related risks to transmission. In December, the Governing Council decided to decrease the monetary policy securities portfolio acquired by the Eurosystem under the APP, at a measured and predictable pace, from March 2023 onwards. The Eurosystem's balance sheet reached a historical high in June 2022 at €8.8 trillion, before declining to €8.0 trillion by the year's end. The reduction stemmed mainly from maturing operations and early repayments under the third series of targeted longer-term refinancing operations (TLTRO III). Early repayments were supported by the Governing Council's decision in October to change the terms and conditions for TLTRO III operations. In line with the normalisation of monetary policy, the ECB also began phasing out collateral easing measures introduced in response to the pandemic, thus gradually restoring pre-pandemic risk tolerance levels in the Eurosystem's credit operations.

2.1 Withdrawing monetary policy accommodation

A first phase of policy normalisation: a slower pace of asset purchases and the preconditions for rate hikes

In early 2022 the pandemic was still hampering economic growth, and inflation was higher than projected

In early 2022 the euro area economy continued to recover from the pandemic and the labour market improved further, not least as a result of the support provided by public policies. However, the near-term outlook for economic growth remained subdued amid surging new coronavirus infections due to the spread of the Omicron variant. Shortages of materials, equipment and labour continued to hold back output in some industries, and high energy costs were already hurting real incomes. Inflation in the Harmonised Index of Consumer Prices (HICP) had risen sharply in the preceding months and was again higher than projected in January. This was primarily driven by higher energy costs, which were pushing up prices across many sectors, as well as by higher food prices. On the basis of data at the beginning of the year, the Governing

Council assessed in February that inflation was likely to remain elevated for longer than previously expected but to decline over the course of the year.

In February the Governing Council continued the normalisation of monetary policy which had started in December 2021

The Governing Council therefore confirmed the decision taken at its monetary policy meeting in December 2021 to continue reducing the pace of asset purchases step by step over the following quarters. It had decided to discontinue net asset purchases under the PEPP at the end of March 2022, and to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2024. The Governing Council emphasised that, in the event of renewed market fragmentation related to the pandemic, PEPP reinvestments could be adjusted flexibly across time, asset classes and jurisdictions whenever threats to monetary policy transmission jeopardised the attainment of price stability. This could include purchasing bonds issued by the Hellenic Republic over and above rollovers of redemptions in order to avoid an interruption of purchases in that jurisdiction, which could impair the transmission of monetary policy to the Greek economy while it was still recovering from the fallout of the pandemic.

The invasion of Ukraine dramatically increased economic uncertainty and price pressures

Russia's invasion of Ukraine in February was a watershed for Europe. The unjustified war had a material impact on economic activity and inflation in 2022, including in the euro area, through higher energy and commodity prices, the disruption of international trade and weaker confidence. In March the Governing Council assessed that the extent of these effects would depend on how the war evolved, on the impact of sanctions and on possible further measures. In recognition of the highly uncertain environment, the Governing Council considered a range of scenarios in addition to the usual ECB staff macroeconomic projections for the euro area. The impact of the war was assessed in the context of incoming data that indicated still solid underlying conditions for the euro area economy, helped by considerable policy support. The ongoing recovery of the economy was boosted by the fading impact of the Omicron coronavirus variant. Supply bottlenecks were showing some signs of easing and the labour market was improving further. Still, in the baseline of the March staff projections, which incorporated a first assessment of the implications of the war, GDP growth was revised downwards for the near term. Prior to the Governing Council's March monetary policy meeting, inflation had continued to be higher than projected mainly because of unexpectedly high energy costs. Price rises had also become more broad-based across sectors. Compared with the December 2021 Eurosystem staff projections, the baseline for HICP inflation in the March projections was revised significantly upwards, while longer-term inflation expectations across a range of measures were in line with the ECB's 2% medium-term inflation target.

The Governing Council revised the APP purchase schedule in March

On the basis of this updated assessment and taking into account the uncertain environment, the Governing Council revised the purchase schedule for the APP at its March monetary policy meeting, with monthly net purchases to be €40 billion in April, €30 billion in May and €20 billion in June. The calibration of net purchases for the third quarter was to depend on incoming data. The Governing Council also confirmed its prior decision that any adjustments to the key ECB interest rates would take place some time after the end of net purchases under the APP. The path for the key ECB interest rates was still determined by the Governing Council's forward guidance, reflecting its strategic commitment to stabilise inflation at 2% over the medium term.

The June staff projections made another upward revision to the inflation path

Inflation again rose significantly in May, mainly due to the impact of the war and a continued surge in energy and food prices. At the same time, inflation pressures had broadened and intensified, with prices for many goods and services increasing strongly. Against this backdrop and the June baseline Eurosystem staff projections, which saw inflation above the 2% target at the end of the projection horizon, the Governing Council decided on 9 June to take further steps in normalising monetary policy, guided by the principles of optionality, data-dependence, gradualism and flexibility.

The Governing Council said it would end APP net asset purchases and start raising rates...

First, the Governing Council decided to end net asset purchases under the APP as of 1 July 2022. It said that it intended to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it started raising the key ECB interest rates and, in any case, for as long as necessary to maintain ample liquidity conditions and an appropriate monetary policy stance.

Second, the Governing Council concluded in June that the conditions under its forward guidance for starting to raise the key ECB interest rates had been satisfied. Accordingly, and in line with the previously signalled policy sequencing, it said that it intended to raise the key ECB interest rates by 25 basis points at the July monetary policy meeting, with another increase expected in September.

Third, based on the assessment in June, the Governing Council anticipated that, beyond September, a gradual but sustained path of further increases in interest rates would be appropriate, depending on the incoming data and the assessment of inflation developments over the medium term.

…and addressed concerns about the transmission of monetary policy

The decisions taken on 9 June reflected significant steps towards a normalisation of the monetary policy stance. At an ad hoc meeting on 15 June, the Governing Council assessed the financial market situation and potential fragmentation risks, and underscored its determination to preserve an orderly transmission of the monetary policy stance throughout the euro area. In particular, the Governing Council assessed that the pandemic had left lasting vulnerabilities in the euro area economy, which were contributing to an uneven transmission of the normalisation of the ECB's monetary policy across jurisdictions.

On the basis of this assessment, the Governing Council decided to apply flexibility in reinvesting redemptions coming due in the PEPP portfolio, with a view to preserving the functioning of the monetary policy transmission mechanism. In addition, it mandated the relevant Eurosystem committees together with the ECB services to accelerate the completion of the design of a new anti-fragmentation instrument.

A second phase of policy normalisation: the Transmission Protection Instrument and policy rate hikes

In July the Governing Council approved the Transmission Protection Instrument…

The new Transmission Protection Instrument (TPI) was approved by the Governing Council at its meeting on 21 July. The Governing Council considered the establishment of the new instrument necessary to support the effective transmission of monetary policy, in particular over the course of policy normalisation. The TPI would ensure that the monetary policy stance is transmitted smoothly across all euro area countries. The TPI constitutes an addition to the ECB's toolkit and can be activated to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area. Subject to established criteria being met, the Eurosystem can make secondary market purchases of securities issued in jurisdictions experiencing a deterioration in financing conditions not warranted by country-specific fundamentals, to counter risks to the transmission mechanism to the extent necessary. The scale of TPI purchases, if activated, would depend on the severity of the risks facing monetary policy transmission; purchases would not be restricted ex ante. The Governing Council further emphasised in July that, in any event, the flexibility in reinvestments of redemptions coming due in the PEPP portfolio remained the first line of defence to counter risks to the transmission mechanism related to the pandemic. The Governing Council also highlighted in July that it retained discretion to conduct Outright Monetary Transactions for countries that fulfilled the requisite criteria. While the TPI's objective is to safeguard the smooth transmission of monetary policy across all euro area countries, Outright Monetary Transactions can be activated in the event of severe distortions in government bond markets which originate from, in particular, unfounded fears on the part of investors of the reversibility of the euro.

…raised the key ECB interest rates for the first time in more than a decade…

The Governing Council also decided in July on the first policy rate hike since 2011, raising the three key ECB interest rates by 50 basis points. It judged that it was appropriate to take a larger first step on its policy rate normalisation path than had been signalled at its previous meeting. This decision was based on the Governing Council's updated assessment of inflation risks and the reinforced support provided by the TPI for the effective transmission of monetary policy. The Governing Council also signalled that further normalisation of interest rates would be appropriate in the following months.

…and ended its forward guidance on policy rates

The frontloading of the exit from negative interest rates in July allowed the Governing Council to make a transition from forward guidance on interest rates to a meeting-by-meeting approach to its interest rate decisions. This transition appeared warranted in view of the exceptional uncertainty surrounding the outlook for inflation and the economy.

With inflation over 9% in August and expected to be above target in the medium run, the Governing Council raised rates by another 75 basis points in September

In September the Governing Council decided to raise the key ECB interest rates by another 75 basis points, the largest single increase in these rates on record up to then. It took this decision because inflation remained far too high and incoming data indicated that it would stay above target for an extended period. Soaring energy and food prices, demand pressures in some sectors owing to the reopening of the economy, and supply bottlenecks were still driving up inflation, which had risen to 9.1% in August. As in previous months, price pressures were continuing to strengthen and broaden across the economy. ECB staff had significantly revised up their inflation projections in September in comparison with the June projections, with HICP inflation declining over the projection horizon but still above the 2% target in the final year. Furthermore, incoming data pointed to a substantial slowdown in euro area economic growth, and the economy was expected to stagnate later in the year and in the first quarter of 2023. Very high energy prices continued to reduce the purchasing power of people's incomes and supply bottlenecks were still constraining economic activity. In addition, the geopolitical situation, especially Russia's war in Ukraine, weighed on the confidence of businesses and consumers. Against this backdrop, the September staff projections for economic growth were revised down markedly for the remainder of 2022 and throughout 2023.

Positive policy rates made the two-tier system for excess reserve remuneration obsolete

The increase in the key ECB interest rates by 75 basis points in September frontloaded the transition from a highly accommodative level of policy rates towards levels that would ensure the timely return of inflation to the ECB's 2% medium-term target. The Governing Council said that, based on its assessment, it expected to raise interest rates further over the coming meetings to dampen demand and guard against the risk of a persistent upward shift in inflation expectations. Furthermore, since the deposit facility rate had been raised to above zero, the two-tier system for the remuneration of excess reserves was no longer necessary. The Governing Council therefore decided to suspend the two-tier system by setting the multiplier to zero. In addition, to preserve the effectiveness of monetary policy transmission and safeguard orderly market functioning, the Governing Council decided to temporarily remove the 0% interest rate ceiling for the remuneration of government deposits. The ceiling was temporarily set at the lower of either the deposit facility rate or the euro short-term rate (€STR), including under a positive deposit facility rate. The measure was intended to remain in effect until 30 April 2023 and was designed to prevent an abrupt outflow of deposits into the market, at a time when some segments of the euro area repo markets were showing signs of collateral scarcity, and to allow an in-depth assessment of how money markets were adjusting to the return to positive interest rates.

A third phase of policy normalisation: further rate hikes and balance sheet reduction

With inflation likely to stay high for an extended period, the Governing Council raised rates again by 75 basis points in October…

Inflation rose to 9.9% in September and 10.6% in October, the highest reading in the history of the single currency. Soaring energy and food prices, supply bottlenecks and the post-pandemic recovery in demand had led to a further broadening of price pressures and an increase in inflation over summer. Against this background, the Governing Council decided in October to raise the three key ECB interest rates again by 75 basis points, emphasising that with this third major policy rate increase in a row substantial progress had been made in withdrawing monetary policy accommodation.

…and aligned the TLTRO III terms and conditions with the broader policy normalisation

The Governing Council also decided in October to change the terms and conditions of TLTRO III. It adjusted the interest rates on the operations from 23 November, by indexing the interest rate paid to the average applicable key ECB interest rates, and offered banks three additional voluntary early repayment dates. During the acute phase of the pandemic, this instrument played a key role in countering downside risks to price stability. In view of the unexpected and extraordinary rise in inflation, however, it needed to be recalibrated to ensure consistency with the broader monetary policy normalisation process and to reinforce the transmission of policy rate increases to bank lending conditions. The Governing Council expected the recalibration of the

TLTRO III terms and conditions to contribute to the normalisation of bank funding costs. The ensuing normalisation of financing conditions would, in turn, exert downward pressure on inflation, helping to restore price stability over the medium term. The recalibration also removed deterrents to voluntary early repayment of outstanding TLTRO III funds. Voluntary early repayments would reduce the Eurosystem balance sheet and thus contribute to the overall monetary policy normalisation. The recalibration of TLTRO III and the subsequent repayments led to a substantial decline in excess liquidity.

Finally, in order to align the remuneration of minimum reserves held by credit institutions with the Eurosystem more closely with money market conditions, the Governing Council decided to set the remuneration of minimum reserves at the deposit facility rate.

December saw the fourth rate hike in a row amid double-digit inflation and increasing recession risks

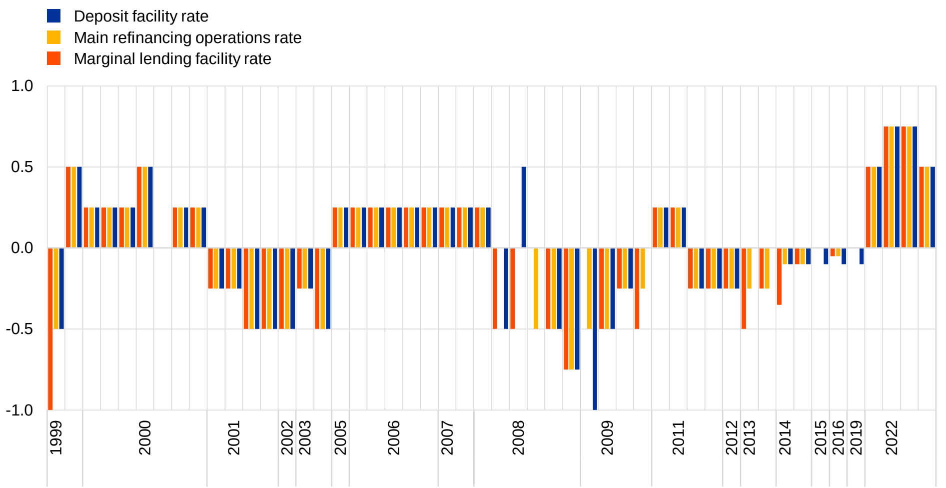
In December the Governing Council raised interest rates for the fourth time in a row, this time by 50 basis points, because inflation remained far too high and was projected to stay above the ECB's target for too long. The Governing Council also said that interest rates would still have to rise significantly at a steady pace to reach levels that were sufficiently restrictive to ensure a timely return of inflation to the target. Keeping interest rates at restrictive levels would over time reduce inflation by dampening demand and also guard against the risk of a persistent upward shift in inflation expectations. Inflation was 10.1% in November, slightly lower than the 10.6% recorded in October. The decline resulted mainly from lower energy price inflation. Food price inflation and underlying price pressures across the economy had strengthened and were expected to persist for some time. Amid exceptional uncertainty, Eurosystem staff had significantly revised up their inflation projections in December, and saw average inflation reaching 8.4% in 2022 before decreasing to 6.3% in 2023, with inflation projected to decline markedly over the course of that year. Inflation was then seen falling further to an average of 3.4% in 2024 and 2.3% in 2025. The projections indicated that the euro area economy might contract around the turn of 2022/2023, owing to the energy crisis, high uncertainty, weakening global economic activity and tighter financing conditions. However, they saw a possible recession as likely to be relatively short-lived and shallow, while the growth outlook for 2023 had still been revised down significantly compared with the previous projections.

The Governing Council laid out the principles for normalising the balance sheet

In December the Governing Council also discussed principles for reducing the APP securities holdings. It decided that from the beginning of March 2023 onwards the APP portfolio would decline at a measured and predictable pace, as the Eurosystem would not reinvest all of the principal payments from maturing securities. The decline would amount to €15 billion per month on average until the end of the second quarter of 2023 and its subsequent pace would be determined over time. The Governing Council also highlighted that by the end of 2023 the ECB would review its operational framework for steering short-term interest rates, which would provide information regarding the endpoint of the balance sheet normalisation process.

Chart 2.1
Changes in the key ECB policy rates

(percentage points)



Source: ECB.

2.2 Eurosystem balance sheet developments as monetary policy normalises

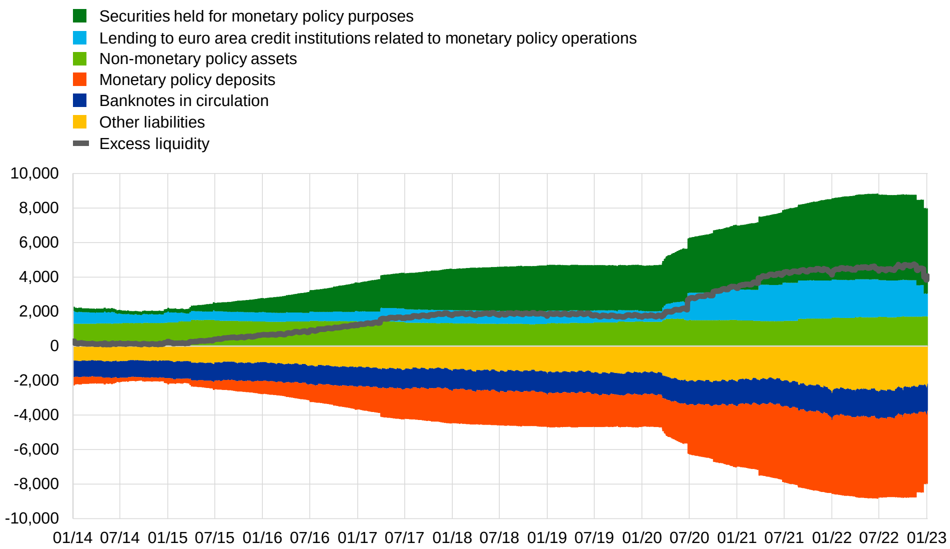
In the first half of 2022 the growth of the Eurosystem balance sheet slowed as net purchases under the APP and the PEPP were phased out. In the second half the ongoing normalisation of monetary policy contributed to a gradual reduction of the balance sheet. The balance sheet reached its historical high in June at €8.8 trillion before net asset purchases under the APP were concluded as of 1 July (Chart 2.2). By the end of the year it had declined to €8.0 trillion, mainly on account of TLTRO III operations maturing as well as sizeable early repayments, especially after the TLTRO III terms and conditions were changed to align them with the broader monetary policy normalisation process.

At the end of 2022 monetary policy-related assets on the Eurosystem balance sheet amounted to €6.3 trillion, a decline of €0.7 trillion compared with the end of 2021. Loans to euro area credit institutions accounted for 17% of total assets (down from 26% at the end of 2021) and assets purchased for monetary policy purposes represented 62% of total assets (up from 55% at the end of 2021). Other financial assets on the balance sheet consisted mainly of foreign currency and gold held by the Eurosystem and euro-denominated non-monetary policy portfolios.

On the liabilities side, the overall amount of credit institutions' reserve holdings and recourse to the deposit facility decreased to €4.0 trillion at the end of 2022 (from €4.3 trillion at the end of 2021) and represented 50% of total liabilities (in line with the percentage at the end of 2021). Banknotes in circulation grew to €1.6 trillion (from €1.5 trillion at the end of 2021) and accounted for 20% of total liabilities (up from 18%).

Chart 2.2
Evolution of the Eurosystem's consolidated balance sheet

(EUR billions)



Source: ECB.
Notes: Positive figures refer to assets and negative figures to liabilities. The line for excess liquidity is presented as a positive figure, although it refers to the sum of the following liability items: current account holdings in excess of reserve requirements and recourse to the deposit facility.

APP and PEPP portfolio distribution across asset classes and jurisdictions

The APP comprises four asset purchase programmes: the third covered bond purchase programme (CBPP3), the asset-backed securities purchase programme (ABSPP), the public sector purchase programme (PSPP) and the corporate sector purchase programme (CSPP). The PEPP was introduced in 2020 in response to the pandemic. All asset categories that are eligible under the APP are also eligible under the PEPP; a waiver of the eligibility requirements has been granted for securities issued by the Hellenic Republic. The Eurosystem completed net purchases under the PEPP at the end of March 2022 and under the APP as of 1 July 2022, while it continued reinvesting the principal payments from maturing securities under both programmes in full. Purchases continued to be conducted in a smooth manner and in line with the respective prevailing market conditions.

APP holdings were €3.3 trillion at the end of 2022

At the end of 2022 APP holdings amounted to €3.3 trillion (at amortised cost). The PSPP accounted for the bulk of these holdings, with €2.6 trillion or 79% of total APP holdings at the end of the year. Under the PSPP, the allocation of purchases to euro area jurisdictions was guided by the ECB's capital key on a stock basis. In addition, some national central banks purchased securities issued by EU supranational institutions. The weighted average maturity of the PSPP holdings stood at 7.2 years at the end of 2022, with some variation across jurisdictions. The ABSPP accounted for less than 1% (€23 billion) of total APP holdings at year-end, the CBPP3 for 9% (€302 billion) and the CSPP for 11% (€344 billion). Of the private sector purchase programmes, the CSPP contributed the most to the growth in APP holdings in 2022, with €34 billion of net purchases. Corporate and covered bond purchases are guided by benchmarks which reflect the market capitalisation of all eligible outstanding corporate and covered bonds respectively. As of October 2022 climate change considerations were incorporated into the corporate sector benchmark – more details can be found in Section 11.5.[8]

PEPP holdings were €1.7 trillion at the end of 2022

At the end of 2022 PEPP holdings amounted to €1.7 trillion (at amortised cost). Covered bond holdings accounted for less than 1% (€6 billion) of the total, corporate sector holdings for 3% (€46 billion) and public sector holdings for 97% (€1,629 billion).

For the purchases of public sector securities under the PEPP, the benchmark allocation across jurisdictions is the ECB's capital key on a stock basis. At the same time, purchases were conducted in a flexible manner, which led to fluctuations in the distribution of purchase flows over time, across asset classes and among jurisdictions. The weighted average maturity of the PEPP public sector securities holdings stood at 7.6 years at the end of 2022, with some differences across jurisdictions.

The Eurosystem reinvested the principal payments from maturing securities held in the APP and PEPP portfolios. Redemptions of private sector securities amounted to €77 billion in 2022, while redemptions of public sector securities under the PSPP and PEPP amounted to €446 billion. The assets purchased under the PSPP, CSPP, CBPP3 and PEPP continued to be made available for securities lending to support bond and repo market liquidity. Owing to the increase in demand for securities amid collateral scarcity in repo markets, the Governing Council decided in November 2022 to increase the Eurosystem limit for securities lending against cash collateral to €250 billion.

Developments in Eurosystem refinancing operations

At the end of 2022 the outstanding amount of Eurosystem refinancing operations was €1.3 trillion, representing a decline of €878 billion compared with the end of 2021. This change mainly reflects voluntary early repayments (€826 billion) and the maturing of operations (€54 billion) under the TLTRO III series. Of the early repayments, €744 billion occurred following the change in the TLTRO III terms and conditions which took effect on 23 November 2022. Additionally, the pandemic emergency longer-term refinancing operations (PELTROs) had mostly matured by the end of 2022, with only €1 billion outstanding, compared with €3.4 billion at the end of 2021. The weighted average maturity of outstanding Eurosystem refinancing operations decreased from around 1.7 years at the end of 2021 to 0.9 years at the end of 2022.

Gradual phasing-out of pandemic collateral easing measures

In March 2022 the ECB announced the gradual phasing-out of pandemic-related collateral easing measures. These measures were a core element of the ECB's

[8] See "ECB provides details on how it aims to decarbonise its corporate bond holdings", *press release*, ECB, 19 September 2022.

monetary policy response to the pandemic, making it easier for banks to access Eurosystem credit operations and increasing the volume of eligible collateral. According to ECB staff estimates, roughly 10% of the total collateral mobilised at the end of February 2022 was attributable to the easing measures.[9] This contribution was predominantly driven by the temporary reduction in valuation haircuts across all asset classes by a fixed factor of 20% and the extensions to the additional credit claim (ACC) frameworks of some national central banks.

In the first step of the gradual phase-out, which started in July 2022, the temporary reduction in valuation haircuts was decreased from 20% to 10%. In addition, several measures with a more limited impact and scope were phased out. This included no longer maintaining the eligibility of certain downgraded marketable assets and issuers of these assets that had met the credit quality requirements on 7 April 2020 and restoring the 2.5% limit on unsecured debt instruments, in a credit institution's collateral pool, issued by any single other banking group.

Two further steps in the phase-out will be implemented in June 2023 and March 2024. As part of the second step, a revision of the valuation haircut schedule will take effect from 29 June 2023 and will include the complete phase-out of the temporary reduction in valuation haircuts; the revision of the schedule is described in greater detail in Section 2.3. The remaining pandemic collateral easing measures will, in principle, be phased out in the third step in March 2024, following a comprehensive review of the ACC frameworks. The waiver of the minimum rating requirement for marketable debt securities issued by the Hellenic Republic will continue to apply for at least as long as reinvestments in Greek government bonds under the PEPP continue.

Developments in eligible marketable assets and mobilised collateral

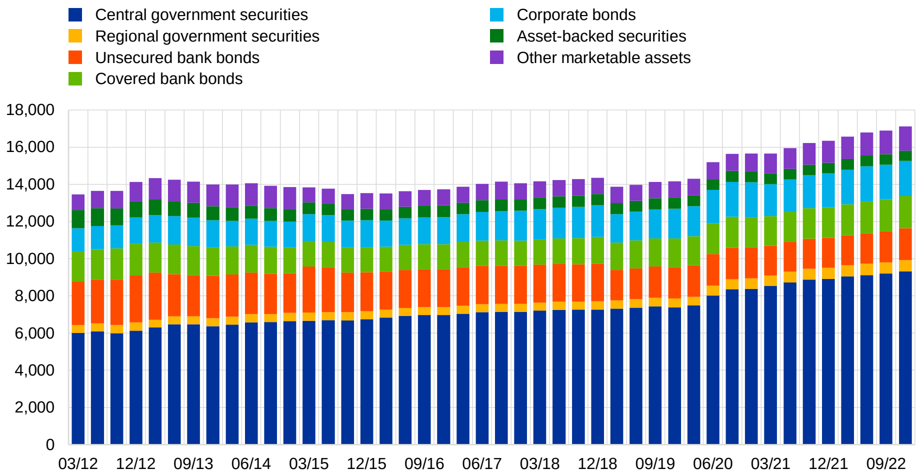
The amount of eligible marketable assets increased by €759 billion in 2022, reaching a level of €17.1 trillion at the end of the year (Chart 2.3). Central government securities continued to be the largest asset class (€9.3 trillion). Other asset classes included corporate bonds (€1.9 trillion), covered bank bonds (€1.7 trillion) and unsecured bank bonds (€1.7 trillion). Regional government securities (€595 billion), asset-backed securities (€562 billion) and other marketable assets (€1.3 trillion) each accounted for a comparatively small fraction of the eligible assets universe.

9 See the box entitled "Gradual phasing-out of pandemic collateral easing measures", *Economic Bulletin*, Issue 3, ECB, 2022.

Chart 2.3

Developments in eligible marketable assets

(EUR billions)



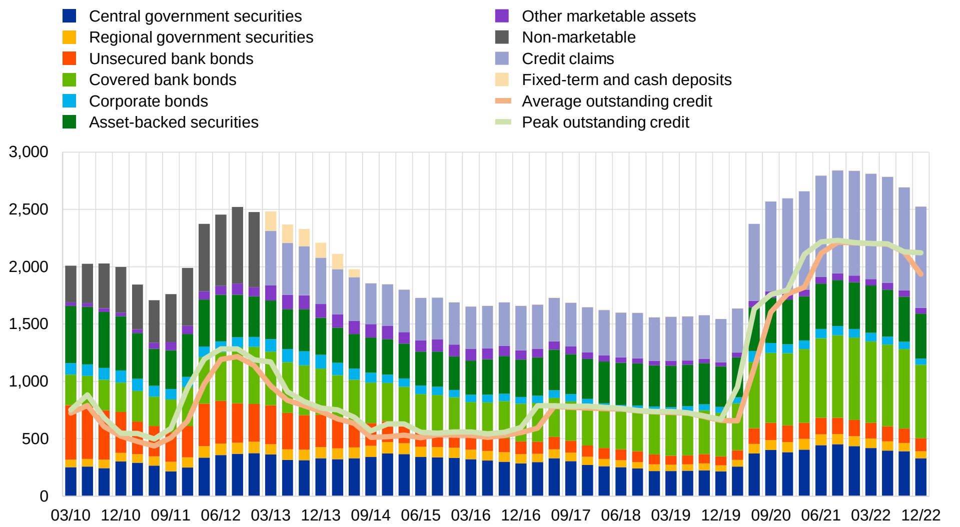
Source: ECB.
Notes: Asset values are nominal amounts. The chart shows averages of end-of-month data for each period.

Mobilised collateral decreased by €314 billion to €2.5 trillion at the end of 2022 (Chart 2.4). Credit claims (including ACCs), for which mobilised amounts stood at €881 billion, continued to represent the most important asset class used as collateral. Covered bank bonds (€640 billion), asset-backed securities (€392 billion) and central government securities (€330 billion) were also mobilised to a considerable extent. Unsecured bank bonds, regional government securities and corporate bonds were used to a lesser extent, accounting for €113 billion, €62 billion and €55 billion respectively.

Chart 2.4

Developments in mobilised collateral

(EUR billions)



Source: ECB.
Notes: Since the first quarter of 2013 "non-marketable assets" has been split into "credit claims" and "fixed-term and cash deposits". For collateral, the averages of end-of-month data for each period are shown, and values are after valuation and haircuts. For outstanding credit, daily data are used.

2.3 Financial risks in times of monetary policy normalisation

Risk efficiency is a key principle of the Eurosystem's risk management function

All monetary policy instruments involve financial risks, which the Eurosystem manages through specific risk management frameworks when pursuing its monetary policy objectives. When there are several ways to implement policy, the Eurosystem's risk management function endeavours to attain risk efficiency: achieving the policy objectives with the lowest possible amount of risk for the Eurosystem.[10]

In 2022, in view of the gradual normalisation of monetary policy and in line with the climate change action plan set out by the Governing Council, the Eurosystem made changes to its risk management frameworks. The Governing Council decided to gradually phase out the collateral easing measures it had introduced in response to the pandemic and to restore pre-pandemic risk tolerance levels in the Eurosystem's credit operations. It also introduced climate change considerations in the framework for purchases of corporate sector securities. Rising interest rates will reduce the Eurosystem's profitability in the foreseeable future.

Regular review of the risk control framework for credit operations

The updated haircut schedule will be implemented in mid-2023

In 2022 the ECB carried out its regular review of the risk control framework for monetary policy credit operations, resulting in an updated haircut schedule. The outcome of the review will be implemented in June 2023 with the second step of the

10 See "The financial risk management of the Eurosystem's monetary policy operations", ECB, July 2015

gradual phase-out of the collateral easing measures. The phase-out process is explained in Section 2.2. This approach will gradually restore the Eurosystem's pre-pandemic risk tolerance levels for credit operations, while at the same time avoiding cliff effects as regards collateral availability.

The main changes in the haircut schedule can be summarised as follows: (i) EU bonds (debt instruments issued by the European Union) will be moved to haircut category I from haircut category II and thus treated in the same way as debt instruments issued by central governments; (ii) all legislative covered bonds and multi-cédulas will be in haircut category II, thus removing the distinction between jumbo and other covered bonds; (iii) haircuts will be the same for marketable debt instruments with both variable and fixed coupons; (iv) the longest residual maturity category (over ten years) will be split into three to better cover the risks of long-dated bonds; (v) the flat 5% theoretical valuation markdown will be replaced with a markdown that varies by maturity and its application will be extended to all theoretically valued marketable assets except those in haircut category I.

Overall, the complete phase-out of the temporary reduction in valuation haircuts, based on an updated haircut schedule, will ensure an adequate level of risk protection, improve the consistency of the framework and enhance the risk equivalence of assets, while ensuring collateral availability.

Managing risks of the asset purchases in the APP and the PEPP

In 2022 asset purchases continued to be conducted for monetary policy purposes under the APP and PEPP, for which specific financial risk control frameworks are in place. These take into account the policy objectives of the programmes as well as the features and risk profiles of the different asset types purchased. The frameworks consist of eligibility criteria, credit risk assessments and due diligence procedures, pricing frameworks, benchmarks and limits. They apply to net asset purchases, the reinvestment of principal payments from maturing holdings, and the holdings for as long as they remain on the Eurosystem's balance sheet. Table 2.1 summarises the current key elements of these frameworks, reflecting changes introduced in 2022.

Future purchases of commercial paper are expected to be limited

As part of the policy response to the pandemic, the Eurosystem made substantial purchases of commercial paper under the PEPP. In view of the discontinuation of net asset purchases under the PEPP and the APP, future commercial paper purchases are generally expected to be limited. Any future commercial paper purchases will be focused on the APP and be conducted at backstop pricing levels.[11]

Corporate sector reinvestments were tilted towards issuers with a better climate performance

From October 2022 onwards the Eurosystem tilted its reinvestments of principal payments from maturing corporate sector securities towards issuers with a better climate performance. This measure is further explained in Section 11.5.[12]

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11 See "FAQs on the corporate sector purchase programme and non-financial commercial paper", on the ECB's website, updated on 22 February 2023.

12 See "ECB takes further steps to incorporate climate change into its monetary policy operations", *press release*, ECB, 4 July 2022.

Table 2.1

Key elements of the risk control frameworks for the APP and the PEPP

	ABSPP	CBPP3	CSPP	PSPP	PEPP (ABSs, covered bonds and corporate bonds)	PEPP (public sector securities)
Main eligibility criteria	Asset-backed securities eligible as collateral for Eurosystem credit operations; additional location criteria	Covered bonds eligible as own-use collateral for Eurosystem credit operations	Corporate bonds and commercial paper eligible as collateral for Eurosystem credit operations; additional exclusion criteria	Central, regional and local government bonds, and bonds issued by recognised agencies and international or supranational institutions located in the euro area[2], eligible as collateral for Eurosystem credit operations	Same as ABSPP, CBPP3 and CSPP	Same as PSPP
Minimum credit quality	CQS 3[1]	CQS 3	CQS 3	CQS 3	CQS 3[1]	CQS 3 Waiver for debt securities issued by the Hellenic Republic
Minimum remaining maturity	None	None	6 months; 28 days for commercial paper	1 year	Same as ABSPP, CBPP3 and CSPP	70 days
Maximum remaining maturity	None	None	30 years and 364 days for bonds; 365/366 days for commercial paper	30 years and 364 days	Same as ABSPP, CBPP3 and CSPP	Same as PSPP
Issue share limits	70%	70%	70%; for public undertakings 33%/25% (depending on CAC)	50% for supranational bonds, otherwise 33%/25% (depending on CAC)	Purchases as deemed necessary and proportionate	Purchases as deemed necessary and proportionate
Issuer limits	None	Yes	Yes	50% for supranational bonds, otherwise 33%	Purchases as deemed necessary and proportionate	Purchases as deemed necessary and proportionate
Credit risk assessments and due diligence procedures	Yes	Yes	Yes	None	Yes	None
Price review (ex post)	Yes	Yes	Yes	Yes	Yes	Yes
Climate change considerations	None	None	Reinvestments tilted towards issuers with a better climate performance	None	For corporate sector securities, reinvestments tilted towards issuers with a better climate performance	None

Source: ECB.
Notes: ABS: asset-backed security; CAC: collective action clause; CQS: credit quality step as per the Eurosystem's harmonised rating scale (see the "Eurosystem credit assessment framework" page on the ECB's website).
1) ABSs rated below credit quality step 2 have to satisfy additional requirements, which include: (i) no non-performing loans backing the ABS at issuance or added during the life of the ABS; (ii) the cash-flow-generating assets backing the ABS must not be structured, syndicated or leveraged; and (iii) servicing continuity provisions must be in place.
2) See the "Implementation aspects of the public sector purchase programme (PSPP)" page on the ECB's website.

Rising interest rates can affect Eurosystem profits

As interest rates rise, central bank interest expenses initially increase faster than income

The ECB increased its key interest rates several times in 2022 in response to the extraordinarily large shocks to the inflation outlook. The higher interest rates in turn affect the profits of the ECB and of the national central banks of the euro area countries and may even result in financial losses. This is due to the fact that, in the short and medium term, the cost of the liabilities on central bank balance sheets is more sensitive to interest rates than the income generated by their assets. Over time, the income earned on the Eurosystem's assets is also expected to rise, which will improve profitability.

In previous years financial buffers have been built up that can be used to offset potential losses. If these buffers are fully utilised, any remaining losses can be recorded on the balance sheet and can be offset with future profits, without directly affecting the ability of the Eurosystem central banks to operate effectively.[13]

13 See the explainer "Profits and losses of the ECB and the euro area national central banks: where do they come from?" ECB, updated on 23 February 2023.

3 European financial sector: financial stability conditions deteriorate

Financial stability conditions deteriorated in the euro area over the course of 2022 amid high inflation, tighter financial conditions and weaker growth prospects. Key vulnerabilities increased throughout the year. They included: i) debt sustainability concerns as regards some firms, households and sovereigns; ii) financial asset valuations that may not have reflected the more negative outlook for growth, inflation and financial conditions, iii) stretched property market valuations, iv) increased credit risk for banks, and v) credit and liquidity risk exposures among non-bank financial institutions. To address the risks arising from these vulnerabilities, macroprudential authorities gradually tightened capital-based and/or borrower-based policy measures. In addition, work continued on strengthening the regulatory framework for banks and the macroprudential approach as regards non-bank financial institutions to further increase the long-term resilience of the financial system.

3.1 The financial stability environment in 2022

Financial stability risks increased as macro-financial conditions weakened

Financial stability conditions deteriorated in the euro area over the course of 2022, reflecting high inflation, tighter financial conditions and weaker growth prospects. Russia's invasion of Ukraine triggered large rises in commodity and energy prices which, together with global supply chain pressures, fuelled inflationary pressures. This led major central banks to adjust their monetary policy stance, which contributed to tighter global financial conditions, greater financial market volatility and asset price corrections. Large-scale fiscal support at a time of rising government bond yields resulted in increased debt servicing costs, particularly for more indebted countries, while high inflation weighed on households' real incomes and firms' costs. As a result, while euro area banks benefited from higher interest rates, concerns rose over the quality of their assets. Non-bank financial institutions continued to face elevated credit and liquidity risk, although they took steps to reduce portfolio risk levels to some extent.

High inflation, recession risks and tighter financial conditions posed challenges for indebted sovereigns, firms and households

High inflation and a tightening of financial conditions weighed on the financial situation of sovereigns, firms and households in 2022. With already high debt levels stemming from the pandemic, euro area governments provided renewed sizeable fiscal support to attenuate the impact of higher energy prices and inflation. At the same time, government bond yields increased sharply, which revived concerns about fragmentation in euro area sovereign debt markets. These were mitigated to some extent by policy action such as the announcement of the ECB's Transmission Protection Instrument. In the corporate sector, higher energy and commodity prices posed challenges for, particularly, those energy-intensive sectors that were less able to pass on higher costs to customers, such as some utility and construction firms. Small and medium-sized enterprises benefited less than larger firms from the post-pandemic rebound in economic activity and remained particularly vulnerable to a slowdown in economic activity and higher borrowing costs. Households' ability to service debt was weakened by the erosion of real disposable income and savings by high inflation, combined with higher interest rates, particularly in countries where household debt levels are higher. While property price growth remained strong in the euro area, there were signs that the real estate expansion of recent years could come to an end, as overvaluation estimates were elevated, rates on new mortgages rose and mortgage growth slowed. A turn in the real estate cycle may compound the vulnerabilities in euro area household incomes and financial situations.

Financial markets saw large price corrections as interest rates rose

Euro area financial markets saw large price falls in 2022, mainly reflecting the direct impact of higher interest rates. While these corrections were generally orderly, there was an unusually strong co-movement in prices across a wide range of asset classes, which complicated diversification strategies. However, in the second half of 2022 and especially after September, stock market indices diverged from bond market performance and increased across Europe, supported by rising banking indices. Activity in primary markets – including initial public share offerings and issuance of high-yield corporate bonds – fell significantly compared with the previous year. Despite the market corrections, the prices of some risky assets still appeared stretched and may not have fully reflected the more negative outlook for growth, inflation and financial conditions. In addition, large shifts in commodity prices and related margin requirements posed challenges to liquidity management for some participants in derivative markets.

Higher interest rates supported bank profits, but funding costs rose and asset quality appeared at risk

Euro area bank profitability remained robust in 2022, underpinned by lower operating expenses, still low loan loss provisions and higher operating income thanks to wider margins and higher lending volumes. Despite a significant worsening of the economic outlook, the quality of euro area banks' assets showed no signs of a broad-based deterioration, with the non-performing loan ratio falling further. However, trends in "underperforming" loans (Stage 2 of the three categories under the IFRS 9 international financial reporting standard) suggested some increase in credit risk. Higher interest rates could increase credit risks stemming from banks' exposures to vulnerable sectors, which have grown in recent years, notably including residential real estate markets. On the liability side, bond funding costs rose markedly for banks during 2022, driven predominantly by expectations of monetary policy actions. In addition, rising rates on new deposits and maturing funds under the third series of targeted longer-term refinancing operations (TLTRO III) started to translate into higher average funding costs for banks. These growing cyclical headwinds were compounded by longer-term challenges stemming from low cost-efficiency, limited revenue diversification and overcapacity in parts of the euro area banking sector.

Credit risk exposure of the non-bank financial sector remained high

Non-bank financial institutions' overall exposures to credit risk remained high in 2022, which put them at risk of substantial credit losses in the event of a significant deterioration in corporate sector fundamentals, especially in energy-intensive industries. In addition to liquidity needs stemming from investor redemptions, insurance policy lapses and margin calls, the broad-based fall in financial asset prices was the main driver of a significant decline in the total value of assets in the non-bank financial sector. While the cash holdings of investment funds rose from early 2022, their holdings of liquid assets remained relatively low, making them likely to amplify a market correction via procyclical selling behaviour should an adverse scenario trigger large redemptions. Non-banks' duration risk remained elevated too, exposing the sector to further bond portfolio revaluation losses. However, particularly the life insurance and pension fund sectors stand to benefit from the transition to a higher interest rate environment because of their structural negative duration gaps. That said, non-banks responded to rising yields and a worsening economic outlook by starting to reduce their holdings of lower-rated corporate and sovereign bonds, thereby lowering risk in their portfolios.

In addition to risks for individual sectors, climate change continued to pose risks to financial stability in the euro area in 2022. Euro area banks, funds and insurers need to manage the implications of the transition to a greener economy, including concentration risks associated with climate-related exposures. Furthermore, increasing cyber risks threatened the euro area financial system, underlining the need for financial institutions to invest continuously in cyber infrastructures and security and for authorities to increase monitoring.

3.2 Macroprudential policy measures to build up financial sector resilience to accumulated vulnerabilities

Macroprudential policies are a key instrument to address financial stability vulnerabilities

The ECB has the task of assessing macroprudential capital measures for banks planned by national authorities in countries participating in the Single Supervisory Mechanism (SSM), the system of banking supervision in Europe. Importantly, the ECB has the power to apply more stringent capital measures if necessary.[14] This role was particularly important in 2022 owing to the macro-financial vulnerabilities that had built up in recent years, including during the pandemic.

Promoting financial system resilience and identifying priorities for regulatory reform

Although the macroeconomic outlook and financial stability conditions deteriorated in the euro area during 2022, banks under European banking supervision remained in a good position to withstand the unfolding economic challenges. Regulatory advances and an active use of prudential policies had resulted in stronger bank balance sheets and capital positions. At the same time, accumulated vulnerabilities, related in particular to residential real estate developments but also, more broadly, to strong credit growth and increasing indebtedness in the non-financial private sector, posed medium-term risks. Russia's invasion of Ukraine made the macro-financial situation more challenging, compounding these vulnerabilities and increasing the likelihood of risks materialising in the near term.

14 Article 5 of the SSM Regulation assigns an important role and specific powers to the ECB in this area, including the power to apply more stringent capital measures in case of need.

Many countries introduced or increased macroprudential buffers in 2022

To address these medium-term risks, a significant number of the countries participating in European banking supervision decided to tighten capital-based macroprudential measures. By the end of 2022, 11 countries had announced an increase in the countercyclical capital buffer and three countries had introduced a (sectoral) systemic risk buffer or announced an increase.[15] The ECB exchanged views with the national authorities and assessed the measures. It did not object to the decisions, which were considered consistent with its own assessment of the need to preserve resilience in the banking sector. By the end of 2022 15 countries had also applied borrower-based macroprudential measures.

In November 2022 the Governing Council issued a statement highlighting the role of macroprudential capital buffers in preserving and strengthening banking sector resilience in a challenging macro-financial environment.[16] Tightening capital buffers, even late in the economic or financial cycle, provided that procyclical effects are avoided, shields against accumulated vulnerabilities and helps make capital available when needed as the buffers can be released if adverse developments materialise. In turn, this boosts the capacity of banks to absorb losses while continuing to provide key financial services to the economy. The statement noted the existing capital headroom above regulatory requirements and highlighted the need to avoid procyclical effects from an excessive tightening of credit conditions, in particular by properly tailoring the macroprudential measures to the specific conditions in each country. It also referred to the importance of addressing financial stability risks in the non-bank financial sector from a systemic risk perspective. In December 2022 the Governing Council announced that it had revised the floor methodology for capital buffers applicable to other systemically important institutions (O-SIIs). The revised methodology will make systemically important banks more resilient and will apply from 1 January 2024.

The ECB continued to communicate its analysis and views on macroprudential policy topics in 2022. It expressed the view that, over the medium term, the resilience of the financial system would be reinforced by creating more macroprudential space through an increase in the amount of releasable buffers, and by enhancing the effectiveness of the existing countercyclical capital buffers.[17] In addition, the macroprudential policy chapters of the May and November 2022 issues of the ECB's Financial Stability Review explained why it was important to strengthen banking system resilience in a timely manner, while adjusting the timing and pace of the prudential measures to heightened uncertainty and country-specific conditions.[18] Last but not least, with the accumulation of vulnerabilities in real estate markets over recent years duly receiving

15 In 2022, 11 countries increased the countercyclical capital buffer (Bulgaria, Germany, Estonia, Ireland, France, Croatia, Cyprus, Lithuania, Netherlands, Slovenia and Slovakia) while Luxembourg maintained a positive buffer rate. As regards systemic risk buffers, two countries (Germany and Slovenia) introduced a sectoral buffer and Lithuania maintained a positive sectoral buffer (Belgium had decided at the end of 2021 to replace its residential real estate risk weight measure with a sectoral systemic risk buffer). Austria increased its broad systemic risk buffer, while Bulgaria and Croatia maintained positive broad systemic risk buffers.

16 The statement also acknowledged and endorsed the warning on vulnerabilities in the EU financial system issued by the European Systemic Risk Board on 22 September 2022 (see below).

17 "Enhancing macroprudential space in the banking union – report from the Drafting Team of the Steering Committee of the Macroprudential Forum", Annex 2 of the ECB response to the European Commission's call for advice on the review of the EU macroprudential framework, ECB, March 2022.

18 For example, Box 8 in the May issue focuses on the transmission and effectiveness of capital-based macroprudential measures.

renewed attention, the ECB dedicated the October 2022 issue of its Macroprudential Bulletin to analysing the interplay between real estate markets, financial stability and macroprudential policy.

Cooperation with the European Systemic Risk Board

The ESRB published a significant number of recommendations and warnings in response to systemic risk

In 2022 the ECB continued to provide analytical, statistical, logistical and administrative support to the European Systemic Risk Board (ESRB) Secretariat.[19] Notably, the ECB co-chaired an ESRB drafting team responding to the European Commission's call for advice on the review of the EU macroprudential framework.[20] The ECB also supported the ESRB's work on: (i) a macroprudential strategy on the risks to financial stability stemming from cyber incidents;[21] (ii) policy reforms aimed at increasing the resilience of money market funds;[22] (iii) monitoring vulnerabilities related to non-bank financial intermediation;[23] (iv) the measurement and modelling of climate-related risks to EU financial stability;[24] and (v) analysing vulnerabilities in the European Economic Area commercial real estate sector.[25]

In 2022 the ESRB issued several warnings and recommendations. In January and February it published recommendations on increasing the resilience of money market funds and on establishing a systemic cyber incident coordination framework[26] as well as five warnings and two recommendations on vulnerabilities in the residential real estate sector.[27] Amid increasing risks to financial stability, the ESRB published its first general warning in September 2022.[28] In addition, the ESRB issued a recommendation concerning vulnerabilities in the commercial real estate sector in December 2022.[29]

More detailed information on the ESRB can be found on its website and in its Annual Reports.

19 The ESRB is responsible for the macroprudential oversight of the EU financial system and the prevention and mitigation of systemic risk. It uses "soft powers", i.e. issuance of warnings and recommendations, to carry out its mandate.

20 See "Review of the EU Macroprudential Framework for the Banking Sector – response to the call for advice", ESRB, March 2022, "Review of the EU Macroprudential Framework for the Banking Sector – a Concept Note", ESRB, March 2022, and Wedow, M. et al., "Making the EU macroprudential framework fit for the next decade", *VoxEU column*, 4 October 2022.

21 See "Mitigating systemic cyber risk", ESRB, January 2022.

22 See "Report on the economic rationale supporting the ESRB Recommendation of 2 December 2021 on money market funds and assessment", ESRB, January 2022.

23 See "EU Non-bank Financial Intermediation Risk Monitor", No 7, ESRB, July 2022.

24 See ECB/ESRB Project Team on climate risk monitoring, "The macroprudential challenge of climate change", ECB/ESRB, July 2022.

25 See "Vulnerabilities in the EEA commercial real estate sector", ESRB, January 2023.

26 Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds (ESRB/2021/9) (OJ C 129, 22.3.2022, p.1) and Recommendation of the European Systemic Risk Board of 2 December 2021 on a pan-European systemic cyber incident coordination framework for relevant authorities (ESRB/2021/17) (OJ C 134, 25.3.2022, p.1).

27 See "ESRB issues new warnings and recommendations on medium-term residential real estate vulnerabilities", *press release*, ESRB, 11 February 2022.

28 Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system (ESRB/2022/7) (OJ C 423, 7.11.2022, p.1).

29 Recommendation of the European Systemic Risk Board of 1 December 2022 on vulnerabilities in the commercial real estate sector in the European Economic Area (ESRB/2022/9).

3.3 Microprudential activities to ensure the soundness of individual banks

The euro area banking sector proved resilient to the macroeconomic and financial effects of Russia's war in Ukraine

Following Russia's invasion of Ukraine the ECB conducted a vulnerability analysis which confirmed the overall resilience of the euro area banking sector to the macroeconomic and financial consequences of the war. However, as a result of sanctions put in place, some banks left the market. In February the ECB assessed that Sberbank Europe AG and its two subsidiaries in the banking union, Sberbank d.d. in Croatia and Sberbank banka d.d. in Slovenia, were failing or likely to fail owing to a deterioration of their liquidity situation. Moreover, the ECB took decisions related to RCB Bank phasing out its banking operations.

In 2022 the ECB adjusted the focus of its targeted reviews and on-site inspections to the risks most directly affected by the war: energy-related exposures, interest rate risk in the banking book, real estate exposures and counterparty credit risk. These pockets of risk, as well as pronounced uncertainty over the macroeconomic outlook and persistent concerns about banks' governance and internal risk controls, meant that banks' overall scores did not improve in the 2022 Supervisory Review and Evaluation Process despite better asset quality and profitability metrics. To account for possible impacts of the war and the normalisation of monetary policy, geopolitical and funding risks were included in the 2023-25 supervisory priorities.

The ECB made decisive progress towards its climate risk agenda with the first dedicated stress test and a thematic review

The ECB also took decisive steps forward on its climate risk agenda. The first supervisory climate risk stress test assessed how prepared banks were to anticipate and manage financial and economic shocks stemming from climate risk. The results, published in July, showed that banks did not yet sufficiently incorporate climate risk into their stress-testing frameworks and internal models, despite some progress made since 2020. Moreover, in November the ECB published the results of the 2022 thematic review on climate-related and environmental risks, which concluded that most banks still needed to improve their risk practices to meet the supervisory expectations set out in the ECB Guide on climate-related and environmental risks. Two reports compiling good practices observed in the review and in the stress test were published in November and December.

As part of its continued effort to enhance transparency and accountability, on 28 September 2022 the ECB launched a public consultation on its draft Guide on qualifying holding procedures. The ECB also clarified its policies for exercising options and discretions when supervising banks, following a public consultation which ended on 30 August 2021. In June 2022 the ECB issued a statement on the methodology that would be used for exercising supervisory discretion regarding cross-border intra-banking union exposures in the assessment framework for global systemically important banks (G-SIBs).

Three banks were sanctioned by the ECB in 2022.[30]

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30 Using its power to impose sanctions on supervised credit institutions, in March 2022 the ECB sanctioned Banque et Caisse d'Epargne de l'Etat, Luxembourg, for misreporting capital needs. On the same day, it sanctioned Bank of Cyprus for transferring liquidity to subsidiaries without approval. In December 2022 the ECB sanctioned ABANCA for failing to report a significant cyber incident within the prescribed deadline.

Finally, the ECB published two supervisory Memoranda of Understanding (with the Single Resolution Board and Commissione Nazionale per le Società e la Borsa respectively) which were reviewed in 2022. ECB Banking Supervision also pursued its desk-mapping review of the international banks that had decided to relocate business from London, following Brexit, to subsidiaries in the countries participating in European banking supervision, to ensure that all entities supervised by the SSM have prudentially sound risk management arrangements and a local presence which enables effective supervision and is commensurate with the risks they originate.

More detailed information on ECB Banking Supervision can be found on its website and in the 2022 ECB Annual Report on supervisory activities.

3.4 The ECB's contribution to European financial sector policy initiatives

Significant progress was made on improving the regulatory framework

Significant progress was made on the regulatory framework for the financial sector in 2022. At the same time, further work remains to be done on implementing the final Basel III reforms, completing the banking union, improving the macroprudential framework and tackling climate risk, as well as on regulating crypto-assets, capital markets and non-bank financial institutions.

Improving the regulatory framework for banks

Work on banking regulation in the EU focused on Basel III, crisis management, the macroprudential framework and climate risks

The European Commission published its proposals for implementing the Basel III reforms in the EU on 27 October 2021. Since then, the ECB has actively supported the legislative process. In 2022 it published opinions on the proposed revisions to the Capital Requirements Regulation and the Capital Requirements Directive.[31] It also communicated its views on the banking package on several occasions.[32]

The discussions on completing the banking union continued in 2022, with the active involvement of the ECB. As agreed by the Eurogroup in June, work will now focus on strengthening the crisis management framework for banks, and in July the ECB published a contribution to the European Commission's targeted consultation on the evaluation of State aid rules for banks in difficulty.

The review of the macroprudential framework in the EU, aimed at ensuring that the relevant authorities can address systemic risks in a timely, consistent and comprehensive manner across jurisdictions, was another important workstream for the ECB in 2022. In its response to the European Commission's call for advice, the ECB identified a number of priority areas where legislative action was needed to increase the efficiency and effectiveness of the EU macroprudential toolkit.

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31 For more details on the Capital Requirements Regulation and Directive, see Box 2, which also provides links to the ECB opinions on the banking package proposals.

32 See, for example, Elderson, F., "Mind the gap, close the gap – the ECB's views on the banking package reforms", *The Supervision Blog*, ECB, 28 April 2022 and Campa, J.M., (Chairperson of the European Banking Authority), de Guindos, L. and Enria, A., "Strong rules, strong banks: let's stick to our commitments", *The Supervision Blog*, ECB, 4 November 2022.

As part of its overall climate agenda, the ECB continuously monitored climate-related financial risks and contributed to European and international policy discussions. It published a report, jointly with the ESRB, that showed how climate shocks can affect the financial system. The report assessed the scope for macroprudential policies as part of a broader policy response, to complement microprudential efforts to address the financial impact of climate change. On the microprudential side, the ECB conducted an assessment of banks' disclosures and a thematic review of climate-related and environmental risks, as well as a climate stress test (see Section 3.3). Furthermore, the ECB participated in the work of the Basel Committee on Banking Supervision (BCBS) Task Force on Climate-related Financial Risks, which published frequently asked questions clarifying how climate-related financial risks may be addressed through existing regulatory standards, as well as principles for the effective management and supervision of climate-related financial risks. At the EU level, the ECB contributed to the European Banking Authority's analysis on the role of environmental risks in the prudential framework.

Strengthening regulation of capital markets and non-bank financial institutions and developing a regulatory framework for crypto-assets

For the non-bank financial sector, regulatory efforts focused on capital markets union, structural vulnerabilities and crypto-assets

In 2022 the ECB continued to highlight the importance of advancing the capital markets union.[33] It published several opinions on legislative proposals, including on i) enhancing market transparency, ii) the establishment and functioning of the European Single Access Point, iii) central securities depositories and iv) the Alternative Investment Fund Managers Directive. The ECB also reiterated the need to implement the European Commission's 2020 capital markets union action plan in full and without delay, welcoming the legislative proposals published in December 2022. These proposals address structural impediments to EU capital market integration, such as national differences in insolvency rules. The proposals will also make it less burdensome for companies to list securities and raise capital on public exchanges and will strengthen the EU central clearing system. The ECB called for further progress on investor protection and harmonisation of taxation, for cross-border supervision of capital markets to be strengthened and for venture capital frameworks to be harmonised across the euro area to support equity and risk capital markets and make it easier to finance innovation.

The ECB continued to highlight the importance of addressing structural vulnerabilities in the non-bank financial sector and improving the relevant policy framework from a macroprudential perspective. Policy proposals to address liquidity mismatch in the money market fund sector were reviewed in the ECB's Macroprudential Bulletin and the ECB also contributed to the economic rationale supporting the ESRB recommendation on reforming money market funds, published in January 2022.[34] The

[33] See "An EU financial system for the future", speech by Luis de Guindos, Vice-President of the ECB, at the Joint conference of the ECB and the European Commission on European financial integration, Frankfurt am Main, 6 April 2022.

[34] See "Mind the liquidity gap: a discussion of money market fund reform proposals" and "Assessing the impact of a mandatory public debt quota for private debt money market funds", *Macroprudential Bulletin*, Issue 16, ECB, 21 January 2022.

ECB has continued to stress that the implementation of such reforms must not be delayed. As regards open-ended investment funds, the ECB contributed to the assessment by the Financial Stability Board (FSB) of the effectiveness of the FSB's 2017 recommendations on the structural liquidity mismatch in such funds.[35] The FSB will now revise the recommendations to better address the mismatch.[36]

The ECB also actively contributed to the discussions on a regulatory framework for crypto-assets in international fora such as the FSB, the BCBS and the Committee on Payments and Market Infrastructures (CPMI).[37] Important progress was made on ensuring that all crypto-asset activities posing a risk to financial stability will become subject to comprehensive, globally coordinated regulation, supervision and oversight and that there is a globally agreed prudential treatment of banks' crypto-asset exposures.

Box 2
Strong rules, strong banks – the banking package

In 2022 the ECB published its opinions on the European Commission's proposed amendments to the Capital Requirements Directive (CRD VI) and the Capital Requirements Regulation (CRR III), which are two main elements in the EU's latest "banking package".[38] These proposals aim to implement the outstanding Basel III rules in the EU, as well as to further strengthen the EU prudential framework, for example by increasing harmonisation and closing regulatory loopholes, and by putting more focus on environmental, social and governance risks. The ECB strongly supports these aims. Stronger rules make stronger banks, and will therefore benefit the resilience of the EU banking system.

Implementing the outstanding Basel III rules

Implementing the outstanding elements of the Basel III standards is the final step in the overhaul of global financial regulation in response to the global financial crisis. These rules have been developed and agreed upon internationally, by central banks and bank supervisors, in response to the lessons from the crisis. They also incorporate proposals and adjustments put forward by European representatives in the Basel Committee.

The ECB has consistently argued for a full, timely and faithful implementation of the Basel III standards in the EU. This will be decisive in keeping the EU's banking system safe and sound. The legislative proposal put forward by the European Commission in October 2021 includes several

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35 See "Assessment of the Effectiveness of the FSB's 2017 Recommendations on Liquidity Mismatch in Open-Ended Funds", FSB, 14 December 2022.

36 See "Enhancing the Resilience of Non-Bank Financial Intermediation – Progress report", FSB, 10 November 2022.

37 See CPMI and Board of IOSCO, "Application of the Principles for Financial Market Infrastructures to stablecoin arrangements", Bank for International Settlements and IOSCO, July 2022.

38 See Opinion of the European Central Bank of 27 April 2022 on the Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/36/EU as regards supervisory powers, sanctions, third-country branches, environmental, social and governance risk (CON/2022/16) (OJ C 248, 30.6.2022, p.87) and Opinion of the European Central Bank of 24 March 2022 on a proposal for amendments to Regulation (EU) No 575/2013 of the European Parliament and of the Council as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor (CON/2022/11) (OJ C 233, 16.6.2022, p.14). The ECB also published an opinion on the third element of the package, see Opinion of the European Central Bank of 13 January 2022 on a proposal to amend Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms with respect to resolution (CON/2022/3) (OJ C 122, 17.3.2022, p. 33).

deviations from the agreed Basel III rules, about which the ECB raised concerns in its opinions. In particular, the ECB pointed out that the proposal for the Capital Requirements Regulation includes transitional arrangements for exposures to real estate and unrated corporates that deviate from the Basel III standards. These deviations are not justified from a prudential and financial stability perspective and may leave pockets of risk unaddressed. In the ECB's view all deviations should be removed or, if kept, made limited and strictly temporary. However, during the ongoing legislative process, proposals and calls have been made by co-legislators to deviate even further from the Basel III standards than proposed by the European Commission. Such additional deviations would further weaken the safety net which Basel III provides and widen the gap between EU regulation and these important international minimum standards. They would also make the regulatory system more complex, raise compliance costs for banks and complicate the work of supervisors. In sum, lowering regulatory standards below the international minimum would put the safety and competitiveness of the EU banking sector at risk, and increase its funding costs.

Furthermore, too many significant adjustments versus the Basel III standards could call the EU's compliance with the Basel III framework into question. Not complying with Basel III could weaken the reputation of the EU, potentially jeopardising its standing in future international negotiations. In addition, not upholding global consistency in the implementation of the standards could initiate a race to the bottom among jurisdictions in financial regulation. This would be unfortunate, as the pandemic has demonstrated that strong banks are a source of resilience.[39] This increased resilience of the banking sector comes largely from the Basel standards that have already been implemented and should be upheld through faithful implementation of the remaining rules.

Strengthening banking regulation: more harmonisation and closing loopholes

Certain supervisory rules and powers are not yet harmonised in the EU. The banking package suggests further harmonisation, so that rules and powers can be applied consistently to banks regardless of the country in which they are headquartered. Among other changes, the banking package proposes the following measures.

- The supervisory practices as regards third-country branches, i.e. EU branches of banks headquartered in non-EU countries, will be harmonised. EU Member States currently apply different supervisory practices, which creates an unlevel playing field and prevents the ECB from having a clear overview of the activities of third-country groups. The suggested changes will ensure a level playing field for third-country groups in the EU and EU credit institutions, and will make supervision more effective.

- The "fit and proper[40]" supervisory process will be harmonised. While the ECB already plays a gatekeeper role in this regard, its work has been hampered by the patchwork of different national rules. The ECB therefore strongly welcomes harmonisation in this area, while agreeing with the European Commission that proportionality must be ensured, for example by focusing on directors of the largest European banks.

39 See Ikeda, Y. et al., "Covid-19 and bank resilience: where do we stand?", *BIS Bulletin*, No 44, Bank for International Settlements, 22 July 2021.

40 A process to ensure that only suitable and experienced managers are appointed to the top positions of a bank.

- Differences between European countries as regards other supervisory powers, such as sanctioning powers, will be removed. For example, the banking package grants the ECB the power to impose periodic penalty payments on banks from all countries participating in European banking supervision.

The harmonisation of supervisory rules and powers will make the ECB's banking supervision more effective and create a more integrated and resilient banking sector.

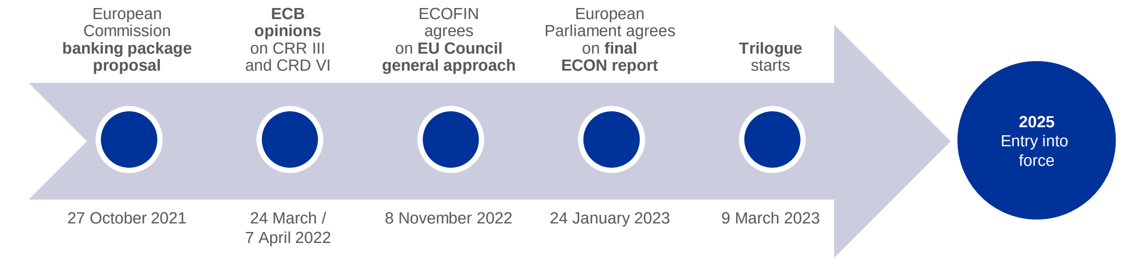
Focus on environmental, social and governance risks

Environmental, social and governance (ESG) risks matter for the stability of both individual banks and the financial system as a whole, especially in view of climate change. The ECB therefore welcomes the inclusion of the requirement for banks to manage all material risks, including ESG risks, in the proposed banking package.

The banking package includes a new legal requirement for banks to prepare specific plans to monitor and address ESG risks arising in the short, medium and long term. This will ensure that banks thoroughly assess the structural changes that are likely to occur within the industries they are exposed to, according to the transition pathways determined by the EU legal framework.[41]

Chart A

Timeline of the legislative process of the banking package



Source: ECB.
Note: Trilogue: a process of negotiation between the European Commission, the EU Council and the European Parliament. ECOFIN: Economic and Financial Affairs Council. ECON: the European Parliament Committee on Economic and Monetary Affairs.

[41] For example, a bank that finances companies operating in sectors affected by the sustainable transition may face significant risks in terms of both credit losses and business model resilience. The proposed legislative provisions will ensure that such a bank sets up a plan to proactively measure and manage these risks. This may help the bank to identify opportunities to mitigate ESG risks, for instance by supporting the transition and adaptation of its most vulnerable customers.

4 Smooth functioning of market infrastructure and payments

The Eurosystem plays a central role in developing, operating and overseeing market infrastructure and arrangements that facilitate the safe and efficient flow of payments, securities and collateral across the euro area. It also acts as a catalyst for integration and innovation in the payments and securities market. In 2022 the Eurosystem reviewed and renewed existing market infrastructure, policies and strategies, and explored new technologies and a potential digital euro.

4.1 TARGET Services and innovation and integration of market infrastructure and payments

The Eurosystem's TARGET Services consist of three settlement services: TARGET2, a real-time gross settlement system (RTGS) for euro payment transactions supporting the Eurosystem's monetary policy operations, bank-to-bank transfers and commercial payments; TARGET2-Securities (T2S), a single multi-currency platform for securities settlement in Europe; and TARGET Instant Payment Settlement (TIPS), which settles instant payments in central bank money.

For the first time, more than 100 million payments per year were processed by TARGET2

Approximately 1,000 banks use TARGET2 to initiate transactions in euro, either on their own behalf or on behalf of their customers. Taking into account branches and subsidiaries, more than 41,000 banks worldwide can be reached via TARGET2. In 2022 TARGET2 processed on average 399,653 payments per day with an average daily value of €2.219 trillion. This was a 7% increase in the daily volume of payments compared with 2021. For the first time, TARGET2 processed more than 100 million payments per calendar year.

In 2022 TARGET2 achieved 100% technical availability. Furthermore, the Eurosystem largely implemented the action plan to address the TARGET Services incidents that occurred in 2020.[42]

To verify the high level of cybersecurity of TARGET2, a TIBER-EU[43] test was performed in 2022. TIBER-EU tests mimic the tactics, techniques and procedures of real-life cyber attackers, based on bespoke threat intelligence. Performing such tests contributes to a deeper understanding of the ability of TARGET2 to withstand cyberattacks.

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42 In total, five major information technology (not cyber) related incidents occurred in 2020, affecting the payment transactions and securities processing of TARGET Services. See "ECB publishes an independent review of TARGET incidents in 2020", *press release*, ECB, 28 July 2021.

43 TIBER-EU is the European framework for threat intelligence-based ethical red-teaming. It serves as an EU-wide guide on how authorities, entities, threat intelligence and red-team providers should work together to test and improve the cyber resilience of entities by carrying out a controlled cyberattack.

Following the formal approval of Croatia's accession to the euro area on 1 January 2023, preparatory testing and the required coordination activities with Hrvatska narodna banka and the Croatian financial community for the migration from the national RTGS system to TARGET2 were conducted throughout 2022.

The launch of T2 was rescheduled

In line with technological developments, new regulatory requirements and changing user demands, the Eurosystem has been working on implementing T2, a new RTGS system and central liquidity management function that optimises liquidity management across all TARGET Services. The launch of T2, which was planned for November 2022, was rescheduled to March 2023.

The T2S platform connects 19 central securities depositories (CSDs) from 20 European markets, allowing securities settlement in euro and Danish kroner. In 2022 T2S processed an average of 707,879 transactions per day with an average daily value of €716.67 billion. In addition, the Croatian CSD (SKDD), the Bulgarian CSD (CDAD) and the Bulgarian National Bank Government Securities Settlement System signed the T2S Framework Agreement in 2022 and are assessing suitable migration dates. Testing activities for onboarding new CSDs to T2S will continue in 2023.

Two major enhancements to T2S took place in 2022. First, the penalty mechanism functionality to support the CSDs in complying with their obligations under the Central Securities Depository Regulation (CSDR) settlement discipline regime moved from the dry run phase into production. Second, the deployment of release 6.0 of the T2S platform allowed for the adoption of components that will be shared across the TARGET Services (so-called common components) within T2S.

Instant payment transaction volumes in TIPS increased significantly

To support the rollout of instant payments in the euro area, the Eurosystem finalised the implementation of measures to ensure pan-European reachability via TIPS. As more banks and national communities joined TIPS, transaction volumes increased 17.1 times compared with 2021, peaking at 18.7 million transactions in December 2022 (compared with 1.6 million in December 2021). Given the European Commission's legislative proposal to oblige EU payment service providers that already offer credit transfers in euro to also offer their instant version within a defined period, it is expected that the rollout of instant payments in euro will accelerate further.

The multi-currency design of TIPS has been attracting interest from non-euro area central banks. In May 2022 Sveriges Riksbank successfully completed the first phase of migration to TIPS, paving the way for the instant settlement of payments in Swedish kronor in TIPS. Danmarks Nationalbank will offer settlement in Danish kroner on TARGET Services including TIPS in the second quarter of 2025. Norges Bank has also expressed an interest in potentially joining TIPS with its respective national currency. A possible cross-currency functionality that would allow instant payments between currencies settled on the platform is being explored.

In addition to the three settlement services, the Eurosystem is developing a new TARGET Service, the Eurosystem Collateral Management System (ECMS), which will be a unified system for managing the assets used as collateral in Eurosystem credit operations for all euro area jurisdictions. The launch of ECMS was moved from November 2023 to April 2024 to mitigate the impact of the rescheduled launch of T2.

With regard to the payments domain, the Eurosystem continues to pursue the goals set out in its retail payments strategy. This includes supporting a pan-European retail payment solution at the point of interaction (i.e. at the physical point of sale and in the mobile and e-commerce space, governed by European private sector entities), the full deployment of instant payments, and making improvements to cross-border payments. It also encompasses work on ensuring all Europeans have access to safe, efficient and convenient payments in view of the growing digitalisation of the economy. This work included publication of the report on the stock-take of accessibility to retail payments in the EU. Its key findings indicate that, while growing digitalisation poses particular challenges for vulnerable individuals and groups, it also provides opportunities for improving accessibility through dedicated innovative solutions.

Progress made on open banking promoted by the ERPB, a high-level strategic body chaired by the ECB

In parallel to promoting the Eurosystem retail payments strategy, the ECB supports work on developing innovative payment services, including at the level of the Euro Retail Payments Board (ERPB). In particular, the ERPB has been promoting progress in open banking, which enables third-party providers to access payment account-related data with the consent of banks' customers, and to initiate payments via open application programming interfaces. This in turn allows third-party providers to offer convenient and attractive payment solutions. At the invitation of the ERPB, the European Payments Council (EPC) started work on a future SEPA Payment Account Access (SPAA) scheme setting out rules, practices and standards that will allow the exchange of payment accounts related data and facilitates the initiation of payment transactions of value-added services provided by banks to third-party providers. A first version of a SPAA scheme rulebook was published by the EPC in November 2022.

The Eurosystem explored ways of using DLT or other new technologies to provide central bank money for the settlement of wholesale financial transactions

Digital innovation is not only changing retail payment services but also wholesale financial transactions. Financial market stakeholders have been experimenting with new technologies, for example distributed ledger technologies (DLT), for a couple of years now. In order to better assess these technologies, on 23 March 2023 the EU launched a pilot regime for market infrastructures based on DLT, which will last for three years and is renewable once. This regime allows investment service providers, market undertakings and CSDs to operate a multilateral trading facility, a settlement system or a trading and settlement system based on DLT technology. In the hypothetical scenario that financial markets were to widely adopt DLT or other new technologies for wholesale transactions, the needs of the users of the Eurosystem's wholesale settlement services, notably TARGET2 and T2S, might also change. To reduce risks to the financial system by ensuring that central bank money would retain its role as the safest settlement asset for wholesale financial transactions, the Eurosystem is exploring ways of using new technology for providing central bank money for the settlement of wholesale financial transactions. Careful analysis by the Eurosystem of the potential implications for governance, settlement efficiency and liquidity management is critical, while not implying any policy direction.

In line with its goal to further European financial market integration, the Eurosystem's Advisory Group on Market Infrastructures for Securities and Collateral (AMI-SeCo) continued to report on the progress made by national markets towards compliance with the standards agreed under the Single Collateral management Rulebook for Europe (SCoRE) initiative. In the H2 2022 SCoREBoard report, the AMI-SeCo noted that, despite some delays in the progress by stakeholders, ensuring full compliance by the deadline was still feasible. In view of the rescheduling of the go-live of the Eurosystem's ECMS to April 2024, the AMI-SeCo agreed to move forward the deadline for compliance with the SCoRE standards in order to align on the timing.

Furthermore, the AMI-SeCo continued to monitor and discuss progress and developments in the T2S harmonisation agenda and corporate events compliance, including the industry standards on shareholder identification. In addition, the AMI-SeCo submitted responses to the European Commission and European Securities and Markets Authority public consultations on withholding tax procedures and on the implementation of the Shareholder Rights Directive 2.

4.2 Digital euro investigation phase

The investigation phase of the digital euro project which was launched in October 2021 is on track and expected to finish in the second half of 2023. By that time the Governing Council will have been presented with the findings of the investigation phase and advice on whether or not to move to a preparation phase, as well as a project plan for this subsequent phase. Any potential decision to move to the preparation phase does not in itself pre-empt a decision to issue.

The Eurosystem agreed on the main use cases and key design decisions in the investigation phase of the digital euro project

The Eurosystem regularly reported on the progress of the digital euro investigation phase, publishing two progress reports in September and December. In 2022 the Eurosystem agreed upon the main use cases and many key design decisions for a digital euro, taking into account the aspects of privacy and regulatory requirements, as well as the need to provide online possibilities alongside offline options for payments with a digital euro. These decisions also reflect the important role of intermediaries as distributors of a digital euro and a scheme as the preferred distribution model. The decision was taken to start preparations for a digital euro rulebook, for which a rulebook manager was hired and a call for expressions of interest by market representatives to take part in the drafting was issued. Work on the rulebook itself started in the first quarter of 2023.

As part of this project, the related digital euro prototyping activities with Eurosystem national central banks and private companies progressed according to plan. Findings will be reported on in the first half of 2023 and applied as relevant in a future project phase.

To ensure the development of a digital euro that is attractive for all stakeholders, the project relies on frequent interactions with market participants and future users in different fora and formats. In 2022 this included the dedicated technical sessions of the ERPB, bilateral feedback sessions with major stakeholder groups, meetings of the digital euro Market Advisory Group, focus group exercises and civil society seminars. In parallel, the ECB collaborated closely with the European institutions that will decide on the necessary legal framework for a potential future issuance of a digital euro.

4.3 Oversight and the role of central bank of issue

To ensure the safe and efficient functioning of financial market infrastructures (FMIs) and payments in the euro area, the Eurosystem sets out oversight objectives in regulations, standards, guidelines and recommendations, monitors their implementation, and promotes change where necessary. As central bank of issue for the euro, the Eurosystem is involved in cooperative oversight and supervision, as well as crisis management arrangements for FMIs with meaningful euro-denominated activities.

As regards systemically important payment systems (SIPS), the Eurosystem oversight function directly oversees TARGET2, EURO1, STEP2-T and the Mastercard Clearing Management System. A particular focus during 2022 was the Eurosystem's T2-T2S consolidation project (see Section 4.1). The Eurosystem conducted a pre-assessment of the consolidated platform focused on major changes to TARGET2 and monitored the project to identify any potential risks for the successful go-live of the platform and its subsequent smooth operation. In addition, the Eurosystem conducted a comprehensive assessment of the Mastercard Clearing Management System against the SIPS Regulation and the Cyber Resilience Oversight Expectations. The evolution and operational resilience of pan-European instant payment systems such as TIPS and RT1 was also closely monitored.

Implementation of the PISA framework started

With respect to payment instruments, work focused on the implementation of the Eurosystem's oversight framework for electronic payment instruments, schemes and arrangements (PISA framework). Based on the outcome of a harmonised scoring exercise, the governance authorities of identified payment schemes were notified as to whether they will be overseen, monitored or exempted from oversight activities under the PISA framework. For payment arrangements, this process is close to finalisation. Furthermore, comprehensive assessments were launched for a first group of payment schemes.

As central bank of issue for the euro, the Eurosystem continued to be a member of the supervisory colleges for EU central counterparties under the European Market Infrastructure Regulation (EMIR). In this capacity, it assessed various proposals for the extension of services or major changes in risk management procedures and revised recovery plans prepared in line with the EU Regulation on Recovery and Resolution for Central Counterparties. In the context of the preparatory work on the review of EMIR, the Eurosystem provided input to the March 2022 consultation by the European Commission.

The Eurosystem also monitored the impact of increased market volatility on central counterparties. The ECB conducted analytical work on volatility in the energy market to explore the impact of large margin calls on clearing participants. The findings supported the ECB's contribution to EU and international policy work on reducing the risk and potential impact of sudden large margin calls.

With regard to securities settlement, the Eurosystem contributed as central bank of issue to the regular evaluation of CSDs under the CSDR. The Eurosystem also started preparations for contributing to the application of Regulation (EU) No 2022/858 on a pilot regime for market infrastructures based on distributed ledger technology.

In the field of T2S oversight, the Eurosystem finalised the first assessment of T2S against the Cyber Resilience Oversight Expectations in the first quarter of 2022. The Eurosystem also completed its assessment of the changes implemented in T2S in 2022 (see Section 4.1).

Cyber resilience of FMIs continues to be a key focus in both the operational area of TARGET Services (see Section 4.1) and oversight. In 2022 a review of the Eurosystem/ESCB oversight cyber resilience strategy for financial market infrastructures and some of its tools was launched, another round of the Cyber Resilience Survey concerning FMIs was concluded, while the Euro Cyber Resilience Board worked on information-sharing (particularly in view of the Russian invasion of Ukraine), crisis coordination and third-party risk. Under the TIBER-EU framework, the TIBER-EU Knowledge Centre developed best practices for purple teaming, a collaborative activity which takes place during a certain stage of a TIBER test.

5 Market operations activities and financial services provided to other institutions

Most euro liquidity lines to other central banks established or activated since 2020 remained in place in 2022 and new lines were established with Narodowy Bank Polski and the Andorran Financial Authority. The ECB continued to offer US dollar operations to euro area counterparties, thereby providing a backstop to market-based funding. No ECB interventions took place in the foreign exchange market.

The ECB remained responsible for the administration of various financial operations on behalf of the European Union and played a coordinating role in relation to the Eurosystem reserve management services framework.

The transmission of ECB policy rate changes to euro area money markets (Box 3) was complete and immediate in the short-term unsecured money market segment, while term unsecured rates increased only sluggishly. The pass-through of rate hikes to secured money markets was also largely smooth, although with some heterogeneity in the speed of adjustment across segments.

5.1 Developments in market operations

Euro and foreign currency liquidity lines

Liquidity lines continued to help the ECB fulfil its price stability objective, prevent euro liquidity shortages and avoid spillover effects

The Eurosystem's swap and repo lines are monetary policy instruments that are used as stabilising tools in times of stress in global financial markets.

When the Eurosystem provides euro to non-euro area central banks, the liquidity lines address possible euro liquidity needs in non-euro area countries in the event of market dysfunctions. They therefore prevent spillover effects in euro area financial markets and economies via upward pressure on short-term money market rates or fire sales of assets that might adversely impact the smooth transmission of the ECB's monetary policy. The liquidity lines also prevent euro liquidity shortages from turning into financial stability risks.

When the ECB receives foreign currency from another central bank (for example US dollars from the Federal Reserve System) and provides euro as collateral, the foreign currency liquidity lines ensure the continuous provision of loans in foreign currency. This prevents abrupt deleveraging, extreme price movements and interruptions to the flow of credit resulting from tensions in international funding markets.

Most euro liquidity lines that have been established or activated since 2020 remained in place and were prolonged initially to 15 January 2023 and later to 15 January 2024, with the exception of the swap agreements with Българска народна банка (Bulgarian National Bank) and Hrvatska narodna banka, and the repo line with the National Bank of Serbia, which expired at the end of March 2022. New liquidity lines were established in 2022 with Narodowy Bank Polski and the Andorran Financial Authority. Table 5.1 shows the euro liquidity lines in operation as of 31 December 2022, whereby the Eurosystem could provide euro liquidity to foreign central banks. Drawings on the euro liquidity lines have been limited to quarter-ends.

The reciprocal swap agreement with the People's Bank of China was extended for another three years to October 2025.

In 2022 the ECB continued to provide US dollar liquidity in coordination with the Federal Reserve System, the Bank of Canada, the Bank of England, the Bank of Japan and the Swiss National Bank, usually at a maturity of seven days. The provision of US dollars in major jurisdictions helped ease pressure in global funding markets and continued to backstop private funding markets.

Table 5.1
Overview of operational liquidity lines

Non-euro area counterpart	Type of arrangement	Reciprocal	Maximum borrowable amount (EUR millions)
Danmarks Nationalbank	Swap line	No	24,000
Sveriges Riksbank	Swap line	No	10,000
Bank of Canada	Swap line	Yes	Unlimited
People's Bank of China	Swap line	Yes	45,000
Bank of Japan	Swap line	Yes	Unlimited
Swiss National Bank	Swap line	Yes	Unlimited
Bank of England	Swap line	Yes	Unlimited
Federal Reserve System	Swap line	Yes	Unlimited
Narodowy Bank Polski	Swap line	No	10,000
Magyar Nemzeti Bank	Repo line	No	4,000
Banca Naţională a României	Repo line	No	4,500
Bank of Albania	Repo line	No	400
Andorran Financial Authority	Repo line	No	35
National Bank of the Republic of North Macedonia	Repo line	No	400
Central Bank of the Republic of San Marino	Repo line	No	100

Source: ECB website.
Note: The table does not include repo lines established with non-euro area central banks under the Eurosystem repo facility for central banks (EUREP), for which the ECB does not disclose its counterparties.

Reporting on foreign exchange interventions

No ECB interventions took place in the foreign exchange market

The ECB did not intervene in the foreign exchange market in 2022. Since the inception of the euro, the ECB has intervened in the foreign exchange market twice – in 2000 and 2011. Data on foreign exchange interventions are published on a quarterly basis with a delay of one quarter on the ECB's website and in the Statistical Data Warehouse. The information published in the quarterly table is also recapped on an annual basis in the ECB's Annual Report (Table 5.2). If there were no foreign exchange interventions in the relevant quarter, this is explicitly stated.

Table 5.2
ECB foreign exchange interventions

Period	Date	Intervention type	Currency pair	Currency bought	Gross amount (EUR millions)	Net amount (EUR millions)
Q3 2000	22/09/2000	Coordinated	EUR/USD	EUR	1,640	1,640
	22/09/2000	Coordinated	EUR/JPY	EUR	1,500	1,500
Q4 2000	03/11/2000	Unilateral	EUR/USD	EUR	2,890	2,890
	03/11/2000	Unilateral	EUR/JPY	EUR	680	680
	06/11/2000	Unilateral	EUR/USD	EUR	1,000	1,000
	09/11/2000	Unilateral	EUR/USD	EUR	1,700	1,700
	09/11/2000	Unilateral	EUR/JPY	EUR	800	800
Q1 2011	18/03/2011	Coordinated	EUR/JPY	EUR	700	700
Q1 to Q4 2021	-	-	-	-	-	-
Q1 to Q4 2022	-	-	-	-	-	-

Source: ECB.

The reporting framework covers foreign exchange interventions carried out by the ECB unilaterally and in coordination with other international authorities, as well as interventions "at the margins" within the exchange rate mechanism (ERM II).

5.2 Administration of EU borrowing and lending operations

The ECB processes payments for various EU loan programmes

The ECB is responsible for the administration of the borrowing and lending operations of the EU under the medium-term financial assistance (MTFA) facility[44], the European financial stabilisation mechanism (EFSM)[45], the European instrument for temporary support to mitigate unemployment risks in an Emergency (SURE)[46] and the Next Generation EU (NGEU)[47] programme. In 2022 the ECB also accepted the European Commission's request to perform paying agent services, thereby extending the ECB's current fiscal agent services. Preparations are ongoing to become operational in 2023.

In 2022 the ECB processed interest payments in relation to the loans under the MTFA. As at 31 December 2022 the total outstanding nominal amount under this facility was €200 million. In 2022 the ECB also processed various payments and interest payments in relation to the loans under the EFSM. As at 31 December 2022 the total outstanding amount under this mechanism was €46.3 billion. In 2022 the ECB processed disbursements of SURE loans to various EU Member States and related

44 In accordance with Article 141(2) of the Treaty on the Functioning of the European Union, Articles 17, 21.2, 43.1 and 46.1 of the Statute of the ESCB, and Article 9 of Council Regulation (EC) No 332/2002 of 18 February 2002.

45 In accordance with Articles 122(2) and 132(1) of the Treaty on the Functioning of the European Union, Articles 17 and 21 of the Statute of the ESCB, and Article 8 of Council Regulation (EU) No 407/2010 of 11 May 2010.

46 In accordance with Articles 17 and 21 of the Statute of the ESCB (in conjunction with Article 10 of Council Regulation (EU) No 2020/672 of 19 May 2020 on the establishment of a European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) following the COVID-19 outbreak).

47 In accordance with Articles 17 and 21 of the Statute of the ESCB (in conjunction with Regulation (EU) No 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility).

interest payments. As at 31 December 2022 the total outstanding amount under this mechanism was €98.4 billion. Finally, in 2022 the ECB processed the disbursements of NGEU loans and grants to various Member States.

The ECB is also responsible for the administration of payments arising in connection with operations under the European Financial Stability Facility (EFSF)[48] and the European Stability Mechanism (ESM)[49]. In 2022 the ECB processed various interest and fee payments in relation to one loan under the EFSF.

Finally, the ECB is responsible for processing all payments in relation to the loan facility agreement for Greece.[50] As at 31 December 2022 the total outstanding amount under this agreement was €44.8 billion.

5.3 Eurosystem Reserve Management Services

A number of Eurosystem national central banks provided services under the ERMS framework

In 2022 a comprehensive set of financial services continued to be offered within the Eurosystem reserve management services (ERMS) framework established in 2005 for the management of customers' euro-denominated reserve assets. A number of Eurosystem national central banks provide financial services within this framework – under harmonised terms and conditions and in line with market standards – to central banks, monetary authorities and government agencies located outside the euro area, as well as to international organisations. The ECB performs an overall coordinating role, monitors the smooth functioning of the services, promotes changes to improve the framework and prepares related reports for the ECB's decision-making bodies.

The number of reported customer accounts in the ERMS stood at 270 at the end of 2022, compared with 265 at the end of 2021. The total aggregated holdings (including cash assets and securities holdings) managed within the ERMS framework decreased by approximately 6% in 2022 compared with 2021.

Box 3
Pass-through of key ECB interest rate changes to euro money market rates

Between July and December 2022 the ECB increased its key interest rates by 250 basis points, bringing the ECB's deposit facility rate out of negative territory and to a level of 2.0% by year-end. This hiking cycle stands out historically in terms of the magnitude of the rate increases (two 50 basis point rate hikes and two 75 basis point rate hikes), the speed of the policy rate adjustment (over a

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48 In accordance with Articles 17 and 21 of the Statute of the ESCB (in conjunction with Article 3.5 of the EFSF Framework Agreement).

49 In accordance with Articles 17 and 21 of the Statute of the ESCB (in conjunction with Article 5.12.1 of the ESM General Terms for Financial Assistance Facility Agreements).

50 In the context of the loan facility agreement between the Member States whose currency is the euro (other than Germany and Greece) and *Kreditanstalt für Wiederaufbau* (acting in the public interest, subject to the instructions of and with the benefit of the guarantee of the Federal Republic of Germany) as lenders and the Hellenic Republic as borrower and the Bank of Greece as agent to the borrower, and pursuant to Articles 17 and 21.2 of the Statute of the ESCB and Article 2 of Decision of the European Central Bank of 10 May 2010 concerning the management of pooled bilateral loans for the benefit of the Hellenic Republic and amending Decision ECB/2007/7 (ECB/2010/4) (OJ L 119, 13.5.2010, p. 24).

period of five months) and because it took place in an environment of record high excess liquidity of more than €4 trillion.

This box provides an overview of how the policy rate changes were transmitted to money markets, which represent the first link in the chain of monetary policy transmission. In summary, the transmission was complete and immediate in the short-term unsecured segment, as reflected in the euro short-term rate (€STR), while term unsecured rates reacted more sluggishly. In the secured money market, rates on repurchase agreements (repos) experienced in part a delayed or even impaired transmission, mainly owing to an increase in collateral scarcity in 2022. Moreover, the limited supply of short-term securities and increased demand for such instruments contributed to only a partial pass-through of policy rate increases to government bill rates.

Short-term unsecured money market rates adjusted well to the policy rate hikes, while term unsecured rates increased only sluggishly.

The €STR increased by 249 basis points between July and December 2022 and therefore adjusted almost one-to-one to the 250 basis point policy rate increase (Chart A). The distribution of money market transaction rates supporting the €STR, collected under the ECB Money Market Statistical Regulation, also remained stable, as reflected in the unchanged spread between the 25th and 75th percentile of interest rates underlying the €STR. Unsecured short-term trading volumes picked up substantially, especially after interest rates returned to positive territory. In particular, the average trading volume backing the €STR increased by 20% between September and December 2022 compared with the average trading volume up to September 2022. However, unsecured term rates, reflected in the euro interbank offered rate (EURIBOR) reacted sluggishly to the rate hikes for short-term maturities (Chart B). The delayed adjustment in term rates was largely driven by increased demand for short-term money market investments in an environment of high uncertainty about the future level of policy rates and by a premium charged by the banks accepting term deposits.

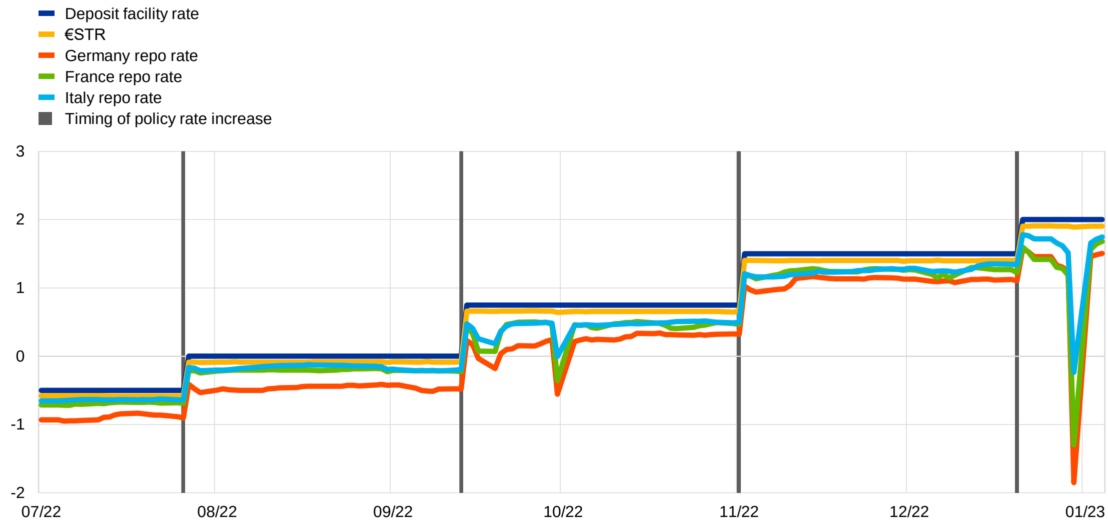
The transmission of rate hikes to secured money markets was also largely completed eventually, although with some heterogeneity in the speed of adjustment across segments.

Repos essentially function as short-term secured loans where cash is exchanged for a security under the agreement that the transaction is reversed (typically the next day). From the last quarter of 2021 the demand for borrowing securities and secured short-term investments increased significantly, widening the wedge between repo rates and the deposit facility rate of the ECB as the type of collateral backing those trades became scarcer. Looking at the transmission of the three rate hikes in July, October and December 2022, all of them were largely transmitted to the short-term repo rates backed by government bonds of most euro area countries, while the pass-through to the highest-rated government bond collateral, for example German government securities, experienced some delays. For the 75 basis point rate hike in September 2022, which brought the policy rate back into positive territory, the transmission to repo rates was more severely delayed and impaired. In the first days after the implementation of the rate hike, repo rates across all euro area jurisdictions experienced substantial downward pressure, amid concerns of a substantial increase in demand for collateral as investors rushed to invest cash holdings in the repo market with the return to positive interest rate levels. In longer-dated repo and government bill rates, the pass-through was also imperfect, mainly owing to the limited supply of collateral and increased demand for such investments. Collateral availability improved towards the end of 2022, reflected in a narrowing spread between secured money market rates and the ECB policy rates, not least owing to a number of initiatives on behalf of the Eurosystem and national debt management offices to ease collateral scarcity, with the usual end-of-year volatility experienced in late December 2022 (Charts A and B).

Chart A

Transmission of rate hikes to short-term unsecured and secured money market rates

(percentages, volume-weighted average rate)

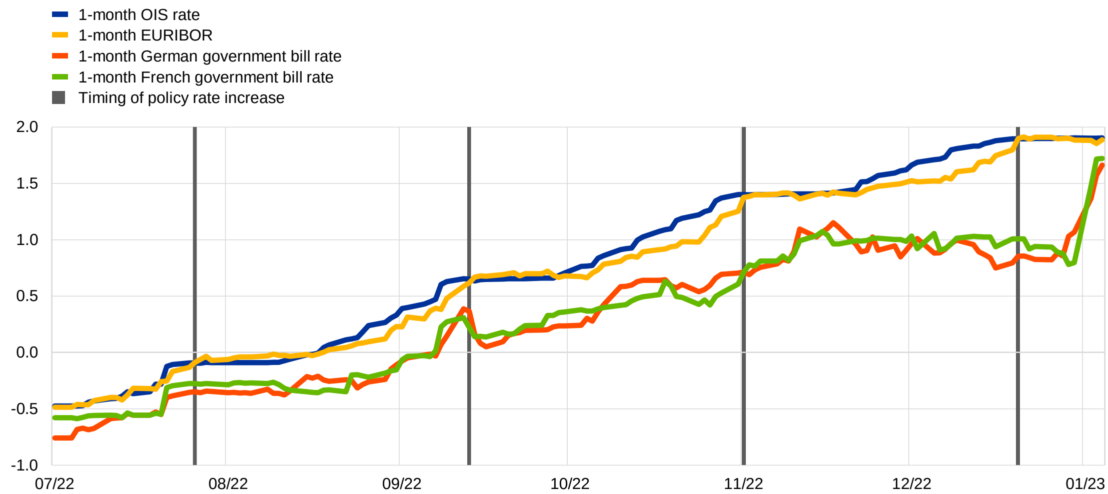


Sources: ECB calculations, Bloomberg and BrokerTec/MTS.
Notes: There are two types of transaction: non-general collateral (non-GC) repo transactions, which are motivated to exchange a specific security, and cash-motivated repo transactions or so-called general collateral (GC). Repo rates displayed in the chart combine GC and non-GC repo rates and overnight, tomorrow-next, and spot-next maturities. The decline in repo rates at the end of October and December 2022 was due to quarter-end effects, when banks' balance sheet constraints are particularly binding on regulatory reporting dates.

Chart B

Transmission of rate hikes to term unsecured and secured money market rates

(percentages, volume-weighted average rate)



Sources: ECB calculations and Bloomberg.
Note: OIS represents 1-month overnight indexed swap rates, where the floating rate refers to the expected €STR.

6 Cash remains the most frequently used means of payment among European citizens, with a low level of counterfeiting

Euro banknote circulation continued to grow in 2022, by 4.5% in terms of number and 1.8% in terms of value, and was mainly affected by Russia's war in Ukraine and the rises in the ECB's key interest rates from July onwards.

The ECB study on payment attitudes of consumers in the euro area revealed that cash was the most frequently used payment method at points-of-sale, accounting for 59% of payments. Moreover, the first survey on the use of cash by companies concluded that 96% of companies serving mostly private customers accepted cash and more than 90% will continue to do so in the future.

Counterfeiting levels remain remarkably low. Development of new security features for banknotes continues with a view to keeping ahead of counterfeiters and further improving the resilience and integrity of the banknotes.

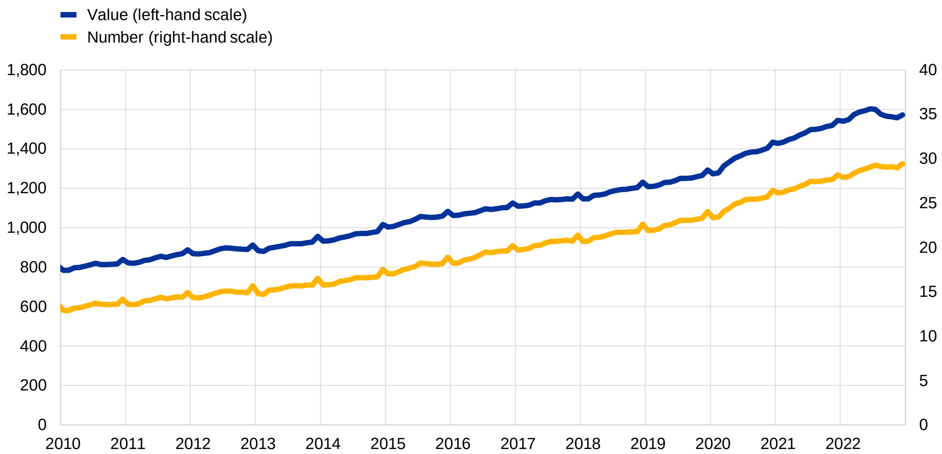
6.1 Circulation of euro banknotes

Euro banknote circulation increased in line with two main developments

At the end of 2022 euro banknote circulation reached 29.5 billion pieces and a total value of €1.57 trillion. This represents positive annual growth rates of 4.5% and 1.8% in terms of the number and value of banknotes respectively. Two main developments affected the circulation of euro banknotes in 2022. First, Russia's invasion of Ukraine generated higher demand for euro banknotes in February and March 2022, as people wanted to have enough funds in the event of possible disruptions to payment ecosystems. The demand for euro banknotes stabilised from April 2022 onwards. Second, the increase in the ECB's key interest rates starting on 27 July 2022 made the outstanding euro cash holdings more expensive compared with interest-bearing instruments. As a result, a small part of euro banknotes in circulation returned to the Eurosystem, with a downward effect on euro banknote circulation (Chart 6.1).

Chart 6.1
Number and value of euro banknotes in circulation

(left-hand scale: EUR billions; right-hand scale: billions)



Source: ECB.

To maintain the quality of euro banknotes in circulation and trust in them, Eurosystem national central banks processed 24.8 billion euro banknotes. Of this amount, 3.2 billion worn-out banknotes had to be replaced with newly printed banknotes.

The value of euro coin circulation also grew by 4.0% annually to reach €32.5 billion at the end of 2022. This represents a total of 145 billion euro coins in circulation.

The euro area celebrated the 20th anniversary of the introduction of euro banknotes and coins into circulation

The introduction of euro banknotes and coins in physical form as of 2002 was a milestone in European history. It was considered a remarkable event, including at a global level, as it represented – and still does – the world's largest ever monetary changeover.

6.2 Studies on payment attitudes among consumers and use of cash by companies in the euro area

Study on payment attitudes of consumers in the euro area

Cash continued to be the most frequently used means of payment at points-of-sale.

Between October 2021 and June 2022 the ECB conducted the study on payment attitudes of consumers in the euro area to assess consumers' payment behaviour and preferences, as well as their access to various payment instruments. The study showed that cash was the most frequently used payment method at points-of-sale, with 59% of all payments made in cash, although the share of cash payments had declined from 72% in 2019. In terms of value, cards accounted for a higher share of payments (46%) than cash (42%). Cash was accepted in 95% of transactions in physical payment locations throughout the euro area, while it was possible to pay with non-cash instruments in 81% of transactions.

Most euro area consumers were satisfied with their access to cash. The vast majority of consumers (90%) found it fairly easy or very easy to get to an ATM or a bank.

Use of cash by companies in the euro area

96% of companies with private clients accept cash and 90% will continue to do so in the future

In 2022 the ECB published the results of its first survey on the use of cash by companies, shedding light on companies' strategic views on the current and future use and acceptance of cash. Cash is likely to remain relevant as a payment method, since more than 90% of firms currently accepting cash intend to continue to do so in the future. Security and reliability are the most important criteria for firms when deciding whether to accept a means of payment.

6.3 Low level of counterfeiting and euro banknote development

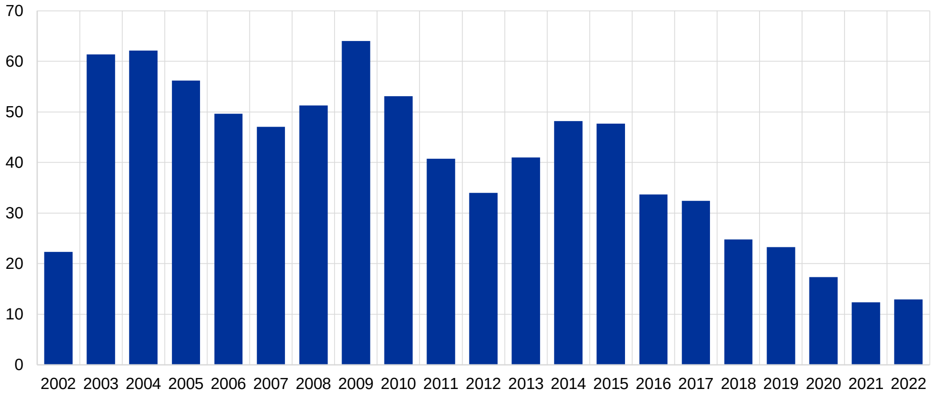
Remarkably low level of euro banknote counterfeiting

In 2022 the second lowest level of counterfeits in proportion to banknotes in circulation was observed since the introduction of euro banknotes

In the course of 2022, 376,000 counterfeit euro banknotes were withdrawn from circulation. With 13 counterfeits detected per 1 million genuine banknotes in circulation, this is the second lowest level of counterfeits in proportion to banknotes in circulation since the introduction of euro banknotes (Chart 6.2). There was an increase of 8.4% in the total number of counterfeits withdrawn from circulation compared with 2021. This also reflects the rebound in economic activity in 2022 following the lifting of most pandemic-related restrictions. The quality of the counterfeits continues to be low. Consequently, they can be detected very quickly and easily on applying the "feel-look-tilt" test.

Chart 6.2

Number of counterfeits detected annually per 1 million genuine notes in circulation



Source: ECB.

Euro banknote development

The development of new security features continued to stay ahead of counterfeiters

In order to ensure the high quality of euro banknotes and their resilience to counterfeiting in the future, the development of new security features continues, also taking into account benefits offered by technological advances. Other important objectives that have been set for future banknotes include the redesign of euro banknotes and reduction of their environmental impact. No decision on the actual production and issuance of new euro banknotes has yet been taken.

7 Statistics

The ECB – assisted by the national central banks (NCBs) – develops, collects, compiles and disseminates a wide range of statistics and data needed to support the ECB's monetary policy, as well as financial stability-related and other tasks of the European System of Central Banks (ESCB) and the European Systemic Risk Board. These statistics are also used by public authorities, international organisations, financial market participants, the media and the general public, and help the ECB to increase the transparency of its work.

In 2022 the ECB focused on new euro area statistics, namely the enhanced publication of securities statistics, the development of indicators for overnight index swaps (OIS) in the euro money market based on Money Market Statistical Reporting (MMSR) data, information on special purpose entities (SPEs) and bilateral external statistics of euro area countries vis-à-vis Russia. Experimental indicators to support climate change policy were developed and work started on the design phase of the Integrated Reporting Framework (IReF). Furthermore, new data on non-bank financial institutions were included in quarterly financial accounts.

7.1 New and enhanced euro area statistics and other developments

The ECB's Governing Council adopted a Guideline for the production of new monthly data on securities issues

The ECB's Governing Council adopted a new Guideline in the field of securities data and securities issues statistics.[51] The Guideline defines amended requirements for the data quality management of the ESCB's Centralised Securities Database (CSDB) and new requirements to produce securities issues statistics based on CSDB data.

New statistics on securities issues and holdings were made available at significantly enhanced timeliness

Following the adoption of the Guideline, the ECB started publishing new breakdowns for securities issues statistics by valuation method, maturity and interest rate type for all EU Member States. This is the first ESCB micro-to-macro dataset, whereby CSDB micro data are used to compile official macro statistics in line with international statistical standards. The data are available at a significantly enhanced timeliness. The ECB also significantly extended the publication of securities holdings statistics with new breakdowns by individual euro area country, as well as by holder and issuer sectors. The new data provide a more timely and complete picture of the financial markets, allowing better monitoring of primary and secondary market activities.

New statistics were published on the overnight index swaps in the euro money market

The ECB started publishing new statistics on the OIS in the euro money market based on MMSR data collected from 47 euro area banks.[52] The data series include information on the OIS spot and forward markets about the total and daily average

51 Guideline (EU) 2022/971 of the European Central Bank of 19 May 2022 on the Centralised Securities Database and the production of securities issues statistics and repealing Guideline 2012/689/EU (ECB/2012/21) and Guideline (EU) 2021/834 (ECB/2021/15) (ECB/2022/25) (OJ L 166, 22.6.2022, p. 147).

52 Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets (ECB/2014/48) (OJ L 359, 16.12.2014, p. 97).

nominal amount and the weighted average rate. The new statistics complement data on the unsecured and secured money market segments, which have been published regularly since November 2017 and January 2019 respectively. The publication of the new statistics serves to enhance market transparency and therefore improve money market functioning.

The ECB Guideline on external statistics was amended to include special purpose entities

In May 2022 the ECB's Governing Council adopted the amendment to the Guideline on external statistics to collect statistical information on SPEs.[53] This will allow a better understanding of their role in the economic and financial system of the euro area. The first transmission of data relating to cross-border transactions and stocks of resident SPEs started in March 2023 based on data for the fourth quarter of 2022, while back data from the first quarter of 2020 will be transmitted by September 2023.

Public release of euro area countries' external statistics vis-à-vis Russia

In October 2022 the ECB started publishing a subset of bilateral external statistics of euro area's countries vis-à-vis Russia.[54] This additional granularity at quarterly frequency provides useful statistical detail for the topical analysis of cross-border transactions and positions between euro area countries and Russia.

7.2 Development of experimental indicators to support climate change policy

New climate change indicators were introduced to support the ECB's monetary policy strategy

Based on work completed in 2022, on 24 January 2023 the ECB published for the first time three sets of new statistical indicators on sustainable finance, greenhouse gas emissions and physical risk. This work is part of the ECB action plan[55] to include climate change considerations in its monetary policy strategy. The development of these indicators on climate change was highly complex. The indicators consist of, among other things, matching various cross-country micro-level datasets, developing appropriate imputation mechanisms for missing data, and inspecting data quality considering aspects such as confidentiality, replicability and representativeness. As such, and with differences dependent on the subset of data in question, the datasets remain a "work in progress" with some caveats hampering the use of these indicators.

The following three datasets were released:[56]

1. Sustainable finance indicators: These provide an overview of the issuance and holding of debt instruments with sustainability characteristics by residents in the euro area. This dataset is already rather comprehensive and is published with an "experimental" data quality label.

2. Indicators on the greenhouse gas emissions of financial institutions: These provide information on the greenhouse gas intensity of the securities and loan

53 Guideline (EU) 2022/747 of the European Central Bank of 5 May 2022 amending Guideline 2012/120/EU on the statistical reporting requirements of the European Central Bank in the field of external statistics (ECB/2011/23) (ECB/2022/23) (OJ L 137, 16.5.2022, p. 177).

54 An additional Tab "Focus on Russia" is also available in the dashboard of the Balance of payments and international investment position.

55 For more information, see "ECB presents action plan to include climate change considerations in its monetary policy strategy", *press release*, ECB, 8 July 2021.

56 See "Climate change-related indicators", on the ECB's website.

portfolios of financial institutions such as banks and thus help to assess the sector's role in financing the transition to a net-zero economy and related risks. However, the underlying dataset will need to be improved, especially in terms of coverage. Consequently, the indicators must be interpreted with caution and seen as a work in progress and analytical in nature.

3. Indicators on the physical risks of loan and security portfolios: These assess the risks stemming from climate change-induced natural hazards, such as floods or wildfires, on the performance of loans, bonds and equities portfolios. The underlying dataset will need to be further improved, for example with respect to the details of locational information. Therefore, the indicators must be interpreted with caution and seen as a work in progress and analytical in nature.

In line with the action plan set out by the ECB's Governing Council, improvements in these three datasets are being worked on, partially supported by new and better data sources as they emerge, as well as by any future methodological developments both within the ESCB and worldwide.

7.3 Progress on the Integrated Reporting Framework

Reporting burden reduction effort entered a concrete phase

The ECB's long-standing commitment to reduce the reporting burden of banks and improve the quality and comparability of data took shape in 2022. In December 2021 the design phase of the IReF programme was launched with the aim of integrating the Eurosystem's statistical requirements for banks into a single standardised framework that will be applicable across the euro area and that might also be adopted by authorities in other EU Member States.[57]

During the IReF design phase, work focused on the future framework and assessment of cost-benefit

During the design phase, the Eurosystem is identifying the key elements of the new framework (both in terms of content and data processes) and outlining a more efficient organisation of the Eurosystem statistical business process. In shaping the IReF, the Eurosystem builds on the contributions of the relevant stakeholders by means of an ongoing cost-benefit assessment.[58] As part of the ongoing cost-benefit assessment, three reports were published in September 2022. These were each focused on specific features of the envisaged reporting system, namely content-related topics, technical integration of country-specific requirements, and procedural and implementation aspects.[59] Furthermore, the ECB organised two workshops with the banking industry in 2022 to discuss the state of play of the cost-benefit assessment.

The IReF is a first step towards a broader initiative for an integrated reporting system for statistical, prudential and resolution data in the EU, as requested by the European banking industry and solicited by the European Parliament and the Council. The European Banking Authority (EBA), ECB, Single Resolution Board (SRB) and the European Commission have started cooperating in an Informal Coordination Group to

57 See "ECB moves towards harmonising statistical reporting to ease burden for banks and improve analysis", *press release*, ECB, 17 December 2021.

58 In line with the Decision on increased transparency in ECB regulations on European Statistics adopted by the Governing Council in October 2016.

59 For more information, see "Standardising banks' data reporting" (IReF and BIRD) on the ECB's website.

further such integration. The cooperation among authorities is expected to be formalised through the creation of a Joint Bank Reporting Committee (JBRC) – involving the ESCB, the EBA, Single Supervisory Mechanism (SSM) and non-SSM national competent authorities, the SRB, national resolution authorities and the European Commission, as outlined in the EBA feasibility study published in December 2021.[60]

Box 4
New statistics on non-bank financial institutions in the quarterly financial accounts

Other financial institutions – the second largest financial sector in the euro area

The quarterly financial accounts published by the ECB provide a new breakdown of other financial institutions (OFIs). OFIs are, after monetary financial institutions (i.e. banks and money market funds), the second largest financial sector in the euro area (Chart A). Their expanding role was recognised in the ECB's 2020-21 monetary policy strategy review, and the new breakdown is an important step in facilitating analysis of this development.[61] Three subsectors are distinguished:

- Captive financial institutions and money lenders – these are mainly holding companies and intra-group entities, such as financing conduits. This subsector accounts for 17% of the euro area financial sector and is concentrated in a few euro area countries (with Ireland, Luxembourg and the Netherlands accounting for more than 85% of captives).
- Other financial intermediaries – these are, for example, securities and derivatives dealers and financial vehicle corporations engaged in securitisation transactions. The subsector accounts for 4% of the financial sector at euro area level. Data on other financial intermediaries are essential for a complete analysis of the financial intermediation process in the euro area.
- Financial auxiliaries – these facilitate financial transactions without becoming the legal (or economic) counterparty. Examples are stock exchanges, managers of pension funds and mutual funds, and insurance brokers. They account for 1% of the euro area financial sector.

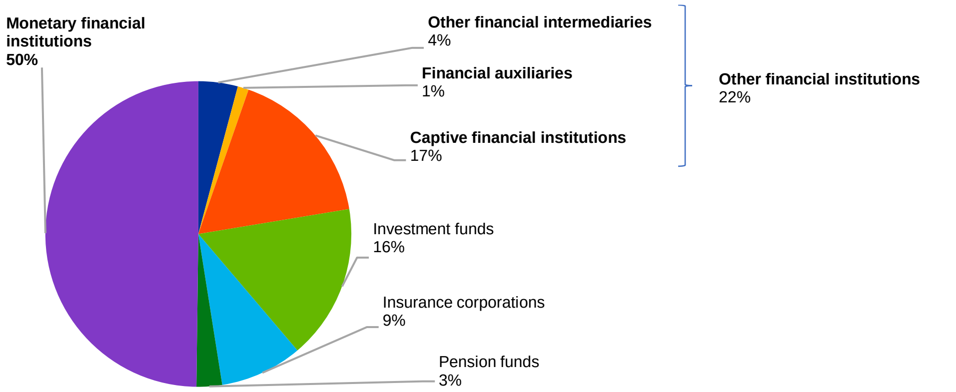
60 See "The ESCB input into the EBA feasibility report under Article 430c of the Capital Requirements Regulation (CRR 2)", ECB, September 2020.

61 For more information on the analysis of OFIs, see "Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities", *Occasional Paper Series*, No 270, ECB, revised December 2021.

Chart A

Financial subsectors in the euro area

(outstanding amount of liabilities at the end of the third quarter of 2022 as percentages of financial sector liabilities)



Source: Quarterly sector accounts, ECB.

8 ECB research activities

In 2022 ECB research focused on assessing inflation developments and analysing the potential impacts of monetary policy normalisation. The use of datasets available via the Household Finance and Consumption Network (HFCN) was extended to the analysis of heterogeneities in household finances across the euro area. New projects have been initiated based on the rich information collected via the ECB's Consumer Expectations Survey (CES). Research on climate change-related issues also intensified. Collaboration with national central banks within the research clusters of the European System of Central Banks (ESCB) continued, with annual workshops organised to discuss the most pressing issues in their respective fields of specialisation. The Price-setting Microdata Analysis (PRISMA) network concluded its work and delivered several policy-relevant findings (see Box 5).

8.1 Update on ECB research initiatives

Research focused on assessing the impact of monetary policy normalisation

In 2022 a main focus of the ECB's research was to examine the effects of interest rate and balance sheet normalisation, including the transmission channels and trade-offs involved. A wide array of in-house models with macro-financial linkages were used to assess the potential impact of normalisation on financial stability. A key and persistent insight from most of this research is that policy normalisation mitigates the build-up of financial vulnerabilities and lowers tail risks to inflation over the medium term, at the cost of tighter financing conditions and greater downside risks to growth in the short term.

The Household Finance and Consumption Network provided key input for research on heterogeneity

The HFCN has served as a key input for constructing the euro area distributional wealth accounts and is an important source of information for several research projects conducted by the ECB's Research Taskforce on Heterogeneity.

Research based on HFCN data focused on the difference in wealth and liquid assets between non-immigrant and immigrant households in the euro area, financial distress of households, substantial differences in housing and home ownership rates across euro area countries, and the heterogeneity of the effects of the pandemic on household finances.

New projects were initiated based on datasets of the Consumer Expectations Survey

The ECB's CES gained increasing visibility over the course of 2022. This was evidenced by the development of new survey modules on consumer finance, housing, labour markets and other central banking-related topics, as well as the expansion of research output and new projects drawing on the rich array of topics covered by the survey. Work based on the CES has featured prominently in the ECB's economic, monetary and financial analysis, as well as in its official publications. As highlighted on the newly developed CES web page, publications featuring the survey data have led to insights on a variety of topics including inflation expectations, central bank communication, consumption and consumer finance, monetary policy transmission to households, the energy shock, and fiscal support to households. In addition, the aggregate results from the monthly surveys are now reported regularly on the CES web page. A monthly press release initiated in August 2022 summarises consumers' expectations about inflation, the housing market, access to credit, income, consumption, the labour market, and economic growth.

Policy-relevant conclusions emerged from extensive research on climate change-related issues

Research on climate change intensified in the course of 2022. Researchers focused on various aspects of the interaction between financial stability, financial markets, government policy and the green transition. A number of ECB research papers were published on various aspects of this topic and drew the following policy-relevant conclusions: (i) bank lending responds to climate policy, with visible reallocation of fossil fuel lending across national borders in response to carbon taxes[62] and a significant decline in lending to greenhouse gas-intensive companies following the Paris Agreement[63]; (ii) more equity-based economies decarbonise faster than more debt-based economies[64]; (iii) natural-resource scarcity prompts energy-saving technical change[65]; and (iv) it is considerably costlier for society to set carbon taxes at lower-than-optimal rather than higher-than-optimal levels[66].

Another strand of research studied how climate-related risk and financial stability are connected and considered three main dimensions: 1) data on and measurement of climate-related risks for the financial system, 2) stress test assessments of climate-related risks, and 3) macroprudential policy implications of climate-related risks. The findings were published in a joint ECB/ESRB report in July 2022.

8.2 Update on the work of ESCB research clusters

Collaboration within research clusters continued and the research cluster on climate change was launched

Regular research networks continued coordinating research efforts within the ESCB and maintaining relations with academic researchers. In particular, the ESCB research clusters on "Monetary economics" (Cluster 1), "International macroeconomics, fiscal policy, labour economics, competitiveness and EMU governance" (Cluster 2), "Financial stability, macroprudential regulation and microprudential supervision" (Cluster 3) and "Climate change" (Cluster 4) held workshops on the most pressing issues in their fields.

The annual workshop of Cluster 1 took place in Paris on 10-11 October 2022. Organised by the Banque de France, it focused on the themes of inflation, interest rates, and monetary and fiscal policy interactions. Cluster 2 held its annual workshop at the Bank of Greece on 29-30 September 2022. It focused on the implications of economic sanctions, in particular their effects on trade, employment and production. Members also discussed the interactions between monetary and fiscal policies, as

62 See Laeven, L. and Popov, A., "Carbon taxes and the geography of fossil lending", *Working Paper Series*, No 2762, ECB, December 2022.

63 See Reghezza, A., Altunbas, Y., Marques-Ibanez, D., Rodriguez d'Acri, C. and Spaggiari, M., "Do banks fuel climate change?", *Working Paper Series*, No 2550, ECB, May 2021.

64 See De Haas, R. and Popov, A., "Finance and Green Growth", *The Economic Journal*, Vol. 133, Issue 650, February 2023, pp. 637-668.

65 See Hassler, J., Krusell, P. and Olovsson, C., "Finite resources and the world economy", *Journal of International Economics*, Vol. 136, No 103592, May 2022.

66 See Hassler, J., Krusell, P. and Olovsson, C., "Presidential Address 2020 Suboptimal Climate Policy", *Journal of the European Economic Association*, Vol. 19, No 6, December 2021, pp. 2895-2928.

well as the design of EU institutions in the light of the threat of disintegration. The annual workshop of Cluster 3, hosted by the Banco de Portugal, took place in Lisbon on 20-21 October 2022. It covered topics ranging from banking regulation and supervision to housing markets and central bank digital currencies. On 5-6 September 2022 Cluster 4 held its first annual workshop virtually, hosted by the Deutsche Bundesbank. The workshop dealt with theoretical and empirical research on the macroeconomic effects of climate change and climate policy, as well as the implications for various financial markets.

Box 5

Microdata in the spotlight – findings of the Price-setting Microdata Analysis Network

The Price-setting Microdata Analysis (PRISMA) research network was set up in 2018 by the European System of Central Banks (ESCB) to deepen understanding of price-setting behaviour and inflation dynamics in the European Union, with a view to gaining new insights on this key element of monetary policy transmission. It officially concluded its work in March 2022.

Under PRISMA, ECB and national central bank staff produced numerous research and policy products on price-setting and inflation dynamics, e-commerce, online prices and household inflation heterogeneity. The research work focused on the period 2010-19 and resulted in the following policy-relevant findings.

The frequency of price changes in the euro area in the period 2010-19 was low but heterogeneous across “core” sectors, implying a slow transmission of nominal shocks. On average, 8.5% of consumer prices changed each month (when sales prices are excluded), which is close to the 10% frequency recorded in the United States. The typical non-sale retail price therefore changed only every 12 months, entailing a slow transmission of nominal impulses. The ex-sales repricing rate was lowest for services (6% over a 17-month duration) and highest for processed food (10% over a 10-month duration).

Price changes are heterogeneous, with both small and large hikes and cuts, and mainly driven by firm-specific shocks. Typical (non-zero) price changes (“reset” prices) were rather large (even excluding sales). In the period from 2010 to 2019 the median increase and decrease stood at around 9% and 12% respectively. However, price hikes and cuts were very heterogeneous: 14% were smaller than ±2% in absolute value, while around 20% were larger than ±14%. Firm-specific cost and demand shocks were thus more relevant than aggregate shocks in determining when and by how much firms reset their prices. Data confirm that producer price changes are more frequent and smaller than consumer price changes, in line with previous findings for the euro area.

The online prices of most goods change more frequently than prices in brick-and-mortar stores, while the respective sizes of both price cuts and hikes do not differ significantly, consistent with lower price-setting frictions online. For both Poland and Germany, where this comparison was possible, the repricing rate for non-energy goods, except for processed food, was higher online than offline (at 16.7% and 11.1% respectively). However, the (absolute) size of online price increases and decreases was lower in Germany, whereas in Poland the opposite tended to be the case. Overall, these findings were consistent with lower price-setting frictions online, at least for goods. They confirmed previous evidence supporting the assumption that, with online trade gaining market share in an ever growing number of sectors, aggregate price flexibility might increase.

Price-setting is mildly dependent on the stage in the economic cycle, implying that in the current environment, more frequent and larger price changes can occur than suggested by historical regularities. Prices that are far from their “target” values are slightly more likely to adjust. This direct evidence of a moderate degree of state dependence can still influence the monetary transmission, especially by eliciting non-linearities in response to variations in trend inflation or large cost shocks. In the current volatile environment, more frequent and larger price changes can occur than suggested by historical regularities.

Inflation variation in the period 2005-2019 was due to fluctuations in the average size of price changes, as the repricing rate moved very little. Despite several possible structural influences, the repricing rate showed little sign of following either a downward or upward trend during the low inflation period under review. Moreover, its limited cyclical variation did not contribute much to fluctuations in aggregate inflation, which instead mainly reflected shifts in the average size of price changes. Specifically, aggregate disturbances affected inflation by shifting the relative share of firms increasing or decreasing their prices, rather than the size of price increases and decreases or the repricing rate. This “linear” behaviour of aggregate inflation could change, however, when aggregate shocks are larger than in the historical experience, because of the non-linearities in firm-level decisions.

According to models calibrated to match the micro price evidence, shifts in trend inflation above 5-6% would materially raise the slope of the euro area Phillips curve. Simulations of models featuring non-linearities in price-setting consistent with the micro price evidence suggest that increases of above 5-6% in trend inflation (and thus in firms’ long-run inflation expectations) would materially raise the repricing rate and the slope of model-based Phillips curves. Evidence for the United States confirms that, in the period of “Great Inflation” from 1978 to 1982, the repricing rate stood at over 15% (compared with 10% in the low inflation period under review).

Similarly, calibrated models show that large shocks to costs can have non-linear effects on inflation dynamics. Non-linearities in price-setting imply that in the model-based simulations the larger the nominal shocks the greater the effect on the repricing rate. These shocks have to be larger than 15% for non-linearities to significantly accelerate inflation dynamics in their aftermath. Given the relatively stable environment up to 2019, the period for which micro data are available, there is little direct evidence regarding the empirical values of the shock thresholds. Nevertheless, under PRISMA, micro data have been analysed in a few countries since 2019 to check for evidence of non-linearities in the context of the volatile pandemic environment, finding instances of large shifts in the repricing rate.

9 Legal activities and duties

In 2022 the Court of Justice of the European Union (the "Court of Justice") interpreted for the first time the concept of "other type of credit facility" in the context of the monetary financing prohibition and recognised the financial independence of national central banks (Case C-45/21). The Court of Justice also put an end to almost ten years of litigation relating to the 2013 resolution measures in Cyprus (Cases T-200/18 and T-379/16) and further clarified important aspects of the ECB's supervisory powers (Case T-275/19). The ECB adopted 14 opinions on proposed Union acts and 32 opinions on draft national legislation falling within its fields of competence. Five cases of non-compliance with the obligation to consult the ECB on draft legislation were recorded in respect of national laws. The ECB's 2022 monitoring exercise on central banks' compliance with the prohibitions on monetary financing and privileged access confirmed that Articles 123 and 124 of the Treaty were in general respected.

9.1 Jurisdiction of the Court of Justice of the European Union concerning the ECB

For the first time, the Court of Justice interpreted the concept of "other type of credit facility" in the context of the monetary financing prohibition

In September 2022 the Court of Justice of the European Union, sitting in Grand Chamber, ruled for the first time on the interpretation of the term "other type of credit facility" used in Article 123(1) of the Treaty on the Functioning of the European Union and defined in Article 1(1)(b)(ii) of Council Regulation (EC) No 3603/93 as "any financing of the public sector's obligations vis-à-vis third parties" (Case C-45/21). According to the Court of Justice, the prohibition of a credit facility within the meaning of any financing of the public sector's obligation vis-à-vis third parties not only means that the national central banks (NCBs) must not assume pre-existing obligations of other public authorities or bodies vis-à-vis third parties; it also requires that the effective financing of the obligations vis-à-vis third parties by the NCBs must not result directly from the measures adopted by, or from the policy choices made by, other public authorities or bodies. In the same preliminary ruling, the Court of Justice expressly recognised, again for the first time, the financial dimension of the NCBs' independence and interpreted its implications in the context of an NCB performing national tasks outside the European System of Central Banks (ESCB). According to the Court of Justice, NCBs' ability to carry out independently a task falling within the scope of the ESCB would be undermined if national tasks falling outside that scope precluded NCBs from building up adequate financial resources in the form of reserves or buffers to offset losses, particularly those resulting from monetary policy operations.

The General Court put an end to almost ten years of litigation relating to the 2013 resolution measures in Cyprus by dismissing the last pending actions for damages against the ECB

In July and November 2022, respectively the General Court dismissed the last pending actions for damages brought against, amongst others, the ECB by some stakeholders in two Cypriot banks which were subject to the 2013 resolution measures (Cases T-200/18 and T-379/16). The orders follow the 2020 judgment of the Court of Justice of the European Union in the joined *Chrysostomides* and *Bourdouvali* cases[67]

[67] Joined Cases C-597/18 P, C-598/18 P, C-603/18 P and C-604/18 P - ECLI:EU:C:2020:1028.

that concerned similar subject matter. The applicants alleged that the relevant resolution measures were imposed by the ECB and other defendants[68] through, among other things, their involvement in the Eurogroup meetings, their role in the negotiation and adoption of the Cypriot Memorandum of Understanding, and the ECB Governing Council decisions relating to the emergency liquidity assistance. The General Court found that the ECB and other defendants did not commit any breach of the right to property, the principle of legitimate expectations, the principle of proportionality or the principle of equal treatment. The orders delivered by the General Court put an end to almost ten years of litigation relating to the 2013 resolution measures in Cyprus and in which the ECB has always prevailed by demonstrating that it acted lawfully.

The General Court further clarified the ECB's investigatory and supervisory powers

In December 2022 the General Court delivered four judgments, dismissing all actions brought by AS PNB Banka against a series of ECB supervisory decisions and further clarifying the ECB's supervisory powers. From January 2019 to February 2020 the ECB adopted a series of supervisory decisions regarding AS PNB Banka. Reviewing these decisions, the General Court confirmed that the ECB is competent to exercise, with regard to a less significant credit institution, all investigatory powers listed in Articles 10 to 13 of the SSM Regulation, including on-site inspections, and clarified that applicable regulation does not require the inspected entity to be heard before the adoption of the decision to perform an on-site inspection (Case T-275/19). The General Court also confirmed that the ECB enjoys broad discretion to activate the power to take over direct supervision of a less significant institution when necessary to ensure consistent application of high supervisory standards (Case T-301/19). Third, the General Court ruled that the ECB may oppose a proposed acquisition of a qualifying holding if there are reasonable grounds for doing so on the basis of one or more of the criteria referred to in Article 23(1) of Directive 2013/36, without being required to examine the other criteria (Case T-330/19). Lastly, having regard to the withdrawal decision, the General Court clarified some aspects relating to the relations between a proposal by a national competent authority (NCA) and the ECB's final decision on withdrawal. For example, it ruled that, since it is not bound by the NCA proposal, the ECB shall perform its own assessment, taking into account the elements listed in Article 83(2) of the SSM Framework Regulation. As a result, the ECB may, if appropriate, add in the final withdrawal decision grounds for withdrawal which were not included in the NCA proposal (Case T-230/20).

9.2 ECB opinions and cases of non-compliance

Articles 127(4) and 282(5) of the Treaty on the Functioning of the European Union require that the ECB be consulted on any proposed EU or draft national legislation falling within its fields of competence. All ECB opinions are published on EUR-Lex. ECB opinions on proposed EU legislation are also published in the Official Journal of the European Union. In 2022 the ECB adopted 14 opinions on proposed Union legal acts and 32 opinions on draft national legislation falling within its fields of competence.

[68] The Council of the European Union, the European Commission, the Eurogroup and the European Union.

Five clear and important cases of non-consultation were recorded

Five cases of non-compliance with the obligation to consult the ECB on draft legislation were recorded in respect of national laws and Union legal acts. The first case concerned a Finnish law on an emergency interbank payment scheme. This case was considered to be clear and important owing to its potential impact on the ESCB's task of promoting the smooth operation of payment systems and on the tasks of Suomen Pankki. The second case concerned an Italian law on measures prohibiting the financing of companies producing anti-personnel mines and cluster munitions and submunitions, which required the relevant authorities, including Banca d'Italia, to ensure that credit institutions comply with the ban on financing companies that produce anti-personnel mines, cluster munitions and submunitions. This case was considered to be clear and important owing to its potential impact on Banca d'Italia due to the atypical nature of the task for a national central bank. The third case concerned the Irish Land Development Agency Act, which makes provision for the compulsory acquisition of lands owned by relevant public bodies, including the Central Bank of Ireland. This case was considered to be clear and important owing to its potential impact on the Central Bank of Ireland, in particular on its financial independence. The fourth case concerned a Lithuanian law on securitisation and covered bonds amending the Law on Lietuvos bankas that designated Lietuvos bankas as the competent authority responsible for the public supervision of securitisation and covered bonds and conferred on it the related supervisory, investigatory and sanctioning powers. This case was considered to be a clear and important case owing to its impact on the tasks of Lietuvos bankas. The fifth case concerned the Union Directive on measures for a high common level of cybersecurity across the Union. This case was considered to be a clear and important case of failure to consult the ECB because of its potential impact on the ESCB's tasks, in particular the promotion of the smooth operation of payment systems, the contribution to the smooth conduct of policies pursued by competent authorities relating to the stability of the financial market system and the ECB's tasks concerning the prudential supervision of credit institutions.

The ECB adopted 14 opinions on proposed EU legislation

The ECB adopted 14 opinions on EU legislative proposals, covering topics such as the introduction of the euro in Croatia and the conversion rate to euro for the Croatian kuna; the introduction of a gas price market correction mechanism; CSDs; prudential requirements for credit institutions and investment firms as regards requirements for credit risks and with respect to resolution (CRR III); supervisory powers, sanctions, third-country branches, and environmental, social and governance risk (CRD VI); the prevention of the use of the financial system for the purposes of money laundering or terrorist financing (AMLD 6), and the establishment of an Authority for Anti-Money Laundering and Countering the Financing of Terrorism; ensuring a high common level of cybersecurity across the Union (NIS 2); markets in financial instruments (MiFIR/MiFID II); alternative investment fund managers; harmonised rules on fair access to and use of data (Data Act); the establishment and functioning of a European Single Access Point providing centralised access to publicly available information relevant to financial services, capital markets and sustainability; and the system of national and regional accounts in the European Union.

The ECB adopted 32 opinions on draft national legislation

With regard to national legislation, which often covers more than one subject, the ECB adopted eight opinions concerning currency matters and means of payment; 25

opinions concerning NCBs; two opinions concerning payment and/or securities settlement systems; four opinions concerning statistical matters; five opinions concerning the stability of the financial system; two opinions concerning monetary policy instruments and operations; and seven opinions concerning the prudential supervision of credit institutions.

9.3 Compliance with the prohibition of monetary financing and privileged access

Pursuant to Article 271(d) of the Treaty on the Functioning of the European Union, the ECB is entrusted with the task of monitoring the compliance of the EU NCBs with the prohibitions laid down in Articles 123 and 124 of the Treaty and Council Regulations (EC) Nos 3603/93 and 3604/93. Article 123 prohibits the ECB and the NCBs from providing overdraft facilities or any other type of credit facility to governments and EU institutions or bodies, as well as from purchasing in the primary market debt instruments issued by these institutions. Article 124 prohibits any measure, not based on prudential considerations, which establishes privileged access by governments and EU institutions or bodies to financial institutions. In parallel with the Governing Council of the ECB, the European Commission monitors Member States' compliance with the above provisions.

The ECB also monitors the EU central banks' secondary market purchases of debt instruments issued by the domestic public sector, the public sector of other Member States and EU institutions and bodies. According to the recitals of Council Regulation (EC) No 3603/93, the acquisition of public sector debt instruments in the secondary market must not be used to circumvent the objective of Article 123 of the Treaty. Such purchases should not become a form of indirect monetary financing of the public sector.

The prohibitions laid down in Articles 123 and 124 of the Treaty were in general respected

The ECB's monitoring exercise conducted for 2022 confirmed that Articles 123 and 124 of the Treaty were in general respected.

The ECB will continue monitoring the involvement of the Magyar Nemzeti Bank in the Budapest Stock Exchange as the purchase of the majority ownership of the Budapest Stock Exchange by the Magyar Nemzeti Bank in 2015 may still be seen as giving rise to monetary financing concerns.

The Central Bank of Ireland's reduction of assets related to the Irish Bank Resolution Corporation during 2022 through sales of long-duration floating rate notes is a step towards the necessary full disposal of these assets and raises the prospect of fully dissolving the Special Portfolio in 2023. Continued sales at an appropriate pace would further mitigate the serious monetary financing concerns that persist.

The financing by NCBs of obligations falling upon the public sector vis-à-vis the International Monetary Fund (IMF) is not considered as monetary financing provided it results in foreign claims that have all characteristics of reserve assets. However, financial donations as provided in 2022 and previous years by a few NCBs via the IMF for debt relief for heavily indebted poor countries did not result in any foreign claims. This form of financial contributions by NCBs to IMF initiatives is therefore not compatible with the prohibition of monetary financing and warrants corrective measures where not yet fully implemented (Nationale Bank van België/Banque Nationale de Belgique, Banque de France, Banca d’Italia, Lietuvos bankas and Sveriges Riksbank).

10 The ECB in an EU and international context

The ECB continued to interact closely with its European and international partners in 2022. The ECB's relationship with the European Parliament is an essential part of its accountability framework. Throughout the year, the ECB engaged in regular hearings and exchanges of letters with the Committee on Economic and Monetary Affairs of the European Parliament (ECON). It held additional meetings with ECON as part of its ongoing work on a digital euro. At international level, the ECB engaged constructively in a challenging dialogue with G20 finance ministries and central banks. It also contributed to central bank-relevant discussions at the International Monetary Fund (IMF), focusing on policy responses to alleviate the consequences on IMF members of Russia's war in Ukraine. The ECB also interacted closely with the IMF on the operationalisation of the Resilience and Sustainability Trust to facilitate the voluntary channelling of special drawing rights (SDRs) following the landmark general allocation of SDRs in 2021 in line with the governance framework of Economic and Monetary Union. The ECB, often together with its partners in the European System of Central Banks, also continued its international engagement beyond the G20 and the IMF in other fora, including through central bank cooperation with Ukraine, and with other prospective EU Member States and developing and emerging countries.

10.1 The ECB's accountability

The ECB discharged its accountability obligations

The ECB was granted independence under the Treaty on the Functioning of the European Union (TFEU), meaning that it is not subject to instructions from Union institutions, any national government or other bodies. This ensures that the ECB can make decisions in pursuit of its objective to maintain price stability without being influenced by political actors. The necessary counterpart to independence is accountability. The ECB is accountable for its actions to the European Parliament as the body composed of the elected representatives of the EU's citizens. The effective discharge of the ECB's accountability obligations to the European Parliament is an essential part of its work. The two-way dialogue between the ECB and the European Parliament allows the ECB to explain its actions and policies to the representatives of EU citizens and to listen to their concerns. This dialogue has evolved over time, going beyond the requirements set out in Article 284(3) of the TFEU. Additionally, the actions of the ECB are subject to judicial review by the Court of Justice of the European Union, providing an additional layer of accountability.

Wide-ranging interaction with the European Parliament continued

In 2022 the President of the ECB attended four regular hearings of the ECON Committee and participated in the plenary debate on the ECB's 2020 Annual Report in February. During the regular hearings, the President of the ECB answered more than 120 questions from Members of the European Parliament covering a wide range of topics. A majority of the questions focused on the ECB's monetary policy and the economic outlook (75%), but Members also raised issues related to economic governance (9%), climate change (6%) and financial legislation (4%). The ECB Vice-President also presented the ECB's 2021 Annual Report to the ECON Committee in April 2022. On the same occasion, the ECB published its feedback on the input provided by the European Parliament as part of the latter's resolution on the 2020 Annual Report. Moreover, in May 2022 a delegation of Members of the ECON Committee participated in the annual visit to the ECB, which took place in person following two years of virtual visits during the pandemic. In addition to these direct interactions, the ECB also replied to 32 written questions from Members of the European Parliament over the course of the year.

Furthermore, the ECB interacted closely with the ECON Committee in the context of its work on a digital euro.[69] In 2022 Executive Board Member Mr Panetta attended three hearings of the ECON Committee to discuss progress made during the digital euro investigation phase, including the topics of privacy, financial stability and the role of the private sector in a digital euro ecosystem. The ECB also organised staff-level technical seminars with the European Parliament and participated in events organised by Members of the European Parliament to discuss a digital euro.

The Winter 2022-23 Eurobarometer survey conducted in January and February 2023 indicated that 79% of euro area respondents supported the euro. While these results are encouraging, the same survey also showed that a relatively smaller share of 44% tended to trust the ECB. It is essential for the ECB to foster public trust both to anchor inflation expectations and to shield the ECB from political pressures that could undermine its independence. The ECB will therefore continue its efforts to build trust among the public by engaging in constructive dialogue with the European Parliament and euro area citizens to explain its decisions and listen to their concerns.

10.2 International relations

G20

The G20 had to respond to the impact of Russia's war in Ukraine in addition to structural challenges

Global economic developments during Indonesia's G20 Presidency in 2022 were dominated by the severe economic and humanitarian impact of Russia's war in Ukraine, which exacerbated global fragilities and slowed the nascent global recovery. G20 finance ministers and central bank governors had to respond to the direct and indirect impacts of the war, such as food and energy shortages, rising global inflation and increasing debt problems, in particular in vulnerable countries. Moreover, long-term structural challenges, such as mitigating climate change, improving pandemic preparedness, and avoiding protectionism and global fragmentation remained high on the agenda.

The ECB also continued to support G20 initiatives in the area of strengthening financial stability and resilience. This included reducing structural vulnerabilities stemming from non-bank financial intermediation and making progress towards the

[69] See Letter from Fabio Panetta to Irene Tinagli, Chair of the ECON Committee, on progress reporting on the investigation phase of a digital euro, ECB, 14 June 2022.

implementation of a regulatory framework at international and jurisdictional level to contain the risks from crypto-assets ecosystems. The ECB also supported the G20 in developing a framework to ensure just and affordable climate transitions and to accelerate the flow of sustainable investment. With regard to vulnerable countries, the ECB continued to support a predictable, timely and coordinated implementation of the Common Framework for Debt Treatments as well as measures to enhance debt transparency.

Policy issues related to the IMF and the international financial architecture

The IMF introduced measures to support Ukraine and other members in dealing with the impact of Russia's war in Ukraine

The IMF played a prominent role in supporting Ukraine and other member countries affected by the direct and indirect repercussions of Russia's war in Ukraine, such as the energy and food crises. It deployed several measures, including a newly created food shock window under its emergency financing instruments and a new Program Monitoring with Board involvement, from which Ukraine and several other countries benefited. An Administered Account was set up to allow donor countries to securely channel financial support – loans or grants – to Ukraine using the IMF's payment infrastructure. Moreover, the IMF has been closely engaging with Ukrainian authorities to provide technical support for Ukraine's economic policy measures.

Work continued to alleviate the impact of global challenges, including the pandemic and Russia's war in Ukraine

In terms of the IMF's lending toolkit, the new Resilience and Sustainability Trust (RST) – first proposed following the 2021 general allocation of SDRs – was approved and became operational ahead of the 2022 IMF Annual Meetings. The RST will help amplify the positive effects of the general allocation of SDRs in 2021 by facilitating the voluntary channelling of SDRs from members with strong external positions to low-income countries and vulnerable middle-income countries. RST funding can be used to address longer-term structural challenges, including climate change and pandemic preparedness, thereby contributing to prospective balance of payments stability. For contributions from the ESCB, similar to other channelling alternatives via the Poverty Reduction and Growth Trust, it is essential that claims on the RST maintain reserve asset quality. Among other SDR-related issues, in May 2022 the IMF concluded the five-year review of the SDR valuation, according to which the euro remained the second largest currency by size of share after the US dollar.

Amid heightened debt vulnerabilities following the pandemic, which were further exacerbated by Russia's war in Ukraine, the IMF continued to develop its debt-related work agenda, completing its Review of the Fund's Policies on Sovereign Arrears and Related Perimeter Issues in Spring 2022. The Review revisited the conditions under which the Fund can lend to a member country in the presence of sovereign arrears, taking into account the evolution in the creditor landscape, including the emergence of new official bilateral and institutional creditors and instruments. This includes a refinement of the claims that are subject to the policy of non-toleration of arrears, the highest level of IMF protection for the claims of international financial institutions and official bilateral creditors. The work on debt transparency under the joint IMF-World Bank Multipronged Approach to Address Debt Vulnerabilities has proceeded further. The IMF also completed the Review of The Institutional View on the Liberalization and

Management of Capital Flows in March 2022. This forms part of its surveillance activities, which are increasingly important in the light of the slowing growth momentum, tightening financial conditions, and the impact of the energy and food crises.

11 Promoting good governance, social and environmental sustainability

In 2022 the ECB closely monitored the developments on sustainability reporting at European and international level to continuously increase transparency on its activities in the environmental, social and governance fields. Key work in these areas was carried out throughout the year including the achievement of several milestones set for the ECB's climate agenda, the launch of awareness-raising campaigns and easy access to advice on ethics and good conduct to address the growing relevance of ethics and compliance issues, the expansion of the ways in which the ECB communicates with the public and the adjustment of human resources policies and practices to the new ways of working that emerged after the pandemic.

11.1 The ECB's response to sustainability and related impacts and risks

Key work was conducted on environmental, social and governance-related topics

The ECB first started reporting on environmental, social and governance (ESG) matters in a more holistic manner in 2021, based on a materiality assessment which identified key sustainability topics for the organisation. This exercise also guided the ECB's disclosures for 2022, which were further enriched through an initial analysis of the sustainability topics identified in the European Sustainability Reporting Standards in 2022.[70]

As a public institution, the ECB strives for the highest level of integrity and good conduct, continuously monitoring and adapting its frameworks to make them fit for purpose in a fast-changing world (see Section 11.2). With regard to its social impacts, the ECB has made further efforts to explain its policies to the public, targeting different audiences and addressing the concerns of citizens, while also creating space for conversations with the public on a regular basis. Section 11.3 sets out the key activities in this domain in 2022. The ECB also updated its human resources policies and practices in line with the new ways of working that arose in response to the COVID-19 pandemic. This included developing a new, flexible teleworking policy, introducing new learning programmes and advancing its diversity and inclusion initiatives, as outlined in Section 11.4. In 2022 the ECB further defined its strategic approach to climate change by developing an ECB climate agenda (see Section 11.5).

In addition to assessing ESG aspects from an impact perspective, the ECB considers sustainability risks under its existing governance framework, as highlighted in the chapter on risk management in the Annual Accounts.

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70 The standards developed by the European Financial Reporting Advisory Group (EFRAG) outline requirements for corporate reporting on a broad range of ESG issues.

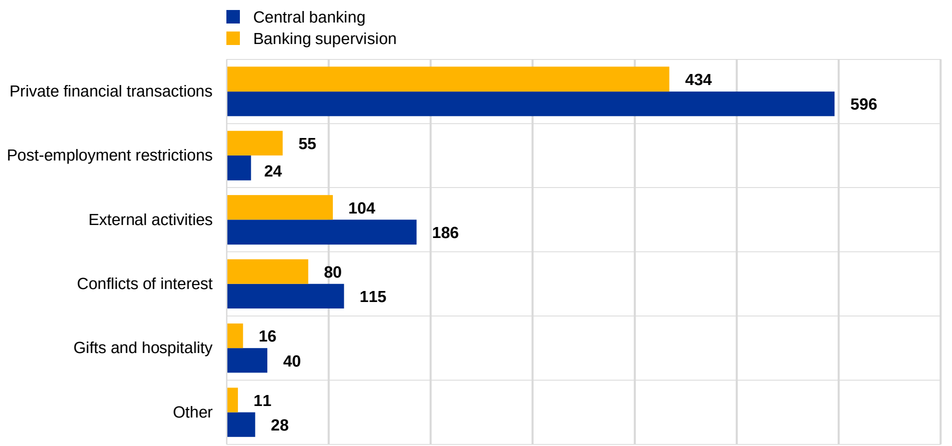
11.2 Strengthening ethics and integrity

The ECB puts ethics and good conduct at the heart of its activities

The ECB actively promotes an organisational culture of ethics and compliance, ensuring that its high-level officials, management and staff members perform their functions in accordance with the highest standards of conduct. The Compliance and Governance Office (CGO) is responsible for establishing the rules on ethics and governance for ECB staff and for monitoring compliance with these. It organises awareness campaigns, training courses and e-learning programmes, and provides individual advice and guidance on ethical issues. In 2022 efforts were made to enhance awareness about these rules and facilitate access to advice on ethics. Noting the importance of a prompt delivery of quality guidance, the CGO developed an ethics chatbot, which is able to provide general information and replies to straightforward questions in several ethical areas in real time. As a result, the number of queries submitted to the CGO fell by almost 20% from approximately 2,050 in 2021 to 1,690 in 2022, allowing the ethics and compliance experts to focus on more complex issues (Chart 11.1).

Chart 11.1

Overview of requests received from ECB staff in 2022



Source: ECB.

The ECB developed a structured approach to managing conduct risk stemming from external contractors

In addition to its regular information and advisory activities, the ECB invested in further strengthening its integrity and good conduct frameworks. In 2022 the ECB adopted a structured approach to managing the risk incurred if contractors working in sensitive areas do not behave according to the ECB's ethics standards. The new approach complements the ECB's vendor risk management framework and provides guidance on the monitoring and management of conduct risk during contract implementation.

An independent Ethics Committee provides advice to high-level ECB officials on questions of ethics, mostly concerning private activities and post-mandate gainful employment, and assesses their declarations of interests. In line with the ECB's commitment to transparency and public trust-building, the opinions of the Ethics Committee on conflicts of interest, post-mandate gainful employment and private activities, as well as the declarations of interests of high-level officials are published on the ECB website.

The ECB adopted enhanced rules on the private financial transactions of high-level ECB officials

In addition, the Ethics Committee monitors international developments in the field of ethics and good conduct and advises on desirable updates of the ECB's ethics framework for high-level ECB officials. At the end of 2021 the Ethics Committee proposed a review of the rules governing private financial transactions to further mitigate the risks of misuse of confidential information and possible conflicts of interest. As a result, in November 2022 the Governing Council adopted an enhanced Single Code of Conduct imposing additional restrictions on the investment universe and horizon of private financial transactions, as well as new transparency obligations.[71]

At Eurosystem level, the Ethics and Compliance Conference, which comprises the Chief Ethics Officers of the ECB, national central banks (NCBs) and national competent authorities (NCAs), supported the ongoing implementation of the Ethics Guidelines adopted in 2021, which promote a consistent interpretation of the provisions across the national institutions.[72] To reflect the growing importance of ethics and compliance, the Governing Council decided to transform the Conference into an Ethics and Compliance Committee.

The ECB participated in European and international activities and knowledge-sharing on ethical issues

The ECB participates in joint activities and knowledge-sharing with the ethics functions of European institutions and international organisations. To encourage conversations on ethics and integrity, the Ethics and Compliance Committee organised thematic sessions with guest speakers from European and international organisations. In 2022 the ECB participated in interinstitutional discussions on the establishment of an independent ethics body common to all EU institutions, contributed to the Mechanism for the Review of Implementation of the United Nations Convention against Corruption and assumed the role of Vice-Chair of the Ethics Network of Multilateral Organizations.

11.3 Enhancing transparency and fostering understanding of ECB policy

The ECB continued to uphold its commitment to price stability and to make itself better understood by the wider public

In 2022 the surge in inflation, Russia's invasion of Ukraine and the subsequent energy crisis created a challenging environment, including for the ECB's communication. During times of exceptional uncertainty, clear, credible and consistent communication is particularly essential to anchor expectations and foster trust among the public in the ECB's commitment and ability to restore price stability. To that end, the ECB continued its major efforts to foster better understanding of its decisions among both experts and the wider public, using innovative formats and adopting a multilingual approach.

71 See "ECB publishes enhanced rules for private financial transactions of high-level officials", *press release*, ECB, 16 December 2022.

72 Guideline (EU) 2021/2253 of the European Central Bank of 2 November 2021 laying down the principles of the Eurosystem Ethics Framework (ECB/2021/49) (OJ L 454, 17.12.2021, p. 7) and Guideline (EU) 2021/2256 of the European Central Bank of 2 November 2021 laying down the principles of the Ethics Framework for the Single Supervisory Mechanism (ECB/2021/50) (OJ L 454, 17.12.2021, p. 21).

Explaining ECB policy in uncertain times and beyond

The ECB reassured European citizens and provided accessible explanations on its policy decisions

With inflation rising to levels not seen in the history of the euro, and the ECB taking decisive monetary policy action, it was essential to step up communication and provide accessible explanations. First and foremost, this included reassuring European citizens about the ECB's core commitment to bring inflation back to its 2% target over the medium term and its ability to deliver price stability with the tools at its disposal. At the same time, it was important to acknowledge that high inflation is a strain on everyone in the economy and that the necessary monetary policy tightening will also cause pain.

The ECB undertook major efforts to explain how its policy decisions will affect inflation. The interest rate hike in July 2022 was the first in 11 years. To explain to the wider public what higher interest rates seek to achieve, what they mean concretely for people and their economic choices, the ECB ran an extensive communication campaign. This involved publishing a new explainer (available in all EU languages) and arranging a number of TV and radio appearances by ECB Executive Board members and staff members to explain the various decisions and the reasoning behind them, as well as to address concerns.

In addition, a dedicated ECB Podcast episode explained the basic mechanisms of how higher interest rates can rein in inflation, and a second podcast on why monetary policy tightening needs to continue despite a weakening economy.

Sharing more of the insights and analysis that feed into ECB decisions can also help to foster understanding of the ECB's policy among the interested public. To that end, 2022 saw the launch of a revamped ECB Blog, which now includes contributions from both Executive Board members and ECB staff.

With a fresh look and a steady flow of interesting and visually attractive posts, the ECB Blog has become an appealing channel for learning about a variety of central banking topics, ranging from differences in how men and women "feel" inflation to the financing of green innovation and the rise and fall of crypto-assets. Since blog posts are, as a rule, concise and written in accessible language, they tend to attract a readership that goes beyond experts and academics.

Novel ways of reaching the wider public

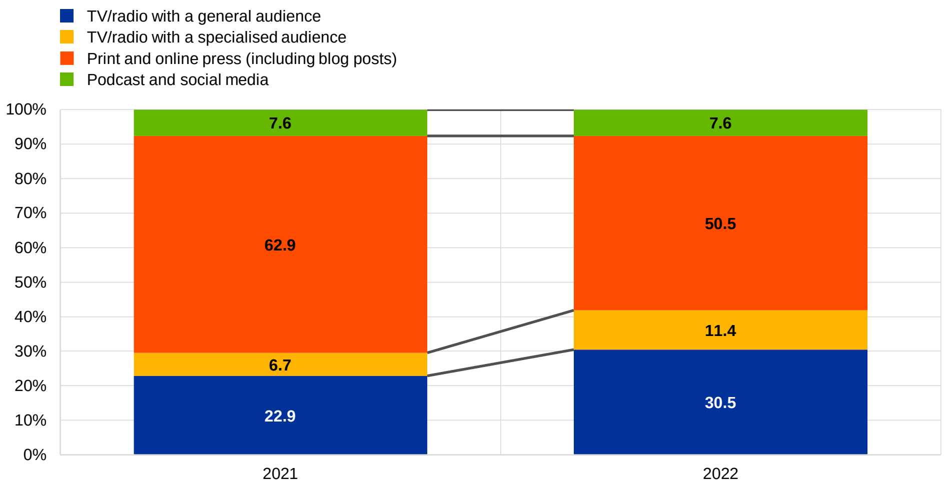
The ECB increased the presence of its Executive Board members on TV and radio

In 2022 the ECB also followed up on its commitment stemming from the ECB's monetary policy strategy review to expand the reach of its communication and engagement beyond financial markets and experts to focus more on the wider public. Based on the finding from internal research that the majority of Europeans (79%) hear about the ECB via television, with radio and other general interest media also playing a very important role, the ECB focused its efforts on these media in 2022. This was reflected in the significant increase in the presence of ECB Executive Board members on radio and television (Chart 11.2).

Chart 11.2

Increase in TV and radio appearances by ECB Executive Board members

(percentages of overall media engagements)



Source: ECB.
Notes: Media activities include Executive Board members' interviews, blog posts, contributions, op-eds, Q&A on social media and podcasts. Short contributions and video messages are excluded.

As younger people in particular increasingly access news via digital channels, the ECB also strengthened its online presence. It did so by enhancing its websites and by expanding its activity and using new formats on a variety of social media platforms, leading to continued growth in the number of followers.

In view of the outcome of the strategy review, the ECB had also committed to making direct engagement and interaction with the wider public a structural part of its communication – in other words, to expand on its one-way communication to encompass two-way conversation. To that end, the "ECB Listens" concept developed into a new "ECB & You" format. "ECB & You" seeks to enable direct dialogue between the ECB's top representatives and the public. It aims for the widest possible reach, for instance via suitable TV programmes in euro area countries. The first event of this kind on a Dutch TV programme called "College Tour" gave local students an opportunity to interact live with President Lagarde on a variety of topics, including inflation, the digital euro, crypto-assets and career advice.

To reach the wider public effectively, the ECB has to speak to people in their own languages. Taking a multilingual approach to communications is the only way it can do this. To that end, significant parts of the ECB's websites are available in all 24 official EU languages, including in Irish from 2022.

Providing access to documents is a key part of the ECB's transparency policy. In 2022 the ECB undertook several initiatives to facilitate the submission and handling of requests for public access to ECB documents. Not least, following up on the policies and practices proposed by the European Ombudsman to give effect to the right of public access to documents, the ECB enhanced the information available on its Access to documents web page by publishing its filing and retention plan, as well as summary information on the requests for public access received in the previous year. With regard to the recommendations on the recording of text and instant messages sent/received by staff members in their professional capacity, the ECB prepared guidance for staff on the strictly limited use and mandatory recording of text and instant messages exchanged for business purposes.

No findings of maladministration were raised by the European Ombudsman regarding the ECB's handling of public access requests.

To facilitate the handling of requests for public access to ECB documents within the ECB, the Eurosystem and the Single Supervisory Mechanism, the CGO developed a portal on transparency and access to documents, accessible to staff of the ECB, NCBs and NCAs. It provides easy access to the legal framework and procedures to follow, as well as information on past cases. It also raises awareness about transparency developments at the EU and international levels.

In 2022 the ECB responded to around 10,400 enquiries from European citizens, an increase of 7% compared with 2021. Citizens requested information or commented on a wide variety of topics, including inflation, interest rates, Russia's war in Ukraine, climate change, the euro and exchange rates.

11.4 Empowering our people to excel for Europe

After more than two years of mostly working remotely, in 2022 ECB staff gradually returned to the office and started preparing for a new way of working. To support them during this period, we developed and adapted our people policies and initiatives. We continued to run pulse checks to check in with our employees on their well-being, connectedness and initial experiences with hybrid working. As we shifted to a hybrid working model, we also strengthened our diversity and inclusion efforts to create a workplace where everyone feels safe, valued and respected for who they are.

Gradual return to the office

ECB staff prepared for a new way of working

In May 2022 ECB staff entered a transition phase during which they gradually returned to the office, based on a minimum on-site presence of eight days per month. In parallel, we launched a Hybrid Working Model pilot to collect initial experiences with hybrid working. Roughly 1,400 employees from six business areas took part. The findings from the pilot, together with the feedback shared by ECB staff via different channels, extensive benchmarking and several rounds of consultation with our staff representatives all fed into the ECB's new teleworking policy. This new policy, effective as of 1 January 2023, stands out in terms of overall flexibility compared with other organisations, allowing ECB staff to telework up to 110 days per year (around 50% of their working time).

The ECB checked in with employees

To gain insight into our employees' well-being, productivity, connectedness and first experiences with hybrid working, we continued to run pulse checks, with participation rates of around 60%. While our employees' well-being continued to improve in the first part of the year, it dropped towards the end of the year despite an improved feeling of connectedness after returning to the offices. Our latest pulse check showed that our employees feel well equipped to work in a hybrid way and that 83% of them feel proud to work for the ECB and 72% would recommend the ECB as a great place to work.

Learning and development

Digital people development initiatives were introduced

In 2022 we offered learning initiatives to accelerate digital business transformation, equip our staff for hybrid working and support their professional development. For example, we launched a digital dexterity learning portfolio that included masterclasses and e-learning courses for leaders and all staff and re-introduced a Leadership Growth Programme for our ECB leaders. In parallel to enabling our employees to access learning material from the European Commission and other EU institutions, as well as LinkedIn Learning through the Commission's learning portal "EU Learn", we launched EUREKA ("European Expertise & Knowledge Academy"), our new virtual learning platform. EUREKA promotes knowledge-sharing and collaboration. It also gathers learning and mobility opportunities within the ECB in one place. From 2023 it will also cover learning and mobility opportunities across other institutions in the ESCB and SSM.

System-wide collaboration on learning and development was enhanced

We use mobility to foster versatility and to attract talented people with new perspectives. This proved useful during the pandemic when we redeployed ECB staff on mobility to their former business areas in response to urgent business needs. In 2022 staff mobility in the ECB across business areas decreased slightly to 4.3% (compared with 4.5% in 2021). However, mobility within the ESCB and SSM increased thanks to two related initiatives: the relaunched Schuman programme and a new "System-wide Virtual Teams" programme pilot, allowing both ECB staff and staff from other ESCB and SSM institutions to work on interesting projects remotely (Table 11.1).

Table 11.1
Mobility projects

Schuman programme	System-wide Virtual Teams pilot
44 projects	**22 projects**
4 projects hosted by the ECB	**7 projects** offered by the ECB
10 ECB employees seconded to NCAs or NCBs	**2 ECB employees seconded** to NCAs or NCBs

Source: ECB.

Measures taken to support Ukrainian professionals

The ECB took several measures to support Ukrainian nationals after Russia's invasion of Ukraine. We launched a traineeship for Ukrainian graduates and offered short-term contracts to Ukrainian professionals. In September 2022 we welcomed 15 Ukrainian trainees and two short-term employees. We also ensured that our childcare and accommodation service providers were available for Ukrainian refugees. Furthermore, we have been working on offering opportunities to staff from the National Bank of Ukraine.

Diversity and inclusion

Steps taken to attract diverse talent

Attracting diverse talent is crucial for the ECB to be able to make the best possible decisions for the citizens it serves. To achieve this, in 2022 the ECB participated in several careers fairs, such as the careers fair organised by ADAN (*Afro Deutsches Akademiker Netzwerk)*, Europe's largest careers fair for black people and people of colour, and EUROUT, Europe's leading LGBTQ+ business conference. We also successfully launched a traineeship pilot for applicants on the autism spectrum.

Efforts were strengthened to improve gender balance

We continued monitoring our progress towards our 2020-26 gender targets through improved gender scorecards. In 2022 the ECB met its target to hire and promote women in at least 50% of cases at management level (all management and senior management). However, the targets were missed at the (team) lead, expert and analyst levels by between 10 and 6 percentage points. When it comes to the overall share of women in the relevant salary band groups, the 2022 targets were achieved at management (all management and senior management) and analyst levels. However, the targets were missed at the (team) lead and expert levels by 2 percentage points and 1 percentage point respectively (Table 11.2). We will continue to strengthen our efforts to achieve gender balance.

Table 11.2

Targets for intake and share of female staff in 2022

Salary bands	2022 targets for intake of female staff (= women hired and promoted)	2022 actual intake of female staff	2022 targets for share of female staff (= overall share of female staff)	2022 actual share of female staff
Senior management (K-L)	Minimum 50%	60%	37%	38%
All management (I-L)	Minimum 50%	52%	33%	33%
(Team) leads (H)	Minimum 50%	40%	37%	35%
Experts (F/G-G)	Minimum 50%	42%	44%	43%
Analysts (E/F)	Minimum 50%	44%	51%	53%

Source: ECB.

We also implemented further measures focused on the intersection of gender with other aspects of diversity, such as age, ethnicity and disability. One such measure was the launch of our redesigned ECB Scholarship for Women.

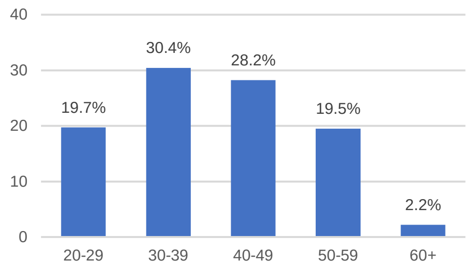
The ECB strived to build an inclusive culture

At the ECB, we strive to create a working culture where all employees feel included and respected, and where individual backgrounds, experiences and abilities are welcomed and valued. To enable such a culture and engage with our employees on this topic, in 2022 we continued to roll out our Inclusion Programme. In addition to providing training and e-learning courses, we launched several workshops focusing on inclusive behaviours within teams. Furthermore, President Christine Lagarde and the governors of 28 NCBs and NCAs signed an Equality, diversity and inclusion charter to promote a culture based on respect, dignity and inclusion across the ESCB and SSM.

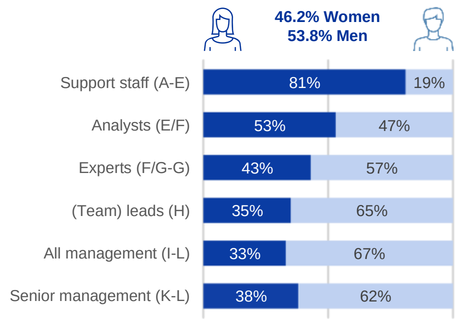
The ECB workforce in figures

5,089 employees and trainees, of which 7.4% work part-time[1]

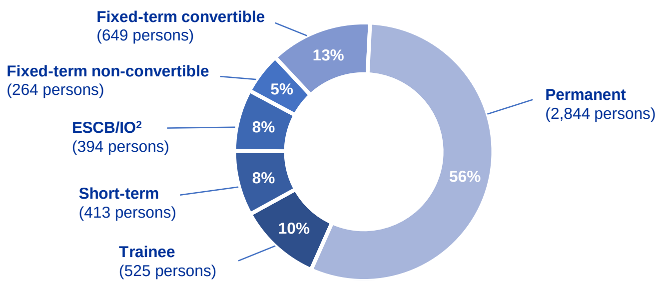
Our employees and trainees by age group[1]
(percentages of entire workforce, age ranges)



Our employees and trainees by gender[1]
(percentages of workforce by salary band)



Our employees and trainees by contract type[1]



Our employees and trainees by other factors

683 training sessions

with 3,772 participations

6 diversity networks

6.6% overall mobility rate[3,4]

9.5% overall promotion rate[3,5]

1.3% turnover rate[6]

Shares of ECB staff and management by nationality[7]

	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	HR	IT	CY	LV
All staff	2.2	2.1	0.8	0.6	27.4	0.6	3.1	5.1	8.1	7.0	1.1	14.2	0.5	0.8
Management	2.9	0.9	0.4	0.7	30.6	0.5	3.8	3.6	12.1	10.7	0.4	14.0	0.5	0.5

	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
All staff	0.8	0.1	1.6	0.3	3.1	2.3	3.1	3.0	4.0	1.1	0.8	1.3	0.8	4.3
Management	0.4	0.2	0.9	-	5.2	1.9	1.4	3.5	0.2	0.9	-	0.5	0.2	3.5

1 As of 31 December 2022.
2 Employees seconded from a national central bank of the European System of Central Banks, European public institutions/agencies or international organisations.
3 Refers only to permanent staff members and staff with fixed-term positions.
4 Refers to any permanent or temporary horizontal move across divisions or business areas.
5 Refers to any permanent or temporary move to a higher salary band, with or without a recruitment campaign.
6 Refers only to permanent staff members and staff with fixed-term convertible positions.
7 The table shows shares of ECB staff and management by nationality, i.e. staff members holding multiple nationalities are counted for each nationality they declare. “All staff” refers to employees, including management, on permanent, fixed-term convertible and fixed-term non-convertible contracts as at 31 December 2022. “Management” refers to salary bands I to M. Totals may exceed 100% due to rounding. The countries are listed using the alphabetical order of the country names in the respective national language.

11.5 Addressing environmental and climate-related challenges

The ECB's climate-related work is steered by its climate change centre under the guidance of the Executive Board

The ECB is committed to playing its part in the fight against climate change and in addressing climate-related risks, within its mandate. In 2021 the ECB strengthened the governance of its climate-related work by setting up the climate change centre (CCC), which reports directly to the ECB President and regularly updates the Executive Board on progress and priorities.

The CCC designs and steers the ECB's strategy on climate and advances climate-related work in collaboration with relevant internal and external stakeholders. Regular meetings with ECB senior managers serve as a forum for coordination and information exchange.

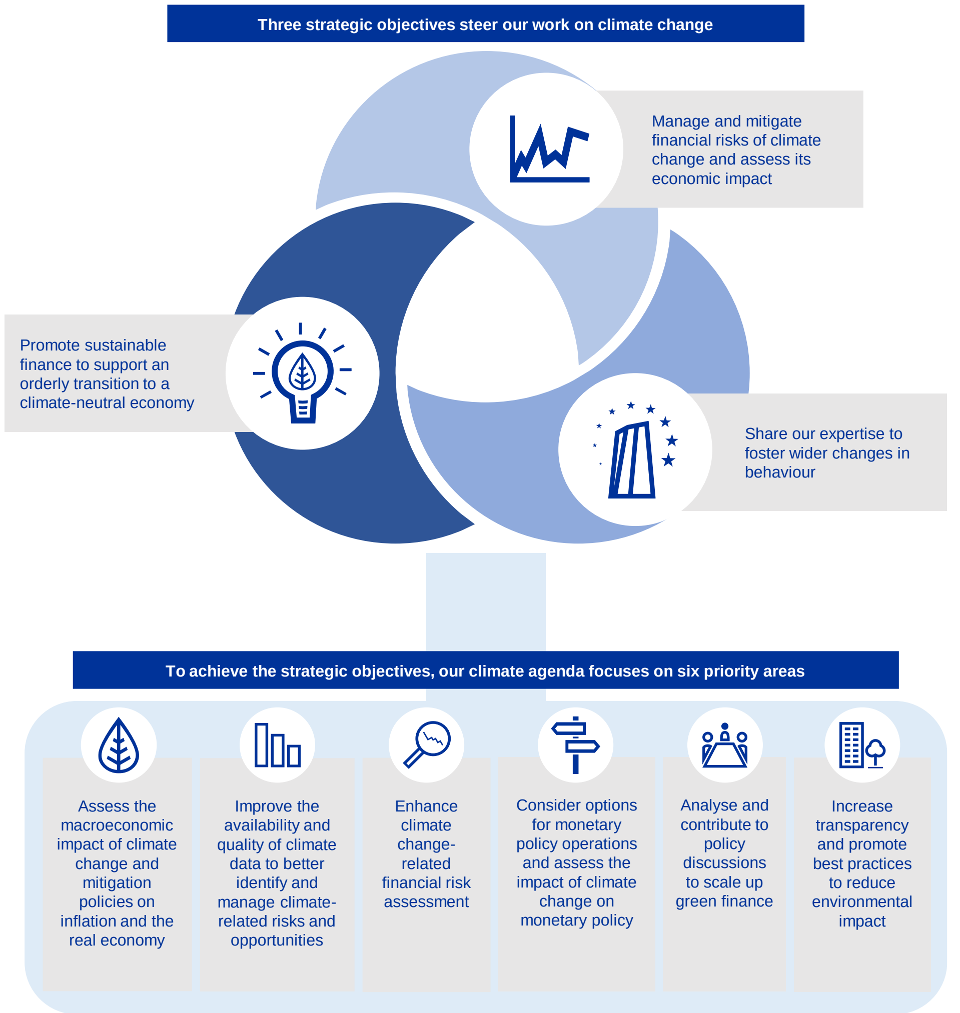
Climate-related considerations are already integrated in the ECB's existing governance structures, for example in its assessment of climate-related risks, as well as in monetary policy operations, non-monetary policy portfolios, financial stability and operational risk management wherever relevant. Furthermore, in 2022 the ECB decided to adopt an internal framework supporting the integration of the objectives of the European Climate Law into the ECB's policies, projects and activities and to report on these measures in the Annual Report. Within the Eurosystem, a new climate change forum was established to deepen collaboration on information-sharing and capacity-building, as well as to foster innovation in climate-related work. Policy issues related to climate change continue to be addressed in the relevant Eurosystem and ESCB committees.

The ECB launched its climate agenda to guide its work on climate change across all areas of competence

The ECB climate agenda was launched in 2022 and sets out the strategic objectives, priorities and a roadmap for the ECB's work in this area. It is guided by three strategic objectives. First, the ECB manages and mitigates the financial risks associated with climate change and assesses its economic impact. Second, it supports an orderly transition to a climate-neutral economy with measures that are within its mandate. Third, it shares expertise with the aim of fostering action beyond the ECB. The ECB's climate agenda will be regularly updated, with details on the activities supporting the achievement of the strategic objectives grouped under six priority areas as outlined in Figure 11.1.

Figure 11.1

The strategic objectives of the ECB's climate agenda



Source: ECB.
Note: For more information on the ECB's climate agenda, see the web page "Climate change and the ECB".

Priority areas for climate change-related work

In 2022 the ECB took further steps to incorporate climate change considerations into its activities within its mandate and given the tasks at hand.

The ECB is assessing the macroeconomic impact of climate change and mitigation policies, and improving climate data

Through its analytical work, the ECB continued to assess the macroeconomic impact of climate change and mitigation policies on inflation and the real economy. The December 2022 Eurosystem staff macroeconomic projections for the euro area included an evaluation of the macroeconomic impact of climate change-related fiscal measures, such as energy taxes, on growth and inflation. The main results were published in the Economic Bulletin. Analytical work focused, among other things, on assessing the impact of extreme weather events on inflation. Furthermore, the ECB made progress on integrating climate change considerations into the macroeconomic modelling toolbox.

The Eurosystem developed climate-related statistical indicators, including experimental indicators for sustainable financial instruments and analytical indicators on financial institutions' exposures to physical risk and the carbon footprint of their portfolios. These indicators will be developed further. In this context, the Eurosystem also aims to improve the availability and quality of climate data, for instance by means of assessing and incorporating public data sources for the analysis of transition and physical risk and through the procurement of commercial data to close existing data gaps.

The ECB is working on enhancing climate change-related financial risk assessment

To enhance the assessment of climate-related financial risks, in 2022 the Eurosystem conducted a first climate stress test of several of the financial exposures on its balance sheet. The main results relating to the corporate bond portfolio were published in the Eurosystem's climate-related financial disclosures in March 2023. The Eurosystem also developed common minimum standards for incorporating climate change risks into the in-house credit assessment systems of NCBs for Eurosystem collateral, which will enter into force by the end of 2024. ECB analysis also provided further evidence on the systemic nature of climate risks and made the case for adapting existing macroprudential policy instruments to mitigate such risks for the financial system.[73]

Climate and environmental risks are being further integrated into the ECB's banking supervision and are identified as a supervisory priority for 2023-25. Information on the key actions taken in 2022 is provided in the ECB Annual Report on supervisory activities.

The ECB is integrating climate change considerations into monetary policy operations and assessing its impact on monetary policy

The Eurosystem took further steps to incorporate climate change into its monetary policy operations. As of October 2022 the Eurosystem began to decarbonise the corporate bond holdings in its monetary policy portfolios by tilting its holdings towards issuers with a better climate performance as measured by past emissions, the ambitiousness of emission reduction plans and the quality of reporting.

Furthermore, in its collateral framework, the Eurosystem decided to limit the share of assets issued by non-financial corporations with a high carbon footprint that counterparties can pledge as collateral when borrowing from the Eurosystem. The limitation will apply by the end of 2024, provided that the necessary technical preconditions are in place. Furthermore, in December 2022 the ECB considered climate risks during its regular reviews of haircuts applied to corporate bonds used as collateral for the first time. The 2022 review of risk control measures did not find evidence that called for changes to the haircut schedule based on climate considerations, as the updated haircut schedule is already sufficiently protective against climate-related financial risks. Other measures in the collateral framework include the introduction of disclosure-related eligibility requirements, expected to apply as of 2026, for entities that are subject to the Corporate Sustainability Reporting Directive, and the above-mentioned enhancement of risk assessment.

The ECB is analysing and contributing to policy discussions to scale up sustainable finance

In the areas of EU and international policy and financial regulation, the ECB actively participated in discussions on sustainable finance in relevant fora, including the G7, G20, Financial Stability Board, Basel Committee on Banking Supervision, Central

73 See "The macroprudential challenge of climate change", joint report by the ECB/ESRB Project Team on climate risk monitoring, July 2022.

Banks and Supervisors Network for Greening the Financial System (NGFS), European Banking Authority and EFRAG. Through this, the ECB aims to further advance the regulatory framework to address climate change, improve climate risk analysis and climate scenarios, act as a catalyst to improve reporting from its perspective, fill data gaps and ultimately help scale up private and public sustainable finance. Examples of the ECB's work in the field of EU sustainable finance and climate legislation include the opinion on the proposed recast of the Energy Performance of Buildings Directive and its contribution to developing the European Sustainability Reporting Standards as observer on the Sustainability Reporting Board of EFRAG. At the international level, the ECB also currently chairs the workstream on Scenario Design and Analysis and the Experts' Network on Legal Issues of the NGFS.

The ECB is increasing its transparency and promoting best practices to reduce environmental impacts

In its Environmental Statement 2022 the ECB set out how it plans to align its business operations with the objectives of the Paris Agreement. The plan focuses on reducing travel and conference-related environmental impacts and engaging with suppliers via tools offered by sustainable procurement processes to manage impacts along the value chain. Progress was also made in the assessment of the potential environmental impacts of the second series of euro banknotes over the lifecycle. Based on the information available, research activities were launched and policies implemented to minimise the environmental impact of euro banknotes, such as the use of sustainable cotton for banknote paper, the extension of banknotes' life in circulation and the use of more sustainable methods to dispose of used banknotes.

With regard to increased transparency, in March 2023 the ECB and the Eurosystem published their first climate-related financial disclosures of the euro-denominated non-monetary policy portfolios of the ECB and the Eurosystem NCBs and of the Eurosystem corporate bond portfolio for monetary policy purposes. The ECB's report on non-monetary policy portfolios explains the ECB's investment strategy and outlines the progress made on decarbonising its own funds and staff pension fund portfolios.

12 Meet our people

Changing jobs within the ECB or working temporarily at another central bank or partner institution has become an integral part of the professional and personal development of colleagues within the Eurosystem and the European System of Central Banks. Such mobility opportunities are a great tool for staff to broaden their knowledge and skills, while allowing them to contribute their specific expertise to important projects with a European impact.

The following stories give an insight into the rich array of assignments undertaken by colleagues via various forms of mobility.

Elena Bobeica, Lead Economist, Directorate General Economics

After a temporary assignment in Directorate General (DG) Secretariat under the ECB's internal mobility scheme, I returned in 2022 to DG Economics to undertake a challenging project. I was entrusted the task of co-leading a group of experts from the ECB and national central banks to investigate issues related to forecasting owner-occupied housing costs.

Interestingly, the current inflation measure only partially includes the housing service costs of homeowners associated with owning, maintaining and living in their own home, even though these represent key expenditure items. While the future inclusion of these costs in the Harmonised Index of Consumer Prices is a multi-year project under the remit of the European Statistical System, forecasting inflation and its components is one of the main tasks of a central bank.

Having worked previously on various aspects of inflation forecasting, I was interested in gaining an understanding of the challenges involved in forecasting owner-occupied housing costs and investigating ways to address these. I found interacting with colleagues from the national central banks particularly rewarding. We worked closely on the project and were able to share diverse insights and information on country particularities. This was extremely useful given the heterogeneity of housing markets across the euro area. I felt that we managed to deepen our understanding of the costs associated with owner-occupied housing and the potential impact of including them in the HICP from the forecasting and monitoring perspectives.

Daniel Gybas, Senior Economist, Secretariat of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS Secretariat)

While addressing climate change is a global challenge that requires global action, central banks operate in very different circumstances. Having been involved as a member of the DG Market Operations team in shaping the ECB's initial thinking on how to integrate climate change into its monetary policy framework, I was curious to understand how other central banks operating in different environments address this challenge. Thanks to a special mobility initiative among the EU's national central banks (Schuman Programme), I was able to join the NGFS Secretariat (hosted by the Banque de France), where I support the workstream on monetary policy. My focus area is the greening of monetary policy operations, which involves facilitating exchanges between more experienced central banks, including the ECB, and central banks that are exploring the possibility of making climate-related adaptations to their respective operational frameworks.

Thanks to this very rewarding assignment I have been able to learn first-hand about central banks' actions and initiatives, and facilitate the sharing of knowledge and experience across institutions. On a personal level, while relocating my family from Frankfurt am Main to the Paris area was challenging, it has also created opportunities for personal growth and long-lasting memories.

Stefano Pagnano, Senior Business Analysis Expert, Directorate General Information Systems

I started my career at the ECB in the Governance and Transformation Services Division, where I was involved in IT governance and digital transformation. After a few years, I realised that I would be interested in getting to know the ECB from a different perspective and bringing my experience to a new context. Thanks to an opportunity for internal mobility, in 2022 I joined the Data and Analytics Services Division of DG Information Systems. My new Division works on cutting-edge data platforms and analytical applications that help the ECB meet its goal of becoming a data-driven organisation.

I currently work on a centralised data collection platform called CASPER, which automates the submission of data to the ECB from anywhere in the world in a self-service mode and within a short time frame. More than 3,000 users and 175 different institutions currently use it to fulfil their reporting obligations.

In my new role, I am involved in project management and business analysis. Together with colleagues from DG Statistics, we are constantly looking for ways to improve our services. For example, my new Division has initiated a Common Data Management programme. This is a complex project, which aims to build a new-generation data management and analytics platform for all ESCB and SSM users. There are many transformational challenges ahead, but our team spirit and constructive approach are one of our strengths!

Being on mobility has been enriching, both professionally and personally. It has allowed me to expand my network and work on innovative assignments wearing my two hats: contributing a different perspective thanks to my "newcomer's eyes" combined with my experience as a seasoned professional.

Meri Sintonen, Economist, Directorate General Monetary Policy

In 2022 I joined the ECB's Monetary Policy Strategy Division on secondment from Suomen Pankki under a Eurosystem staff mobility initiative called the Schuman Programme. As an economist with expertise in the payments field, I contribute to analysing the monetary policy effects of a digital euro with colleagues from various ECB business areas. While a digital euro could offer a wide range of benefits, it could also have monetary policy and financial stability implications depending on the extent to which it would become a substitute for bank deposits.

I am involved in a project that aims to predict the potential demand for a digital euro depending on its design features. The findings of this research can be used to gauge the impact of introducing a digital euro on households' bank deposits and cash holdings. Insights from the analysis also shed light on how different design choices affect the demand for a digital euro and the way in which demand varies according to household characteristics and across euro area countries.

This secondment has offered me a unique opportunity to enhance my skills, grow my networks, get to know the ECB better and contribute to an incredibly interesting project. It has been an inspiring experience to see so many talented people working together towards common goals.

Annual Accounts

Contents

Key figures

€698.9 billion
ECB's Balance Sheet

The ECB's Balance Sheet increased by €18.7 billion in 2022, mainly due to the acquisition of monetary policy securities.

€457.3 billion
Monetary policy securities

Securities held for monetary policy purposes increased by €11.9 billion, mainly owing to purchases of securities under the PEPP and the APP.

€1,627 million
Amount released from the provision for financial risks

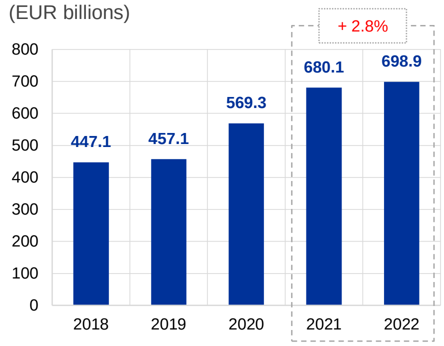
Part of the provision for financial risks was released to offset losses incurred in 2022. After the release, this provision stood at €6.6 billion.

€0
ECB's financial result after the release from the provision for financial risks

The ECB's loss before the release from the provision for financial risks stood at €1,627 million and mainly arose from the interest expense resulting from the net TARGET2 liability, securities write-downs and realised price losses from securities sales. The release from the provision for financial risks brought the ECB's financial result to zero.

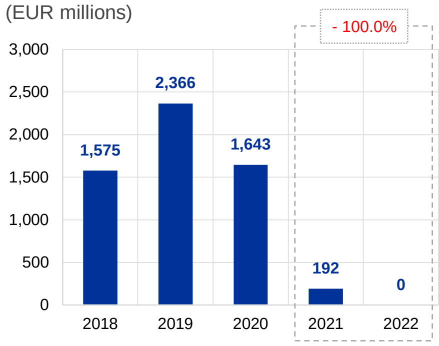
ECB's Balance Sheet

(EUR billions)



ECB's financial result

(EUR millions)



1 Management report

1.1 Purpose of the ECB's management report

The management report[1] is an integral part of the ECB's Annual Accounts and is designed to provide readers with contextual information related to the financial statements.[2] Given that the ECB's activities and operations are undertaken in support of its policy objectives, the ECB's financial position and result should be viewed in conjunction with its policy actions.

To this end, the management report presents the ECB's main tasks and activities, as well as their impact on its financial statements. Furthermore, it analyses the main developments in the Balance Sheet and the Profit and Loss Account during the year and includes information on the ECB's financial resources. Finally, it describes the risk environment in which the ECB operates, providing information on the specific risks to which the ECB is exposed, and the risk management policies used to mitigate risks.

1.2 Main tasks and activities

The ECB is part of the Eurosystem, which comprises, besides the ECB, the national central banks (NCBs) of the Member States of the European Union (EU) whose currency is the euro.[3] The Eurosystem has the primary objective of maintaining price stability. The ECB performs its tasks as described in the Treaty on the Functioning of the European Union[4] and in the Statute of the European System of Central Banks and of the European Central Bank (Statute of the ESCB)[5] (Figure 1). The ECB conducts its activities in order to fulfil its mandate and not with the intention of generating profit.

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1 Throughout this document, the numbers presented may not add up precisely to the totals and percentages may not precisely reflect the absolute figures owing to rounding.

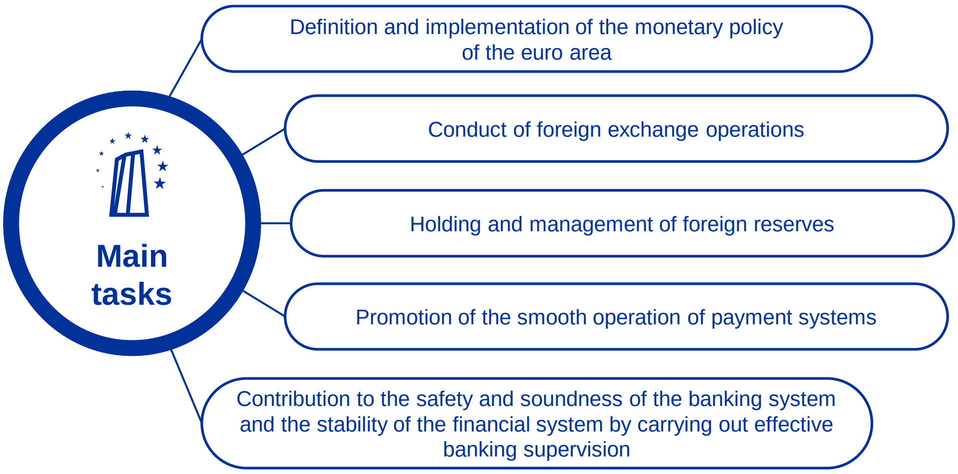
2 The "financial statements" comprise the Balance Sheet, the Profit and Loss Account and the related notes. The "Annual Accounts" comprise the financial statements, the management report, the independent auditor's report and the note on profit distribution/allocation of losses. Further details on the related preparation and approval process can be found on the ECB's website.

3 The number of NCBs in the Eurosystem in 2022 was 19. On 12 July 2022 the Council of the European Union formally approved the adoption of the euro by Croatia on 1 January 2023. As of that date the addition of Hrvatska narodna banka increased the number of Eurosystem NCBs to 20.

4 Consolidated version of the Treaty on the Functioning of the European Union (OJ C 202, 7.6.2016, p.1), as amended. The unofficial consolidated text with the list of amendments can be found here.

5 Protocol (No 4) on the Statute of the European System of Central Banks and of the European Central Bank (OJ C 202, 7.6.2016, p. 230). The European System of Central Banks (ESCB) comprises the ECB and the NCBs of all 27 EU Member States.

Figure 1
The ECB's main tasks



The Eurosystem's monetary policy operations are recorded in the financial statements of the ECB and of the euro area NCBs, reflecting the principle of decentralised implementation of monetary policy in the Eurosystem. Table 1 below provides an overview of the main operations and functions of the ECB in pursuit of its mandate, and their impact on the ECB's financial statements.

Table 1

The ECB's key activities and their impact on its financial statements

Implementation of monetary policy

Lending and liabilities to euro area credit institutions related to monetary policy operations	Securities held for monetary policy purposes	Securities lending
The monetary policy operational framework of the Eurosystem consists of a set of monetary policy instruments. The Eurosystem conducts open market operations, offers standing facilities and requires credit institutions to hold minimum reserves.[1] These monetary policy instruments are used in a decentralised manner by the NCBs and are reflected in their financial statements under the balance sheet items "Lending to euro area credit institutions related to monetary policy operations denominated in euro" and "Liabilities to euro area credit institutions related to monetary policy operations denominated in euro". Accordingly, they have no impact on the ECB's financial statements.	Purchases of these securities are conducted by the ECB and the NCBs of the Eurosystem and are recorded under the balance sheet item "Securities held for monetary policy purposes". The securities currently held are accounted for at amortised cost subject to impairment. Coupon accruals and amortised premiums and discounts are included in the Profit and Loss Account on a net basis under either "Other interest income" or "Other interest expense", depending on whether the net amount is positive or negative. Realised gains and losses, if any, are included in the Profit and Loss Account under "Realised gains/losses arising from financial operations".	Securities held for monetary policy purposes are available for lending by the Eurosystem.[2] For the ECB, these operations are conducted via specialised institutions. These operations are recorded in the balance sheet items "Other liabilities to euro area credit institutions denominated in euro" and "Liabilities to non-euro area residents denominated in euro" if collateral is provided in the form of cash and this cash remains uninvested. Otherwise, the related securities lending operations are recorded in off-balance-sheet accounts. Interest accruals are included in the ECB's Profit and Loss Account as "Other interest income" or "Other interest expense".

Liquidity provision in foreign currency	Liquidity provision to non-euro area central banks in euro
The ECB acts as an intermediary between non-euro area central banks and the Eurosystem NCBs by means of swap transactions aimed at offering short-term foreign currency funding to Eurosystem counterparties.[3] These operations are recorded in the balance sheet items "Liabilities to non-euro area residents denominated in euro" and "Other claims within the Eurosystem (net)" / "Other liabilities within the Eurosystem (net)", as well as in off-balance-sheet accounts. Interest accruals are included in the ECB's Profit and Loss Account as "Other interest income" or "Other interest expense".	The Eurosystem may provide euro liquidity to non-euro area central banks by means of swap and repo transactions in exchange for eligible collateral.[4] For the ECB, the swap operations are recorded in the balance sheet items "Claims on non-euro area residents denominated in foreign currency" and "Liabilities to non-euro area residents denominated in euro" or "Other claims within the Eurosystem (net)" / "Other liabilities within the Eurosystem (net)", as well as in off-balance-sheet accounts. The related repo claims are recorded in the balance sheet item "Claims on non-euro area residents denominated in euro". Interest accruals are included in the ECB's Profit and Loss Account as "Other interest income" or "Other interest expense".

Conduct of foreign exchange operations and management of foreign reserves

Foreign exchange operations and management of foreign reserves
The ECB's foreign reserves are presented on the Balance Sheet, mainly under "Gold and gold receivables", "Claims on non-euro area residents denominated in foreign currency" and "Claims on euro area residents denominated in foreign currency", while any related liabilities would be presented under "Liabilities to euro area residents denominated in foreign currency" and "Liabilities to non-euro area residents denominated in foreign currency". Foreign exchange transactions are reflected in off-balance-sheet accounts until the settlement date. Net interest income, including coupon accruals and amortised premiums and discounts, is included in the Profit and Loss Account under the item "Interest income on foreign reserve assets". Unrealised price and exchange rate losses exceeding previously recorded unrealised gains on the same items and realised gains and losses arising from the sale of foreign reserves are also included in the Profit and Loss Account under the items "Write-downs on financial assets and positions" and "Realised gains/losses arising from financial operations" respectively. Unrealised gains are recorded on the Balance Sheet under the item "Revaluation accounts".

Promotion of the smooth operation of payment systems

Payment systems (TARGET2)
Intra-Eurosystem balances of euro area NCBs vis-à-vis the ECB arising from TARGET2[5] are presented together on the Balance Sheet of the ECB as a single net asset or liability position under "Other claims within the Eurosystem (net)" or "Other liabilities within the Eurosystem (net)". TARGET2 balances of non-euro area NCBs vis-à-vis the ECB are recorded on the Balance Sheet under "Liabilities to non-euro area residents denominated in euro". Balances of ancillary systems connected to TARGET2 through the TARGET2-ECB component are recorded on the Balance Sheet under "Liabilities to other euro area residents denominated in euro" or "Liabilities to non-euro area residents denominated in euro", depending on whether the managing entity is established in or outside the euro area. Interest accruals are included in the Profit and Loss Account under "Other interest income" or "Other interest expense".

Contribution to the safety and soundness of the banking system and the stability of the financial system

Banking supervision – the Single Supervisory Mechanism
The annual expenses of the ECB in relation to its supervisory tasks are recovered via annual supervisory fees levied on the supervised entities. The supervisory fees are included in the Profit and Loss Account under the heading "Net income/expense from fees and commissions". Furthermore, the ECB is entitled to impose administrative penalties on supervised entities for failure to comply with applicable EU banking law on prudential requirements (including ECB supervisory decisions). The related income is recorded in the Profit and Loss Account under the heading "Net income/expense from fees and commissions".

Other

Banknotes in circulation	Own funds portfolio
The ECB has been allocated an 8% share of the total value of euro banknotes in circulation. This share is backed by claims on the NCBs, which bear interest at the rate used by the Eurosystem in its tenders for main refinancing operations and are recorded on the Balance Sheet under the item "Claims related to the allocation of euro banknotes within the Eurosystem". The interest is included in the Profit and Loss Account under the item "Interest income arising from the allocation of euro banknotes within the Eurosystem". Expenses arising from the cross-border transportation of euro banknotes between banknote printing works and NCBs, for the delivery of new banknotes, and between NCBs, for the compensation of shortages with surplus stocks, are borne centrally by the ECB. These expenses are presented in the Profit and Loss Account under the heading "Banknote production services".	The own funds portfolio of the ECB is presented on the Balance Sheet, mainly under the item "Other financial assets". Coupon accruals and amortised premiums and discounts are included in the Profit and Loss Account under "Other interest income" and "Other interest expense". Unrealised price losses exceeding previously recorded unrealised price gains on the same items and realised gains and losses arising from the sale of securities are also included in the Profit and Loss Account under the items "Write-downs on financial assets and positions" and "Realised gains/losses arising from financial operations" respectively. Unrealised price gains are recorded on the Balance Sheet under the item "Revaluation accounts".

1) Further details on the Eurosystem's monetary policy instruments and more specifically on the open market operations can be found on the ECB's website.
2) Further details on securities lending can be found on the ECB's website.
3) Further details on the currency swap lines can be found on the ECB's website.
4) Further details on the Eurosystem's euro liquidity operations against eligible collateral can be found on the ECB's website.
5) Further details on TARGET2 can be found on the ECB's website.

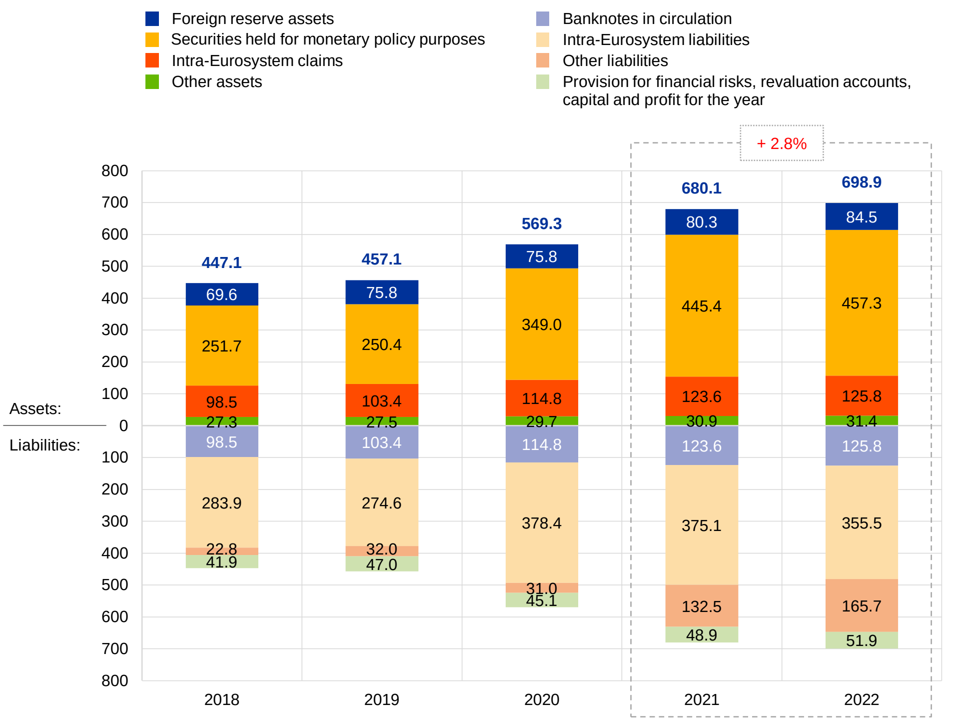
1.3 Financial developments

1.3.1 Balance Sheet

The ECB's Balance Sheet expanded significantly in the period from 2018 to 2022, mainly driven by outright purchases of securities by the ECB in the context of the implementation of the monetary policy of the Eurosystem (Chart 1). As net purchases under the asset purchase programme (APP)[6] ceased in December 2018 and resumed again in November 2019, growth was moderate in 2019 and stemmed mainly from rises in the market value of the ECB's foreign reserve assets and the value of euro banknotes in circulation. The main drivers of the substantial expansion in 2020 and 2021 were net purchases of securities under the APP and the launch of the pandemic emergency purchase programme (PEPP)[7] in March 2020. Net purchases of securities under the PEPP and APP were discontinued as of the end of March 2022 and 1 July 2022 respectively, leading to a more moderate increase in the ECB's Balance Sheet in 2022.

Chart 1
Main components of the ECB's Balance Sheet

(EUR billions)



Source: ECB.

6 The APP consists of the third covered bond purchase programme (CBPP3), the asset-backed securities purchase programme (ABSPP), the public sector purchase programme (PSPP) and the corporate sector purchase programme (CSPP). The ECB does not acquire securities under the CSPP. Further details on the APP can be found on the ECB's website.

7 Further details on the PEPP can be found on the ECB's website.

€18.7 billion
Increase in the ECB's Balance Sheet

In 2022 the **ECB's Balance Sheet** increased by €18.7 billion to €698.9 billion, mainly owing to the ECB's share of securities purchases under the PEPP and the APP. These purchases resulted in an increase in securities held for monetary policy purposes, while the cash settlement of these purchases via TARGET2 accounts led to a corresponding rise in intra-Eurosystem liabilities. This rise in intra-Eurosystem liabilities was more than offset by cash inflows as a result of higher deposits placed with the ECB by euro area residents, which simultaneously resulted in an increase in other liabilities.

The rise in the euro equivalent value of the ECB's foreign reserve assets and in the value of euro banknotes in circulation also contributed to the growth of the ECB's Balance Sheet.

65%
Share of securities held for monetary policy purposes in total assets

Euro-denominated securities held for monetary policy purposes made up 65% of the ECB's total assets at the end of 2022. Under this balance sheet item, the ECB holds securities acquired in the context of the Securities Markets Programme (SMP), the CBPP3, the ABSPP, the PSPP and the PEPP. All remaining securities held under the first and the second covered bond purchase programmes (CBPP1 and CBPP2) matured during 2022.

€11.9 billion
Increase in securities held for monetary policy purposes

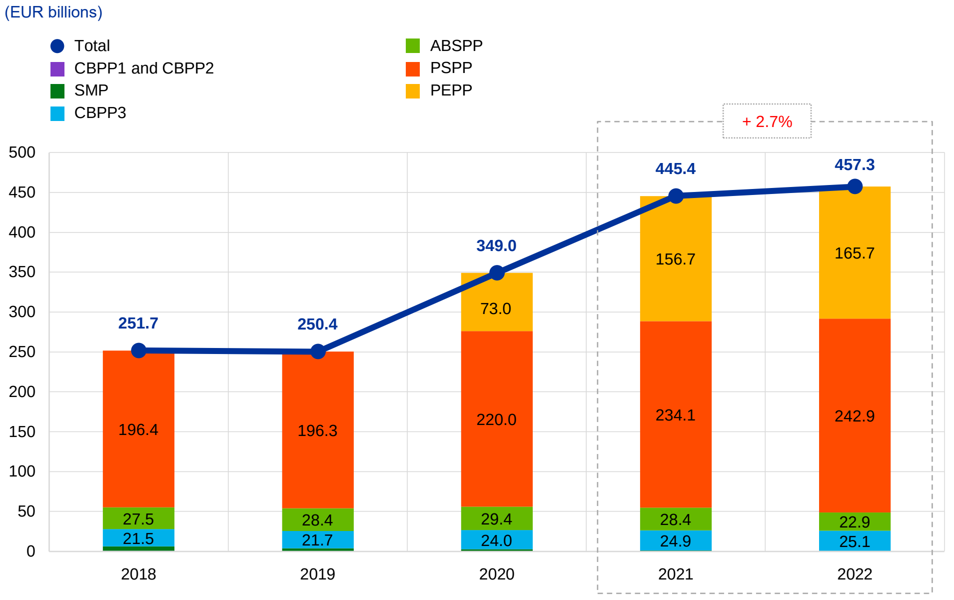
Based on the relevant Governing Council decisions, the ECB continued its net purchases of securities under the PEPP until the end of March 2022, while net purchases under the APP ended as of 1 July 2022. At the same time, the principal payments from maturing securities held in both portfolios continued to be fully reinvested during the year. As a result of these purchases and reinvestments, the portfolio of securities held by the ECB for monetary policy purposes rose by €11.9 billion to €457.3 billion (Chart 2), with PEPP and PSPP holdings increasing by €9.0 billion and €8.8 billion respectively. The €5.5 billion decrease in ABSPP holdings was due to redemptions.

In December 2022 the Governing Council announced[8] that, from the beginning of March 2023, the APP portfolio would decline at a measured and predictable pace, as the Eurosystem will not reinvest all the principal payments from maturing securities. The decline will amount to €15 billion per month on average until the end of June 2023, and its subsequent pace will be determined over time. The Governing Council will continue reinvesting, in full, the principal payments from maturing securities purchased under the PEPP until at least the end of 2024 and will continue applying flexibility across time, asset classes and jurisdictions in these reinvestments with a view to countering risks to the monetary policy transmission mechanism related to the coronavirus (COVID-19) pandemic.

[8] For further details, see the press release of 15 December 2022 on the Governing Council's decisions.

Chart 2

Securities held for monetary policy purposes

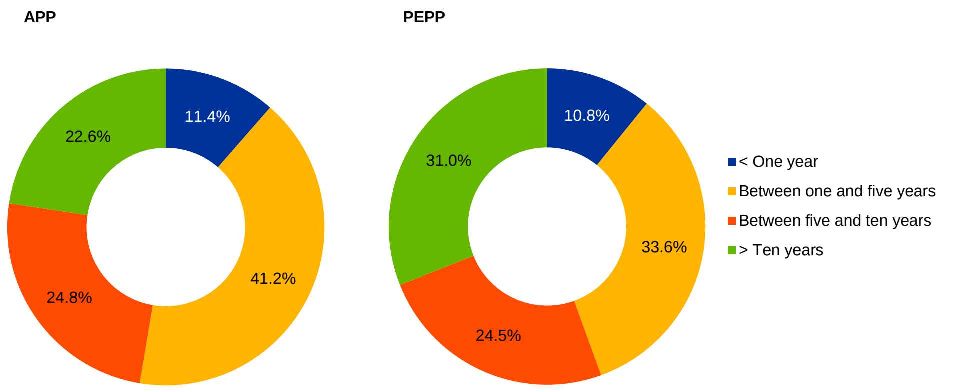


Source: ECB.

For the active programmes of securities held for monetary policy purposes, namely the APP and the PEPP, securities held by the ECB at the end of 2022 had a diversified maturity profile[9] (Chart 3).

Chart 3

Maturity profile of the APP and the PEPP



Source: ECB.
Note: For asset-backed securities, the maturity profile is based on the weighted average life of the securities rather than the legal maturity date.

In 2022 the total euro equivalent value of the **ECB's foreign reserve assets**, which consist of gold, special drawing rights, US dollars, Japanese yen and Chinese renminbi, increased by €4.1 billion to €84.5 billion.

9 More information about maturity restrictions for both the APP and the PEPP can be found on the ECB's website.

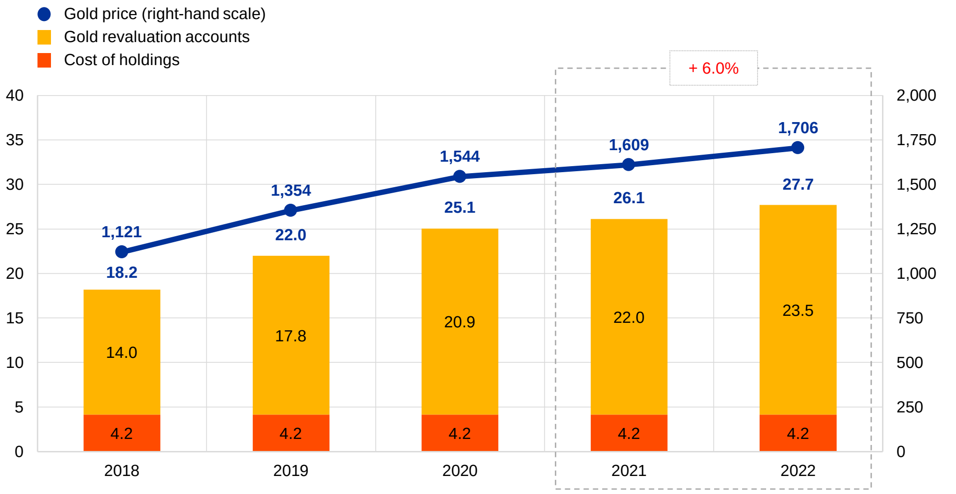
The value of the ECB's holdings of gold and gold receivables increased owing to the increase in the market price of gold in euro terms

The euro equivalent value of the ECB's holdings of gold and gold receivables increased by €1.6 billion to €27.7 billion in 2022 (Chart 4) owing to an increase in the market price of gold in euro terms, while the size of these holdings in fine ounces remained unchanged. This increase also led to an equivalent rise in the ECB's gold revaluation accounts (see Section 1.3.2 "Financial resources").

Chart 4

Gold holdings and gold prices

(left-hand scale: EUR billions; right-hand scale: euro per fine ounce of gold)



Source: ECB.
Note: "Gold revaluation accounts" does not include the contributions of the central banks of the Members States that joined the euro area after 1 January 1999 to the accumulated gold revaluation accounts of the ECB as at the day prior to their entry into the Eurosystem.

Increase in the ECB's foreign currency holdings, mainly owing to the appreciation of the US dollar against the euro

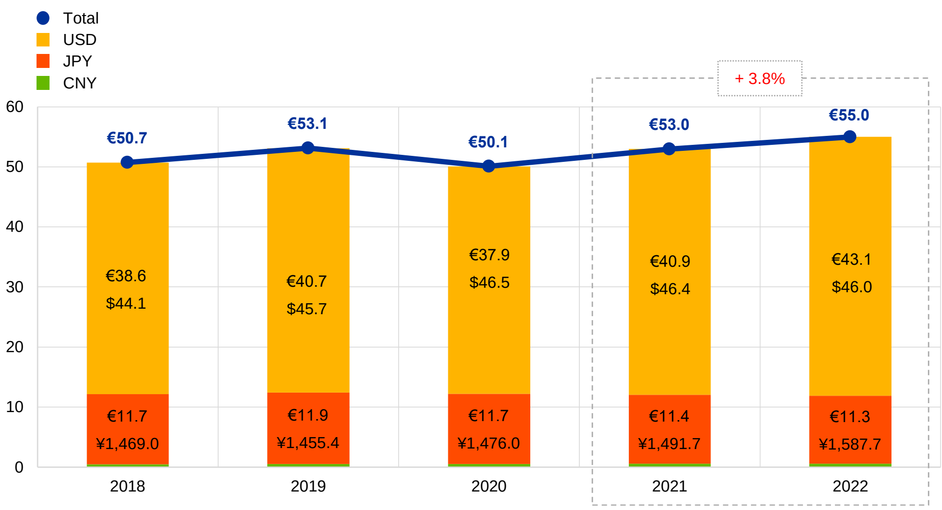
The ECB's foreign currency holdings[10] of US dollars, Japanese yen and Chinese renminbi increased in euro terms by €2.0 billion to €55.0 billion (Chart 5), mainly owing to the appreciation of the US dollar against the euro. The appreciation of the US dollar is also reflected in higher balances in the ECB's revaluation accounts (see Section 1.3.2 "Financial resources").

[10] These holdings comprise assets included under the balance sheet items "Claims on non-euro area residents denominated in foreign currency – Balances with banks and security investments, external loans and other external assets" and "Claims on euro area residents denominated in foreign currency".

Chart 5

Foreign currency holdings

(EUR billions)



Source: ECB.

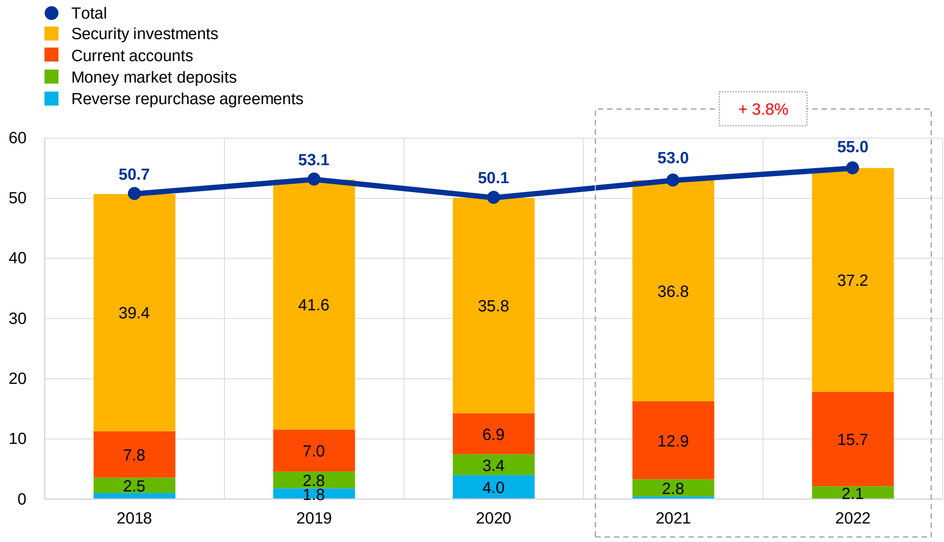
The US dollar continued to be the main component of the ECB's foreign currency holdings, accounting for approximately 78% of the total at the end of 2022.

The ECB manages the investment of its foreign currency holdings using a three-step approach. First, a strategic benchmark portfolio is designed by the ECB's risk managers and approved by the Governing Council. Second, the ECB's portfolio managers design the tactical benchmark portfolio, which is approved by the Executive Board. Third, investment operations are conducted in a decentralised manner by the NCBs on a day-to-day basis.

The ECB's foreign currency holdings are mainly invested in securities and money market deposits or are held in current accounts (Chart 6). Securities in this portfolio are valued at year-end market prices.

Chart 6

Composition of foreign currency investments



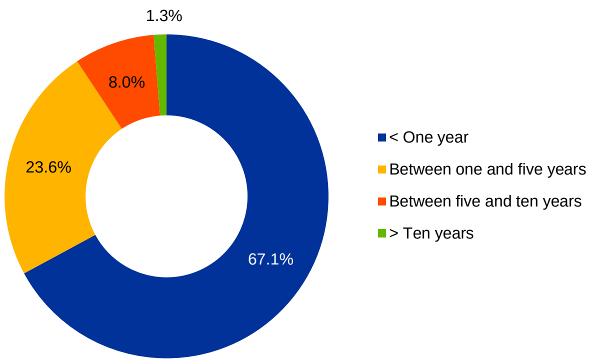
Source: ECB.

67%
Foreign currency-denominated securities with a maturity of less than one year

The purpose of the ECB's foreign currency holdings is to finance potential interventions in the foreign exchange market. For this reason, the ECB's foreign currency holdings are managed in accordance with three objectives (in order of priority): liquidity, safety and return. Therefore, this portfolio mainly comprises securities with short maturities (Chart 7).

Chart 7

Maturity profile of foreign currency-denominated securities



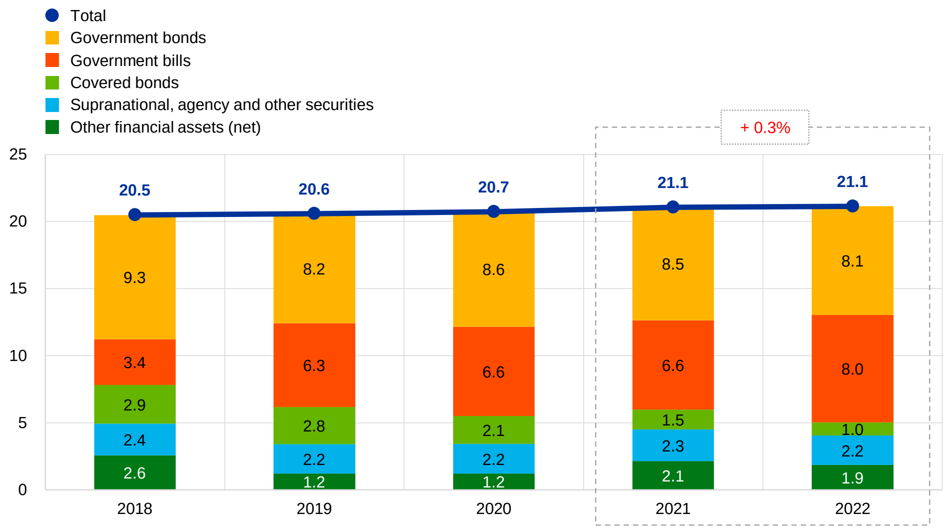
Source: ECB.

The value of the **own funds portfolio** remained virtually unchanged at €21.1 billion (Chart 8) as its main drivers in 2022 were largely mutually offsetting. The investment of a total amount equal to the amount transferred to the ECB's provision for financial risks in 2021 and the amount paid up by the euro area NCBs in 2022 in respect of the second instalment of their increased subscriptions in the ECB's capital following the withdrawal of the Bank of England from the ESCB (see Section 1.3.2 "Financial resources") increased the size of the own funds portfolio. However, this increase was almost fully offset by the decline in the market value of the securities held in this portfolio as a result of the significant rise in euro area bond yields (Chart 16).

Chart 8

The ECB's own funds portfolio

(EUR billions)



Source: ECB.

The portfolio mainly consists of euro-denominated securities which are valued at year-end market prices. In 2022 government debt securities accounted for 76% of the total portfolio.

13.1%
Share of sustainable and responsible investments in the ECB's own funds portfolio

The share of green investments in the own funds portfolio continued to increase, rising from 7.6% at the end of 2021 to 13.1% at the end of 2022. The ECB plans to further increase this share over the coming years.[11] Since 2021 purchases of green bonds in secondary markets are complemented by investments in the euro-denominated green bond investment fund for central banks launched by the Bank for International Settlements in January 2021.

The ECB's own funds portfolio predominantly consists of investments of the ECB's financial resources, namely its paid-up capital and amounts set aside in the general reserve fund and in the provision for financial risks. The purpose of this portfolio is to provide income to help fund the ECB's operating expenses which are not related to the delivery of its supervisory tasks.[12] It is invested in euro-denominated assets,

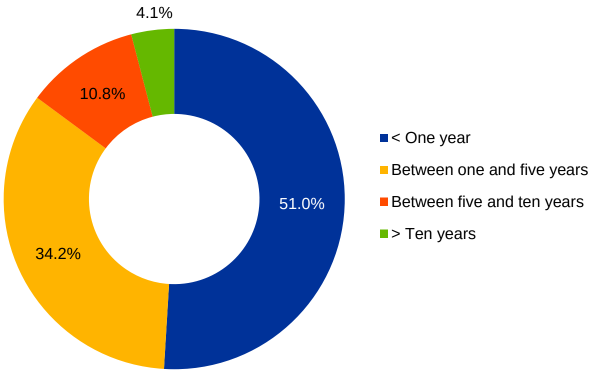
[11] In accordance with the recommendations of the Task Force on Climate-related Financial Disclosures, the ECB will publish climate-related financial disclosures with regard to its own funds and pension portfolios on the ECB's website in March 2023.

[12] The expenses incurred by the ECB in the performance of its supervisory tasks are recovered via annual fees levied on supervised entities. Further details can be found on the ECB's banking supervision website.

subject to the limits imposed by its risk control framework. This results in a more diversified maturity structure (Chart 9) than in the foreign reserves portfolio.

Chart 9

Maturity profile of the ECB's own funds securities



Source: ECB.

At the end of 2022, the total value of euro **banknotes in circulation** was €1,572.0 billion, an increase of 1.8% compared to the end of 2021. The ECB has been allocated an 8% share of the total value of euro banknotes in circulation, which amounted to €125.8 billion at the end of the year. Since the ECB does not issue banknotes itself, it holds **intra-Eurosystem claims** vis-à-vis the euro area NCBs for a value equivalent to the value of the banknotes in circulation.

The ECB's **intra-Eurosystem liabilities**, which mainly comprise the net TARGET2 balance of euro area NCBs vis-à-vis the ECB and the ECB's liabilities with regard to the foreign reserve assets transferred to it by the euro area NCBs when they joined the Eurosystem, decreased by €19.7 billion to €355.5 billion in 2022.

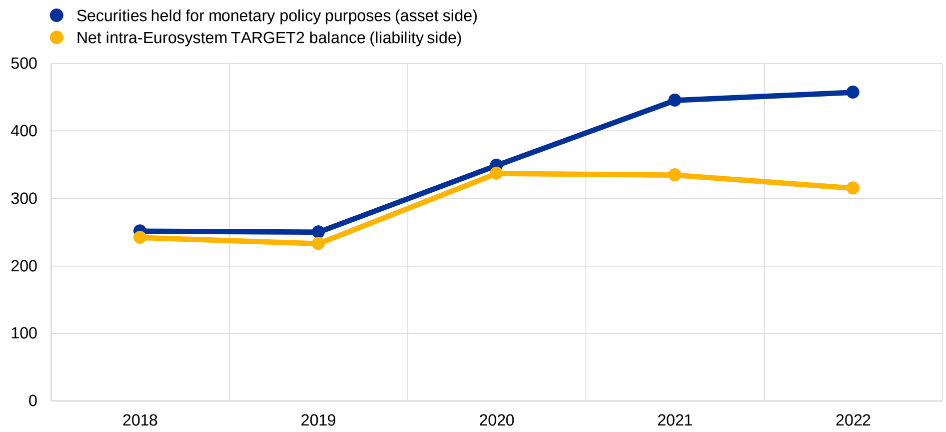
The development of the intra-Eurosystem liabilities over the period from 2018 to 2020, was mostly driven by the evolution of the net TARGET2 liability as a result of the ECB's net purchases of securities held for monetary policy purposes, which are settled via TARGET2 accounts (Chart 10). In 2021 and 2022 the impact of monetary policy securities purchases on the net TARGET2 liability was more than offset by other factors. In 2022 these factors were mainly the higher deposits of euro area residents accepted by the ECB in its role as fiscal agent[13] and the higher balances of euro area ancillary systems connected to TARGET2 through the TARGET2-ECB component.

13 In accordance with Article 21 of the Statute of the ESCB, the ECB may act as fiscal agent for Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States.

Chart 10

Net intra-Eurosystem TARGET2 balance and securities held for monetary policy purposes

(EUR billions)



Source: ECB.

The ECB's **other liabilities** consist mainly of deposits accepted by the ECB in its role as fiscal agent and balances of ancillary systems connected to TARGET2 through the TARGET2-ECB component. In 2022 the ECB's other liabilities increased by €33.2 billion to €165.7 billion, mainly due to higher deposits of euro area residents accepted in its role as fiscal agent.

1.3.2 Financial resources

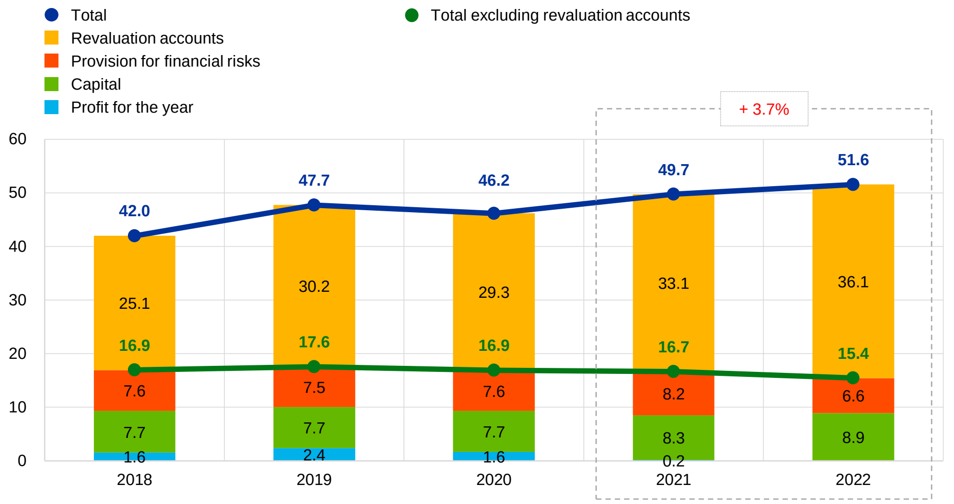
€51.6 billion
The ECB's financial resources

The ECB's financial resources consist of its capital, any amounts held in the provision for financial risks and the general reserve fund, the revaluation accounts and any profit for the year. These financial resources are (i) invested in assets that generate income and/or (ii) used to offset losses. As at 31 December 2022, the **ECB's financial resources** totalled €51.6 billion (Chart 11). This was €1.8 billion higher than in 2021 owing to (i) the increase in the revaluation accounts as a result of the appreciation of the US dollar against the euro and the rise in the market price of gold in euro terms in 2022 and (ii) the increase in the paid-up capital. These increases were partially offset, mainly by the reduction in the provision for financial risks following its partial use to offset losses incurred in 2022.

Chart 11

The ECB's financial resources

(EUR billions)



Source: ECB.
Note: "Revaluation accounts" includes total revaluation gains on gold, foreign currency and securities holdings, but excludes the revaluation account for post-employment benefits.

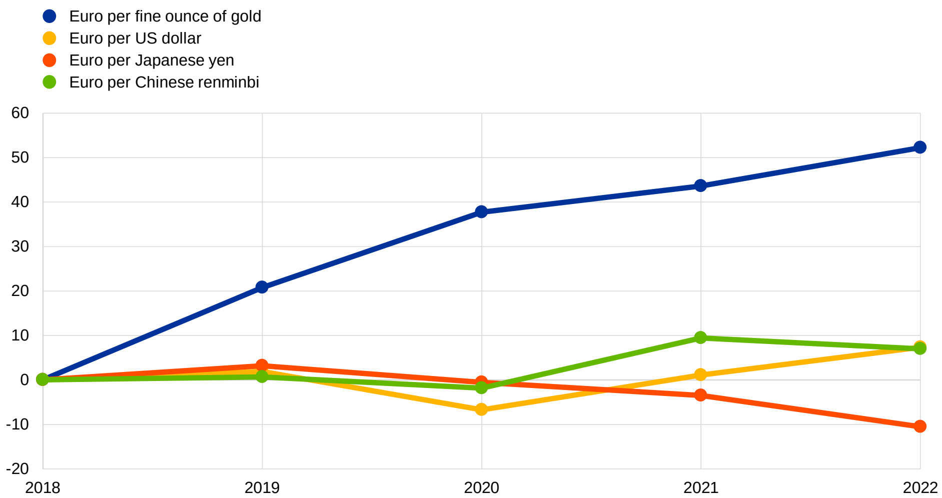
6%
Appreciation of the US dollar against the euro

Unrealised gains on gold and foreign currencies and unrealised gains on securities that are subject to price revaluation are not recognised as income in the Profit and Loss Account but are recorded directly in **revaluation accounts** shown on the liability side of the ECB's Balance Sheet. The balances in these accounts can be used to absorb the impact of any future unfavourable movement in the respective prices and/or exchange rates and thus strengthen the ECB's resilience against the underlying risks. In 2022 the revaluation accounts for gold, foreign currencies and securities[14] increased by €3.0 billion to €36.1 billion owing to higher revaluation balances for foreign currencies and gold as a result of the appreciation of the US dollar against the euro and the rise in the market price of gold in euro terms (Chart 12), which were partially offset by the decrease in the revaluation balances for securities.

[14] The balance sheet item "Revaluation accounts" also includes remeasurements in respect of post-employment benefits.

Chart 12
The main foreign exchange rates and gold price over the period 2018-22

(percentage changes vis-à-vis 2018; year-end data)



Source: ECB.

Following the Bank of England's departure from the ESCB in 2020, the shares of the remaining NCBs in the subscribed capital of the ECB increased. The Governing Council decided that the remaining NCBs would cover only the Bank of England's withdrawn paid-up capital of €58 million in 2020 and that the euro area NCBs would pay up in full their increased subscriptions in two equal annual instalments in 2021 and 2022. Following the payment of the final instalment by the euro area NCBs, the **ECB's paid-up capital** increased by €0.6 billion to €8.9 billion in 2022.[15]

€1,627 million
Amount released from the provision for financial risks

In view of its exposure to financial risks (see Section 1.4.1 "Financial risks"), the ECB maintains a **provision for financial risks**. The provision for financial risks, together with any amount held in the ECB's general reserve fund, may not exceed the value of the capital paid up by the euro area NCBs. The size of this provision is reviewed annually, taking a range of factors into account, including the level of holdings of risk-bearing assets, the projected results for the coming year and a risk assessment. Following the annual review, the Governing Council decided to release €1,627 million from the provision for financial risks to offset losses incurred in 2022, after which the **ECB's financial result** was zero (see Section 1.3.3 "Profit and Loss Account"). Following this release, the size of the provision for financial risks fell to €6.6 billion.

1.3.3 Profit and Loss Account

After several years of increases, the ECB's annual profit reached a peak in 2019 before starting to decrease in 2020. The movements in the ECB's profit were driven mainly by changes in the income generated on foreign reserve assets and on

15 See the press release of 30 January 2020 on the ECB's subscribed capital following the Bank of England's withdrawal from the ESCB.

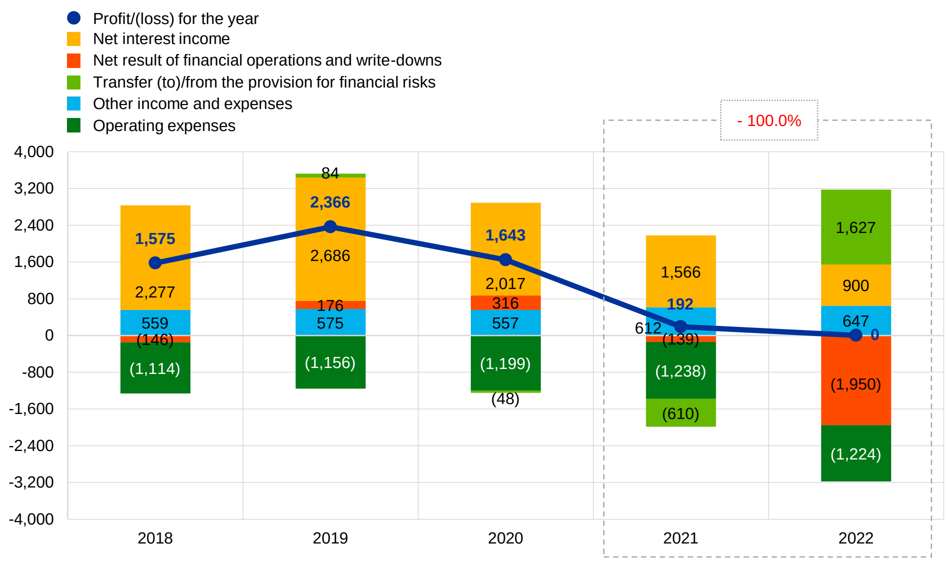
securities held for monetary policy purposes. In 2021 there was also a significant transfer to the provision for financial risks, which reduced the ECB's profit by a corresponding amount.

€0
ECB's financial result after the release from the provision for financial risks

Following the release of €1,627 million from the provision for financial risks to offset losses incurred in 2022, the **ECB's financial result** was zero (2021: €192 million). The losses mainly arose from (i) the interest expense resulting from the ECB's net TARGET2 liability and (ii) the negative net result from financial operations and write-downs (Chart 13).

Chart 13
Main components of the ECB's Profit and Loss Account

(EUR millions)



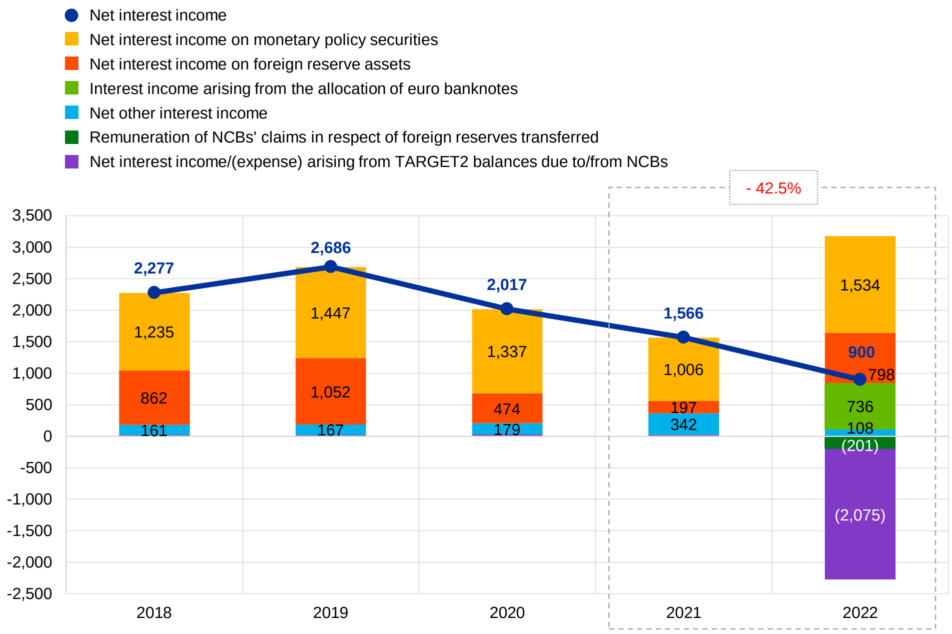
Source: ECB.
Note: "Other income and expenses" consists of "Net income/expense from fees and commissions", "Income from equity shares and participating interests", "Other income" and "Other expenses".

Decrease in net interest income, mainly owing to the interest expense resulting from the ECB's net TARGET2 liability

The **net interest income** of the ECB decreased by €666 million to €900 million (Chart 14), mainly owing to the interest expense resulting from the ECB's net TARGET2 liability. The interest expense related to the remuneration of euro area NCBs' claims in respect of foreign reserves transferred to the ECB also contributed to this decrease. These expenses were partially offset by higher interest income arising from (i) the ECB's claims related to the allocation of euro banknotes within the Eurosystem, (ii) foreign reserve assets and (iii) securities held for monetary policy purposes.

Chart 14
Net interest income

(EUR millions)



Source: ECB.

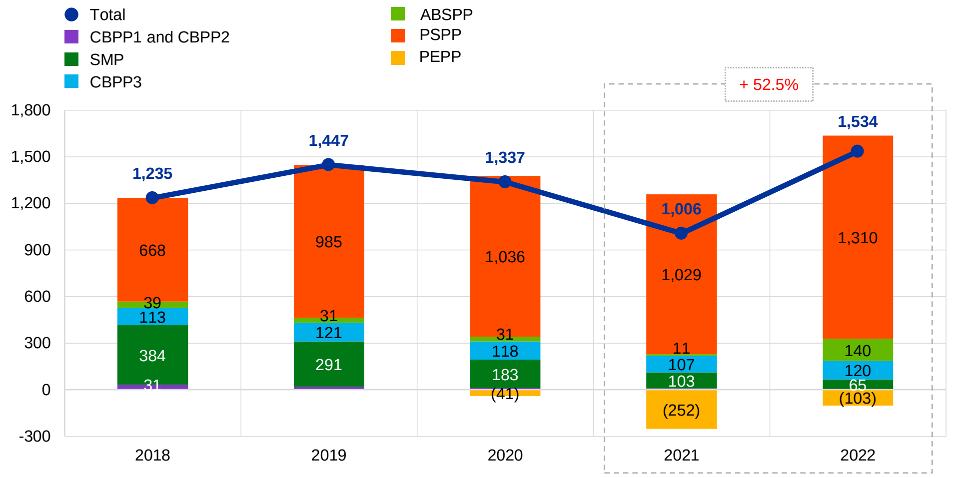
Higher interest income on monetary policy related securities, mainly owing to higher yields on public sector securities acquired under the APP and PEPP

Net interest income generated on securities held for monetary policy purposes increased by €528 million to €1,534 million in 2022 (Chart 15), mainly owing to the higher net interest income arising from the APP (from securities held under the CBPP3, ABSPP and PSPP) and the lower negative net interest income on the PEPP portfolio. APP net interest income rose by €424 million to €1,571 million in 2022, while PEPP negative net interest income fell to €103 million from €252 million. These developments were mainly driven by the significant rise in euro area bond yields in 2022 (Chart 16), which allowed purchases of securities under both programmes at higher yields than the historical yield of the respective portfolios. Net interest income on the SMP, CBPP1 and CBPP2 portfolios decreased by €45 million to €66 million owing to the decline in the size of these portfolios as a result of maturing securities.

Chart 15

Net interest income/(expense) on securities held for monetary policy purposes

(EUR millions)

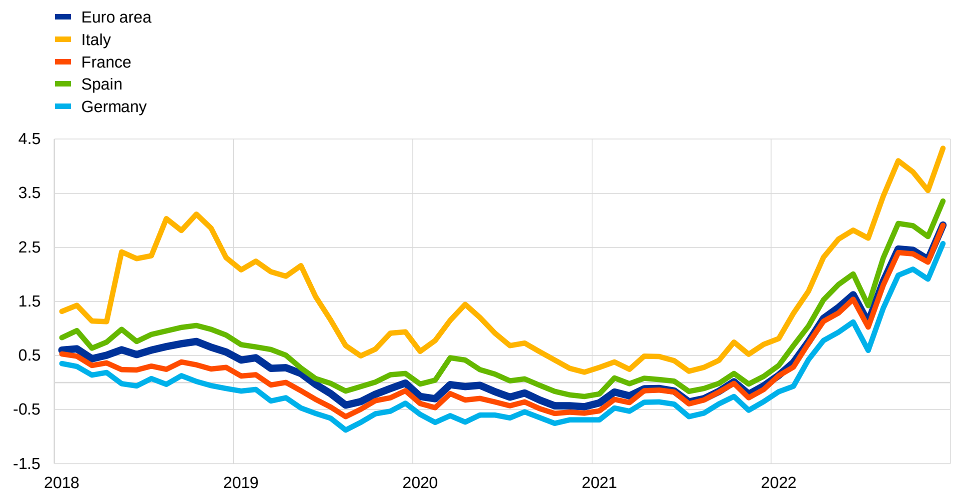


Source: ECB.

Chart 16

Seven-year sovereign bond yields in the euro area

(percentages per annum; month-end data)



Source: ECB.

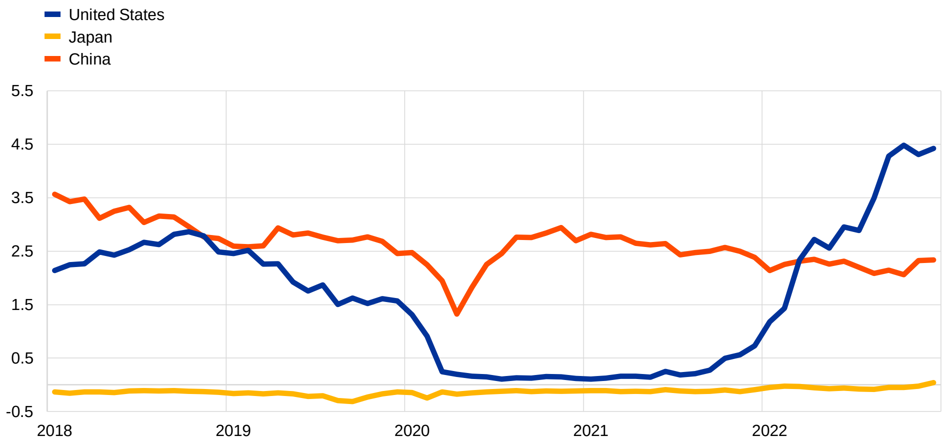
Increase in interest income on the US dollar portfolio

Net interest income on foreign reserve assets increased by €602 million to €798 million, predominantly as a result of higher interest income from securities denominated in US dollars. The average interest rate earned on the ECB's US dollar portfolio increased in 2022 compared to the previous year owing to (i) sales and redemptions of lower-yield bonds purchased in the past and (ii) purchases of securities with higher yields owing to the increase in US dollar bond yields since the end of 2021 (Chart 17).

Chart 17

Two-year sovereign bond yields in the United States, Japan and China

(percentages per annum; month-end data)



Source: Bloomberg and ECB.

0.6%
Average MRO rate in 2022; gradual increase in the second half of the year, from 0% to 2.5% at the year-end

Interest income arising from the allocation of euro banknotes to the ECB and **interest expense stemming from the remuneration of NCBs' claims in respect of foreign reserves transferred** amounted to €736 million and €201 million respectively in 2022, while both were zero in the previous year. The changes were the result of increases in the rate on the main refinancing operations (MRO), which is the rate used for the interest calculation on these balances. This rate had stood at 0% since March 2016, but was increased gradually as of 27 July 2022 and stood at 2.5% at the end of the year.

€2,075 million
Interest expense resulting from the ECB's net TARGET2 liability following the increase in the MRO rate

The **net interest expense arising from TARGET2 balances due to/from NCBs** amounted to €2,075 million, compared to an interest income of €22 million in 2021. The net interest expense in 2022 resulted from the remuneration of the ECB's intra-Eurosystem TARGET2 balances at the MRO rate, which started increasing in 2022. The interest income of €22 million in 2021 resulted from the remuneration of TARGET2 balances of non-euro area NCBs at a negative average remuneration rate.

Net other interest income decreased, mainly owing to the remuneration of deposits accepted by the ECB in its role as fiscal agent. While in 2021 the ECB earned interest income on these deposits owing to the negative average remuneration rate applied to them, in 2022 the ECB incurred an interest expense as the applicable remuneration rates turned positive and average deposits were higher towards the end of the year. This was partially offset by the higher interest income earned on the own funds portfolio as a result of increasing yields in the euro area (Chart 16).

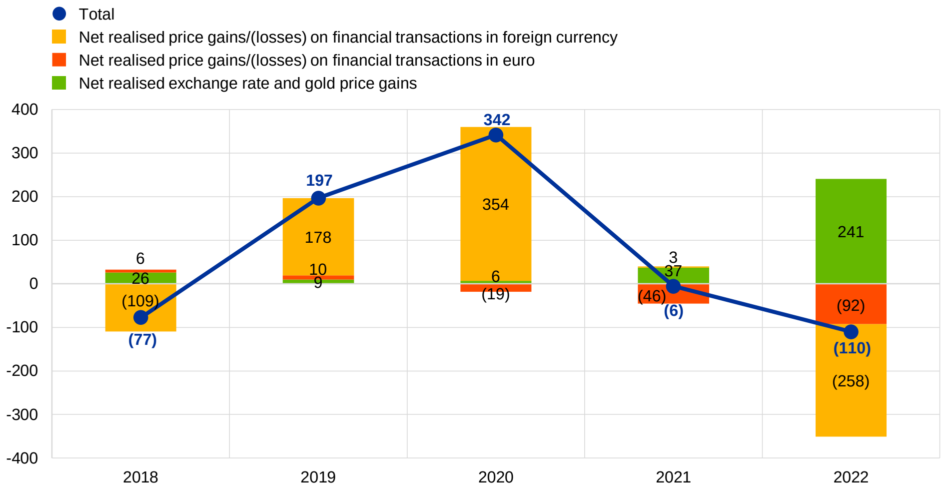
Net realised price losses were mainly driven by developments in US dollar bond yields

Net realised losses arising from financial operations increased by €104 million to €110 million in 2022 (Chart 18). This was due to price losses realised mainly on sales of US dollar-denominated securities, as their market value was negatively affected by the increase in US dollar bond yields during the year (Chart 17). These losses occurred mainly in the last three quarters of 2022 (Chart 19). The realised price losses were partially offset by realised exchange rate gains, which largely arose as a consequence of the year-end price write-downs of US dollar securities.

Chart 18

Realised gains/losses arising from financial operations

(EUR millions)

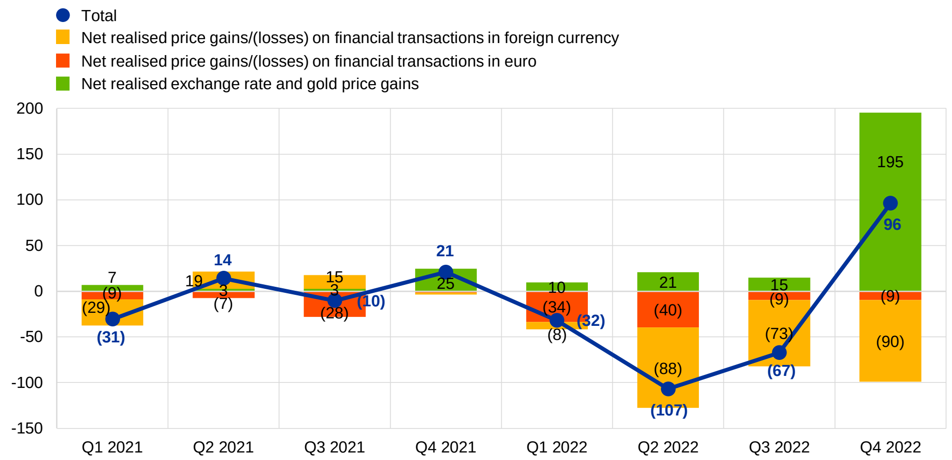


Source: ECB.

Chart 19

Quarterly realised gains/losses arising from financial operations in 2021 and 2022

(EUR millions)



Source: ECB.

€1,840 million

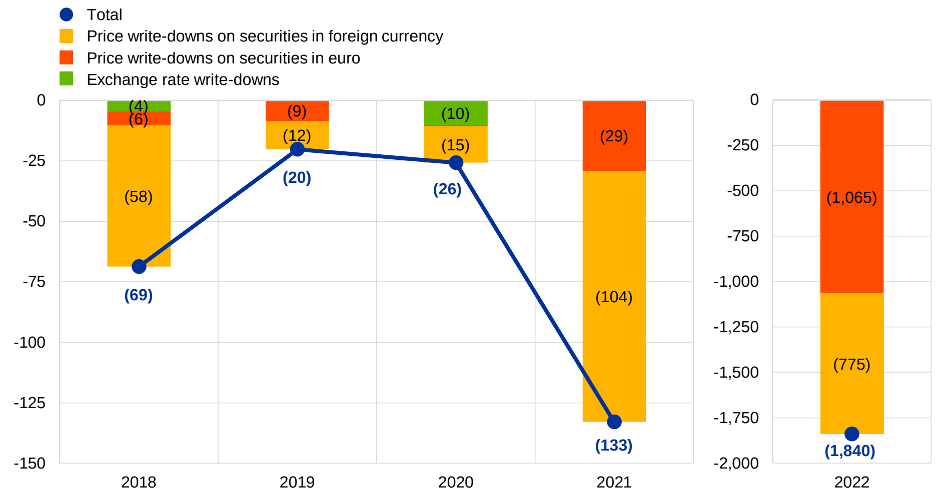
Price write-downs on securities owing to increasing euro and US dollar bond yields

Unrealised revaluation losses are expensed in the form of **write-downs** at the year-end in the ECB's Profit and Loss Account. In 2022 these write-downs amounted to €1,840 million, compared to €133 million in 2021 (Chart 20), and resulted mainly from the decline in the market value of securities held in the own funds and US dollar portfolios as a result of the significant increase in the corresponding yields.

Chart 20

Write-downs on financial assets and positions

(EUR millions)



Source: ECB.

As at 31 December 2022, the Governing Council decided to release €1,627 million from the **ECB's provision for financial risks** to offset losses incurred in 2022 (see Section 1.3.2 "Financial resources").

The **total operating expenses** of the ECB, including depreciation and banknote production services, decreased by €14 million to €1,224 million (Chart 21). The decrease compared to 2021 was mainly due to lower staff costs resulting from actuarial gains in relation to other long-term benefits as a consequence of the higher discount rate used for the actuarial valuation at the end of 2022. Administrative expenses increased slightly, mainly owing to a gradual return to normal levels of activity following the pandemic and the new and improved IT services in banking supervision.

€594 million
Supervisory fee income

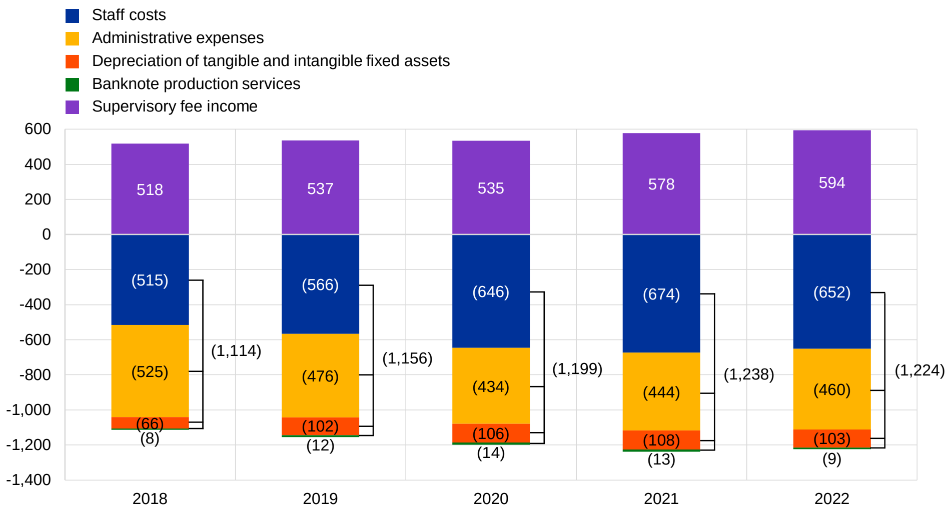
Banking supervision-related expenses are fully covered by fees levied on the supervised entities. Based on the actual expenses incurred by the ECB in the performance of its banking supervision tasks, supervisory fee income for 2022 stood at €594 million.[16]

[16] Supervisory fee income is included under "Other income and expenses" (Chart 13).

Chart 21

Operating expenses and supervisory fee income

(EUR millions)

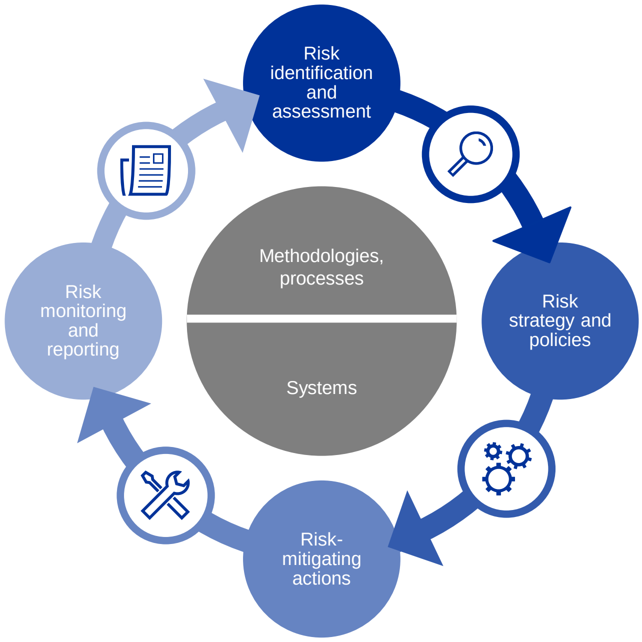


Source: ECB.

1.4 Risk management

Risk management is a critical part of the ECB's activities and is conducted through a continuous process of (i) risk identification and assessment, (ii) review of the risk strategy and policies, (iii) implementation of risk mitigating actions and (iv) risk monitoring and reporting, all of which are supported by effective methodologies, processes and systems.

Figure 2
Risk management cycle



The following sections focus on the risks, their sources and the applicable risk control frameworks.

1.4.1 Financial risks

The Executive Board proposes policies and procedures that ensure an appropriate level of protection against the financial risks to which the ECB is exposed. The Risk Management Committee (RMC), which comprises experts from Eurosystem central banks, contributes to the monitoring, measuring and reporting of financial risks related to the balance sheet of the Eurosystem and defines and reviews the associated methodologies and frameworks. In this way, the RMC helps the decision-making bodies to ensure an appropriate level of protection for the Eurosystem.

Financial risks arise from the ECB's core activities and associated exposures. The risk control frameworks and limits that the ECB uses to manage its risk profile differ across types of operation, reflecting the policy or investment objectives of the different portfolios and the risk characteristics of the underlying assets.

To monitor and assess the risks, the ECB relies on a number of risk estimation techniques developed by its experts. These techniques are based on a joint market and credit risk simulation framework. The core modelling concepts, techniques and assumptions underlying the risk measures draw on industry standards and available market data. The risks are typically quantified as the expected shortfall (ES),[17] estimated at the 99% confidence level over a one-year

[17] The ES is defined as a probability-weighted average loss that occurs in the worst *(1-p)%* of scenarios, where *p* denotes the confidence level.

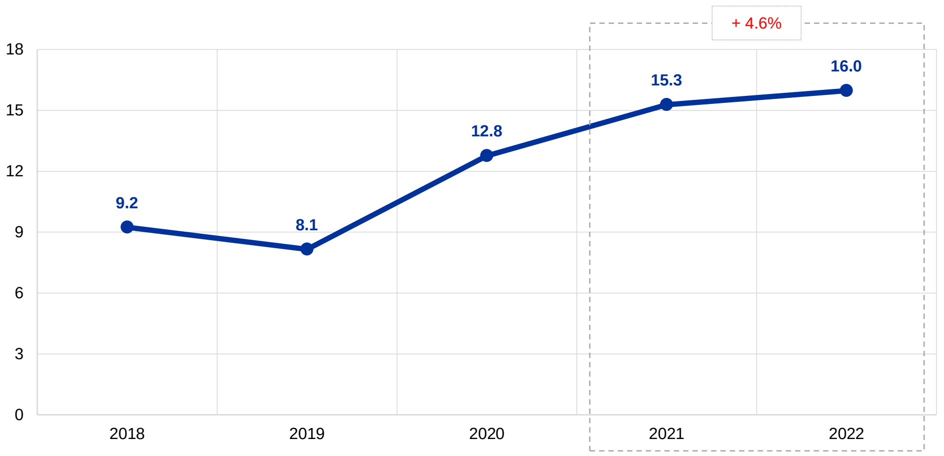
horizon. Two approaches are used to calculate risks: (i) the accounting approach, under which the ECB's revaluation accounts are considered as a buffer in the calculation of risk estimates in line with all applicable accounting rules; and (ii) the financial approach, under which the revaluation accounts are not considered as a buffer in the risk calculation. The ECB also calculates other risk measures at different confidence levels, performs sensitivity and stress scenario analyses and assesses longer-term projections of exposures and income to maintain a comprehensive picture of the risks.[18]

€16.0 billion
Total risk (ES 99%, accounting approach)

The total risks of the ECB increased during the year. At the end of 2022 the total financial risks for all the ECB's portfolios combined, as measured by the ES at the 99% confidence level over a one-year horizon under the accounting approach, stood at €16.0 billion, which was €0.7 billion higher than the risks estimated as at the end of 2021 (Chart 22). The rise in estimated risks continued a trend which began in 2020 and reflects the growth of the ECB's monetary policy portfolios as a result of asset purchases conducted under the PEPP and the APP.

Chart 22
Total financial risks (ES 99%, accounting approach)

(EUR billions)



Source: ECB.

Credit risk

Credit risk arises from the ECB's monetary policy portfolios, its euro-denominated own funds portfolio and its foreign reserve holdings. While securities held for monetary policy purposes are valued at amortised cost subject to impairment and are therefore, in the absence of sales, not subject to price changes associated with credit migrations, they are still subject to credit default risk. Euro-denominated own funds and foreign reserves are valued at market prices and, as such, are subject to credit migration and default risk. Credit risk increased compared with the previous year owing to the expansion of the ECB's Balance Sheet through purchases of securities under the PEPP and the APP.

[18] Further details on the risk modelling approach can be found in "The financial risk management of the Eurosystem's monetary policy operations", ECB, July 2015.

Credit risk is mitigated mainly through the application of eligibility criteria, due diligence procedures and limits that differ across portfolios.

Currency and commodity risks

Currency and commodity risks arise from the ECB's foreign currency and gold holdings. The currency risk remained stable compared with 2021.

In view of the policy role of these assets, the ECB does not hedge the related currency and commodity risks. Instead, these risks are mitigated through the existence of revaluation accounts and the diversification of the holdings across different currencies and gold.

Interest rate risk

The ECB's foreign reserves and euro-denominated own funds are mainly invested in fixed income securities and are subject to mark-to-market interest rate risk, given that they are valued at market prices. The ECB's foreign reserves are mainly invested in assets with relatively short maturities (see Chart 7 in Section 1.3.1 "Balance Sheet"), while the assets in the own funds portfolio generally have longer maturities (see Chart 9 in Section 1.3.1 "Balance Sheet"). The interest rate risk of these portfolios, as measured under the accounting approach, increased compared to 2021, reflecting developments in market conditions.

The mark-to-market interest rate risk of the ECB is mitigated through asset allocation policies and the revaluation accounts.

The ECB is also subject to interest rate risk arising from mismatches between the interest rate earned on its assets and the interest rate paid on its liabilities, which has an impact on its net interest income. This risk is not directly linked to any particular portfolio but rather to the structure of the ECB's Balance Sheet as a whole and, in particular, the existence of maturity and yield mismatches between assets and liabilities. It is monitored by means of projections of the ECB's profitability, which indicate that the ECB, before any releases from or transfers to the provision for financial risks may experience losses in the short to medium term, while expecting a return to profits in the long run.

This type of risk is managed through asset allocation policies and is further mitigated by the existence of unremunerated liabilities on the ECB's Balance Sheet.

Climate change risk

The risks associated with climate change will gradually be incorporated into the ECB's risk management framework in the coming years. In 2022 the Eurosystem conducted the first climate stress test of the Eurosystem balance sheet[19], which allowed a preliminary estimate of the impact of this risk on the ECB's Balance Sheet to be obtained. In the coming years climate stress testing will be performed on a regular basis.

19 The results of this stress test for corporate bond holdings will be incorporated in climate-related disclosures on corporate bond holdings of euro area NCBs under the CSPP and the PEPP, which the ECB will start publishing annually as of March 2023. In addition, the general qualitative results of this stress test are planned to be published in the Economic Bulletin in March 2023.

1.4.2 Operational risk

The Executive Board is responsible for and approves the ECB's operational risk[20] management (ORM) policy and framework. The Operational Risk Committee (ORC) supports the Executive Board in the performance of its role in overseeing the management of operational risks. **ORM is an integral part of the ECB's governance structure**[21] **and management processes.**

The main objective of the ECB's ORM framework is to **contribute to ensuring that the ECB achieves its mission and objectives, while protecting its reputation and assets against loss, misuse and damage**. Under the ORM framework, each business area is responsible for identifying, assessing, responding to, reporting on and monitoring its operational risks, incidents and controls. In this context, the ECB's risk tolerance policy provides guidance with regard to risk response strategies and risk acceptance procedures. It is linked to a five-by-five risk matrix based on impact and likelihood grading scales using quantitative and qualitative criteria.

The environment in which the ECB operates is exposed to increasingly complex and interconnected threats and there are a wide range of operational risks associated with the ECB's day-to-day activities. The main areas of concern for the ECB include a wide spectrum of non-financial risks resulting from people, systems, processes and external events. Consequently, the ECB has put in place processes to facilitate ongoing and effective management of its operational risks and to integrate risk information into the decision-making process. Moreover, the ECB is focusing on enhancing its resilience, taking a broad view of risks and opportunities from an end-to-end perspective, including sustainability aspects. Response structures and contingency plans have been established to ensure the continuity of critical business functions in the event of any disruption or crisis.

1.4.3 Conduct risk

The ECB has a dedicated **Compliance and Governance Office as a key risk management function to strengthen the ECB's governance framework** in order to address conduct risk.[22] Its purpose is to support the Executive Board in protecting the integrity and reputation of the ECB, to promote ethical standards of behaviour and to strengthen the ECB's accountability and transparency. An independent Ethics Committee provides advice and guidance to high-level ECB officials on integrity and conduct matters and supports the Governing Council in managing risks at executive level appropriately and coherently. At the level of the Eurosystem and the Single Supervisory Mechanism (SSM), the Ethics and Compliance Committee works

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20 Operational risk encompasses all non-financial risks and is defined as the risk of a negative business, reputational or financial impact on the ECB resulting from people, the inadequate implementation or failure of internal governance and business processes, the failure of systems on which processes rely, or external events (e.g. natural disasters or external attacks).

21 Further information about the ECB's governance structure can be found on the ECB's website.

22 Conduct risk management has gained increasing attention in the corporate and public sector. It complements financial and operational risk management and for the ECB can be defined as the risk of suffering reputational or other harm caused by high-level ECB officials or staff not acting in conformity with the ECB's ethics and integrity rules and/or good governance and good administration standards.

towards achieving coherent implementation of the conduct frameworks for NCBs and national competent authorities (NCAs).

In the course of 2022, the ECB expanded its conduct risk management to also cover conduct risk stemming from the recourse to external contractors supporting ECB tasks.

2 Financial statements of the ECB

2.1 Balance Sheet as at 31 December 2022

ASSETS	Note number	2022 € millions	2021 € millions
Gold and gold receivables	1	**27,689**	**26,121**
Claims on non-euro area residents denominated in foreign currency	2	**55,603**	**51,433**
Receivables from the IMF	2.1	1,759	1,234
Balances with banks and security investments, external loans and other external assets	2.2	53,844	50,199
Claims on euro area residents denominated in foreign currency	2.2	**1,159**	**2,776**
Claims on non-euro area residents denominated in euro	3	**-**	**3,070**
Balances with banks, security investments and loans	3.1	-	3,070
Other claims on euro area credit institutions denominated in euro	4	**12**	**38**
Securities of euro area residents denominated in euro	5	**457,271**	**445,384**
Securities held for monetary policy purposes	5.1	457,271	445,384
Intra-Eurosystem claims	6	**125,763**	**123,551**
Claims related to the allocation of euro banknotes within the Eurosystem	6.1	125,763	123,551
Other assets	7	**31,355**	**27,765**
Tangible and intangible fixed assets	7.1	1,105	1,189
Other financial assets	7.2	21,213	21,152
Off-balance-sheet instruments revaluation differences	7.3	783	620
Accruals and prepaid expenses	7.4	7,815	4,055
Sundry	7.5	438	749
Total assets		**698,853**	**680,140**

Note: Totals in the financial statements and in the tables included in the notes may not add up due to rounding. The figures 0 and (0) indicate positive or negative amounts rounded to zero, while a dash (-) indicates zero.

LIABILITIES	Note number	2022 € millions	2021 € millions
Banknotes in circulation	8	**125,763**	**123,551**
Other liabilities to euro area credit institutions denominated in euro	9	**17,734**	**9,473**
Liabilities to other euro area residents denominated in euro	10	**63,863**	**7,604**
General government	10.1	48,520	3,200
Other liabilities	10.2	15,343	4,404
Liabilities to non-euro area residents denominated in euro	11	**78,108**	**112,492**
Intra-Eurosystem liabilities	12	**355,474**	**375,136**
Liabilities equivalent to the transfer of foreign reserves	12.1	40,344	40,344
Other liabilities within the Eurosystem (net)	12.2	315,130	334,792
Other liabilities	13	**5,908**	**2,877**
Off-balance-sheet instruments revaluation differences	13.1	430	568
Accruals and income collected in advance	13.2	3,915	32
Sundry	13.3	1,562	2,277
Provisions	14	**6,636**	**8,268**
Revaluation accounts	15	**36,487**	**32,277**
Capital and reserves	16	**8,880**	**8,270**
Capital	16.1	8,880	8,270
Profit for the year		**-**	**192**
Total liabilities		**698,853**	**680,140**

2.2 Profit and Loss Account for the year ending 31 December 2022

	Note number	2022 € millions	2021 € millions
Interest income on foreign reserve assets	23.1	798	197
Interest income arising from the allocation of euro banknotes within the Eurosystem	23.2	736	-
Other interest income	23.4	11,001	1,531
Interest income		12,536	1,728
Remuneration of NCBs' claims in respect of foreign reserves transferred	23.3	(201)	-
Other interest expense	23.4	(11,434)	(162)
Interest expense		(11,636)	(162)
Net interest income	23	**900**	**1,566**
Realised gains/losses arising from financial operations	24	(110)	(6)
Write-downs on financial assets and positions	25	(1,840)	(133)
Transfer to/from provisions for financial risks		1,627	(610)
Net result of financial operations, write-downs and risk provisions		**(322)**	**(749)**
Net income/expense from fees and commissions	26	**585**	**559**
Income from equity shares and participating interests	27	**1**	**2**
Other income	28	**61**	**56**
Total net income		**1,224**	**1,435**
Staff costs	29	(652)	(674)
Administrative expenses	30	(460)	(444)
Depreciation of tangible and intangible fixed assets		(103)	(108)
Banknote production services	31	(9)	(13)
Other expenses	32	-	(5)
Profit/(loss) for the year		**-**	**192**

Frankfurt am Main, 14 February 2023
European Central Bank

Christine Lagarde
President

2.3 Accounting policies

Form and presentation of the financial statements

The financial statements of the ECB have been drawn up in accordance with the following accounting policies,[23] which, in the view of the Governing Council of the ECB, achieve a fair presentation of the financial statements, reflecting at the same time the nature of central bank activities.

Accounting principles

The following accounting principles have been applied: economic reality and transparency, prudence, recognition of post-balance-sheet events, materiality, going concern, the accruals principle, consistency and comparability.

Recognition of assets and liabilities

An asset or liability is only recognised in the Balance Sheet when it is probable that any associated future economic benefit will flow to or from the ECB, substantially all of the associated risks and rewards have been transferred to the ECB, and the cost or value of the asset or the amount of the obligation can be measured reliably.

Basis of accounting

The accounts have been prepared on a historical cost basis, modified to include the market valuation of marketable securities (other than securities currently held for monetary policy purposes), gold and all other on-balance-sheet and off-balance-sheet assets and liabilities denominated in foreign currency.

Transactions in financial assets and liabilities are reflected in the accounts on the basis of the date on which they were settled.

With the exception of spot transactions in securities, transactions in financial instruments denominated in foreign currency are recorded in off-balance-sheet accounts on the trade date. At the settlement date, the off-balance-sheet entries are reversed, and transactions are booked on-balance-sheet. Purchases and sales of

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[23] The detailed accounting policies of the ECB are laid down in Decision (EU) 2016/2247 of the ECB of 3 November 2016 on the annual accounts of the ECB (ECB/2016/35) (OJ L 347, 20.12.2016, p. 1), as amended. The unofficial consolidated text with the list of amendments can be found here.
In order to ensure the harmonised accounting and financial reporting of Eurosystem operations, the above-mentioned Decision is based on Guideline (EU) 2016/2249 of the ECB of 3 November 2016 on the legal framework for accounting and financial reporting in the European System of Central Banks (ECB/2016/34) (OJ L 347, 20.12.2016, p. 37), as amended. The unofficial consolidated text with the list of amendments can be found here.
These policies, which are reviewed and updated regularly as deemed appropriate, are consistent with the provisions of Article 26.4 of the Statute of the ESCB, which require a harmonised approach to the rules governing the accounting and financial reporting of Eurosystem operations.

foreign currency affect the net foreign currency position on the trade date, and realised results arising from sales are also calculated on that date. Accrued interest, premiums and discounts related to financial instruments denominated in foreign currency are calculated and recorded daily, and the foreign currency position is also affected daily by these accruals.

Gold and foreign currency assets and liabilities

Assets and liabilities denominated in foreign currency are converted into euro at the exchange rate prevailing on the balance sheet date. Income and expenses are converted at the exchange rate prevailing on the recording date. The revaluation of foreign exchange assets and liabilities, including on-balance-sheet and off-balance-sheet instruments, is performed on a currency-by-currency basis.

Revaluation to the market price for assets and liabilities denominated in foreign currency is treated separately from the exchange rate revaluation.

Gold is valued at the market price prevailing at the balance sheet date. No distinction is made between the price and currency revaluation differences for gold. Instead, a single gold valuation is accounted for on the basis of the price in euro per fine ounce of gold, which, for the year ending 31 December 2022, was derived from the exchange rate of the euro against the US dollar on 30 December 2022.

The special drawing right (SDR) is defined in terms of a basket of currencies and its value is determined by the weighted sum of the exchange rates of five major currencies (the US dollar, euro, Chinese renminbi, Japanese yen and pound sterling). The ECB’s holdings of SDRs were converted into euro using the exchange rate of the euro against the SDR as at 30 December 2022.

Securities

Securities held for monetary policy purposes

Securities currently held for monetary policy purposes are accounted for at amortised cost subject to impairment.

Other securities

Marketable securities (other than securities currently held for monetary policy purposes) and similar assets are valued either at the mid-market prices or on the basis of the relevant yield curve prevailing on the balance sheet date, on a security-by-security basis. Options embedded in securities are not separated for valuation purposes. For the year ending 31 December 2022, mid-market prices on 30 December 2022 were used.

Marketable investment funds are revalued on a net basis at fund level, using their net asset value. No netting is applied between unrealised gains and losses in different investment funds.

Illiquid equity shares and any other equity instruments held as permanent investments are valued at cost subject to impairment.

Income recognition

Income and expenses are recognised in the period in which they are earned or incurred.[24] Realised gains and losses resulting from the sale of foreign currency, gold and securities are recorded in the Profit and Loss Account. Such realised gains and losses are calculated by reference to the average cost of the respective asset.

Unrealised gains are not recognised as income and are transferred directly to a revaluation account.

Unrealised losses are recorded in the Profit and Loss Account if, at the year-end, they exceed previous revaluation gains accumulated in the corresponding revaluation account. Such unrealised losses on any one security or currency or on gold are not netted against unrealised gains on other securities or currencies or gold. In the event of such unrealised losses on any item recorded in the Profit and Loss Account, the average cost of that item is reduced to the year-end exchange rate or market price.

Impairment losses are recorded in the Profit and Loss Account and are not reversed in subsequent years unless the impairment decreases and the decrease can be related to an observable event that occurred after the impairment was first recorded.

Premiums or discounts arising on securities are amortised over the securities' remaining contractual life.

Reverse transactions

Reverse transactions are operations whereby the ECB buys or sells assets under a repurchase agreement or conducts credit operations against collateral.

Under a repurchase agreement, securities are sold for cash with a simultaneous agreement to repurchase them from the counterparty at an agreed price on a set future date. Repurchase agreements are recorded as collateralised deposits on the liability side of the Balance Sheet. Securities sold under such an agreement remain on the Balance Sheet of the ECB.

Under a reverse repurchase agreement, securities are bought for cash with a simultaneous agreement to sell them back to the counterparty at an agreed price on a set future date. Reverse repurchase agreements are recorded as collateralised loans on the asset side of the Balance Sheet, but are not included in the ECB's security holdings.

[24] A minimum threshold of €100,000 applies for administrative accruals and provisions.

Reverse transactions (including securities lending transactions) conducted under a programme offered by a specialised institution are recorded on the Balance Sheet only where collateral has been provided in the form of cash and this cash remains uninvested.

Off-balance-sheet instruments

Currency instruments, namely foreign exchange forward transactions, forward legs of foreign exchange swaps and other currency instruments involving an exchange of one currency for another at a future date, are included in the net foreign currency position for the purpose of calculating foreign exchange gains and losses.

Interest rate instruments are revalued on an item-by-item basis. Daily changes in the variation margin of open interest rate futures contracts are recorded in the Profit and Loss Account. The valuation of forward transactions in securities is carried out by the ECB based on generally accepted valuation methods using observable market prices and rates, as well as discount factors from the settlement dates to the valuation date.

Fixed assets

Fixed assets, including intangible assets, but excluding land and works of art, are valued at cost less depreciation. Land and works of art are valued at cost. The ECB's main building is valued at cost less depreciation subject to impairment. For the depreciation of the ECB's main building, costs are assigned to the appropriate asset components, which are depreciated in accordance with their estimated useful lives. Depreciation is calculated on a straight-line basis over the expected useful life of the asset, beginning in the quarter after the asset is available for use. The useful lives applied for the main asset classes are as follows:

Buildings	20, 25 or 50 years
Plant in building	10 or 15 years
Technical equipment	4, 10 or 15 years
Computers, related hardware and software, and motor vehicles	4 years
Furniture	10 years

The depreciation period for capitalised refurbishment expenditure relating to the ECB's existing rented premises is adjusted to take account of any events that have an impact on the expected useful life of the affected asset.

The ECB performs an annual impairment test of its main building and right-of-use assets relating to office buildings (see "Leases" below). If an impairment indicator is identified, and it is assessed that the asset may be impaired, the recoverable amount is estimated. An impairment loss is recorded in the Profit and Loss Account if the recoverable amount is less than the net book value.

Fixed assets costing less than €10,000 are written off in the year of acquisition.

Fixed assets that comply with the capitalisation criteria, but are still under construction or development, are recorded under the heading “Assets under construction”. The related costs are transferred to the relevant fixed asset headings once the assets are available for use.

Leases

For all leases involving a tangible asset, the related right-of-use asset and lease liability are recognised on the Balance Sheet at the lease commencement date and included under “Tangible and intangible fixed assets” and “Sundry” (liabilities), respectively. Where leases comply with the capitalisation criteria, but the asset involved is still under construction or adaptation, the incurred costs before the lease commencement date are recorded under the heading “Assets under construction”. The related right-of-use asset and lease liability are recognised under the relevant fixed asset headings once the asset is available for use (lease commencement date).

Right-of-use assets are valued at cost less depreciation. In addition, right-of-use assets relating to office buildings are subject to impairment (regarding the annual impairment test, see “Fixed assets” above). Depreciation is calculated on a straight-line basis from the commencement date to either the end of the useful life of the right-of-use asset or the end of the lease term, whichever is earlier.

The lease liability is initially measured at the present value of the future lease payments (comprising only lease components), discounted using the ECB's incremental borrowing rate. Subsequently, the lease liability is measured at amortised cost using the effective interest method. The related interest expense is recorded in the Profit and Loss Account under “Other interest expense”. When there is a change in future lease payments arising from a change in an index or other reassessment of the existing contract, the lease liability is remeasured. Any such remeasurement results in a corresponding adjustment to the carrying amount of the right-of-use asset.

Short-term leases with a duration of 12 months or less and leases of low-value assets below €10,000 (consistent with the threshold used for the recognition of fixed assets) are recorded as an expense in the Profit and Loss Account.

The ECB’s post-employment benefits, other long-term benefits and termination benefits

The ECB operates defined benefit plans for its staff and the members of the Executive Board, as well as for the members of the Supervisory Board employed by the ECB.

The staff pension plan is funded by assets held in a long-term employee benefit fund. The compulsory contributions made by the ECB and the staff are reflected in the defined benefit pillar of the plan. Staff can make additional contributions on a voluntary basis in a defined contribution pillar that can be used to provide additional benefits.[25] These additional benefits are determined by the amount of voluntary contributions together with the investment returns arising from those contributions.

Unfunded arrangements are in place for the post-employment and other long-term benefits of members of the Executive Board and members of the Supervisory Board employed by the ECB. For staff, unfunded arrangements are in place for post-employment benefits other than pensions and for other long-term benefits and termination benefits.

Net defined benefit liability

The liability recognised in the Balance Sheet under “Sundry” (liabilities) in respect of the defined benefit plans, including other long-term benefits and termination benefits, is the present value of the defined benefit obligation at the balance sheet date, less the fair value of plan assets used to fund the related obligation.

The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is calculated by discounting the estimated future cash flows using a rate which is determined by reference to market yields at the balance sheet date on high-quality euro-denominated corporate bonds that have similar terms to maturity to the related obligation.

Actuarial gains and losses can arise from experience adjustments (where actual outcomes are different from the actuarial assumptions previously made) and changes in actuarial assumptions.

Net defined benefit cost

The net defined benefit cost is split into components reported in the Profit and Loss Account and remeasurements in respect of post-employment benefits shown in the Balance Sheet under “Revaluation accounts”.

The net amount charged to the Profit and Loss Account comprises:

1. the current service cost of the defined benefits accruing for the year;
2. the past service cost of the defined benefits resulting from a plan amendment;
3. net interest at the discount rate on the net defined benefit liability;
4. remeasurements in respect of other long-term benefits and termination benefits of a long-term nature, if any, in their entirety.

The net amount shown under “Revaluation accounts” comprises the following items:

1. actuarial gains and losses on the defined benefit obligation;

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[25] The funds accumulated by a staff member through voluntary contributions can be used at retirement to purchase an additional pension. This pension is included in the defined benefit obligation from that point on.

2. the actual return on plan assets, excluding amounts included in the net interest on the net defined benefit liability;

3. any change in the effect of the asset ceiling, excluding amounts included in the net interest on the net defined benefit liability.

These amounts are valued annually by independent actuaries to establish the appropriate liability in the financial statements.

Intra-ESCB balances/intra-Eurosystem balances

Intra-ESCB balances result primarily from cross-border payments in the European Union (EU) that are settled in central bank money in euro. These transactions are for the most part initiated by private entities (i.e. credit institutions, corporations and individuals). They are settled in TARGET2 – the Trans-European Automated Real-time Gross settlement Express Transfer system – and give rise to bilateral balances in the TARGET2 accounts of EU central banks. These bilateral balances are netted and then assigned to the ECB on a daily basis, leaving each national central bank (NCB) with a single net bilateral position vis-à-vis the ECB only. Payments conducted by the ECB and settled in TARGET2 also affect the single net bilateral positions. These positions in the books of the ECB represent the net claim or liability of each NCB against the rest of the European System of Central Banks (ESCB). Intra-Eurosystem balances of euro area NCBs vis-à-vis the ECB arising from TARGET2, as well as other intra-Eurosystem balances denominated in euro (e.g. the ECB's interim profit distribution to NCBs, if any), are presented on the Balance Sheet of the ECB as a single net asset or liability position under either "Other claims within the Eurosystem (net)" or "Other liabilities within the Eurosystem (net)". Intra-ESCB balances of non-euro area NCBs vis-à-vis the ECB, arising from their participation in TARGET2,[26] are disclosed under "Liabilities to non-euro area residents denominated in euro".

Intra-Eurosystem balances arising from the allocation of euro banknotes within the Eurosystem are included as a single net asset under "Claims related to the allocation of euro banknotes within the Eurosystem" (see "Banknotes in circulation" below).

Intra-Eurosystem balances arising from the transfer of foreign reserve assets to the ECB by NCBs joining the Eurosystem are denominated in euro and reported under "Liabilities equivalent to the transfer of foreign reserves".

[26] As at 31 December 2022 the non-euro area NCBs participating in TARGET2 were Българска народна банка (Bulgarian National Bank), Danmarks Nationalbank, Hrvatska narodna banka, Narodowy Bank Polski and Banca Naţională a României.

Banknotes in circulation

The ECB and the euro area NCBs, which together comprise the Eurosystem, issue euro banknotes.[27] The total value of euro banknotes in circulation is allocated to the Eurosystem central banks on the last working day of each month in accordance with the banknote allocation key.[28]

The ECB has been allocated an 8% share of the total value of euro banknotes in circulation, which is disclosed in the Balance Sheet under the liability item "Banknotes in circulation". The ECB's share of the total euro banknote issue is backed by claims on the NCBs. These claims, which bear interest,[29] are disclosed under the item "Claims related to the allocation of euro banknotes within the Eurosystem" (see "Intra-ESCB balances/intra-Eurosystem balances" above). Interest income on these claims is included in the Profit and Loss Account under the item "Interest income arising from the allocation of euro banknotes within the Eurosystem".

Interim profit distribution

An amount that is equal to the sum of the ECB's income on euro banknotes in circulation and income arising from the securities held for monetary policy purposes purchased under (i) the Securities Markets Programme; (ii) the third covered bond purchase programme; (iii) the asset-backed securities purchase programme; (iv) the public sector purchase programme; and (v) the pandemic emergency purchase programme is distributed in January of the following year by means of an interim profit distribution, unless otherwise decided by the Governing Council.[30] Any such decision shall be taken where, on the basis of a reasoned estimate prepared by the Executive Board, the Governing Council expects that the ECB will have an overall annual loss or will make an annual profit that is less than this income. The Governing Council may also decide to transfer all or part of this income to a provision for financial risks. Furthermore, the Governing Council may decide to reduce the amount of the income on euro banknotes in circulation to be distributed in January by the amount of the costs incurred by the ECB in connection with the issue and handling of euro banknotes.

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27 Decision of the ECB of 13 December 2010 on the issue of euro banknotes (ECB/2010/29) (2011/67/EU) (OJ L 35, 9.2.2011, p. 26), as amended. The unofficial consolidated text with the list of amendments can be found here.

28 "Banknote allocation key" means the percentages that result from taking into account the ECB's share in the total euro banknote issue and applying the subscribed capital key to the NCBs' share in that total.

29 Decision (EU) 2016/2248 of the ECB of 3 November 2016 on the allocation of monetary income of the national central banks of Member States whose currency is the euro (ECB/2016/36) (OJ L 347, 20.12.2016, p. 26), as amended. The unofficial consolidated text with the list of amendments can be found here.

30 Decision (EU) 2015/298 of the ECB of 15 December 2014 on the interim distribution of the income of the ECB (ECB/2014/57) (OJ L 53, 25.2.2015, p. 24), as amended. The unofficial consolidated text with the list of amendments can be found here.

Post-balance-sheet events

The values of assets and liabilities are adjusted for events that occur between the annual balance sheet date and the date on which the Executive Board authorises the submission of the ECB’s Annual Accounts to the Governing Council for approval, if such events materially affect the condition of assets and liabilities at the balance sheet date.

Important post-balance-sheet events that do not affect the condition of assets and liabilities at the balance sheet date are disclosed in the notes.

Changes to accounting policies

In 2022 there were no changes to the accounting policies applied by the ECB.

Other issues

In accordance with Article 27 of the Statute of the ESCB, and on the basis of a recommendation of the Governing Council, the EU Council has approved the appointment of Baker Tilly GmbH & Co. KG Wirtschaftsprüfungsgesellschaft, Düsseldorf (Federal Republic of Germany) as the external auditors of the ECB for a five-year period up to the end of the financial year 2022. This five-year period can be extended for up to two additional financial years.

2.4 Notes on the Balance Sheet

Note 1 - Gold and gold receivables

As at 31 December 2022 the ECB held 16,229,522 ounces of fine gold[31], the market value of which amounted to €27,689 million (2021: €26,121 million). No gold operations took place in 2022 and the ECB's holdings therefore remained unchanged compared with their level as at 31 December 2021. The increase in the euro equivalent value of these holdings was due to the rise in the market price of gold in euro terms (see "Gold and foreign currency assets and liabilities" in Section 2.3 "Accounting policies" and note 15 "Revaluation accounts").

Note 2 - Claims on non-euro area and euro area residents denominated in foreign currency

Note 2.1 - Receivables from the IMF

This asset represents the ECB's holdings of SDRs and amounted to €1,759 million as at 31 December 2022 (2021: €1,234 million). It arises as the result of a two-way SDR buying and selling voluntary trading arrangement with the International Monetary Fund (IMF), whereby the IMF is authorised to arrange sales or purchases of SDRs against euro, on behalf of the ECB, within minimum and maximum holding levels. For accounting purposes, SDRs are treated as a foreign currency (see "Gold and foreign currency assets and liabilities" in Section 2.3 "Accounting policies"). The ECB's holdings of SDRs increased in 2022, mainly as a result of a transaction that took place in the context of the above-mentioned voluntary trading arrangement.

Note 2.2 - Balances with banks and security investments, external loans and other external assets; and claims on euro area residents denominated in foreign currency

These two items consist of balances with banks and loans denominated in foreign currency, and investments in securities denominated in US dollars, Japanese yen and Chinese renminbi.

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31 This corresponds to 504.8 tonnes.

	2022 € millions	2021 € millions	Change € millions
Claims on non-euro area residents			
Current accounts	15,687	12,882	2,805
Money market deposits	985	562	424
Security investments	37,172	36,755	417
Total claims on non-euro area residents	**53,844**	**50,199**	**3,645**
Claims on euro area residents			
Current accounts	34	33	1
Money market deposits	1,125	2,284	(1,159)
Reverse repurchase agreements	-	459	(459)
Total claims on euro area residents	**1,159**	**2,776**	**(1,617)**
Total	**55,004**	**52,975**	**2,028**

The total value of these items increased in 2022, mainly owing to the appreciation of the US dollar against the euro.

The ECB's net foreign currency holdings[32] were as follows:

	2022 Foreign currency in millions	2021 Foreign currency in millions
US dollars	49,590	49,869
Japanese yen	1,090,312	1,093,694
Chinese renminbi	4,440	4,308

No foreign exchange interventions took place during 2022.

Note 3 - Claims on non-euro area residents denominated in euro

Note 3.1 - Balances with banks, security investments and loans

As at 31 December 2022 there were no balances under this item, while at the end of 2021 this item had consisted of a claim amounting to €3,070 million in relation to liquidity facility arrangements between the Eurosystem and non-euro area central banks.[33]

32 These holdings comprise assets minus liabilities denominated in the given foreign currency that are subject to foreign currency revaluation. They are included under the headings “Claims on non-euro area residents denominated in foreign currency”, “Claims on euro area residents denominated in foreign currency”, “Accruals and prepaid expenses”, “Off-balance-sheet instruments revaluation differences” (liabilities side) and “Accruals and income collected in advance” and take into account foreign exchange forward and swap transactions included in off-balance-sheet items. Price gains on financial instruments denominated in foreign currency arising as a result of revaluations are not included.

33 Further details on the Eurosystem’s euro liquidity operations against eligible collateral can be found on the ECB’s website.

Note 4 - Other claims on euro area credit institutions denominated in euro

As at 31 December 2022 this item consisted of current account balances with euro area residents amounting to €12 million (2021: €38 million).

Note 5 - Securities of euro area residents denominated in euro

Note 5.1 - Securities held for monetary policy purposes

As at 31 December 2022 this item consisted of securities acquired by the ECB within the scope of the Securities Markets Programme (SMP), the third covered bond purchase programme (CBPP3), the asset-backed securities purchase programme (ABSPP), the public sector purchase programme (PSPP) and the pandemic emergency purchase programme (PEPP).

All securities held under the first and the second covered bond purchase programmes (CBPP1 and CBPP2) matured in the course of 2022, and therefore the ECB and the euro area NCBs had no holdings of these securities as at 31 December 2022.

	Start date	End date	Decision	Universe of eligible securities[1]
Completed/Terminated programmes				
CBPP1	July 2009	June 2010	ECB/2009/16	Covered bonds of euro area residents
CBPP2	November 2011	October 2012	ECB/2011/17	Covered bonds of euro area residents
SMP	May 2010	September 2012	ECB/2010/5	Public and private debt securities issued in the euro area[2]
Asset purchase programme (APP)				
CBPP3	October 2014	active	ECB/2020/8, as amended	Covered bonds of euro area residents
ABSPP	November 2014	active	ECB/2014/45, as amended	Senior and guaranteed mezzanine tranches of asset-backed securities of euro area residents
PSPP	March 2015	active	ECB/2020/9	Bonds issued by euro area central, regional or local governments or recognised agencies as well as by international organisations and multilateral development banks located in the euro area
CSPP[3]	June 2016	active	ECB/2016/16, as amended	Bonds and commercial paper issued by non-bank corporations established in the euro area
Pandemic emergency purchase programme (PEPP)				
PEPP	March 2020	active	ECB/2020/17, as amended	All asset categories eligible under the APP [4]

1) Further eligibility criteria for the specific programmes can be found in the Governing Council’s decisions.
2) Only public debt securities issued by five euro area treasuries were purchased under the SMP.
3) The ECB does not acquire securities under the corporate sector purchase programme (CSPP).
4) A waiver of the eligibility requirements was granted for securities issued by the Greek Government.

During the first quarter of 2022, the Eurosystem continued its net purchases under the asset purchase programme (APP)[34] at a monthly pace of €20 billion on average. In March 2022 the Governing Council decided[35] to revise the net purchase amounts to €40 billion in April, €30 billion in May and €20 billion in June, and in June 2022 the Governing Council decided[36] to end net asset purchases under the APP as of 1 July 2022. The Governing Council intends[37] to continue reinvesting, in full, the principal payments from maturing securities until the end of February 2023. Thereafter the APP portfolio will decline at a measured and predictable pace, as the Eurosystem will not reinvest all of the principal payments from maturing securities. The decline will amount to €15 billion a month on average until the end of June 2023 and its subsequent pace will be determined over time. The Governing Council will regularly reassess the pace of the APP portfolio reduction to ensure it remains consistent with the overall monetary policy strategy and stance, to preserve market functioning, and to maintain firm control over short-term money market conditions.

In addition, during the first quarter of 2022, the Eurosystem continued its net asset purchases under the PEPP[38], albeit at a lower pace than in the previous quarter, following the decision of the Governing Council in December 2021.[39] Based on the same decision, net PEPP purchases were discontinued at the end of March 2022. The Governing Council intends to reinvest, in full, the principal payments from maturing securities purchased under the PEPP until at least the end of 2024. The Governing Council will continue applying flexibility across time, asset classes and jurisdictions in the reinvestments, with a view to countering risks to the monetary policy transmission mechanism related to the pandemic. The future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

The securities purchased under these programmes are valued on an amortised cost basis subject to impairment (see "Securities" in Section 2.3 "Accounting policies").

The amortised cost of the securities held by the ECB and their market value[40] (which is not recorded on the Balance Sheet or in the Profit and Loss Account and is provided for comparison purposes only) were as follows:

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34 Further details on the APP can be found on the ECB's website.

35 See the press release of 10 March 2022 on the Governing Council's decisions.

36 See the press release of 9 June 2022 on the Governing Council's decisions.

37 See the press release of 15 December 2022 on the Governing Council's decisions.

38 Further details on the PEPP can be found on the ECB's website.

39 See the press release of 16 December 2021 on the Governing Council's decisions.

40 Market values are indicative and are derived on the basis of market quotes. When market quotes are not available, market prices are estimated using internal Eurosystem models.

	2022 € millions		2021 € millions		Change € millions	
	Amortised cost	Market value	Amortised cost	Market value	Amortised cost	Market value
Completed/Terminated programmes						
CBPP1	-	-	14	14	(14)	(14)
CBPP2	-	-	195	196	(195)	(196)
SMP	718	766	1,035	1,191	(318)	(425)
APP						
CBPP3	25,116	22,136	24,934	25,254	182	(3,118)
ABSPP	22,895	22,605	28,403	28,286	(5,508)	(5,681)
PSPP – government/agency securities	242,857	213,750	234,083	242,777	8,774	(29,027)
Total APP	**290,868**	**258,491**	**287,420**	**296,317**	**3,448**	**(37,825)**
PEPP						
PEPP – covered bonds	769	628	696	686	73	(58)
PEPP – government/agency securities	164,916	138,072	156,024	154,804	8,892	(16,732)
Total PEPP	**165,685**	**138,700**	**156,720**	**155,490**	**8,965**	**(16,790)**
Total	**457,271**	**397,957**	**445,384**	**453,208**	**11,887**	**(55,251)**

The amortised cost value of the securities held by the ECB changed during the year as follows:

	2021 € millions	Gross purchases € millions	Redemptions € millions	Net discount/ (premium)[1] € millions	2022 € millions
CBPP1	14	-	(14)	0	-
CBPP2	195	-	(195)	(0)	-
SMP	1,035	-	(335)	17	718
CBPP3	24,934	3,576	(3,325)	(69)	25,116
ABSPP	28,403	6,247	(11,644)	(111)	22,895
PSPP – government/agency securities	234,083	37,796	(26,467)	(2,555)	242,857
PEPP – covered bonds	696	92	(17)	(1)	769
PEPP – government/agency securities	156,024	34,875	(23,570)	(2,413)	164,916
Total	**445,384**	**82,585**	**(65,566)**	**(5,132)**	**457,271**

1) "Net discount/(premium)" includes net realised gains/(losses), if any.

The Governing Council assesses on a regular basis the financial risks associated with the securities held under these programmes.

In this context, impairment tests are conducted on an annual basis, using data as at the year-end, and are approved by the Governing Council. In these tests, impairment indicators are assessed separately for each programme. In cases where impairment indicators are observed, further analysis is performed to confirm that the cash flows of the underlying securities have not been affected by an impairment event. Based on the results of this year's impairment tests, no losses have been recorded by the ECB for the securities held in its monetary policy portfolios in 2022.

The amortised cost value of the securities held by the Eurosystem was as follows:

	2022 € millions			2021 € millions		
	ECB	Euro area NCBs	Total Eurosystem	ECB	Euro area NCBs	Total Eurosystem
Completed/Terminated programmes						
CBPP1	-	-	-	14	415	429
CBPP2	-	-	-	195	2,211	2,406
SMP	718	2,143	2,860	1,035	5,486	6,522
APP						
CBPP3	25,116	276,857	301,973	24,934	273,233	298,167
ABSPP	22,895	-	22,895	28,403	-	28,403
PSPP – government/agency securities	242,857	2,066,581	2,309,438	234,083	1,988,516	2,222,599
PSPP – supranational securities	-	275,228	275,228	-	264,537	264,537
CSPP	-	344,119	344,119	-	309,676	309,676
Total APP	**290,868**	**2,962,785**	**3,253,653**	**287,420**	**2,835,961**	**3,123,382**
PEPP						
PEPP – covered bonds	769	5,283	6,052	696	5,377	6,073
PEPP – government/agency securities	164,916	1,317,937	1,482,853	156,024	1,244,196	1,400,220
PEPP – supranational securities	-	145,687	145,687	-	130,590	130,590
PEPP – corporate sector securities	-	46,074	46,074	-	43,782	43,782
Total PEPP	**165,685**	**1,514,981**	**1,680,666**	**156,720**	**1,423,945**	**1,580,665**
Total	**457,271**	**4,479,908**	**4,937,179**	**445,384**	**4,268,019**	**4,713,403**

Note: "Euro area NCBs" figures are preliminary and may be subject to revision, which would also result in an equivalent change in the "Total Eurosystem" figures.

Note 6 - Intra-Eurosystem claims

Note 6.1 - Claims related to the allocation of euro banknotes within the Eurosystem

This item consists of the claims of the ECB vis-à-vis the euro area NCBs relating to the allocation of euro banknotes within the Eurosystem (see "Banknotes in circulation" in Section 2.3 "Accounting policies") and as at 31 December 2022 amounted to €125,763 million (2021: €123,551 million). The remuneration of these claims is calculated daily at the latest available interest rate used by the Eurosystem in its tenders for main refinancing operations (see note 23.2 "Interest income arising from the allocation of euro banknotes within the Eurosystem").

Note 7 - Other assets

Note 7.1 - Tangible and intangible fixed assets

These assets comprised the following items:

	2022 € millions	2021 € millions	Change € millions
Cost			
Land and buildings	1,007	1,009	(2)
Right-of-use buildings	296	289	8
Plant in building	222	222	0
Computer hardware and software	140	136	4
Equipment, furniture and motor vehicles	110	107	3
Right-of-use equipment	3	5	(2)
Assets under construction	5	3	2
Other fixed assets	11	11	0
Total cost	**1,796**	**1,782**	**14**
Accumulated depreciation			
Land and buildings	(204)	(183)	(21)
Right-of-use buildings	(152)	(111)	(41)
Plant in building	(128)	(112)	(16)
Computer hardware and software	(120)	(110)	(10)
Equipment, furniture and motor vehicles	(82)	(71)	(10)
Right-of-use equipment	(2)	(3)	1
Other fixed assets	(3)	(3)	(0)
Total accumulated depreciation	**(690)**	**(593)**	**(98)**
Total net book value	**1,105**	**1,189**	**(84)**

In respect of the ECB’s main building and right-of-use office buildings, an impairment test was conducted at the end of the year and no impairment loss has been recorded.

Note 7.2 - Other financial assets

This item consists mainly of the ECB’s own funds portfolio, which predominantly consists of investments of the ECB’s financial resources, namely the paid-up capital and amounts set aside in the general reserve fund and in the provision for financial risks. It also includes 3,211 shares in the Bank for International Settlements (BIS) at the acquisition cost of €42 million and other current accounts denominated in euro.

The components of this item were as follows:

	2022 € millions	2021 € millions	Change € millions
Current accounts in euro	38	39	(1)
Securities denominated in euro	19,280	18,928	352
Reverse repurchase agreements in euro	1,854	2,144	(290)
Other financial assets	42	42	0
Total	**21,213**	**21,152**	**61**

The net increase in this item in 2022 was primarily due to the investment in the ECB's own funds portfolio of a total amount equal to the amount transferred to the ECB's provision for financial risks in 2021 and the amount paid up by the euro area NCBs in 2022 in respect of the second instalment of their increased subscriptions in the ECB's capital (see note 16 "Capital and reserves"). The increase in this item was largely offset, mainly by the decline in the market value of euro-denominated securities held in the ECB's own funds portfolio.

Note 7.3 - Off-balance-sheet instruments revaluation differences

This item is composed of valuation changes in swap and forward transactions in foreign currency that were outstanding on 31 December 2022 (see note 20 "Foreign exchange swap and forward transactions"). These valuation changes amounted to €783 million (2021: €620 million) and are the result of the conversion of such transactions into their euro equivalents at the exchange rates prevailing on the balance sheet date, compared with the euro values resulting from the conversion of the transactions at the average cost of the respective foreign currency on that date (see "Off-balance-sheet instruments" and "Gold and foreign currency assets and liabilities" in Section 2.3 "Accounting policies").

Note 7.4 - Accruals and prepaid expenses

This item comprised the following components:

	2022 € millions	2021 € millions	Change € millions
Accrued interest on TARGET2 balances due from NCBs	2,856	2	2,854
Accrued interest on claims related to the allocation of euro banknotes	575	-	575
Accrued interest on financial instruments	3,654	3,332	322
Accrued income related to supervisory tasks	594	577	16
Other accruals and prepaid expenses	137	144	(7)
Total	**7,815**	**4,055**	**3,760**

As at 31 December 2022 the largest component of this item was accrued interest on financial instruments, mainly stemming from coupon interest on securities, including outstanding interest paid at acquisition (see note 2.2 "Balances with banks and security investments, external loans and other external assets; and claims on euro area residents denominated in foreign currency", note 5 "Securities of euro area residents denominated in euro" and note 7.2 "Other financial assets").

It also included accrued interest receivable on TARGET2 balances due from euro area NCBs for December 2022 (see note 12.2 "Other liabilities within the Eurosystem (net)") and accrued interest receivable from euro area NCBs for the final quarter of 2022 in respect of the ECB's claims related to the allocation of euro banknotes within the Eurosystem (see note 6.1 "Claims related to the allocation of euro banknotes within the Eurosystem"). These amounts were settled in January 2023.

Accrued income related to supervisory tasks corresponds to the supervisory fees to be received for the fee period 2022. This amount will be collected in 2023 (see note 26 "Net income/expense from fees and commissions").[41]

This item also includes (i) miscellaneous prepayments; (ii) accrued income from common Eurosystem projects (see note 28 "Other income"); and (iii) accrued interest income on other financial assets and liabilities.

Note 7.5 - Sundry

On 31 December 2022 this item amounted to €438 million (2021: €749 million) and mainly comprised balances with a value of €349 million (2021: €573 million) related to swap and forward transactions in foreign currency outstanding on 31 December 2022 (see note 20 "Foreign exchange swap and forward transactions"). These balances arose from the conversion of such transactions into their euro equivalents at the respective currency's average cost on the balance sheet date, compared with the euro values at which the transactions were initially recorded (see "Off-balance-sheet instruments" in Section 2.3 "Accounting policies").

Note 8 - Banknotes in circulation

This item consists of the ECB's share (8%) of total euro banknotes in circulation (see "Banknotes in circulation" in Section 2.3 "Accounting policies"), which as at 31 December 2022 amounted to €125,763 million (2021: €123,551 million).

Note 9 - Other liabilities to euro area credit institutions denominated in euro

The Eurosystem central banks have the possibility of accepting cash as collateral in their PSPP and public sector PEPP securities lending facilities without having to reinvest it. In the case of the ECB, these operations are conducted via a specialised institution.

[41] Further details can be found on the ECB's banking supervision website.

As at 31 December 2022 the outstanding value of such lending transactions against cash collateral conducted with euro area credit institutions was €17,734 million (2021: €9,473 million). Cash received as collateral was transferred to TARGET2 accounts. As the cash remained uninvested at the year-end, these transactions were recorded on the Balance Sheet (see "Reverse transactions" in Section 2.3 "Accounting policies").[42]

Note 10 - Liabilities to other euro area residents denominated in euro

Note 10.1 - General government

As at 31 December 2022 this item amounted to €48,520 million (2021: €3,200 million) and included deposits of the European Stability Mechanism (ESM) and the European Financial Stability Facility (EFSF). In accordance with Article 21 of the Statute of the ESCB, the ECB may act as fiscal agent for Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States.

Note 10.2 – Other liabilities

This item consists of balances of the euro area ancillary systems[43] connected to TARGET2 through the TARGET2-ECB component, which as at 31 December 2022 amounted to €15,343 million (2021: €4,404 million).

Note 11 - Liabilities to non-euro area residents denominated in euro

This item comprised the following components:

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42 Securities lending transactions that do not result in uninvested cash collateral at the year-end are recorded in off-balance-sheet accounts (see note 17 "Securities lending programmes").

43 Ancillary systems are financial market infrastructures that have been granted access to the TARGET2-ECB component by the Governing Council, provided they fulfil the requirements defined in Decision of the ECB of 24 July 2007 concerning the terms and conditions of TARGET2-ECB (ECB/2007/7) (2007/601/EC) (OJ L 237, 8.9.2007, p. 71), as amended. The unofficial consolidated text with the list of amendments can be found here. Depending on the managing entity, the ancillary systems are considered either euro area residents (see note 10.2 "Other liabilities") or non-euro area residents (see note 11 "Liabilities to non-euro area residents denominated in euro"). Further details on ancillary systems can be found on the ECB's website.

	2022 € millions	2021 € millions	Change € millions
TARGET2 balances	42,808	71,875	(29,067)
Cash received as collateral in securities lending transactions	15,008	21,750	(6,742)
Administration of EU borrowing and lending activities	19,904	18,033	1,871
Liquidity-providing swap arrangements	388	834	(446)
Total	**78,108**	**112,492**	**(34,384)**

As at 31 December 2022 the largest component of this item was TARGET2 balances, consisting of TARGET2 balances of non-euro area NCBs vis-à-vis the ECB (see "Intra-ESCB balances/intra-Eurosystem balances" in Section 2.3 "Accounting policies") and of the non-euro area ancillary systems connected to TARGET2 through the TARGET2-ECB component. The decrease in these balances in 2022 corresponds to lower balances of the non-euro area ancillary systems.

This item also included balances relating to the administration of EU borrowing and lending activities, where the ECB acts as fiscal agent for the European Commission (see note 21 "Administration of borrowing and lending operations").

It also comprised balances arising from outstanding PSPP and public sector PEPP securities lending transactions conducted with non-euro area credit institutions in which cash was received as collateral and transferred to TARGET2 accounts (see note 9 "Other liabilities to euro area credit institutions denominated in euro").

The remainder of this item consists of a balance arising from the standing reciprocal currency arrangement with the Federal Reserve System. Under this arrangement, US dollars are provided by the Federal Reserve Bank of New York to the ECB by means of swap transactions, with the aim of offering short-term US dollar funding to Eurosystem counterparties. The ECB simultaneously enters into back-to-back swap transactions with euro area NCBs, which use the resulting funds to conduct US dollar liquidity-providing operations with Eurosystem counterparties in the form of reverse transactions. The back-to-back swap transactions result in intra-Eurosystem balances between the ECB and the euro area NCBs. Furthermore, the swap transactions conducted with the Federal Reserve Bank of New York and the euro area NCBs result in forward claims and liabilities that are recorded in off-balance-sheet accounts (see note 20 "Foreign exchange swap and forward transactions").

Note 12 - Intra-Eurosystem liabilities

Note 12.1 - Liabilities equivalent to the transfer of foreign reserves

These represent the liabilities to euro area NCBs that arose from the transfer of foreign reserve assets to the ECB when they joined the Eurosystem. In line with Article 30.2 of the Statute of the ESCB, these contributions are fixed in proportion to the NCBs' shares in the subscribed capital of the ECB. No changes occurred in 2022.

	Since 1 February 2020 € millions
Nationale Bank van België/Banque Nationale de Belgique (Belgium)	1,470
Deutsche Bundesbank (Germany)	10,635
Eesti Pank (Estonia)	114
Central Bank of Ireland (Ireland)	683
Bank of Greece (Greece)	998
Banco de España (Spain)	4,811
Banque de France (France)	8,240
Banca d'Italia (Italy)	6,854
Central Bank of Cyprus (Cyprus)	87
Latvijas Banka (Latvia)	157
Lietuvos bankas (Lithuania)	233
Banque centrale du Luxembourg (Luxembourg)	133
Central Bank of Malta (Malta)	42
De Nederlandsche Bank (The Netherlands)	2,364
Oesterreichische Nationalbank (Austria)	1,181
Banco de Portugal (Portugal)	944
Banka Slovenije (Slovenia)	194
Národná banka Slovenska (Slovakia)	462
Suomen Pankki – Finlands Bank (Finland)	741
Total	**40,344**

The remuneration of these liabilities is calculated daily at the latest available interest rate used by the Eurosystem in its tenders for main refinancing operations, adjusted to reflect a zero return on the gold component (see note 23.3 “Remuneration of NCBs’ claims in respect of foreign reserves transferred”).

Note 12.2 - Other liabilities within the Eurosystem (net)

In 2022 this item consisted predominantly of the TARGET2 balances of euro area NCBs vis-à-vis the ECB (see “Intra-ESCB balances/intra-Eurosystem balances” in Section 2.3 “Accounting policies”).

	2022 € millions	2021 € millions
Net TARGET2 liability	315,090	334,618
Due to euro area NCBs in respect of TARGET2	*1,830,483*	*1,791,771*
Due from euro area NCBs in respect of TARGET2	*(1,515,393)*	*(1,457,153)*
Due to euro area NCBs in respect of the ECB’s interim profit distribution	-	150
Other liabilities within the Eurosystem	41	24
Total	**315,130**	**334,792**

The decrease in the net TARGET2 liability was mainly attributable to the cash inflows as a result of (i) higher deposits of the ESM and the EFSF (see note 10.1 “General government”); and (ii) higher balances of the euro area ancillary systems connected to TARGET2 through the TARGET2-ECB component (see note 10.2 “Other liabilities”). The impact of these factors was partially offset by the cash outflows as a result of (i) lower balances of the non-euro area ancillary systems connected to TARGET2 through the TARGET2-ECB component (see note 11 “Liabilities to non-euro area residents denominated in euro”); and (ii) the net purchases of securities under the PEPP and the APP, which were settled via TARGET2 accounts (see note 5 “Securities of euro area residents denominated in euro”).

The remuneration of TARGET2 positions held by euro area NCBs vis-à-vis the ECB, with the exception of balances arising from back-to-back swap transactions in connection with US dollar liquidity-providing operations, is calculated daily at the latest available interest rate used by the Eurosystem in its tenders for main refinancing operations.

In 2021 this item also included the amount due to euro area NCBs in respect of the ECB’s interim profit distribution. With respect to 2022, the Governing Council, in view of the ECB’s financial result for the year, decided to retain the full amount of income derived from banknotes in circulation, as well as income earned on securities purchased under the SMP, APP and PEPP (see “Interim profit distribution” in Section 2.3 “Accounting policies”). Therefore, no related amounts were due at the end of 2022.

Note 13 - Other liabilities

Note 13.1 - Off-balance-sheet instruments revaluation differences

This item is composed primarily of valuation changes in swap and forward transactions in foreign currency that were outstanding on 31 December 2022 (see note 20 “Foreign exchange swap and forward transactions”). These valuation changes amounted to €430 million (2021: €568 million) and are the result of the conversion of such transactions into their euro equivalents at the exchange rates prevailing on the balance sheet date, compared with the euro values resulting from the conversion of the transactions at the average cost of the respective foreign currency on that date (see “Off-balance-sheet instruments” and “Gold and foreign currency assets and liabilities” in Section 2.3 “Accounting policies”).

Note 13.2 - Accruals and income collected in advance

This item comprised the following components:

	2022 € millions	2021 € millions	Change € millions
Accrued interest on TARGET2 balances due to NCBs	3,530	-	3,530
Accrued interest on NCBs’ claims in respect of foreign reserves transferred to the ECB	201	-	201
Accrued interest on financial instruments	92	1	91
Other accruals and deferred income	93	32	61
Total	**3,915**	**32**	**3,883**

As at 31 December 2022 the two main items under this heading were accrued interest payable on TARGET2 balances due to NCBs for December 2022 (see note 11 “Liabilities to non-euro area residents denominated in euro” and note 12.2 “Other liabilities within the Eurosystem (net)”) and accrued interest payable to euro area NCBs for 2022 in respect of their claims relating to foreign reserves transferred to the ECB (see note 12.1 “Liabilities equivalent to the transfer of foreign reserves”). These amounts were settled in January 2023.

Note 13.3 - Sundry

On 31 December 2022 this item stood at €1,562 million (2021: €2,277 million). It included balances amounting to €974 million (2021: €535 million) related to swap and forward transactions in foreign currency that were outstanding on 31 December 2022 (see note 20 “Foreign exchange swap and forward transactions”). These balances arose from the conversion of such transactions into their euro equivalents at the respective currency’s average cost on the balance sheet date, compared with the euro values at which the transactions were initially recorded (see “Off-balance-sheet instruments” in Section 2.3 “Accounting policies”).

The item also includes a lease liability of €141 million (2021: €175 million) (see “Leases” in Section 2.3 “Accounting policies”).

In addition, this item includes the ECB’s net defined benefit liability in respect of the post-employment and other long-term benefits of its staff[44] and the members of the Executive Board, as well as the members of the Supervisory Board employed by the ECB. The termination benefits of ECB staff are also included.

The ECB’s post-employment benefits, other long-term benefits and termination benefits

Balance Sheet

The amounts recognised in the Balance Sheet under the item “Sundry” (liabilities) in respect of post-employment, other long-term and staff termination benefits were as follows:

[44] The defined benefit pillar of the plan reflects only the compulsory contributions made by the ECB and staff. Voluntary contributions made by staff in a defined contribution pillar in 2022 amounted to €189 million (2021: €220 million). These contributions are invested in the plan assets and give rise to a corresponding obligation of equal value.

	2022 € millions			2021 € millions		
	Staff	Boards	Total	Staff	Boards	Total
Defined benefit obligation	1,947	31	1,978	3,165	43	3,209
Fair value of plan assets	(1,638)	-	(1,638)	(1,749)	-	(1,749)
Net defined benefit liability included under "Sundry" (liabilities)	**309**	**31**	**340**	**1,416**	**43**	**1,459**

Note: The columns labelled "Boards" report amounts in respect of both the Executive Board and the Supervisory Board.

In 2022 the present value of the defined benefit obligation vis-à-vis staff of €1,947 million (2021: €3,165 million) included unfunded benefits amounting to €233 million (2021: €373 million) relating to post-employment benefits other than pensions, to other long-term benefits and to staff termination benefits. The present value of the defined benefit obligation vis-à-vis the members of the Executive Board and the members of the Supervisory Board of €31 million (2021: €43 million) relates solely to unfunded arrangements in place for post-employment and other long-term benefits.

Remeasurements of the ECB's net defined benefit liability in respect of post-employment benefits are recognised in the Balance Sheet under the liability item "Revaluation accounts". In 2022 remeasurement gains under that liability item amounted to €369 million, while in 2021 the ECB recorded remeasurement losses of €799 million (see note 15 "Revaluation accounts").

Changes in the defined benefit obligation, plan assets and remeasurement results

Changes in the present value of the defined benefit obligation were as follows:

	2022 € millions			2021 € millions		
	Staff	Boards	Total	Staff	Boards	Total
Opening defined benefit obligation	3,165	43	3,209	3,034	44	3,079
Current service cost	164	4	168	165	4	169
Interest cost on the obligation	42	1	42	34	1	34
Contributions paid by plan participants[1]	40	0	41	33	0	33
Benefits paid	(38)	(2)	(40)	(26)	(5)	(31)
Remeasurement gains	(1,426)	(16)	(1,441)	(75)	(1)	(76)
Closing defined benefit obligation	**1,947**	**31**	**1,978**	**3,165**	**43**	**3,209**

Note: The columns labelled "Boards" report amounts in respect of both the Executive Board and the Supervisory Board.
1) Net figure including compulsory contributions and transfers into/out of the plans. The compulsory contributions paid by staff are 7.4%, whilst those paid by the ECB are 20.7% of the basic salary.

The total remeasurement gains of €1,441 million on the defined benefit obligation in 2022 arose primarily as a result of the rise in the discount rate used for the actuarial valuation from 1.3% in 2021 to 3.9% in 2022.

Changes in the fair value of plan assets in the defined benefit pillar relating to staff were as follows:

	2022 € millions	2021 € millions
Opening fair value of plan assets	1,749	1,447
Interest income on plan assets	23	16
Remeasurement gains/(losses)	(228)	201
Contributions paid by employer	71	67
Contributions paid by plan participants	40	33
Benefits paid	(18)	(14)
Closing fair value of plan assets	**1,638**	**1,749**

The remeasurement losses on plan assets in 2022 reflected the fact that the actual return on the fund units was lower than the assumed interest income on plan assets, which was based on the discount rate assumption of 1.3%.

Changes in the remeasurement results were as follows:

	2022 € millions	2021 € millions
Opening remeasurement losses	(799)	(1,067)
Gains/(losses) on plan assets	(228)	201
Gains on obligation	1,441	76
Gains recognised in the Profit and Loss Account	(45)	(9)
Closing remeasurement gains/(losses) included under "Revaluation accounts"	**369**	**(799)**

Profit and Loss Account

The amounts recognised in the Profit and Loss Account were as follows:

	2022 € millions			2021 € millions		
	Staff	Boards	Total	Staff	Boards	Total
Current service cost	164	4	168	165	4	169
Net interest on the net defined benefit liability	19	1	19	18	1	18
Interest cost on the obligation	*42*	*1*	*42*	*34*	*1*	*34*
Interest income on plan assets	*(23)*	*-*	*(23)*	*(16)*	*-*	*(16)*
Remeasurement (gains)/losses on other long-term and termination benefits	(44)	(0)	(45)	(9)	0	(9)
Total included in "Staff costs"	**138**	**5**	**142**	**173**	**5**	**178**

Note: The columns labelled "Boards" report amounts in respect of both the Executive Board and the Supervisory Board.

The remeasurement gains on other long-term and termination benefits increased in 2022 to €45 million (2021: €9 million), owing mainly to a higher discount rate used for the actuarial valuation at the end of 2022.

Key assumptions

In preparing the valuations referred to in this note, the independent actuaries have used assumptions which the Executive Board has accepted for the purposes of accounting and disclosure. The principal assumptions used for the purposes of calculating the liability for post-employment benefits and other long-term benefits were as follows:

	2022 %	2021 %
Discount rate	3.90	1.30
Expected return on plan assets[1]	4.90	2.30
General future salary increases[2]	2.00	2.00
Future pension increases[3]	1.70	1.80

1) These assumptions were used for calculating the part of the ECB's defined benefit obligation which is funded by assets with an underlying capital guarantee.
2) In addition, allowance is made for prospective individual salary increases of up to 1.8% per annum, depending on the age of the plan participants.
3) In accordance with the ECB's pension plan rules, pensions will be increased annually. If general salary adjustments for ECB employees are below price inflation, any increase in pensions will be in line with the general salary adjustments. If the general salary adjustments exceed price inflation, they will be applied to determine the increase in pensions, provided that the financial position of the ECB's pension plans permits such an increase.

Note 14 - Provisions

This item consists mainly of a provision for financial risks, which is used to the extent deemed necessary by the Governing Council to offset losses that arise as a result of exposures to financial risks. The size of and continuing requirement for this provision is reviewed annually, based on the ECB's assessment of its exposure to these risks and taking a range of factors into account. Its size, together with any amount held in the general reserve fund, may not exceed the value of the ECB's capital paid up by the euro area NCBs.

This year an amount of €1,627 million was released from this provision to cover losses that arose from exposures to financial risks, bringing the ECB's financial result for the year to zero. The losses resulted mainly from the increase in the interest rate used by the Eurosystem in its tenders for main refinancing operations, which led to a significant interest expense arising from the ECB's net TARGET2 liability (see note 23.4 “Other interest income; and other interest expense”). At the same time, the increase in the euro and US dollar yields resulted in price write-downs of securities in the own funds and US dollar portfolios, as well as losses from sales of US dollar securities (see “Income recognition” in Section 2.3 “Accounting policies”, note 25 “Write-downs on financial assets and positions” and note 24 “Realised gains/losses arising from financial operations”). This release from the provision for financial risks reduced its size to €6,566 million as at 31 December 2022.

This item also includes administrative provisions amounting to €69 million (2021: €74 million).

Note 15 - Revaluation accounts

This item consists mainly of revaluation balances arising from unrealised gains on assets, liabilities and off-balance-sheet instruments (see “Income recognition”, “Gold and foreign currency assets and liabilities”, “Securities” and “Off-balance-sheet instruments” in Section 2.3 “Accounting policies”). It also includes remeasurements of the ECB's net defined benefit liability in respect of post-employment benefits (see "The ECB's post-employment benefits, other long-term benefits and termination benefits" in Section 2.3 "Accounting policies" and note 13.3 "Sundry").

	2022 € millions	2021 € millions	Change € millions
Gold	23,794	22,227	1,568
Foreign currency	12,305	10,466	1,838
US dollars	*11,225*	*8,749*	*2,476*
Japanese yen	*977*	*1,595*	*(617)*
Chinese renminbi	*47*	*61*	*(14)*
SDR	*56*	*62*	*(6)*
Others	*-*	*0*	*(0)*
Securities and other instruments	19	384	(365)
Net defined benefit liability in respect of post-employment benefits	369	(799)	1,168
Total	**36,487**	**32,277**	**4,210**

The increase in the size of the revaluation accounts is predominately due to the appreciation of the US dollar against the euro and the rise in the market price of gold in euro terms in 2022.

The foreign exchange rates used for the year-end revaluation were as follows:

Exchange rates	2022	2021
US dollar per euro	1.0666	1.1326
Japanese yen per euro	140.66	130.38
Chinese renminbi per euro	7.3582	7.1947
Euro per SDR	1.2517	1.2359
Euro per fine ounce of gold	1,706.075	1,609.483

Note 16 - Capital and reserves

Note 16.1 - Capital

The subscribed capital of the ECB is €10,825 million.

After the Bank of England's withdrawal from the ESCB on 31 January 2020, the ECB kept its subscribed capital unchanged and the share of the Bank of England in the ECB's subscribed capital was reallocated among both the euro area NCBs and the remaining non-euro area NCBs. In addition, the Governing Council decided that the euro area NCBs would pay up in full their increased subscriptions in two annual instalments in 2021 and 2022, each amounting to €610 million. Owing to the payment of the second instalment by the euro area NCBs on 28 December 2022, the ECB's total paid-up capital increased to €8,880 million, as shown in the table below:

	Capital key since 1 February 2020 %	Subscribed capital since 1 February 2020 € millions	Paid-up capital since 28 December 2022 € millions	Paid-up capital as at 27 December 2022 € millions
Nationale Bank van België/ Banque Nationale de Belgique (Belgium)	2.9630	321	321	299
Deutsche Bundesbank (Germany)	21.4394	2,321	2,321	2,160
Eesti Pank (Estonia)	0.2291	25	25	23
Central Bank of Ireland (Ireland)	1.3772	149	149	139
Bank of Greece (Greece)	2.0117	218	218	203
Banco de España (Spain)	9.6981	1,050	1,050	977
Banque de France (France)	16.6108	1,798	1,798	1,674
Banca d'Italia (Italy)	13.8165	1,496	1,496	1,392
Central Bank of Cyprus (Cyprus)	0.1750	19	19	18
Latvijas Banka (Latvia)	0.3169	34	34	32
Lietuvos bankas (Lithuania)	0.4707	51	51	47
Banque centrale du Luxembourg (Luxembourg)	0.2679	29	29	27
Central Bank of Malta (Malta)	0.0853	9	9	9
De Nederlandsche Bank (The Netherlands)	4.7662	516	516	480
Oesterreichische Nationalbank (Austria)	2.3804	258	258	240
Banco de Portugal (Portugal)	1.9035	206	206	192
Banka Slovenije (Slovenia)	0.3916	42	42	39
Národná banka Slovenska (Slovakia)	0.9314	101	101	94
Suomen Pankki – Finlands Bank (Finland)	1.4939	162	162	151
Subtotal for euro area NCBs	**81.3286**	**8,804**	**8,804**	**8,194**
Българска народна банка (Bulgarian National Bank) (Bulgaria)	0.9832	106	4	4
Česká národní banka (Czech Republic)	1.8794	203	8	8
Danmarks Nationalbank (Denmark)	1.7591	190	7	7
Hrvatska narodna banka (Croatia)	0.6595	71	3	3
Magyar Nemzeti Bank (Hungary)	1.5488	168	6	6
Narodowy Bank Polski (Poland)	6.0335	653	24	24
Banca Naţională a României (Romania)	2.8289	306	11	11
Sveriges Riksbank (Sweden)	2.9790	322	12	12
Subtotal for non-euro area NCBs	**18.6714**	**2,021**	**76**	**76**
Total	**100.0000**	**10,825**	**8,880**	**8,270**

The non-euro area NCBs are required to pay up 3.75% of their subscribed capital as a contribution to the operational costs of the ECB. Since 1 February 2020 this contribution has amounted to a total of €76 million. Non-euro area NCBs are not entitled to receive any share of the distributable profits of the ECB, nor are they liable to cover any loss of the ECB.

2.5 Off-balance-sheet instruments

Note 17 - Securities lending programmes

As part of the management of the ECB's own funds, the ECB has a securities lending programme agreement in place under which a specialised institution enters into securities lending transactions on behalf of the ECB.

In addition, in accordance with the Governing Council's decisions, the ECB has made available for lending its holdings of securities purchased under the first, second and third CBPPs, the PSPP and the PEPP, as well as its holdings of securities purchased under the SMP that are also eligible for purchase under the PSPP.[45]

Unless these securities lending operations are conducted against cash collateral that remains uninvested at the end of the year, they are recorded in off-balance-sheet accounts.[46] Such securities lending operations with a value of €11,569 million (2021: €16,156 million) were outstanding as at 31 December 2022. Of this amount, €6,637 million (2021: €11,821 million) related to the lending of securities held for monetary policy purposes.

Note 18 - Interest rate futures

The following transactions, presented at year-end foreign exchange rates, were outstanding:

Foreign currency interest rate futures	2022 Contract value € millions	2021 Contract value € millions	Change € millions
Purchases	692	174	518
Sales	1,401	1,535	(134)

These transactions were conducted in the context of the management of the ECB's foreign reserves.

Note 19 - Forward transactions in securities

As at 31 December 2022 there were no balances under this item, while as at the end of 2021 forward sales of securities in the amount of €382 million, presented at year-

45 The ECB does not purchase corporate sector securities under the CSPP and PEPP and consequently has no related holdings available for lending. In 2022 the ECB's securities held under CBPP1 and CBPP2 matured, and thus were no longer available for lending operations at the year-end. Further details on securities lending can be found on the ECB's website.

46 If cash collateral remains uninvested at the year-end, these transactions are recorded in on-balance-sheet accounts (see note 9 “Other liabilities to euro area credit institutions denominated in euro” and note 11 “Liabilities to non-euro area residents denominated in euro”).

end foreign exchange rates, remained outstanding. These transactions were conducted in the context of the management of the ECB's foreign reserves.

Note 20 - Foreign exchange swap and forward transactions

Management of foreign reserves

Foreign exchange swap and forward transactions were conducted in the context of the management of the ECB's foreign reserves. The outstanding claims and liabilities resulting from these transactions, presented at year-end foreign exchange rates, were as follows:

Foreign exchange swap and forward transactions	2022 € millions	2021 € millions	Change € millions
Claims	3,269	3,145	123
Liabilities	3,541	3,055	485

Liquidity-providing swap arrangements

The ECB is part of a swap-line network of central banks and has in place reciprocal swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the Federal Reserve System, the Swiss National Bank and the People's Bank of China. These swap arrangements allow for the provision of (i) liquidity in any of the respective currencies of the above-mentioned central banks to euro area banks; or (ii) euro liquidity to financial institutions in the jurisdictions of the above central banks. Furthermore, swap agreements are also in place with Danmarks Nationalbank, Narodowy Bank Polski and Sveriges Riksbank for the provision of euro liquidity to financial institutions in their jurisdictions. The above arrangements are aimed at addressing possible liquidity needs to counter potential market dysfunction and thereby minimise the risk of adverse spillover effects to euro area financial markets and economies.[47]

US dollar-denominated claims and liabilities with a maturity date in 2023 arose in connection with the provision of US dollar liquidity to Eurosystem counterparties (see note 11 "Liabilities to non-euro area residents denominated in euro").

Note 21 - Administration of borrowing and lending operations

In 2022 the ECB continued to be responsible for the administration of the borrowing and lending operations of the EU under the medium-term financial assistance facility and the European Financial Stabilisation Mechanism, for the loan facility agreement for Greece, and for the administration of payments relating to one EFSF loan.

In response to the COVID-19 pandemic, in 2022 the EU continued to grant loans to the Member States under its instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE). In 2022 the EU also continued to provide financing in the form of non-repayable financial support and loan support to

[47] Further details on liquidity-providing swap arrangements can be found on the ECB's website.

Member States under the Next Generation EU (NGEU) programme, which was established to support the economic recovery in the EU, while facilitating the green and digital transition of the Union's economy. As in the previous year, the ECB supported the European Commission in the administration of the operations related to both of the above-mentioned instruments.

In 2022 the ECB processed payments related to all the above-mentioned operations.

Note 22 - Contingent liabilities from pending lawsuits

Lawsuits have been filed against the ECB relating to the exercise of its supervisory functions over Banca Carige S.p.A. (Banca Carige). In one of these lawsuits, Banca Carige's shareholders are seeking financial compensation from the ECB for the harm allegedly sustained as a result of various actions by the ECB in the exercise of its supervisory functions in respect of Banca Carige, consisting both of alleged failures to act and harmful actions. This case will be decided taking into account, among other factors, the final outcome of other related cases. In one of them, the General Court of the EU deemed, in its judgment of 12 October 2022, that the ECB's decision to place Banca Carige under temporary administration lacked an appropriate legal basis under Italian law. Accordingly, the General Court annulled the ECB's decision to place Banca Carige under temporary administration as well as the first extension of the duration of temporary administration in 2019. However, the General Court's judgment was appealed by the ECB before the Court of Justice of the EU, which may still overturn that judgment. Moreover, two further ECB decisions extending the temporary administration are currently being contested in an action for annulment, which is still pending.

2.6 Notes on the Profit and Loss Account

Note 23 - Net interest income

	2022 € millions	2021 € millions	Change € millions
Net interest income on foreign reserve assets	798	197	602
Interest income arising from the allocation of euro banknotes within the Eurosystem	736	-	736
Remuneration of NCBs' claims in respect of foreign reserves transferred	(201)	-	(201)
Net other interest income/(expense)	(433)	1,369	(1,802)
Net interest income/(expense) arising from TARGET2 balances due to/from NCBs	*(2,075)*	*22*	*(2,097)*
Net interest income on monetary policy securities	*1,534*	*1,006*	*528*
Net interest income on monetary policy security lending	*80*	*73*	*7*
Net interest income on own funds	*57*	*31*	*26*
Net interest income/(expense) on other assets/liabilities	*(29)*	*238*	*(267)*
Net interest income	**900**	**1,566**	**(666)**

Note 23.1 - Interest income on foreign reserve assets

This item includes interest income, net of interest expense, in respect of the ECB's net foreign reserve assets.

The net interest income/expense per instrument type is shown below:

	2022 € millions	2021 € millions	Change € millions
Current accounts	22	1	21
Money market deposits	51	4	47
Repurchase agreements	(0)	0	(0)
Reverse repurchase agreements	148	2	146
Securities	513	179	334
Forward and swap transactions in foreign currencies	64	11	53
Net interest income on foreign reserve assets	**798**	**197**	**602**

The net interest income/expense per foreign currency was as follows:

	2022 € millions	2021 € millions	Change € millions
US dollars	771	186	585
Japanese yen	(4)	(4)	0
Chinese renminbi	14	15	(1)
SDR	18	0	18
Net interest income on foreign reserve assets	**798**	**197**	**602**

Note 23.2 - Interest income arising from the allocation of euro banknotes within the Eurosystem

This item consists of the interest income relating to the ECB’s 8% share of the total euro banknote issue (see “Banknotes in circulation” in Section 2.3 “Accounting policies” and note 6.1 “Claims related to the allocation of euro banknotes within the Eurosystem”). The interest income in 2022 amounted to €736 million (2021: zero) and resulted from the increase in the rate on the main refinancing operations to above 0% as of 27 July 2022. In 2021 this rate had stood at 0% throughout the entire year.

Note 23.3 - Remuneration of NCBs’ claims in respect of foreign reserves transferred

Remuneration paid to euro area NCBs on their claims in respect of the foreign reserve assets transferred to the ECB (see note 12.1 “Liabilities equivalent to the transfer of foreign reserves”) is disclosed under this heading. The interest expense in 2022 amounted to €201 million (2021: zero) and resulted from the increase in the rate on the main refinancing operations to above 0% as of 27 July 2022. In 2021 this rate had stood at 0% throughout the entire year.

Note 23.4 - Other interest income; and other interest expense

Other interest income and other interest expense were as follows:

	2022 € millions	2021 € millions	Change € millions
Net interest income/(expense) arising from TARGET2 balances due from/to NCBs	(2,075)	22	(2,097)
Net interest income/(expense) on monetary policy securities	1,534	1,006	528
CBPP1 and CBPP2	*2*	*8*	*(6)*
SMP[1]	*65*	*103*	*(38)*
CBPP3	*120*	*107*	*13*
ABSPP	*140*	*11*	*129*
PSPP	*1,310*	*1,029*	*281*
PEPP	*(103)*	*(252)*	*149*
Net interest income on monetary policy security lending	80	73	7
Net interest income on own funds	57	31	26
Net interest income/(expense) on other assets/liabilities	(29)	238	(267)
Net other interest income/(expense)	**(433)**	**1,369**	**(1,802)**

1) The ECB's net interest income on SMP holdings of Greek government bonds amounted to €43 million (2021: €46 million).

Note 24 - Realised gains/losses arising from financial operations

Realised gains and losses arising from financial operations were as follows:

	2022 € millions	2021 € millions	Change € millions
Net realised price losses	(351)	(43)	(308)
Net realised exchange rate and gold price gains	241	37	204
Net realised losses arising from financial operations	**(110)**	**(6)**	**(104)**

Net realised price losses include realised gains and losses on securities and interest rate futures. The net realised price losses in 2022 were mainly driven by price losses realised in US dollar-denominated securities following the increase in US dollar securities yields. The net realised price losses were partially offset by realised exchange rate gains, which largely arose as a result of the year-end price write-downs of US dollar securities.

Realised gains and losses arising from financial operations per currency and per quarter are shown below:

	2022 € millions					2021 € millions				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
Net realised price gains/(losses)										
US dollars	(9)	(87)	(76)	(88)	(260)	(28)	17	11	(3)	(3)
Japanese yen	(1)	(3)	1	(2)	(4)	(2)	1	2	0	2
Chinese renminbi	2	2	2	0	6	0	1	2	1	4
Euro	(34)	(40)	(9)	(9)	(92)	(9)	(7)	(28)	(2)	(46)
Subtotal	**(42)**	**(128)**	**(82)**	**(99)**	**(351)**	**(37)**	**11**	**(13)**	**(4)**	**(43)**
Net realised exchange rate and gold price gains/(losses)										
US dollars	9	20	15	192	236	6	2	2	24	35
Japanese yen	1	1	0	3	4	1	0	0	1	2
Chinese renminbi	0	0	0	0	0	0	(0)	(0)	0	0
Other	0	0	(0)	0	0	0	0	0	0	0
Subtotal	**10**	**21**	**15**	**195**	**241**	**7**	**3**	**3**	**25**	**37**
Total	**(32)**	**(107)**	**(67)**	**96**	**(110)**	**(31)**	**14**	**(10)**	**21**	**(6)**

Note 25 - Write-downs on financial assets and positions

Write-downs on financial assets and positions were as follows:

	2022 € millions	2021 € millions	Change € millions
Unrealised price losses on securities	(1,840)	(133)	(1,707)
Unrealised exchange rate losses	(0)	-	(0)
Write-downs on financial assets and positions	**(1,840)**	**(133)**	**(1,707)**

The market value of the majority of securities held in the own funds and US dollar portfolios declined, alongside an increase in the corresponding yields in 2022. This resulted in unrealised price losses at the year-end.

Note 26 - Net income/expense from fees and commissions

	2022 € millions	2021 € millions	Change € millions
Income from fees and commissions	606	578	28
Expenses relating to fees and commissions	(21)	(19)	(2)
Net income from fees and commissions	**585**	**559**	**26**

In 2022 income under this heading consisted primarily of supervisory fees. Expenses arose predominantly from custody fees.

Income and expenses related to supervisory tasks

Banking supervision-related income mainly comprises supervisory fee income. The ECB levies annual fees on supervised entities in order to recover expenditure incurred in the performance of its supervisory tasks. Based on the ECB's actual annual expenses incurred in the performance of its banking supervision tasks, the supervisory fee income for 2022 stood at €594 million (2021: €578 million).

In order to determine the amount of supervisory fees to be levied, the actual annual expenditure is adjusted for amounts reimbursed to/received from individual banks for previous fee periods and other adjustments, including interest received on late payments.[48] Taking into account an adjustment corresponding to interest received on late payments as well as net reimbursements to individual banks for previous fee periods, the annual supervisory fees to be levied on the supervised entities for the fee period 2022 correspond to an amount almost equal to the actual annual expenses of €594 million[49] (see note 7.4 "Accruals and prepaid expenses"). The individual supervisory fees will be invoiced in the second quarter of 2023.[50]

The ECB is also entitled to impose administrative penalties on supervised entities for failure to comply with applicable EU banking law on prudential requirements (including ECB supervisory decisions). The related income is not considered in the calculation of the annual supervisory fees, nor are reimbursements of such penalties in the event that previous sanction decisions are amended or annulled. Instead, the related amounts are recorded in the ECB's Profit and Loss Account. In 2022 the income arising from penalties on supervised entities amounted to €12 million (2021: €1 million).

Thus, the income of the ECB for supervisory tasks was as follows:

	2022 € millions	2021 € millions	Change € millions
Income from supervisory fees	594	578	16
Fee income from significant entities or significant groups	*567*	*546*	*21*
Fee income from less significant entities or less significant groups	*27*	*31*	*(4)*
Imposed administrative penalties	12	1	12
Income related to banking supervision tasks	**606**	**578**	**28**

Banking supervision-related expenses result from the direct supervision of significant entities, the oversight of the supervision of less significant entities and the performance of horizontal tasks and specialised services. They consist of the direct expenses of the ECB's supervisory function and the relevant expenses arising from support areas needed to fulfil the ECB's supervisory responsibilities, reflecting their services in relation to premises and facilities; human resources; information

48 See Article 5(3) of Regulation (EU) No 1163/2014 of the ECB of 22 October 2014 on supervisory fees (ECB/2014/41) (OJ L 311, 31.10.2014, p. 23), as amended. The unofficial consolidated text with the list of amendments can be found here.

49 The ECB decision on the total amount of annual supervisory fees for 2022 will be adopted and subsequently published by the end of April 2023.

50 Further details can be found on the ECB's banking supervision website.

technology (IT); legal, audit and administration; communication and translation; as well as other activities.

The actual expenses relating to the ECB's supervisory tasks, which are recovered via the annual supervisory fees for 2022, amounted to €594 million (2021: €578 million). The overall increase was driven by the continued gradual return to normal levels of activity in banking supervision following the pandemic, and ongoing developments in and improvements to IT systems dedicated to banking supervision.

Note 27 - Income from equity shares and participating interests

The dividend of €1 million in 2022 (2021: €2 million) received on shares which the ECB holds in the BIS (see note 7.2 "Other financial assets") is shown under this heading.

Note 28 - Other income

Other miscellaneous income in 2022 stood at €61 million (2021: €56 million) and arose mainly from contributions of euro area NCBs to costs incurred by the ECB in connection with joint Eurosystem projects.

Note 29 - Staff costs

Staff costs were as follows:

	2022 € millions	2021 € millions	Change € millions
Salaries and allowances[1]	487	474	13
Staff insurance	23	22	1
Post-employment, other long-term and termination benefits	142	178	(35)
Staff costs	**652**	**674**	**(22)**

1) Salaries and allowances are, in essence, modelled on, and comparable with, the remuneration scheme of the EU.

The average number of employees, expressed in full-time equivalents (FTEs)[51], amounted to 4,136 (2021: 4,038), of which 373 were managerial staff (2021: 362).

Despite the increase in salaries and allowances as a result of the higher average number of staff employed by the ECB, the overall staff costs decreased in 2022. This decrease was mainly due to actuarial gains in relation to other long-term benefits

51 A full-time equivalent (FTE) is a unit equivalent to one employee working full-time for one year. Staff with permanent, fixed or short-term contracts and participants in the ECB's Graduate Programme are included in proportion to their hours worked. Staff on maternity or long-term leave are also included, while staff on unpaid leave are excluded.

resulting from a higher discount rate used for the actuarial valuation at the end of 2022 (see note 13.3 “Sundry”).

Remuneration of the Executive and Supervisory Boards

Members of the Executive Board and the members of the Supervisory Board employed by the ECB receive a basic salary and a residence allowance. In the case of the President, a residence is provided in lieu of a residence allowance. Members of the Executive Board and the Chair of the Supervisory Board also receive a representation allowance. Subject to the Conditions of Employment for Staff of the European Central Bank, members of both boards may be entitled to household, child, education and other allowances, depending on their individual circumstances. Salaries are subject to a tax for the benefit of the EU, as well as to deductions in respect of contributions to the pension, medical, long-term care and accident insurance schemes. Allowances are non-taxable and non-pensionable.

In 2022 the basic salaries of the members of the Executive Board and members of the Supervisory Board employed by the ECB (i.e. excluding representatives of national supervisors) were as follows:[52]

	2022 €	2021 €
Christine Lagarde (President)	427,560	421,308
Luis de Guindos Jurado (Vice-President)	366,504	361,140
Philip R. Lane (Board Member)	305,400	300,936
Fabio Panetta (Board Member)	305,400	300,936
Isabel Schnabel (Board Member)	305,400	300,936
Frank Elderson (Board Member)[1]	305,400	314,932
Total Executive Board	**2,015,664**	**2,000,188**
Total Supervisory Board (members employed by the ECB)[2]	**1,225,887**	**1,306,458**
of which:		
Andrea Enria (Chair of the Supervisory Board)	*305,400*	*300,936*
Total	**3,241,551**	**3,306,646**

1) Frank Elderson took office as a member of the Executive Board on 15 December 2020; his remuneration for the remainder of December 2020 was included in the costs for 2021, as it was paid in January 2021.
2) The total figure includes the remuneration of the Chair of the Supervisory Board and of four ECB representatives. Frank Elderson does not receive any additional remuneration in his role as Vice-Chair of the Supervisory Board. The totals for 2022 are lower due to a time gap between the end and start, respectively, of the terms of office of Pentti Hakkarainen and his successor Anneli Tuominen.

Total allowances paid to members of both boards and the ECB’s contributions to medical, long-term care and accident insurance schemes on their behalf amounted to €1,110,618 (2021: €1,097,128).

Transitional payments may be made to former members of both boards for a limited period after the end of their terms of office. In 2022 these payments, the related allowances and the ECB’s contributions to the medical, long-term care and accident insurance schemes of former members of both boards amounted to €742,892 (2021: €977,547). The decrease in these payments was due to fewer former board

52 Amounts are presented gross, i.e. before any tax deductions for the benefit of the EU.

members being in receipt of them in 2022, while the ones who were still entitled to them received less as they moved towards the end of their transition period.

Pension-related payments, including post-employment allowances, and contributions to the medical, long-term care and accident insurance schemes for former board members and their dependants amounted to €1,095,737 (2021: €4,047,008).[53] In 2021 this amount included a lump sum payment on retirement to a former board member in lieu of future pension payments.

Note 30 - Administrative expenses

Administrative expenses were as follows:

	2022 € millions	2021 € millions	Change € millions
Rent, property maintenance and utilities	54	68	(14)
Staff-related expenses	60	50	10
IT-related expenses	138	120	18
External services	151	170	(18)
Other expenses	57	35	22
Administrative expenses	**460**	**444**	**17**

The overall increase in administrative expenses in 2022 was a result of several offsetting factors. The continued gradual return to normal levels of activity following the pandemic as well as new and improved IT services in banking supervision led to higher expenses in 2022. These increases were partially offset by lower expenses for external consultancy support, mainly in relation to IT project activities. In addition, in 2022 the rent, property maintenance and utilities expenses were lower because in 2021 there had been a one-off expense related to the remedy of defects in the infrastructure of the main building remaining from the construction phase, which had increased the expenses under the relevant category for that year.

Note 31 - Banknote production services

In 2022 this expense amounted to €9 million (2021: €13 million). It arose predominantly from the cross-border transportation of euro banknotes between banknote printing works and NCBs, for the delivery of new banknotes, and between NCBs, for the compensation of shortages with surplus stocks. These costs are borne centrally by the ECB.

53 These pension-related payments decreased the defined benefit obligation recognised in the Balance Sheet. For the net amount charged to the Profit and Loss Account in relation to the pension arrangements for current members of the Executive Board and current members of the Supervisory Board employed by the ECB, see note 13.3 “Sundry”.

Note 32 - Other expenses

In 2021 this item comprised the reimbursement of €5 million of administrative penalties imposed by the ECB in 2018 on three supervised entities within the same group for which the relevant decisions were partially annulled by the General Court (see note 26 “Net income/expense from fees and commissions”). No expenses were recorded under this item in 2022.

2.7 Post-balance-sheet events

Note 33 - Croatia’s accession to the euro area

Pursuant to Council Decision (EU) 2022/1211 of 12 July 2022, taken in accordance with Article 140(2) of the Treaty on the Functioning of the European Union, Croatia adopted the single currency on 1 January 2023. In accordance with Article 48.1 of the Statute of the ESCB and the legal acts adopted by the Governing Council on 30 December 2022, Hrvatska narodna banka paid up an amount of €69 million with effect from 1 January 2023, which is the remainder of its capital subscription to the ECB. In accordance with Article 48.1, in conjunction with Article 30.1, of the Statute of the ESCB, Hrvatska narodna banka transferred foreign reserve assets with a total value equivalent to €640 million to the ECB with effect from 1 January 2023. These foreign reserve assets comprised US dollars in the form of cash (85%) and gold (15%).

Hrvatska narodna banka was credited with claims in respect of the paid-up capital and foreign reserve assets equivalent to the amounts transferred. The latter is to be treated in an identical manner to the existing claims of the other euro area NCBs (see note 12.1 “Liabilities equivalent to the transfer of foreign reserves”).

2.8 Financial statements 2018-22

2.8.1 Balance Sheet

ASSETS	2018 € millions	2019 € millions	2020 € millions	2021 € millions	2022 € millions
Gold and gold receivables	**18,193**	**21,976**	**25,056**	**26,121**	**27,689**
Claims on non-euro area residents denominated in foreign currency	**50,415**	**51,188**	**45,971**	**51,433**	**55,603**
Receivables from the IMF	692	710	680	1,234	1,759
Balances with banks and security investments, external loans and other external assets	49,723	50,478	45,291	50,199	53,844
Claims on euro area residents denominated in foreign currency	**997**	**2,637**	**4,788**	**2,776**	**1,159**
Claims on non-euro area residents denominated in euro	**-**	**-**	**1,830**	**3,070**	**-**
Balances with banks, security investments and loans	-	-	1,830	3,070	-
Other claims on euro area credit institutions denominated in euro	**300**	**109**	**81**	**38**	**12**
Securities of euro area residents denominated in euro	**251,656**	**250,377**	**349,008**	**445,384**	**457,271**
Securities held for monetary policy purposes	251,656	250,377	349,008	445,384	457,271
Intra-Eurosystem claims	**98,490**	**103,420**	**114,761**	**123,551**	**125,763**
Claims related to the allocation of euro banknotes within the Eurosystem	98,490	103,420	114,761	123,551	125,763
Other assets	**27,033**	**27,375**	**27,797**	**27,765**	**31,355**
Tangible and intangible fixed assets	1,148	1,330	1,262	1,189	1,105
Other financial assets	20,529	20,633	20,785	21,152	21,213
Off-balance-sheet instruments revaluation differences	579	619	388	620	783
Accruals and prepaid expenses	2,738	2,572	3,390	4,055	7,815
Sundry	2,039	2,221	1,970	749	438
Total assets	**447,083**	**457,082**	**569,292**	**680,140**	**698,853**

LIABILITIES	2018 € millions	2019 € millions	2020 € millions	2021 € millions	2022 € millions
Banknotes in circulation	**98,490**	**103,420**	**114,761**	**123,551**	**125,763**
Other liabilities to euro area credit institutions denominated in euro	**1,399**	**1,325**	**2,559**	**9,473**	**17,734**
Liabilities to other euro area residents denominated in euro	**9,152**	**20,466**	**13,700**	**7,604**	**63,863**
General government	7,737	18,198	10,012	3,200	48,520
Other liabilities	1,415	2,268	3,688	4,404	15,343
Liabilities to non-euro area residents denominated in euro	**10,361**	**7,245**	**11,567**	**112,492**	**78,108**
Intra-Eurosystem liabilities	**283,907**	**274,632**	**378,432**	**375,136**	**355,474**
Liabilities equivalent to the transfer of foreign reserves	40,793	40,344	40,344	40,344	40,344
Other liabilities within the Eurosystem (net)	243,115	234,288	338,088	334,792	315,130
Other liabilities	**1,873**	**2,962**	**3,095**	**2,877**	**5,908**
Off-balance-sheet instruments revaluation differences	641	709	636	568	430
Accruals and income collected in advance	54	66	40	32	3,915
Sundry	1,178	2,188	2,419	2,277	1,562
Provisions	**7,663**	**7,586**	**7,641**	**8,268**	**6,636**
Revaluation accounts	**24,922**	**29,420**	**28,235**	**32,277**	**36,487**
Capital and reserves	**7,740**	**7,659**	**7,659**	**8,270**	**8,880**
Capital	7,740	7,659	7,659	8,270	8,880
Profit for the year	**1,575**	**2,366**	**1,643**	**192**	**-**
Total liabilities	**447,083**	**457,082**	**569,292**	**680,140**	**698,853**

Note: In order to ensure comparability, the amounts shown under sub-items “General government” and “Other liabilities” under the item “Liabilities to other euro area residents denominated in euro” were adjusted for 2018 and 2019 in line with the approach applied since 2020. Further details on this change can be found under “Reclassifications” in Section 2.3 “Accounting policies” of the ECB’s Annual Accounts 2020.

2.8.2 Profit and Loss Account

	2018 € millions	2019 € millions	2020 € millions	2021 € millions	2022 € millions
Interest income on foreign reserve assets	862	1,052	474	197	798
Interest income arising from the allocation of euro banknotes within the Eurosystem	-	-	-	-	736
Other interest income	1,642	1,828	1,844	1,531	11,001
Interest income	2,503	2,879	2,318	1,728	12,536
Remuneration of NCBs' claims in respect of foreign reserves transferred	-	-	-	-	(201)
Other interest expense	(226)	(193)	(301)	(162)	(11,434)
Interest expense	(226)	(193)	(301)	(162)	(11,636)
Net interest income	**2,277**	**2,686**	**2,017**	**1,566**	**900**
Realised gains/losses arising from financial operations	(77)	197	342	(6)	(110)
Write-downs on financial assets and positions	(69)	(20)	(26)	(133)	(1,840)
Transfer to/from provisions for financial risks	-	84	(48)	(610)	1,627
Net result of financial operations, write-downs and risk provisions	**(146)**	**260**	**268**	**(749)**	**(322)**
Net income/expense from fees and commissions	**511**	**531**	**520**	**559**	**585**
Income from equity shares and participating interests	**1**	**1**	**-**	**2**	**1**
Other income	**47**	**43**	**37**	**56**	**61**
Total net income	**2,690**	**3,522**	**2,842**	**1,435**	**1,224**
Staff costs	(515)	(566)	(646)	(674)	(652)
Administrative expenses	(525)	(476)	(434)	(444)	(460)
Depreciation of tangible and intangible fixed assets	(66)	(102)	(106)	(108)	(103)
Banknote production services	(8)	(12)	(14)	(13)	(9)
Other expenses	-	-	-	(5)	-
Profit/(loss) for the year	**1,575**	**2,366**	**1,643**	**192**	**-**
Profit distribution	**1,575**	**2,366**	**1,643**	**192**	**-**

3 Independent auditor’s report

To the President and Governing Council
of the European Central Bank
Frankfurt am Main

Report on the Audit of the ECB’s Financial Statements 2022

Opinion

We have audited the Financial Statements of the European Central Bank (ECB) for the year ended 31 December 2022 – included in the ECB’s Annual Accounts – which comprise the balance sheet, the profit and loss account, and a summary of significant accounting policies and other explanatory notes.

In our opinion, the accompanying Financial Statements give a true and fair view of the financial position of the ECB as at 31 December 2022 and of the results of its financial operations for the year then ended in accordance with the principles established by the Governing Council, which are laid down in Decision (EU) 2016/2247 of the ECB of 3 November 2016 on the annual accounts of the ECB (ECB/2016/35), as amended, which is based on Guideline (EU) 2016/2249 of the ECB of 3 November 2016 on the legal framework for accounting and financial reporting in the European System of Central Banks (ECB/2016/34), as amended.

Basis for Opinion

We conducted our audit in accordance with International Standards on Auditing (“ISAs”). Our responsibilities under those standards are further described in the Auditor’s Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the ECB in accordance with the German ethical requirements that are relevant to our audit of the Financial Statements, which are consistent with the International Ethics Standards Board for Accountants’ Code of Ethics for Professional Accountants (“IESBA Code”) and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

The ECB's Executive Board ("Executive Board") is responsible for the other information included in the ECB's Annual Accounts. The other information comprises all the information included in the ECB's Annual Accounts except the Financial Statements of the ECB and our auditor's report.

Our opinion on the Financial Statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the Financial Statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the Financial Statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

Responsibilities of the Executive Board and those charged with Governance for the Financial Statements

The Executive Board is responsible for the preparation and fair presentation of the Financial Statements in accordance with the principles established by the Governing Council, which are laid down in Decision (EU) 2016/2247 of the ECB of 3 November 2016 on the annual accounts of the ECB (ECB/2016/35), as amended, which is based on Guideline (EU) 2016/2249 of the ECB of 3 November 2016 on the legal framework for accounting and financial reporting in the European System of Central Banks (ECB/2016/34), as amended, and for such internal control as the Executive Board determines is necessary to enable the preparation of Financial Statements that are free from material misstatement, whether due to fraud or error.

In preparing the Financial Statements, the Executive Board is responsible for assessing the ECB's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting.

Those charged with governance are responsible for overseeing the ECB's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the Financial Statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these Financial Statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism throughout the planning and performance of the audit. We also:

- Identify and assess the risks of material misstatement of the Financial Statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the ECB's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the ECB's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the Financial Statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report.

- Evaluate the overall presentation, structure and content of the Financial Statements, including the disclosures, and whether the Financial Statements represent the underlying transactions and events in a manner that achieves fair presentation.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Frankfurt am Main, 14 February 2023

Baker Tilly GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft
(Düsseldorf)

Dr. Stefan Wolfgang Fischer
Wirtschaftsprüfer

Maria Brück
Wirtschaftsprüferin

4 Note on profit distribution/allocation of losses

This note is not part of the financial statements of the ECB for the year 2022.

Pursuant to Article 33 of the Statute of the ESCB, the net profit of the ECB shall be transferred in the following order:

1. an amount to be determined by the Governing Council, which may not exceed 20% of the net profit, shall be transferred to the general reserve fund, subject to a limit equal to 100% of the capital; and

2. the remaining net profit shall be distributed to the shareholders of the ECB in proportion to their paid-up shares.[54]

In the event of a loss incurred by the ECB, the shortfall may be offset against the general reserve fund of the ECB and, if necessary, following a decision by the Governing Council, against the monetary income of the relevant financial year in proportion and up to the amounts allocated to the NCBs in accordance with Article 32.5 of the Statute of the ESCB.[55]

The ECB's financial result for 2022 was zero. Therefore there was no profit distribution.

	2022 € millions	2021 € millions
Profit/(loss) for the year	-	192
Interim profit distribution	-	(150)
Profit after the interim profit distribution	-	42
Distribution of the remaining profit	-	(42)
Total	**0**	**0**

54 Non-euro area NCBs are not entitled to receive any share of the ECB's distributable profits, nor are they liable to cover any loss of the ECB.

55 Under Article 32.5 of the Statute of the ESCB, the sum of the NCBs' monetary income shall be allocated to the NCBs in proportion to their paid-up shares in the capital of the ECB.

Consolidated balance sheet of the Eurosystem as at 31 December 2022

Assets

(EUR millions)

		31 December 2022	31 December 2021
1	**Gold and gold receivables**	**592,898**	**559,373**
2	**Claims on non-euro area residents denominated in foreign currency**	**523,217**	**500,191**
2.1	Receivables from the IMF	228,488	218,902
2.2	Balances with banks and security investments, external loans and other external assets	294,729	281,289
3	**Claims on euro area residents denominated in foreign currency**	**20,418**	**24,529**
4	**Claims on non-euro area residents denominated in euro**	**14,126**	**12,983**
4.1	Balances with banks, security investments and loans	14,126	12,983
4.2	Claims arising from the credit facility under ERM II	0	0
5	**Lending to euro area credit institutions related to monetary policy operations denominated in euro**	**1,324,347**	**2,201,882**
5.1	Main refinancing operations	2,406	386
5.2	Longer-term refinancing operations	1,321,422	2,201,496
5.3	Fine-tuning reverse operations	0	0
5.4	Structural reverse operations	0	0
5.5	Marginal lending facility	519	0
5.6	Credits related to margin calls	0	0
6	**Other claims on euro area credit institutions denominated in euro**	**31,083**	**26,627**
7	**Securities of euro area residents denominated in euro**	**5,102,174**	**4,886,410**
7.1	Securities held for monetary policy purposes	4,937,179	4,713,403
7.2	Other securities	164,995	173,007
8	**General government debt denominated in euro**	**21,589**	**22,168**
9	**Other assets**	**325,945**	**330,198**
Total assets		**7,955,797**	**8,564,361**

Liabilities

(EUR millions)

		31 December 2022	31 December 2021
1	**Banknotes in circulation**	**1,572,033**	**1,544,387**
2	**Liabilities to euro area credit institutions related to monetary policy operations denominated in euro**	**3,998,889**	**4,293,938**
2.1	Current accounts (covering the minimum reserve system)	218,883	3,512,153
2.2	Deposit facility	3,778,787	779,596
2.3	Fixed-term deposits	0	0
2.4	Fine-tuning reverse operations	0	0
2.5	Deposits related to margin calls	1,219	2,188
3	**Other liabilities to euro area credit institutions denominated in euro**	**78,303**	**76,674**
4	**Debt certificates issued**	**0**	**0**
5	**Liabilities to other euro area residents denominated in euro**	**564,639**	**757,063**
5.1	General government	436,822	590,383
5.2	Other liabilities	127,817	166,680
6	**Liabilities to non-euro area residents denominated in euro**	**540,725**	**709,971**
7	**Liabilities to euro area residents denominated in foreign currency**	**11,681**	**14,106**
8	**Liabilities to non-euro area residents denominated in foreign currency**	**4,719**	**2,729**
8.1	Deposits, balances and other liabilities	4,719	2,729
8.2	Liabilities arising from the credit facility under ERM II	0	0
9	**Counterpart of special drawing rights allocated by the IMF**	**181,121**	**178,834**
10	**Other liabilities**	**302,728**	**318,766**
11	**Revaluation accounts**	**586,384**	**554,874**
12	**Capital and reserves**	**114,577**	**113,019**
Total liabilities		**7,955,797**	**8,564,361**

Notes: Based on provisional unaudited data. The annual accounts of all the Eurosystem national central banks will be finalised by the end of May 2023, and the final annual consolidated balance sheet of the Eurosystem will be published thereafter.
Totals/sub-totals may not add up due to rounding.

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The cut-off date for the data included in this report was 18 April 2023 (exceptions are explicitly indicated).

For specific terminology please refer to the ECB glossary (available in English only).

PDF ISBN 978-92-899-5946-9, ISSN 1725-2865, doi:10.2866/390483, QB-AA-23-001-EN-N
HTML ISBN 978-92-899-5961-2, ISSN 1725-2865, doi:10.2866/03321, QB-AA-23-001-EN-Q