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EUROSYSTEM

Annual Report
2021

Members of the Executive Board of the Deutsche Bundesbank

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President of the Deutsche Bundesbank

Professor Claudia Buch
Vice-President of the Deutsche Bundesbank

Burkhard Balz

Professor Johannes Beermann

Dr Sabine Mauderer

Professor Joachim Wuermeling

We mourn the loss of the following members of our staff

Peter Hold	3 January 2021
Werner Schmitz	10 January 2021
Klaus-Dieter Petzold	9 April 2021
Ingrid Karolina Lober	15 April 2021
Wolf Thomas Hartmann	20 May 2021
Helmut Knoll	2 June 2021
Klaus Hübner	14 June 2021
Hubert Friedrich Orth	26 June 2021
Claudia Kühnemund	3 July 2021
Dr Dirk Wolfgang Bursian	7 September 2021
Lothar Jürgen Schoof	3 October 2021
Petra Spengler	3 October 2021
Monika Wandelt	22 October 2021

We also remember the retired staff members
of the Bank who passed away in 2021.

We will honour their memory.

DEUTSCHE BUNDESBANK

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Contents

Boxes

Tables

Charts

Abbreviations and symbols

p	Provisional
r	Revised
e	Estimated
pe	Partly estimated
…	Figure available at a later date
.	Figure unknown, not to be published or not meaningful
0	Less than 0.5 but more than nil
–	Nil

Discrepancies in the totals are due to rounding.

Bundesbank round-up

Dear Reader

For some days now, a war has been bringing death and destruction upon the people of Ukraine. We are horrified by the news reports and images. The Federal Government has condemned this attack by Russia upon an independent and sovereign country, one that cannot be justified by anything or anyone. My thoughts go out to the people of Ukraine.

I decisively support the financial sanctions against Russia that have been adopted. The Bundesbank is implementing these sanctions in Germany. In its role in banking supervision and as a guardian of financial stability, the Bundesbank is closely monitoring developments in the financial markets and potential effects on German banks. Energy prices, foreign trade and heightened uncertainty are probably the main channels through which the war will affect the German economy. This impact cannot yet be reliably quantified at present.

It is particularly in times of turmoil that an anchor of stability is important. In January, I returned to the Bundesbank, an institution which has shaped me more than any other. In the past, I have experienced the Bundesbank as an anchor of stability. And that is how it should remain. Now, in my role as President, I shall work tirelessly towards this objective. In this, I am picking up where Jens Weidmann left off after more than ten years in office. The Bank had the benefit of his outstanding leadership until his departure at the end of 2021. He presided over a challenging period, one in which many difficult decisions needed to be made. On behalf of the Bundesbank, I wish to warmly thank Jens Weidmann for his service.

The pandemic and its impact remained defining features of 2021. However, we have also witnessed great strides in the fight against the pandemic, such as the success of vaccination campaigns. They have restored a greater degree of normality and have helped the economy to continue recovering from its slump in the previous year. Moreover, monetary policy has played a major stabilising role.

Over the course of last year, inflation rates rose sharply to a level not seen since the introduction of the euro. The primary objective of monetary policy is clear: stable prices for the people of the euro area. Our monetary policy is oriented to the medium term. A key question is therefore how persistent the currently high rate of inflation will be. The price outlook is very uncertain. Monetary policy must therefore remain vigilant. And if needed to safeguard price stability, the ECB Governing Council will have to adapt its monetary policy stance.

The most important capital central banks have is trust. People count on them to keep the value of money stable. The new monetary policy strategy gives us the appropriate framework for this. In addition, climate aspects are going to play a greater role in monetary policy in the future. The Bundesbank is contributing to these efforts and has published studies on the impacts of climate change and climate policy. We are also involved in shaping digital transformation. For instance, we are pushing ahead with our own digitalisation projects, participating in initiatives to improve statistics and contributing to the investigation phase for a digital euro. At the same time, our new branch in Dortmund underscores our commitment to continue providing secure cash.

In all areas of the Bank, our staff are working with great dedication – especially under the difficult conditions of the pandemic. I warmly thank all our staff for their magnificent efforts!

Frankfurt am Main, early March 2022

Sincerely yours

Joachim Nagel

Dr Joachim Nagel
President of the Deutsche Bundesbank

At a glance

€1,598 billion

The coronavirus pandemic remained a defining feature of 2021. The Eurosystem kept its emergency monetary policy measures in place. By the end of 2021, the Eurosystem's total net asset purchases under the **pandemic emergency purchase programme** (PEPP) amounted to just under €1,600 billion. At its final meeting of 2021, the Governing Council of the ECB decided to discontinue its net PEPP purchases at the end of March 2022.

3.2%

Inflation saw a sharp increase. Measured in terms of the Harmonised Index of Consumer Prices (HICP), the annual average **inflation rate** in Germany in 2021 was 3.2%. In November, the inflation rate even hit 6.0%, a new high since the introduction of the euro.

0

Monetary policy crisis measures were the main driver behind another strong expansion of the Bundesbank's balance sheet. The Bundesbank has further upped its balance sheet risk provisioning against the associated risks. This provisioning is the main reason why the Bundesbank, as in the previous year, will not post any **distributable profit** for 2021.

Symmetry

The Governing Council of the ECB adopted a new monetary policy strategy in July 2021. A key component is the symmetric inflation target of 2% in the euro area over the medium term. Positive and negative deviations from the inflation target are equally undesirable. The new target is simpler and clearer and is designed to anchor inflation expectations firmly at target. Another element of the new strategy is for climate aspects to play a greater role in monetary policy.

2

Digital euro

In October 2021, the Eurosystem launched a two-year investigation phase for the digital euro project. It will address, in particular, the potential design of a digital euro such that the new payment instrument can meet the needs of euro area citizens. Only then will the Governing Council of the ECB, in close collaboration with the European Union's legislative bodies, take a decision on whether or not to actually introduce a digital euro.

Climate change and climate policy

can potentially have profound implications for the economy and the financial system, thereby also impinging on core tasks of the Bundesbank. This is why the Bundesbank is continuously and rapidly expanding its work on the impact of climate change and climate policy on macroeconomic developments, monetary policy and financial risks. For instance, it has analysed the German financial system's vulnerabilities caused by the transition to a climate-neutral economy.

Germany's **gross domestic product (GDP)** surged in 2021 (+2.9%). The recovery in the services sector was dampened, however, by the impact of the pandemic. In addition, bottlenecks in the supply of intermediate products weighed on industrial production. As a result, GDP remained significantly short of its pre-crisis level.

Bundesbank round-up

Economic activity and price developments

The global economy last year continued to recover from the unprecedented slump triggered by the pandemic in the second quarter of 2020. In fact, global economic activity expanded so strongly that it already exceeded its pre-crisis level. The recovery was driven mainly by successes in combating the pandemic – in particular thanks to a series of novel vaccines. Medical progress enabled the protective measures in large parts of the economy to be scaled back. The main beneficiaries of this were providers of high-contact services, as people resumed going to restaurants and cinemas more frequently, for instance. They also travelled more often, which meant that the utilisation of hotel and air travel capacities rebounded. As not all restrictions were lifted and a lot of people remained cautious, economic activity in some service industries remained below its pre-crisis level in some instances.

Demand for goods also recovered rapidly. Global industrial output and world trade were already back at their pre-crisis level by the end of 2020 and exceeded this level markedly in 2021. One reason was that a lot of households shifted spending from services to goods. However, the massive support for aggregate demand from fiscal and monetary policy was probably also a factor. On balance, demand for goods rose so sharply that industrial production was unable to keep up. Companies struggled with shortages and long delivery times – especially for semiconductors. There were also problems on the supply side. For instance, new waves of infection caused interruptions to production, and some areas of the shipping industry experienced delays. Transportation by sea and by air, in particular, reached its capacity limits. The delivery bottlenecks in conjunction with the effects of new waves of infection slowed global economic growth perceptibly in the second half of 2021.

These factors were also a drag on Germany's economic recovery. In some instances, other economies picked up faster. The UK economy bounced back from its dramatic downturn particularly robustly. Thanks to progress on vaccinations and periods of declining infection rates, social distancing requirements there were largely lifted during the first half of the year. In the United States, the restrictions imposed on businesses and individuals had been less strict to begin with, reducing the scope for a further opening up of the economy. The economic stimulus package agreed in March provided additional impetus there, and economic output first exceeded its pre-crisis level again as early as the second quarter. The Chinese economy withstood the slowdown in its export boom and continued its upturn. Other regions of the world, meanwhile, were harder hit by infection waves and containment measures. Many restrictions remained in place in Japan, for instance, and economic growth was consequently muted. A renewed massive outbreak of COVID-19 meant that India even suffered severe setbacks again. Many other emerging market and developing countries were also hard hit by the coronavirus crisis. Against this backdrop, the International Monetary Fund (IMF) provided many of the affected countries with financial assistance and approved a large-scale general allocation of special drawing rights to all member countries (see the box on pp. 17 f.).

Germany's economic output picked up sharply in 2021 (+2.9%) after the slump in 2020, but still fell well short of the pre-crisis level of 2019. The pandemic continued to weigh on private consumption, which stagnated on an annual average. By contrast, government consumption

Allocation of special drawing rights by the International Monetary Fund

On 23 August 2021, the International Monetary Fund (IMF) allocated a total of just under 460 billion new special drawing rights (SDRs), worth around €550 billion at the time, to its members. This roughly tripled the total volume of SDRs allocated – from just over 200 billion to around 660 billion SDRs. Each IMF member received an allocation in proportion to their IMF quota shares, which broadly reflect their position in the global economy. Germany received new SDRs equivalent to around €30 billion.

The IMF can create SDRs and allocate them to its members if it identifies a global shortage of reserve assets. Allocations require a majority of 85% of votes in the IMF Board of Governors. SDRs allocated to members count towards their reserve assets. They can be used for payments to the IMF, its members or certain international organisations (prescribed holders). They are not, however, currency; they cannot be used as a means of payment outside the IMF and its SDR system. Fundamentally, SDR allocations are comparable to the granting of an overdraft facility. SDRs can be exchanged with IMF members with strong external positions for US dollars, euro, renminbi, yen or pounds sterling. This right is particularly useful when a country's own reserve assets run low in crisis situations. Unlike with IMF lending programmes, no conditions or repayment deadlines are imposed on a country when making use of SDRs.

The SDR holdings of the Federal Republic of Germany are held and managed as part of the Federal Republic's reserve assets by the Bundesbank in line with the legal provisions and required characteristics of reserve assets. As the IMF can also cancel SDRs, SDR allocations are simultaneously an asset and a liability for members. Thus, an SDR allocation expands the Bundesbank's balance sheet. On the assets side, it increases SDR holdings as reserve assets under item 2.1 "Receivables from the IMF". On the liabilities side, it increases liabilities under item 8 "Counterpart of special drawing rights allocated by the IMF" by the same amount. On balance, gross reserve assets increase, while net reserve assets remain unchanged.

The IMF determines the current value of SDRs each day based on a basket of five currencies (US dollar, euro, renminbi, yen, pound sterling). The Bundesbank records its SDR positions in euro. It is thus irrelevant in terms of risk if the value of SDRs changes vis-à-vis the euro, provided the two aforementioned balance sheet items are equal in size. Exchange rate risk arises where SDR transactions lead to discrepancies between a member's SDR holdings and the amount it has been allocated. In addition, the SDR interest rate (based on the money market interest rates for the currency basket) is applied to such discrepancies. When a member's SDR holdings drop below its cumulative SDR allocation, it must pay interest on the difference to the IMF. If its SDR holdings are greater than its cumulative allocation, it receives interest income on the difference from the IMF. From a risk perspective, the Bundesbank seeks to achieve parity as far as possible between its SDR holdings and Germany's allocation.

At the same time, the Bundesbank, as a dependable partner to the IMF, stands ready to exchange SDRs with other IMF members, usually for euro. The Bundesbank, along with other IMF members with strong external positions, has signed a voluntary trading arrangement (VTA) with the IMF covering such exchange transactions. As part of the SDR allocation in August 2021, the Bundesbank reviewed its VTA. In the future, in line with the increased amount of SDRs Germany has been allocated, it will be available for a nominally larger volume of SDR transactions.

The IMF and international committees are currently also debating how countries with strong external positions might voluntarily channel a share of their newly allocated SDRs to vulnerable countries. Options are being considered for channelling SDRs to various trusts managed by the IMF or to multilateral development banks. The Bundesbank does not participate in this form of channelling. This is because, from the Bundesbank's perspective, reserve assets should not be used for the purposes of development policy. For one thing, doing so invites higher credit and liquidity risks. For another, the Bundesbank's mandate does not cover participation in such IMF trusts or loans to multilateral development banks. German contributions to such trusts can be made out of the Federal budget – as in the case of the recent loans to the IMF's Poverty Reduction and Growth Trust.

expanded considerably, especially as a result of spending on coronavirus tests and vaccinations. The sharp rise in investment in machinery and equipment and exports also helped buoy the economy. The recovery was dampened by supply-side shortages last year. Industry was hard hit by bottlenecks in the supply of intermediate products, which left it unable to benefit from the high demand for German industrial goods. In a regular online survey carried out by the Bundesbank, more than half of firms reported that their access to intermediate products or services had deteriorated in the second half of the year as compared to a year earlier. The shortage of semiconductors forced car manufacturers, in particular, to scale back production in 2021. Towards the end of the year, a renewed wave of infections meant that tighter restrictions had to be imposed again temporarily in some service industries, curtailing economic activity. Russia's war against Ukraine is increasing the uncertainty with regard to the economic outlook. It will probably have an impact on the economy mainly via energy prices, foreign trade and heightened uncertainty. The size of the impact, and how precisely it will be reflected in economic output and price developments, cannot yet be reliably quantified at present.

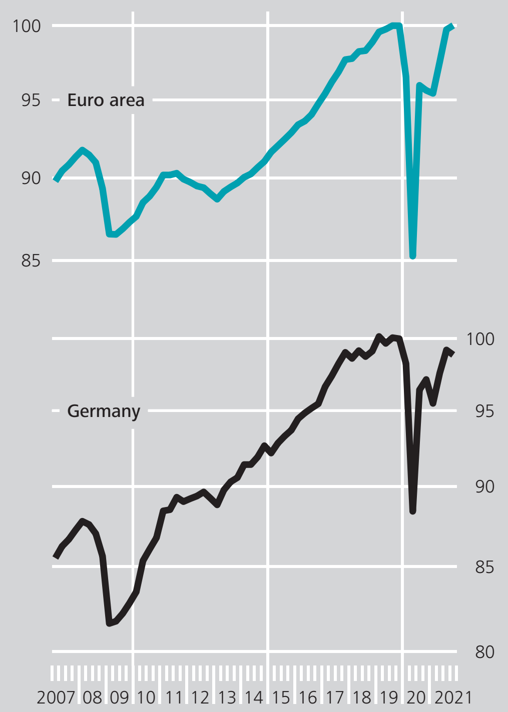
The upturn last year also reached the labour market in Germany. In order to bridge the downturn in business caused by the coronavirus, many enterprises had, in 2020, made large-scale use, at least at times, of the instrument of "short-time work". Over the course of last year, short-time work was reduced massively, a move that was accompanied by a renewed rise in the average hours worked per employee. Employment also recovered somewhat, while the number of jobs subject to social security contributions already exceeded its pre-crisis level in the third quarter. In fact, firms in Germany were increasingly complaining of a labour shortage. The pandemic has likely resulted in considerable sectoral shifts in the German labour market. In accommodation and food service activities – one of the industries that has been hard hit by the coronavirus crisis – the lengthy closures caused the loss of one in six jobs subject to social security contributions by the second quarter of 2021. As the restrictions were eased, the situation changed: some positions were filled again, while many also remained vacant, probably in part because the industry had become considerably less attractive to jobseekers during the pandemic. The situation is similar in arts, entertainment and recreation, and other personal services. Meanwhile, employment in human health and social work activities, in public administration as well as in the IT and construction sectors rose sharply at times. At year-end, the unemployment rate as measured using the Federal Employment Agency concept was still somewhat higher, at 5.2%, than in the first quarter of 2020.

Economic developments in the euro area were similar. Economic output actually outpaced Germany's last year (+5.2%), in part because the slump at the beginning of the pandemic had been even more pronounced. The services sector benefited from, amongst other things, a clear, albeit incomplete, recovery of the tourism industry. In addition, the global delivery bottlenecks did not weigh as heavily on industry as in Germany. Developments in the individual Member States were driven by the local pandemic trajectory and economic structure. The French and Italian economies, for instance, expanded on a broad basis and were roughly the same size at year-end again as before the crisis. Spain's economy, meanwhile, is more dependent on international tourism; activity consequently remained subdued.

Strong demand for goods sent prices for commodities and industrial inputs up sharply in 2021. In several manufacturing industries, the dramatic increase in transport costs was also of significance, something that continued throughout the year, at least in container shipping. Higher production costs were passed on in part to households. Supply problems in the automotive industry drove up consumer prices

Aggregate output*

Q4 2019 = 100, seasonally and calendar adjusted, log scale



Sources: Eurostat, Federal Statistical Office and Bundesbank calculations. * Real gross domestic product.
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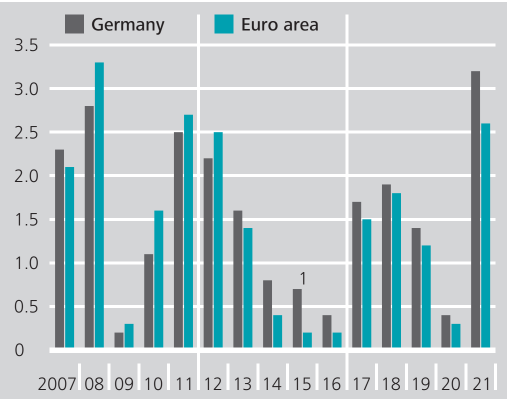
for new and used vehicles. The rise in services prices also accelerated in the second half of the year. Some of the services companies that were hard hit by the pandemic may have been trying to recoup some of the losses they suffered as a result of the pandemic by raising prices once they were able to re-open their businesses. In addition, consumer energy prices rose very sharply, because crude oil and natural gas prices shot up at times. In Germany, one-off effects – such as the expiry of the temporary VAT reduction and the introduction of carbon emission certificates – were further factors contributing to exceptionally high price increases in some areas. As measured by the Harmonised Index of Consumer Prices (HICP), the inflation rate climbed to peaks of 6.0% in Germany and 5.0% in the euro area as a whole towards the end of the year – with both figures marking new highs since the euro was introduced. Average annual inflation amounted to 3.2% and 2.6%, respectively.

Consumer prices*

Year-on-year percentage change



Sources: Federal Statistical Office and Eurostat. * HICP. **1** Values for 2015 biased upwards by an ad hoc revision to German HICP in 2019.

Deutsche Bundesbank

The one-off effects driving prices in Germany largely expired at the turn of 2021-22. However, the other factors pushing prices higher are likely to remain in place for the time being.[1] The war against Ukraine means that the momentum of consumer price inflation may increase further, particularly in the short term. Overall, the inflation outlook is highly uncertain, and the risks are skewed to the upside. Delivery bottlenecks could persist for some time to come, and even price pressure that starts out being temporary can become entrenched through second-round effects if inflation expectations and wage growth increase accordingly. To date, however, second-round effects as a result of more pronounced wage growth have not yet been a major factor. The Bundesbank's monthly online survey shows that individuals' short-term inflation expectations did rise significantly in Germany over the course of 2021. However, the longer-term inflation expectations of the households surveyed have, on average, risen only little to date (see the box on pp. 21 f.).

Monetary policy

The degree to which the high rate of inflation in the euro area could persist is of key significance for monetary policy. This is because the Eurosystem's monetary policy is geared to maintaining price stability over the medium term. In the current environment of highly elevated inflation rates and great uncertainty surrounding future developments, the upside risks to inflation must be carefully monitored and continually reassessed. The Governing Council of the European Central Bank (ECB) must adjust its monetary policy stance if necessitated by the outlook for price stability.

Although the inflation forecasts were revised upwards on multiple occasions during the past year, the ECB Governing Council, again in expectation of inflation rates of less than 2% in the medium term, maintained its very expansionary monetary policy stance. In this context, it left the key ECB interest rates unchanged at their historically low levels,[2] and net asset purchases under the asset purchase programme (APP) were continued at a monthly pace of €20 billion.

Events in 2021 continued to be characterised by the emergency monetary policy measures taken to combat the impact of the pandemic.[3] Since the onset of the coronavirus crisis, the Eurosystem has offered banks access to liquidity at particularly favourable conditions in order to support lending to the economy. As decided by the ECB Governing Council in December 2020, the Eurosystem conducted additional targeted longer-term refinancing operations (TLTRO-III). This offer was met with strong demand particularly as a result of the exceptionally attractive pandemic-related special conditions that were extended until mid-2022.

The Eurosystem also continued the pandemic emergency purchase programme (PEPP), under which it mainly acquires Member States' gov-

1 Inflation as measured by the HICP dropped in Germany from 5.7% in December 2021 to 5.1% in January 2022. In the euro area, meanwhile, the rate rose from 5.0% to stand at 5.1% as well. According to a preliminary estimate, the inflation rate in Germany rose to 5.5% again in February.
2 The main refinancing rate remains at 0%, while the interest rates on the marginal lending facility and the deposit facility are 0.25% and -0.5%, respectively.
3 See Deutsche Bundesbank (2021), Bundesbank round-up, Annual Report 2020, pp. 21 ff.

Inflation expectations of individuals and firms

Towards the end of 2021, the rate of inflation in Germany went up steeply. But it was not just the measured level of inflation that picked up; the inflation expectations of individuals and firms also rose, especially those for the upcoming twelve-month period.[1] According to the Bundesbank's monthly online survey (Bundesbank Online Panel Households), in January 2022 individuals, on average, expected inflation of 4.5% over the next twelve months. The Bundesbank Online Panel Firms revealed that firms expected a rate of 4.2%, on average. In July 2021, the mean expectations in both surveys had been more than 1 percentage point lower.

The fact that the actual rate of inflation picked up is likely to have helped push up inflation expectations. First, individuals most likely respond to price hikes that they observe themselves when shopping. For instance, between May 2021 and January 2022, a very large majority of respondents expected the price of fuel to rise.[2] Second, the public has also become more aware of the increased inflation rate in recent months. Firms' higher inflation expectations may have been driven, in part, by supply bottlenecks and the higher prices for intermediate goods they caused.

In January 2022, firms, on average, expected a mean inflation rate of 3.7% and 3.4% for the next three and five years respectively. The Bundesbank regularly surveys individuals on what rate of inflation they expect over the next five and ten years. These long-term inflation expectations rose, on average, as of the start of 2021, albeit by much less than short-term expectations.

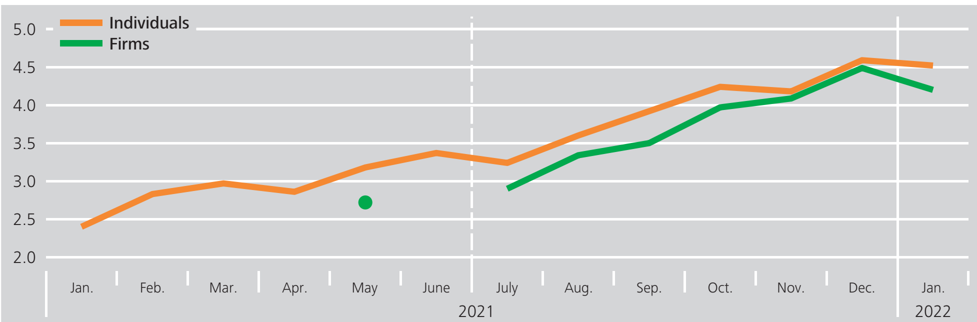
Nevertheless, there is currently no sign of an unanchoring of longer-term inflation expectations. When interpreting individuals' long-term inflation expectations, it generally makes more sense to look at how they have changed rather than their level.

The Bundesbank's surveys of households and firms also give an insight into the expectations of certain groups. For instance, there are two distinct groups among firms: those that want to adjust their own prices upwards, and those that do not wish to change their own prices. In the period from July 2021 to January 2022, the first group, on average, expected the inflation rate for the next twelve months to be 3.8%, whereas the average for the firms that do not want to adjust

1 For information on the online surveys, see Deutsche Bundesbank, The relevance of surveys of expectations for the Deutsche Bundesbank, Monthly Report, December 2019, pp. 53-71, as well as Deutsche Bundesbank, Assessments and expectations of firms in the pandemic: findings from the Bundesbank Online Panel Firms, Monthly Report, April 2021, pp. 33-56.
2 This peaked at 96% of respondents in September 2021, but was still as high as 91% in January 2022.

Expectations of individuals and firms in Germany regarding the inflation rate over the next twelve months*

%, mean values



Sources: Bundesbank Online Panel Households (BOP-HH) and Bundesbank Online Panel Firms (BOP-F). * Question: What do you think the rate of inflation/deflation will roughly be over the next twelve months? (BOP-HH). What do you expect the rate of inflation to be over the next twelve months? (BOP-F). Only responses between –12 and +12 are included. Respondents were given the following information: Inflation is the percentage increase in the general price level. It is mostly measured using the consumer price index.

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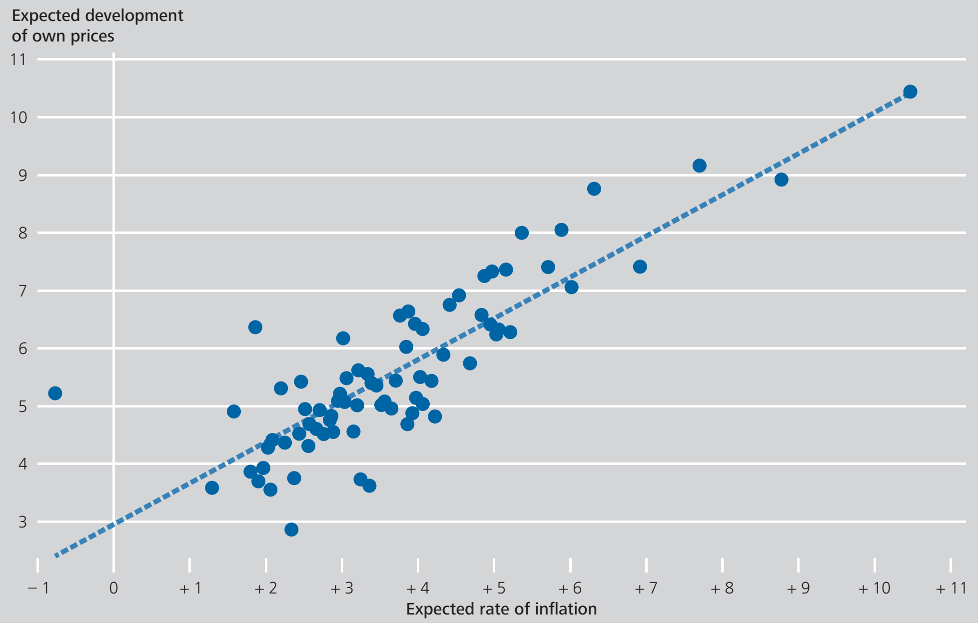
Relationship between expected rate of inflation and expected development of own prices*

%, weighted values, survey period July 2021 to January 2022



Source: Bundesbank Online Panel Firms (BOP-F). * Question: What do you expect the rate of inflation to be over the next twelve months? Question: What average percentage change in the prices charged for your products and services do you expect over the next twelve months?

Deutsche Bundesbank

their prices only amounted to 3.4%. In general, there does appear to be a relationship between firms' inflation expectations and how they anticipate their own prices developing, although the direction of a possible causality is not clear.

As far as individuals are concerned, expectations differ among the various socio-demographic groups. For instance, individuals with a relatively low monthly net household income (below €2,500) expect inflation to be slightly higher over the next twelve months (4.7% on average compared with 4.3%) than persons with a high net household income (above €4,000). In addition, women expect inflation to be higher than men (4.7% compared with 4.3%). Looking at age groups, an observation made since the beginning of 2021 is that individuals under 40 tend to have slightly lower inflation expectations than older cohorts.

In the future, the Bundesbank's surveys could help central banks to answer important questions, such as: What role do different expectations among certain groups play for the development of the inflation rate? How do the currently high rates of inflation and short-term inflation expectations impact on longer-term expectations? What do the higher expectations mean for firms' price setting and investment decisions or for households' saving, investment and consumption behaviour?

The extent to which the Eurosystem's new monetary policy strategy affects the short, medium and long-term expectations of firms and individuals will also be significant. Initial analyses of the data collected suggest that households understand the new strategy and take it into account when forming their expectations if they receive the appropriate information. The new strategy could consequently mean slightly higher inflation expectations for the next two or three years and thus help attain the symmetric inflation target of 2% over the medium term.[3]

3 See Hoffmann, M., E. Mönch, L. Pavlova and G. Schultefrankenfeld (2021), The effects of the ECB's new inflation target on private households' inflation expectations, Deutsche Bundesbank, Research Brief, No 43.

ernment bonds. The aim of this programme is to counteract pandemic-related risks to monetary policy transmission and price stability.[4] Since December 2020, favourable financing conditions for households, enterprises and governments have provided the ECB Governing Council with orientation for the purchase volumes on a quarter-by-quarter basis. In March 2021, based on a joint assessment of financing conditions and the inflation outlook, the ECB Governing Council decided to significantly expand the monthly net purchases. This decision was made against the backdrop of a rise in market interest rates. In the view of the ECB Governing Council, this rise harboured the risk that financing conditions in all sectors of the economy would be tightened prematurely. Market interest rates abated again around the middle of the year. As financing conditions remained favourable and the inflation outlook was revised upwards, the ECB Governing Council made the decision in September to moderately reduce net purchases under the PEPP for the final quarter of 2021.

At its final meeting of 2021, the ECB Governing Council initiated the process of gradually winding down the pandemic-related emergency measures. First, the Governing Council expected that the special conditions for the TLTRO-III would expire in June 2022 as announced. Second, it judged that the progress on economic recovery and towards its medium-term inflation target permitted a step-by-step reduction in the pace of asset purchases over the coming quarters. Consequently, net purchases under the PEPP will be reduced once again in the first quarter of 2022 and then discontinued at the end of March 2022. At the same time, the ECB Governing Council extended the period for reinvesting principal payments from maturing securities purchased under the PEPP by one year, until at least the end of 2024.[5] In addition, the Governing Council temporarily increased the monthly net purchases under the APP for the second and third quarters of 2022. It intends to end net purchases shortly before it starts raising the key ECB interest rates.

Overall, during the course of the pandemic, the monetary policy purchase programmes considerably increased the share of outstanding government bonds held on the balance sheets of Eurosystem central banks. In this context, these central bank holdings of government bonds confer some benefits to government finances with regard to funding: a government essentially pays the interest on these government bonds to itself via its central bank's balance sheet. In this way, funding costs are ultimately determined by the deposit facility rate and are accordingly low. Purchases of government bonds by central banks then have a similar effect to increased short-term government funding. However, in this case, this also means that a turnaround in monetary policy interest rates could place additional strains on government budgets in the short term (see the box on pp. 24 f.).

In July, the ECB Governing Council adopted a new monetary policy strategy following an extensive review. As a result, 18 years after the previous review, its strategy was adapted to the changed environment in order to safeguard price stability as effectively as possible in future, too.[6] The core element of the new strategy is the inflation target. Before it adopted the new strategy, the ECB Governing Council had sought to keep the euro area inflation rate below, but close to, 2% over the medium term. At the same time, it defined price stability as inflation rates of between 0% and 2%. Overall, this may have created the impression that the Governing Council would be more tolerant of deviations below target than deviations above target. By contrast, the new strategy sets out a symmetric inflation target of 2% over the medium term, with both negative and positive deviations of inflation from the target being

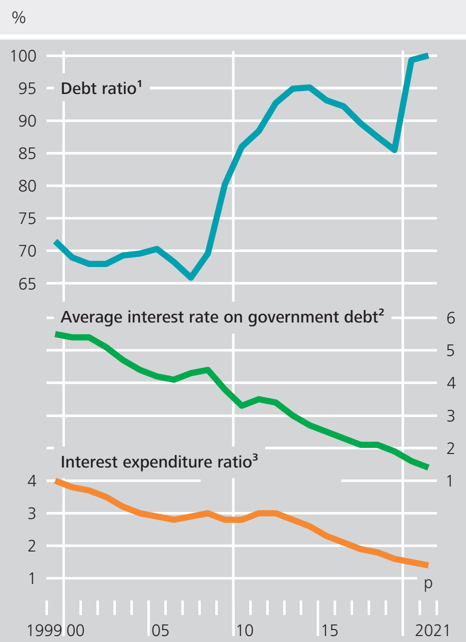
4 After the start of the programme, the ECB Governing Council increased the maximum total envelope multiple times and, at the end of 2020, decided to continue net purchases until at least the end of March 2022.
5 In the event of renewed market fragmentation related to the pandemic, these reinvestments can be adjusted flexibly across time, asset classes and jurisdictions at any time.
6 See Deutsche Bundesbank, The Eurosystem's monetary policy strategy, Monthly Report, September 2021, pp. 17-60.

Central banks' bond purchases affect public finances similarly to increased short-term financing

The interest expenditure burden on euro area Member States has fallen continuously since the beginning of monetary union. The main driver was the declining average interest rate. By contrast, the debt ratio, i.e. government debt in relation to gross domestic product (GDP), has increased considerably since 1999.

Over the last ten years, Member States have increasingly taken on longer-term debt. It thus takes longer for a rise in interest rates to have an impact on public finances, as the bonds do not have to be refinanced until further in the future. However, the reported maturities of government debt have less of a bearing on the impact of an increase in interest rates if the central banks are also taken into account.[1]

Key public finance metrics in the euro area



Source: European Commission. **1** Gross government debt as a percentage of gross domestic product. **2** Interest expenditure as a percentage of the average debt level for the year. **3** Interest expenditure as a percentage of gross domestic product.
Deutsche Bundesbank

In recent years, the Eurosystem has made large-scale acquisitions of public sector bonds in particular (as part of the public sector purchase programme, or PSPP, and the pandemic emergency purchase programme, or PEPP). At the end of 2021, the central banks' total holdings of bonds issued by Member States and supranational entities (such as bonds of the European Union under the NextGenerationEU recovery and resilience programme) had already reached a level corresponding to roughly one-third of euro area GDP. These holdings look set to continue to grow even further in 2022.

In this context, the national central banks primarily hold bonds issued by their own governments and alone bear any associated default risk. The interest received on these bonds constitutes income for the respective national central bank and usually increases its profits. This, in turn, increases the potential for profit distributions to the government (or, in some cases, also the central bank's tax payments). Therefore, in simplified terms, the majority of the interest that a government pays on its own bonds held by its own central bank is, in effect, paid to that government itself.

If a national central bank purchases a government bond from a credit institution, the deposits of this credit institution at the central bank increase (above the minimum reserve requirement and exemption limits). These deposits are remunerated at the Eurosystem's single deposit facility rate. With the deposit facility rate currently negative

1 For more details, see Deutsche Bundesbank, Government finances: Central bank bond purchases increase sensitivity to interest rate changes, Monthly Report, June 2021, pp. 39-45.

at -0.5%, interest expenditure is also negative, which additionally increases the central bank's profits and thus the potential for profit distribution. In a simplified composite view of the central bank balance sheet and public finances, the funding that governments generate via central bank purchases of government bonds is ultimately obtained at the Eurosystem's short-term deposit facility rate for banks. Country-specific risk premia are therefore no longer applicable in this context.

For the governments, this mostly results in short-term funding cost advantages, firstly through the de facto maturity transformation of long maturities into short maturities (due to the usually lower interest rates for short maturities),[2] and secondly due to the elimination of risk premia. The higher the default risk in the capital market is deemed to be, the greater the advantage.

All other things being equal, if the deposit facility rate increases when the monetary policy stance is less expansionary, this weighs on central bank profit in the short term. In that case, even central bank losses cannot be ruled out. The interest income from the bonds remains stable initially, while the interest payable on banks' deposits turns positive and may rise even further. Due to smaller profit distributions or lower tax payments from the central bank, this, in turn, would weigh on the public finances of the country in question. Public finances therefore are not shielded from interest rate rises by their longer-term debt as much as would be assumed when they are viewed in isolation without consideration of the central bank balance sheet. Indeed, public finances are also dependent on the development of the short-term (risk-free) central bank interest rate.

In this context, the time frame of this transmission mechanism can vary. As a result, central banks may set up risk provisions as a precaution against potential losses from interest rate risk, say. The funding cost advantages for governments from the effective maturity transformation via central bank balance sheets thus vary over time. The Bundesbank did not distribute any profits for the years 2020 or 2021. Instead, provisions were topped up by €2.4 billion in 2020 and €1.3 billion in 2021, reducing profits accordingly.

2 However, the yields on German bonds up to the multi-year maturity band were below the deposit facility rate at times.

considered equally undesirable. This symmetry aims to anchor inflation expectations firmly at the 2% inflation target. As before, the ECB Governing Council is targeting price stability over the medium term. This preserves the necessary flexibility to be able to respond appropriately to deviations from the inflation target depending on the economic context.

As the key ECB interest rates cannot be lowered significantly below zero, monetary policy has limited room for manoeuvre in phases of very low inflation. The new strategy takes account of such situations. If interest rates approach the effective lower bound, the new strategy provides for especially forceful or persistent monetary policy action. In such a case, there may also be a transitory period in which inflation is moderately above target under certain conditions. However, this is not intended to compensate for inflation previously undershooting the target in order to achieve the target on average. The ECB Governing Council does not pursue such a policy of average inflation targeting. Under the new strategy, too, monetary policy decision-making will continue to take no account of earlier deviations of inflation from its target.

At its monetary policy meeting following the strategy review, the ECB Governing Council amended its forward guidance on the key interest rates accordingly, thereby signalling that a rise in interest rates should be expected only once inflation reaches 2% well ahead of the end of its projection period and durably for the rest of the projection horizon. Furthermore, the Governing Council must also judge that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term. This may also imply a transitory period in which inflation is moderately above target under certain conditions.

The strategy review also investigated the issue of how inflation should be measured. The ECB Governing Council concluded that the HICP fundamentally remains a suitable metric. In future, however, it is intended that the costs of owner-occupied residential real estate should also be taken into account in order for the rate of inflation as measured by the HICP to even more accurately reflect the real-life circumstances of households. However, it will likely be several years until the official EU-level statistics are amended accordingly. Until that time, the ECB Governing Council therefore intends to incorporate additional analytical inflation metrics that include estimates of the costs of owner-occupied residential real estate into its monetary policy decision-making.

Furthermore, climate-related aspects play a greater role in monetary policy under the new strategy.[7] The Eurosystem is thus strengthening its analytical capabilities with regard to how climate change and climate policy impact the economy and the financial system. This is because their effects could impair the Eurosystem’s ability to ensure price stability. The climate-related action plan approved by the ECB Governing Council envisages, amongst other things, factoring climate aspects into macroeconomic models for analyses and forecasts. The Bundesbank has already been considerably ramping up its efforts in this area, too (see the box on pp. 27 f.). In addition, the Eurosystem intends to increase the requirements regarding transparency and disclosure of climate-relevant information, such as for securities issuers, with regard to monetary policy operations. This is designed to better protect central banks’ balance sheets against climate-related financial risks. At the same time, this allows the Eurosystem to contribute to a sustainable financial system while remaining within its mandate.

Fiscal policy

German fiscal policy made a vital contribution to stabilisation in response to the coronavirus

7 See Deutsche Bundesbank, Monetary policy challenges due to climate change, Monthly Report, September 2021, pp. 49-52.

The impact of climate change and climate policy on the economy and financial system: an overview of the Bundesbank's work

The Bundesbank is continuously and rapidly expanding its work on and analytical capacity for investigating the impact of climate change and climate policy on macroeconomic developments, monetary policy and financial risks. This enables the Bundesbank to provide an impetus of its own in this area and to contribute to a wide array of projects, particularly those emerging in the wake of the Eurosystem's monetary policy strategy review.

The repercussions of climate change and climate policy touch upon almost all of the Bundesbank's core tasks.[1] For this reason, the Executive Board set up a Steering Committee for Green Finance at the beginning of 2021, which coordinates the Bundesbank's work programme in this area. The aim of the programme is to ensure that the Bundesbank incorporates climate change considerations into the fulfilment of its statutory tasks.

For instance, the Bundesbank is continuing to develop its toolkit for macroeconomic analysis so that it can take adequate account of the macroeconomic impact of climate change and climate policy.[2] Economic questions relating to climate change also feature prominently in the Bundesbank's medium-term research programme, e.g. what effects climate-related physical risks could have on global supply chains and consequently on enterprises' competitiveness, or how the costs of greenhouse gas emissions could affect corporate valuations.[3] Alongside this work, the Bundesbank is performing financial stability analyses to gauge the vulnerability of the German financial system in various climate scenarios. In its latest Financial Stability Review, the Bundesbank investigated how transition risks surrounding the transition to a climate-friendly economy could impact on portfolios in the German financial system. All in all, these effects appear to be moderate. However, the results of the analyses are subject to a high degree of uncertainty. In addition, financial assets that react strongly to climate policy measures may make up a large share of some financial intermediaries' portfolios.[4]

The Bundesbank is improving its internal provision of relevant data – e.g. on individual enterprises' greenhouse gas emissions – so that it can make more reliable assessments of climate-related risks. Moreover, it is working to ensure that data gaps are closed. Last year it also launched a Green Finance Dashboard, which provides informative indicators on the sustainability of the financial system in Germany and Europe.[5]

Furthermore, the Bundesbank is in charge of a public tender procedure to procure climate-related data and indicators on behalf of all members of the European System

1 See Deutsche Bundesbank (2021), Bundesbank round-up, Annual Report 2020, p. 24; Deutsche Bundesbank (2020), The significance of climate change for the Bundesbank's tasks, Annual Report 2019, pp. 22-24.
2 See Deutsche Bundesbank, Climate change and climate policy: analytical requirements and options from a central bank perspective, Monthly Report, January 2022, pp. 33-62.
3 See Deutsche Bundesbank, Scenario-based equity valuation effects induced by greenhouse gas emissions, Monthly Report, January 2022, pp. 63-85.
4 See Deutsche Bundesbank, Climate policy and financial stability, Financial Stability Review 2021, pp. 81-108.
5 The Green Finance Dashboard can be accessed via the following link: https://www.bundesbank.de/en/statistics/sustainability/green-finance-dashboard--862732

of Central Banks. The objective is to sign framework agreements with up to two data providers. This tender procedure forms part of the Eurosystem central banks' efforts to apply climate-related, sustainable and responsible investment practices in the management of their non-monetary policy portfolios,[6] which central banks primarily use to invest own funds, reserves and provisions.

The Bundesbank has developed a sustainable investment strategy for its euro-denominated portfolio, consisting of two steps. In the first step, issuers undergo "negative screening" to establish whether they have committed systematic and serious breaches of international sustainability standards. In the second step, issuers are grouped according to their sustainability profile. The best issuers are then weighted higher and the worst weighted lower in the benchmark portfolio.[7] The Bundesbank intends to gradually refine this strategy and regularly monitor its adequacy.

In addition, the Bundesbank analyses and evaluates climate-related financial risks on its balance sheet. In summer 2022, it will start making annual climate-related disclosures for its euro-denominated portfolio.[8]

Banking supervision looks at climate-related risks in three areas: regulation, risk analysis and supervision. In terms of regulation, the Bundesbank is working in European and international forums to further improve the capturing of climate-related risks in the regulatory framework for banking supervision. In the area of risk analysis, the main focus is on climate risk stress tests. The Bundesbank is involved in developing and implementing the ECB stress test for 2022. In addition, the Bundesbank is designing and carrying out its own stress test investigating the impact of transition risks on the capital positions of German financial institutions, focusing on corporate loan portfolios. In its off-site supervision and on-site inspections, moreover, the Bundesbank is paying particular attention to how institutions are taking account of climate risks in their business practices.

With regard to the monetary policy framework, as part of its strategy review the Eurosystem also clarified fundamental questions in July 2021 concerning how it will treat risks stemming from climate change and climate policy in future. The current focus is on finding solutions for a variety of conceptual and technical issues; the Bundesbank is actively involved in the relevant working groups.

Last but not least, the Bundesbank is a founding member of the Network for Greening the Financial System (NGFS), which brings together over 100 central banks and supervisory authorities worldwide. Having been a committed member of the NGFS Steering Committee for a number of years, Bundesbank Executive Board member Dr Sabine Mauderer was made Vice-Chair of the NGFS at the start of this year and thus plays a key role in guiding the strategic focus of the network. In 2024, Sabine Mauderer will be appointed Chair of the NGFS for a term of two years. In addition, the Bundesbank contributes to the various workstreams of the NGFS.

6 See https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210204_1~a720bc4f03.en.html
7 The benchmark portfolio is replicated by the euro-denominated portfolio.
8 See https://www.bundesbank.de/en/press/press-releases/bundesbank-to-start-climate-related-disclosures-for-its-non-monetary-policy-euro-portfolio-in-mid-2022-858684

crisis again in 2021. Government finances provided substantial support to the economy and households in the form of measures such as transfers to enterprises and short-time working benefits. All in all, government spending again rose strongly. However, given the incipient economic recovery, revenue also saw a significant increase. In particular, tax revenue went up sharply, going so far as to exceed pre-crisis projections for 2021 once adjusted for tax law changes introduced in the meantime. On balance, the general government deficit ratio fell from 4.3% in 2020 to 3.7% (deficit in relation to gross domestic product (GDP)). In view of the large deficits, the general government debt ratio is likely to have edged slightly further upwards and have reached somewhere in the region of 70%. This puts it much lower than its peak of 82%, reached in 2010, in the wake of the financial crisis.

The deficit looks set to decrease further in 2022 due to shrinking coronavirus-related burdens. As the pandemic subsides, government can reduce its support for the economy. Given the lower deficits and the marked growth in nominal GDP, the debt ratio will also fall. There is uncertainty regarding new fiscal measures and economic development as well as over Russia's war against Ukraine. Germany's government finances still have a strong structural foundation overall, though.

Even so, German fiscal policy faces major challenges during the current legislative period. The new Federal Government is planning, amongst other things, to significantly advance its climate action and digital transformation agenda. It wishes to finance this using Federal Government funds on a larger scale. The pension, health and long-term care insurance schemes will face serious financial challenges in the next few years and beyond. These are increasingly a reflection not only of demographic change but also of considerable benefit expansions. More substantial reforms on the benefits side have not been announced. The foreseeable financing gaps would then need to be plugged by means of contribution rate increases and Federal Government funds, in particular. In response to the changed security situation in Europe, the Federal Goverment also announced that it would significantly raise its defence spending.

Even prior to Russia's war against Ukraine, the Federal Government had been planning to continue applying the escape clause for the debt brake in 2022. Compliance with regular debt brake requirements should then resume from 2023. This would involve extensive use of reserves in the core budget and off-budget special funds. The reserves were formed largely out of exceptional borrowing authorisations from 2020 and 2021. Irrespective of this, the Federal budget faces considerable challenges in the medium term. If tax hikes are to be avoided, the Federal Government needs to find other ways to financially offset prospective additional spending in a variety of areas. In an uncertain environment, it will ultimately be all the more important to maintain confidence in reliable fiscal rules. Germany can contribute to a stable euro area by means of rules-based, sound government finances – and in doing so also serve as a model for other euro area countries.

According to the European Commission's latest estimate, the euro area deficit ratio in 2021 was almost as high as it was in 2020. However, at roughly 7%, it significantly exceeded the ratio for Germany. Following the abrupt rise in the year before, the general government debt ratio is likely to have remained at around 100%. The usual requirements of the Stability and Growth Pact were suspended in 2021 due to the pandemic. In response to the coronavirus pandemic, the European Commission extended application of this general escape clause into 2022 as well. The Commission expected the euro area deficit ratio to shrink significantly, potentially to around 4%. However, higher deficits and debt in connection with Russia's war against Ukraine cannot be ruled out.

Following the crisis phase, it will be important for the euro area countries to reliably bring their high debt ratios back down and achieve a sound footing. Sustainable national government finances are a prerequisite for the proper functioning of the monetary union in the long run. One reason for this is that high general government debt can result in monetary policy coming under pressure to solve any fiscal problems that may arise. It is therefore vital that sound government finances are safeguarded by common fiscal rules. The European Commission had already launched consultations on reforming fiscal rules in February 2020. Owing to the coronavirus crisis, however, the consultations were postponed and not relaunched until October 2021. Existing rules could be improved by making relatively moderate adjustments. The Bundesbank has outlined such reform options.[8]

The debate on possible reforms of fiscal rules should also cover debt at the EU level. The European assistance rendered to the Member States is a sign of solidarity in the coronavirus crisis. That said, it should be borne in mind that taxpayers in each Member State have to finance the EU debt incurred for transfers in the same way as national debt. If it is not taken into consideration, the national statistics, indicators and rules relating to deficit and debt levels will no longer be fit for purpose in the future.[9] For this reason, Eurostat ought to provide comprehensive statistical information at the European level. It would then be possible to allocate joint EU debt and the EU deficits to individual Member States. The EU fiscal data should be used for analytical purposes and be taken into account within the European fiscal framework.

Banking supervision and financial stability

The coronavirus pandemic has shown just how important it is for general government to have fiscal space. A swift and comprehensive fiscal policy response helped ensure that the German banking system – as well as the wider financial system – weathered the second year of the pandemic well. The defaults on loans that had been feared, especially at the start of the pandemic, did not materialise, not least thanks to comprehensive government support measures. The amount of non-performing loans in banks' loan portfolios in relation to the total amount of loans (NPL ratio) did not rise significantly at the start of the pandemic, and by the third quarter of 2021 it was even down to 1.1%. However, the NPL ratios went up in those parts of the economy that were affected to a greater extent by the measures imposed to contain the pandemic (see the box on pp. 31 f.).

Overall, German institutions' capital base has remained strong. The average CET1 ratio of the German banking sector measured in terms of risk-weighted assets (RWAs) stood at 17.0% at the end of the third quarter of 2021, putting it well above regulatory minimum requirements. The mandatory requirements for the leverage ratio, in place since mid-2021, were also significantly exceeded on aggregate. Regulatory and supervisory coronavirus response measures are reviewed against the risk and pandemic situation on an ongoing basis to ensure that they are appropriate. For example, the European Systemic Risk Board (ESRB), the ECB and the Federal Financial Supervisory Authority (BaFin) each decided not to extend their respective recommendations that banks limit dividends. Furthermore, the flexibility extended by the supervisory authorities regarding general payment moratoria ended for payment moratoria granted after 31 March 2021. In terms of the impact of the war against Ukraine, German supervisory authorities are closely monitoring financial market developments and possible implications for German banks. They are in close contact with institutions and with other supervisory author-

8 See Deutsche Bundesbank, European Stability and Growth Pact: individual reform options, Monthly Report, April 2019, pp. 77-90; and Deutsche Bundesbank, Public debate on the review of the EU economic governance: Bundesbank contribution of 22 December 2021, http://www.bundesbank.de/content/884870
9 See Deutsche Bundesbank, The informative value of national fiscal indicators in respect of debt at the European level, Monthly Report, December 2020, pp. 37-47.

The development of non-performing loans

The COVID-19 pandemic has caused banking supervisors to direct more attention back to non-performing loans (NPLs).[1] Given the pandemic's perceptible economic effects, a rise in credit defaults was feared both in Germany and in other European countries. For this reason, banking supervisors explicitly called on credit institutions to ensure that they identify credit risk in good time and take steps to counter it. Banking supervisors also set up a temporary special reporting system for balance sheet items that, on account of the pandemic, are subject to forbearance measures or benefit from public guarantees. Beyond this, the regular prudential reporting data on NPLs shed light on the pandemic's effects on banks' balance sheets.

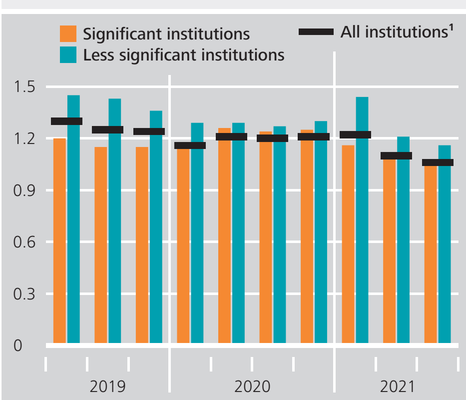
In fact, the NPL ratio in the German banking system, i.e. the ratio of NPLs to the total credit volume, which stood at 1.1% at the end of the period under review, remains low by European standards.

Looking at various groups of borrowers in Germany, NPL ratios developed quite differently and even rose in some cases. The sharpest increase in the NPL ratio since the beginning of the pandemic was recorded for those loans that were granted to small or medium-sized enterprises or that were secured by commercial real estate (rise of around 0.4 percentage point in each case to 2.4% and 2.2%, respectively). Since mid-2020, it is notably NPLs granted to firms in the accommodation and food services sector that have gone up as a percentage of the total loan portfolio, meaning that this sector currently has the highest NPL ratio, at 7.1%.[2] By contrast, the NPL ratio of loans to households has increased only slightly over the course of the pandemic.

A close eye should also be kept on provisions for NPLs. Since the beginning of the pandemic, the ratio of provisions to NPL stocks has fallen by 3.1 percentage points to 35.3%. Should this trend continue, there might be a risk that these loans will increasingly need to be written off if the debt is actually uncollectible. Losses in equity capital might subsequently be incurred in the amount that losses from credit defaults exceed the level of provisioning.

In the euro area, the NPL ratio of the significant institutions directly supervised by the European Central Bank has declined markedly over the past few years, dropping from over 7% in 2015 to roughly 3% in the first quarter of 2020. These institutions have further reduced their NPL ratio during the pandemic, bringing it down to 2.2% by the end

Non-performing loans ratio in Germany*



Source: Supervisory reporting. * Including cash balances at central banks. 1 Also includes promotional banks.
Deutsche Bundesbank

1 A loan is deemed to be non-performing if, inter alia, the borrower's interest or principal payments are more than 90 days past due or it is considered unlikely that they will pay their credit obligations in full without realisation of collateral.
2 More detailed prudential data on NPLs relative to economic sector are only available for credit institutions with total assets of over €3 billion.

of the third quarter of 2021. Various factors contributed to this development.

First, loans were offloaded from banks' balance sheets, for example through NPL sales. It was especially those institutions in countries with high NPL ratios that succeeded in reducing their risks by selling NPL stocks. On the one hand, these sales led to NPL ratios falling despite the accumulation of potential new pandemic-related NPLs. On the other hand, however, this meant that the risks in the financial system associated with NPLs were not completely eliminated, but instead transferred – at least in part – to other market participants.

Second, the substantial fiscal support measures adopted by each government led to a situation in which – despite the significant economic slump at the beginning of the pandemic – risks did not fully materialise in banks' balance sheets. These measures aim to offer payment relief to borrowers from economically hard-hit households and businesses or to support them through new government-guaranteed loans.

Third, forbearance measures contributed to the fact that NPL ratios have not increased during the pandemic. That said, the influence of loans with pandemic-related forbearance, as measured in relation to total loans, has since decreased again in most European countries. The possible effect on the NPL ratio caused by phasing out the remaining forbearance measures is likely to be correspondingly modest.

In the sectors particularly hard hit by the pandemic, the expiry of government assistance measures in the form of support schemes, guarantees and moratoria might, however, lead to a rise in the volume of NPLs.

Alongside the evolution of the pandemic, the length of time for which government assistance will be granted to especially hard-hit businesses will therefore play a decisive role in how credit defaults develop in future. Moreover, in the longer term, enterprises' adaptability to possible structural changes in the business environment will be crucial.

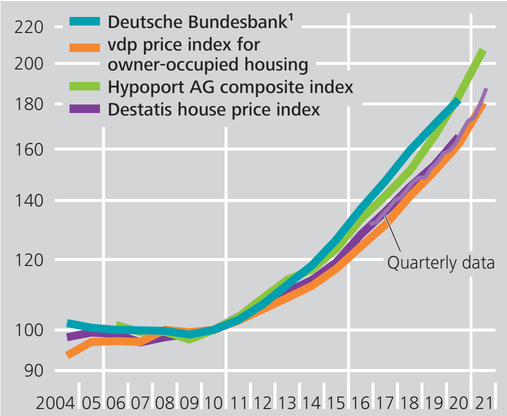
ities, particularly in the context of the Single Supervisory Mechanism.

In order to take into account their higher credit risk as a result of the pandemic, banks raised their loan loss provisions in 2020. Net valuation charges doubled on the year to total €13.3 billion. In light of the more favourable macroeconomic conditions, the formation of loan loss provisions can be expected to have put less of a strain on profitability in 2021. The protracted low interest rate environment is causing interest margins to narrow further, which is weighing considerably on the profitability of German banks, with their strong reliance on net interest income. In the long run, rising interest rates would stabilise German banks' profitability. Nevertheless, an abrupt reversal of monetary policy interest rates would, given the long interest rate lock-in periods at present, initially pose challenges to the German banking sector.

While the pandemic weakened the dynamic rise in office property prices and amplified the decline in retail property prices, it did nothing to slow down price increases in the residential real estate market. Following rises in previous years that were already significant, residential real estate prices surged over the course of 2021.[10] Overvaluations in the residential real estate market increased further. Additionally, there was dynamic growth in the volume of loans to households for house purchase. Overall, the risks in the German financial system arising from the financing of residential real estate therefore also continued to increase during the pandemic. For this reason, the German Financial Stability Committee (G-FSC) called on banks and insurers in December 2021 to exercise prudence when issuing residential real estate loans. The G-FSC said that the ratio of the total loan volume to the market value of the property should be treated conservatively and attention should be paid to ensuring sound levels of debt sustainability on the part of borrowers. Furthermore, BaFin instructed institutions to comply with these standards in its supervisory communication of January 2022.

House price indices in Germany

2010 = 100, log scale



1 Weighted by transaction. Bundesbank calculations based on price data provided by bulwiengesa AG.
Deutsche Bundesbank

Other vulnerabilities also continued to build up: firms, households and governments accumulated more debt. Nonetheless, financing conditions are favourable and the valuations in some market segments remain high. This could indicate that the already long-standing danger of risks being underestimated trended further upwards during the pandemic. High valuations in some market segments have the potential to trigger setbacks. Persistently low interest rates have been incentivising market participants to take on greater risk in the search for yield. At the same time, vulnerabilities to abrupt interest rate increases are on the rise. For instance, around half of bank loans for residential real estate have an interest rate lock-in period of over ten years. In the event of an abrupt interest rate hike, banks' refinancing costs would immediately increase, while interest income would do so only gradually. A high proportion of loans and capital investments with long interest rate lock-in period thus makes the German financial system vulnerable to interest rate risk. The percentage of loans to – relatively speaking – financially weaker enterprises in German banks' credit portfolios also remains unchanged at a high level.

10 See Deutsche Bundesbank, Housing prices in Germany in 2021, Monthly Report, February 2022.

Given the build-up of vulnerabilities, the G-FSC analysed which macroprudential instruments would most effectively counteract the risks identified in the financial system. BaFin then announced a package of macroprudential measures on 12 January 2022. The two measures contained in the package – the raising of the countercyclical capital buffer to 0.75% and the additional introduction of a sectoral systemic risk buffer of 2% of the risk-weighted loans secured by residential real estate – are important steps towards boosting banks' resilience and limiting the build-up of vulnerabilities. It is unlikely that the package of measures will cause the banking system's lending ability to be curtailed or lending rates to rise. Even today, the higher buffer requirements can be met almost in their entirety using existing surplus capital. Furthermore, the banks have until 1 February 2023 to meet the requirements.

The war against Ukraine could affect the German financial system. The direct financial risks posed by Russia to the German financial system are manageable. In particular, the direct exposure of German banks to Russian debtors is limited. Indirect effects on the German economy stemming from the impact of the war are a possibility, but are highly uncertain at present.

The fact that the German financial system is more resilient today than it was before the global financial crisis is also thanks to regulatory reform. The Basel III package of reforms is the final part of revisions to global banking regulations following the financial crisis and is thus an important milestone in strengthening financial stability and creating fair conditions for competition worldwide. In October, the European Commission put forward a legislative proposal to transpose the outstanding Basel III reforms, finalised in December 2017, into European banking regulation.

The Basel III reform package notably enhances the risk sensitivity of the standardised capital requirements for credit risk and limits the use of internal models. In addition, a lower limit on capital requirements (the output floor) was introduced for those institutions that use internal models instead of standardised approaches. The European Commission's implementation proposal incorporates most of these rules. However, it also contains transitional provisions and simplified requirements specific to the EU banking market that are not included in the Basel III reform package. Existing deviations from the Basel III reforms agreed in 2010 were also retained. As the legislative process continues, it will be vital to anchor Basel-compliant rules in European law. Only by consistently and systematically implementing Basel III in all member jurisdictions of the Basel Committee can equal competitive conditions worldwide and stable, resilient banking systems be assured. The implementation proposal envisages an initial effective date of January 2025 and initial fully loaded application of the output floor in 2030. That would be two years later than what was adopted in Basel.

Some institutions will be affected more than others by the new provisions. This is due to the more risk-appropriate design of the new rules, which limits the scope for the use of institution-specific calculation methods. This initiative touches up on areas where risks were not adequately backed by capital in the past. Extrapolated to cover the whole German banking market, this represents an increase in minimum required capital of around 6%, in our view.[11] This equates to additional capital requirements of roughly €20 billion.

Besides the Basel-related changes, the implementation proposal contains new EU-specific rules. These include, in particular, sustainability-related rule adjustments and more harmonised European rules on the supervision of third-country branches in the European Economic Area. In addition, the administrative burden on smaller and medium-sized institutions will be eased further through means such as

11 The calculations are based on the state of negotiations in calendar week 42 of 2021.

centralised disclosure at the European Banking Authority. The Bundesbank has already pushed to reduce red tape and increase proportionality in the past. The idea of anchoring sustainability risks to a greater extent is also a welcome development. It is important that institutions identify all relevant risks and adequately incorporate them into their risk management. But banking supervisors' approach remains purely risk-oriented: their mandate does not permit them to compel banks to finance investments that are preferable from a policy perspective, as desirable as this may be for reasons of sustainability.

Payment systems

The financial system, and payment systems in particular, are changing as a result of digital technology. Central banks also have a role to play here. Introducing a central bank digital currency (CBDC) for the general public could be one potential way of helping to create innovative, future-proof payment systems in the euro area. The Bundesbank and the Eurosystem are therefore analysing the topic of a digital euro in greater depth. For instance, the ECB and the national central banks have conducted joint technical experiments. The results showed that a variety of options can be implemented for the digital euro. Building on these and other results, the ECB Governing Council decided in July 2021 to launch a project to investigate the specific design of a digital euro. The aim is to prepare thoroughly for a decision on the introduction of a digital euro. The investigation phase began in October 2021 and will last for two years.

The project will focus on determining potential uses for a digital euro, its specific design, and the associated impact on monetary policy, the financial system and the central bank balance sheet, inter alia. The potential design involves a balancing act. On the one hand, incentives to use the digital euro as a store of value should be kept small, otherwise its introduction could impair the financial system. This will involve preventing an excessive outflow of sight deposits from the banking sector over a long period as well as sudden, uncontrolled shifts away from bank deposits to the Eurosystem.

On the other hand, the digital euro would have to be attractive for payment purposes to ensure that it is sufficiently widely used. To ensure that a digital euro can create clear added value for people and enterprises in everyday use, the results of various survey formats will also be incorporated into the analyses. These formats include focus groups, for example, which can be used to obtain feedback on the views held by individuals. In the run-up to the investigation phase, the Bundesbank also already surveyed people in Germany with regard to their views on a digital euro. The results suggest that the debate about a CBDC has not yet reached the broader public.[12]

Overall, it may be helpful to take a step-by-step approach – first introducing a digital euro featuring basic payment functions for everyday use, and then expanding on these functions at a later date. That said, international relationships must be taken into account. CBDCs issued by different central banks should not compete with one another, but should function together. This could also make cross-border payment transactions easier (see the box on pp. 36 f.).

To improve payment transactions within the euro area, the Eurosystem has been operating TARGET Instant Payment Settlement (TIPS), a market infrastructure for the real-time settlement of credit transfers, for three years now. TIPS settles these instant payments round the clock, every day of the year, in central bank money. However, the use of instant payments in the euro area is increasing only slowly. Last November, the Eurosystem set a key milestone for the consistent, pan-European reachability, and thus also for the improved acceptance, of instant payments. All clearing systems that

12 See Deutsche Bundesbank, What do households in Germany think about the digital euro? First results from surveys and interviews, Monthly Report, October 2021, pp. 65-84.

Cross-border payments

As globalisation advanced, international trade in goods and services experienced rapid growth and people migrated to other countries. This meant that the volume of cross-border payments increased as well. However, payments to other currency areas are still relatively slow and expensive compared with those within a currency area. The reasons behind this are manifold and were analysed thoroughly as part of the work on the G20 Roadmap for Enhancing Cross-border Payments. For instance, an absence of links between national payment systems results in long transaction chains with numerous stakeholders and a lack of transparency.

Know-your-customer (KYC) checks and anti-money laundering (AML) measures play a crucial role at the regulatory level. According to the G20’s analyses, they still represent a major challenge for cross-border payments. In addition, correspondent banks have withdrawn from this business on account of the increased costs, which has made payment transactions with some countries even more difficult.

Intercompany payments via widely used channels – such as between the United States and the United Kingdom – and credit card payments work relatively well. By contrast, money transfers made by migrants to their home countries (remittances) are often expensive and complicated. For instance, the costs of remittances to sub-Saharan African countries amount to around 8% of the transaction value on average.

Improving cross-border payments is a challenging project that requires global coordination. For this reason, the G20 initiated work on the aforementioned Roadmap for Enhancing Cross-border Payments in 2019. This roadmap was published in 2020.

One objective of the roadmap is to extend the operating hours of payment systems so that they overlap, thereby shortening the transaction time of payments. Furthermore, it is crucial that links between payment infrastructures are enhanced across borders. This can be achieved either via bilateral agreements or by setting up multilateral platforms that could link the systems of several countries with one another or even have a global reach. While bilateral links are potentially easier to implement, multilateral platforms could be a more effective solution. In this context, there should be a particular focus on real-time payment systems. Such systems are currently being developed worldwide. Time overlaps are guaranteed as these systems are available round the clock, every day of the week. Moreover, these instant payment systems employ state-of-the-art technology.

However, payments in modern infrastructures also require effective AML and KYC checks. Consistent application of the relevant requirements worldwide would reduce frictions in the validation processes and contribute to cutting costs for providers of cross-border payments.[1] Harmonised KYC standards combined with payment messages based on the global ISO 20022 standard could enable cross-border payments along the entire transaction chain to be processed automatically and thus more quickly and cheaply. Such common standards could be accompanied by technical solutions that make it possible for data to be exchanged

1 See Financial Stability Board (2020), Enhancing Cross-border Payments, Stage 1 report to the G20: Technical background report.

across borders and, at the same time, comply with data protection provisions – based on new distributed ledger technologies (DLT), for example.

Furthermore, central banks worldwide are increasingly focusing on central bank digital currency. This provides the opportunity for corresponding systems to be set up in such a way from the outset that they may be interlinked and thus also enable cross-border payments. This consideration will play a significant role during Germany's G7 presidency this year. Beyond this interoperability, central bank digital currency could considerably simplify the existing settlement process for banks' correspondent banking business. Overall, central banks can help improve global payments by acting as a catalyst or operating supporting infrastructures.

process these payments are connected via TIPS, thereby guaranteeing full, Europe-wide reachability – regardless of which clearing system a credit institution uses. Implementation of the measures adopted will probably lend a long-term boost to the use of instant payments and offer payment service providers further incentives to develop innovative products.

The success of innovative, instant payments-based payment solutions will hinge on whether it is possible to use them Europe-wide. National digital payment solutions might not exploit the full potential of the European single market. It is also uncertain whether such solutions will be able to compete with those offered by large, global providers in the medium and long term.

Instant payments can generally be initiated in various ways, such as by using a payment card or a digital wallet. Ideally, this would allow consumers throughout Europe to pay simply, cheaply and securely at points of sale, online or in a range of other situations. Not only would this be an additional step towards digitalising European payments; a broad uptake of instant payments would furthermore help to achieve the strategic goals of the ECB and the European Commission, as set out in their respective retail payments strategies. Moreover, payment solutions designed for pan-European use could also help to propagate a potential digital euro.

Providing the general public and the economy with a reliable supply of safe cash is also part of a stable payment system. The Bundesbank's branches play a key role in this regard in Germany. Last year, the new branch in Dortmund gradually took over the business operations of the Bundesbank's branches in the Rhine-Ruhr area, starting with coin processing in March and moving on to banknote processing in June. Since August, the branch has also provided services for the general public, enabling them to buy collectors' coins, change banknotes or coins into different denominations and exchange Deutsche Mark for euro, for instance. The Bundesbank's former branches in Bochum, Dortmund, Düsseldorf, Essen and Hagen were closed at the end of September. This now brings the number of Bundesbank branches located throughout Germany to 31.

Dortmund is home to the largest of the Bundesbank's branches and one of Europe's most modern cash centres. Roughly €300 million was invested, including in the latest technology, meaning that the new branch sets the benchmark for efficient and ergonomic cash processing. It enables around 200 employees to supply banknotes and coins to the whole of the Rhine-Ruhr region: for businesses and for 12 million citizens. The building's large photovoltaic surface and an in-house geothermal heating and cooling system also help to protect the environment.

Bundesbank round-up continued

Efficiency is also a priority for the Bundesbank when it comes to the provision of data. For instance, it is committed to improving the national and international division of tasks and to ensuring successful cooperation, and has enhanced its own IT infrastructure. Potential synergies and comparative advantages among the participating European central banks are being systemically investigated within the European System of Central Banks (ESCB).[13]

At the national level, cooperation with the Federal Statistical Office, in particular, has been expanded. Both partners agreed on new tasks and data fields in order to further improve the quality of the official statistics without introducing new surveys.[14] There is now a legal obligation for the official statistics to ensure the coherence and quality of the data of multinational groups in the national accounts, the balance of payments statistics and the economic statistics supplied.[15] The reported data are checked in special processing units and are clarified with the reporting entities should they appear implausible.[16] Based on a joint initiative by the Bundesbank and the Federal Statistical Office, a legal act has been established for a register of basic company data in conjunction with a standard identification code applicable across authorities in the whole of Germany.[17] The basic data register being developed at the Federal Statistical Office will be fed with data from selected data sources. The data are then intended to be merged and forwarded to numerous public authorities, including the Bundesbank, for the purpose of maintaining their databases. Looking ahead, this may lead to fewer reporting obligations and higher quality in terms of the data provided.

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13 For example, the Bundesbank has assumed the task of calculating the effective exchange rates and the harmonised indicators of price competitiveness for the euro area and its Member States, and now acts as the central point of contact for questions relating to the underlying methodology. Methodological refinements continue to be made in close dialogue with the ECB and in consultation with the ESCB.

14 See Memorandum of Understanding between the Deutsche Bundesbank and the Federal Statistical Office, available at https://www.bundesbank.de/resource/blob/615648/dca69dfcf18a875fe5fdc61c564820ba/mL/kooperationsvereinbarung-data.pdf

15 See *Gesetz über die Statistik des Warenverkehrs mit dem Ausland, zur Prüfung von Daten multinationaler Unternehmensgruppen zur Sicherung der Qualität der Volkswirtschaftlichen Gesamtrechnungen und der Wirtschaftsstatistiken und zur Änderung des Bundesstatistikgesetzes vom 14. Juni 2021* (Foreign Trade Statistics Act on the auditing of data from multinational enterprise groups to ensure the quality of national accounts and economic statistics and on the amendment of the Federal Statistics Act (*Bundesstatistikgesetz*) of 14 July 2021, available at https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&start=//*[@attr_id=%27bgbl121s1751.pdf%27]#__bgbl__%2F%2F*%5B%40attr_id%3D%27bgbl121s1751.pdf%27%5D__1637913450385

16 See Ahlborn, M., F. Draken and V. Schulz (2021), Qualitätssicherung in der amtlichen Statistik: Large Cases Unit, in: Wirtschaft und Statistik, Vol. 73, pp. 31-40.

17 See *Gesetz zur Errichtung und Führung eines Registers über Unternehmensbasisdaten und zur Einführung einer bundeseinheitlichen Wirtschaftsnummer für Unternehmen (Unternehmensbasisdatenregistergesetz*, UBRegG) (Act on the establishment and operation of a register of basic company data and the introduction of a standardised national business number for companies) of 9 July 2021, available at https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&start=//*%5B@attr_id=%27bgbl121s2506.pdf%27%5D#__bgbl__%2F%2F*%5B%40attr_id%3D%27bgbl121s2506.pdf%27%5D__1646238324921

The Bundesbank has also taken part in initiatives to improve the availability of information in various policy areas. In terms of the stability of the financial system in Germany, sufficient data on lending standards for new loans to households for house purchase have been lacking thus far. Robust, systematic and timely data on lending standards are important in order to better detect potential risks to financial stability at an early stage and to be able to counter these adequately. The ERSB, the IMF, the Financial Stability Board (FSB) and the G-FSC have accordingly recommended that this data gap be closed. The administrative order announced by the Bundesbank on 29 September 2021 closes this data gap.[18] The first data will be available after the implementation phase in 2023.

Over the course of the pandemic, information about the real economic situation, enterprises' financial situation and insolvency figures have become significantly more important for various policy areas. For instance, decision-makers need to know whether and how the crisis-induced fiscal measures are reaching enterprises, how they interact, and how they impact on enterprises' liquidity and solvency.

2021 saw two initiatives aimed at improving the information surrounding these questions. Chaired by the Bundesbank, a task force merged data from public authorities in Germany on crisis-induced fiscal measures for the corporate sector. Firm-level microdata are also set to be merged as part of a follow-up project. In addition, an international working group belonging to the ESRB, chaired by Bundesbank Vice-President Professor Claudia Buch, worked on a framework for the ongoing monitoring of the far-reaching fiscal measures in Europe and their impact on financial stability. Reporting on both initiatives is to be continued.

At the Bundesbank, the newly created Integrated Data and Analysis platform (IDA) forms a key component for a modern and future-proof IT infrastructure. IDA is a particularly efficient means of delivering big data to all the Bundesbank's business units whilst ensuring high data security. Depending on their access rights, users can now access large quantities of data more easily and analyse them using various tools.

All in all, digital transformation will help the Bundesbank to perform its tasks even more effectively. To drive forward the process of digital change, the Bundesbank launched its own innovation centre, known as "InnoWerk", at the end of 2021. InnoWerk is making a substantial contribution to improving the Bundesbank's flexibility when it comes to using new technologies and, at the same time, is providing a gateway for new knoweldge and new methods. One of InnoWerk's main aims is to rapidly transform ideas into prototypes. The BIS Innovation Hub Eurosystem Centre, operated in partnership with the Banque de France, is also located in direct proximity to the InnoWerk site. In future, the Innovation Hub Centre will serve as an international platform for innovation, in which the Eurosystem is a participant.

One particular focus of the work carried out by the Innovation Hub Centre will be cybersecurity. Cyberattacks are a rapidly growing threat – including for the financial system as a whole. Last year, the Bundesbank once more helped to counteract this threat and increase the resilience of enterprises from the financial sector to cyberattacks. After the Bundesbank published the TIBER-DE (Threat Intelligence-Based Ethical Red Teaming in Germany) framework in 2020, nine TIBER-DE tests were started, two of which have been completed. The tests involve controlled, planned attacks by an appointed service provider to test the security measures of an organisation against cyberattacks under the most realistic conditions possible. The competence centre for TIBER-DE, which is based at the Bundesbank, provides in-depth support for the tests and ultimately confirms that they were

18 The legal basis for this is the Federal Ministry of Finance's Financial Stability Data Collection Regulation (*Finanzstabilitätsdatenerhebungsverordnung* – FinStabDEV), which entered into force on 3 February 2021.

conducted in compliance with all relevant requirements.

TIBER-DE is primarily aimed at enterprises from Germany's financial sector that are critical to financial stability. These include banks, insurance companies, financial market infrastructures that operate in Germany and IT service providers that are critical to the functioning of the financial sector. TIBER-DE tests are not a supervisory tool. Instead, Germany has chosen a cooperative and voluntary approach. The idea is to encourage enterprises to take an independent, critical look at their resilience to cyberattacks. Beyond the statutory obligations, financial supervisors are involved in the test process at certain stages. Initial experience and feedback from the tested enterprises show that TIBER-DE has proven worthwhile and will make an important contribution to overall cybersecurity in Germany and Europe in the future, too. Up to seven more tests are scheduled to begin this year.

The Bundesbank has to stay on the ball when it comes to its own cybersecurity, as well. Recently, attackers have increasingly been adopting new and rapidly adapted hacking methods – mostly in combination with blackmail attempts. This often involves using newly discovered weaknesses or attacking the supply chains of hardware and software providers. Last year, the number of attacks on the Bundesbank's internet-based systems and the number of emails infected with malicious software doubled overall.

The risks and rewards of digitalisation were also part of the international central bank dialogue the Bundesbank maintained with numerous central banks and monetary authorities last year in virtual form, owing to the pandemic. Beyond this, the Bundesbank's aim is to strengthen mutual understanding, trust and cooperation, particularly within the euro area. It seconded employees to the German embassies in Paris, Rome and Madrid in autumn 2021, for example. Bundesbank staff members now work at the Bank's Representative Offices and at German embassies or consulates in 14 cities worldwide.

In 2021, the Bundesbank once again reached a wide audience in Germany with its range of economic education services – thanks to digital formats, amongst other things. It organised just under 1,200 events attended by roughly 32,000 participants. The Bundesbank imparted basic knowledge about money, currencies and central banking to young people, in particular. This was helped by the fact that it has been continuously expanding its range of training materials for some time now. In particular, it is offering more digital materials and using new media formats to convey content in an understandable and appealing manner. At the request of schools and universities, the range of English-language training materials has been increased significantly. The special exhibition entitled "Money creators – who decides what's money?", which opened at the Bundesbank's Money Museum in Frankfurt am Main in the middle of the year, drew a large audience. The exhibition introduces visitors to past, present and future creators of money.

Chronology of monetary policy decisions

11 March 2021

Based on a joint assessment of financing conditions and the inflation outlook, the Governing Council of the European Central Bank (ECB) expects purchases under the pandemic emergency purchase programme (PEPP) to be conducted at a significantly higher pace over the second quarter of 2021 than during the first months of the year. At the same time, it reaffirms its decision taken in December 2020 to continue to conduct net asset purchases under the PEPP with a total envelope of €1,850 billion until at least the end of March 2022 and, in any case, until it judges that the coronavirus crisis phase is over.

10 June 2021

Based on a joint assessment of financing conditions and the inflation outlook, the ECB Governing Council expects net asset purchases under the PEPP over the third quarter to continue to be conducted at a significantly higher pace than during the first months of the year. Net asset purchases will continue with an unchanged total envelope of €1,850 billion until at least the end of March 2022 and, in any case, until the Governing Council judges that the coronavirus crisis phase is over.

8 July 2021

Following the conclusion of its strategy review, the ECB Governing Council adopts its new monetary policy strategy. One key outcome is the adjustment of the inflation target: the Governing Council considers that price stability is best maintained by aiming for a 2% inflation target over the medium term. This target is symmetric, meaning negative and positive deviations of inflation from the target are equally undesirable. When the economy is operating close to the lower bound on nominal interest rates, it requires especially forceful or persistent monetary policy action to avoid negative deviations from the inflation target becoming entrenched. This may also imply a transitory period in which inflation is moderately above target.

Besides its inflation target, the Governing Council also decides on further adjustments following the strategy review's conclusion; these relate, inter alia, to the integrated assessment of all factors that are relevant to monetary policy decisions in the context of economic analysis as well as monetary and financial analysis. In its monetary policy assessments, the Governing Council will also take into account inflation measures that include initial estimates of the costs of owner-occupied housing, provided that these have not yet been included in the Harmonised Index of Consumer Prices.

22 July 2021

The Governing Council revises its forward guidance on the key ECB interest rates in line with its monetary policy strategy in order to support its new symmetric inflation target of 2%. It expects the key interest rates to remain at their present or lower levels until it sees inflation reaching 2% well ahead of the end of its projection horizon and durably for the rest of the projection horizon. It must also judge that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term. In the Governing Council's view, this may also imply a transitory period in which inflation is moderately above target.

9 September 2021

Based on a joint assessment of financing conditions and the inflation outlook, the Governing Council judges that favourable financing conditions can be maintained with a moderately lower pace of net asset purchases under the PEPP than in the previous two quarters. Moreover, net asset purchases will continue with an unchanged anticipated total envelope of €1,850 billion until at least the end of March 2022 and, in any case, until the Governing Council judges that the coronavirus crisis phase is over.

16 December 2021

In the first quarter of 2022, the Governing Council expects to conduct net asset purchases under the PEPP at a lower pace than in the previous quarter. It will discontinue net asset purchases under the PEPP at the end of March 2022. Net purchases could also be resumed, if necessary, to counter negative shocks related to the pandemic.

In addition, the Governing Council decides to extend the reinvestment horizon for the PEPP. It now intends to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2024. In any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

In the event of renewed market fragmentation related to the pandemic, PEPP reinvestments can be adjusted flexibly across time, asset classes and jurisdictions at any time. 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.

Furthermore, the ECB Governing Council decides on a monthly net purchase pace of €40 billion in the second quarter and €30 billion in the third quarter of 2022 under the asset purchase programme (APP). This is in line with a step-by-step reduction in asset purchases and is intended to ensure that the monetary policy stance remains consistent with inflation stabilising at its target over the medium term. From October 2022 onwards, the Governing Council will maintain net asset purchases under the APP at a monthly pace of €20 billion for as long as necessary to reinforce the accommodative impact of its policy rates. The Governing Council expects net purchases to end shortly before it starts raising the key ECB interest rates.

The Governing Council will continue to monitor funding conditions for banks and ensure that the maturing of operations under the third series of targeted longer-term refinancing operations (TLTRO-III) does not hamper the smooth transmission of its monetary policy. It will also regularly assess how targeted lending operations are contributing to its monetary policy stance. As announced, it expects the special conditions applicable under TLTRO-III to end in June 2022. The Governing Council will also assess the appropriate calibration of its two-tier system for reserve remuneration so that the negative interest rate policy does not limit banks' intermediation capacity in an environment of ample excess liquidity.

Annual accounts of the Deutsche Bundesbank for 2021

Balance sheet of the Deutsche Bundesbank as at 31 December 2021

Assets

			31.12.2020
		€ million	€ million
1 Gold and gold receivables		173,821	166,904
of which: gold receivables €213,839.13			(1)
2 Claims on non-euro area residents denominated in foreign currency			
2.1 Receivables from the IMF	54,917		(22,156)
2.2 Balances with banks and security investments, external loans and other external assets	32,649		(30,066)
		87,566	52,222
3 Claims on euro area residents denominated in foreign currency		35	456
4 Claims on non-euro area residents denominated in euro		–	1,455
5 Lending to euro area credit institutions related to monetary policy operations denominated in euro			
5.1 Main refinancing operations	300		(193)
5.2 Longer-term refinancing operations	421,685		(341,089)
5.3 Fine-tuning reverse operations	–		(–)
5.4 Structural reverse operations	–		(–)
5.5 Marginal lending facility	0		(152)
		421,985	341,434
6 Other claims on euro area credit institutions denominated in euro		3,495	2,360
7 Securities of euro area residents denominated in euro			
7.1 Securities held for monetary policy purposes	1,027,728		(789,230)
7.2 Other securities	–		(–)
		1,027,728	789,230
8 Claims on the Federal Government		4,440	4,440
9 Intra-Eurosystem claims			
9.1 Participating interest in the ECB	2,417		(2,256)
9.2 Claims equivalent to the transfer of foreign reserves to the ECB	10,635		(10,635)
9.3 Net claims related to the allocation of euro banknotes within the Eurosystem	–		(–)
9.4 Other claims within the Eurosystem (net)	1,259,534		(1,135,555)
		1,272,586	1,148,447
10 Items in course of settlement		1	1
11 Other assets			
11.1 Coins	1,086		(1,162)
11.2 Tangible and intangible fixed assets	897		(931)
11.3 Other financial assets	11,621		(12,086)
11.4 Off-balance-sheet instruments revaluation differences	0		(5)
11.5 Accruals and prepaid expenditure	5,453		(5,059)
11.6 Sundry	411		(367)
		19,468	19,610
		3,011,124	2,526,558

Liabilities

				31.12.2020
			€ million	€ million
1	Banknotes in circulation		374,552	347,905
2	Liabilities to euro area credit institutions related to monetary policy operations denominated in euro			
	2.1 Current accounts	902,096		(793,755)
	2.2 Deposit facility	233,948		(225,003)
	2.3 Fixed-term deposits	–		(–)
	2.4 Fine-tuning reverse operations	–		(–)
	2.5 Deposits related to margin calls	2,186		(–)
			1,138,230	1,018,758
3	Other liabilities to euro area credit institutions denominated in euro		26,972	7,473
4	Liabilities to other euro area residents denominated in euro			
	4.1 General government deposits	246,658		(195,996)
	4.2 Other liabilities	52,239		(13,701)
			298,897	209,697
5	Liabilities to non-euro area residents denominated in euro		404,339	256,804
6	Liabilities to euro area residents denominated in foreign currency		35	0
7	Liabilities to non-euro area residents denominated in foreign currency		–	–
8	Counterpart of special drawing rights allocated by the IMF		46,454	14,213
9	Intra-Eurosystem liabilities			
	9.1 Liabilities related to the issuance of ECB debt certificates	–		(–)
	9.2 Net liabilities related to the allocation of euro banknotes within the Eurosystem	509,840		(473,098)
	9.3 Other liabilities within the Eurosystem (net)	–		(–)
			509,840	473,098
10	Items in course of settlement		0	0
11	Other liabilities			
	11.1 Off-balance-sheet instruments revaluation differences	–		(–)
	11.2 Accruals and income collected in advance	5,059		(1,697)
	11.3 Sundry	667		(1,946)
			5,726	3,643
12	Provisions		29,637	27,490
13	Revaluation accounts		170,729	161,757
14	Capital and reserves			
	14.1 Capital	2,500		(2,500)
	14.2 Reserves	3,213		(3,220)
			5,713	5,720
15	Distributable profit		–	–
			3,011,124	2,526,558

Profit and loss account of the Deutsche Bundesbank for the year 2021

				2020
			€ million	€ million
	1.1 Interest income	7,319		(5,473)
	1.2 Interest expense	−4,818		(−2,603)
1	Net interest income		2,501	2,870
	2.1 Realised gains/losses arising from financial operations	378		(1,097)
	2.2 Write-downs on financial assets and positions	− 161		(− 230)
	2.3 Transfer to/from provisions for general risks	−1,346		(−2,424)
2	Net result of financial operations, write-downs and risk provisions		−1,129	−1,557
	3.1 Fees and commissions income	113		(104)
	3.2 Fees and commissions expense	− 53		(− 49)
3	Net income from fees and commissions		60	55
4	Income from participating interests		172	579
5	Net result of pooling of monetary income		−1,179	− 756
6	Other income		1,535	158
	Total net income		1,960	1,350
7	Staff costs		1,068	601
8	Administrative expenses		579	510
9	Depreciation of tangible and intangible fixed assets		153	124
10	Banknote production services		129	78
11	Other expenses		38	36
	Loss for the year		− 7	–
12	Allocation to/withdrawal from reserves owing to the restriction on distribution pursuant to Section 253(6) of the German Commercial Code (*Handelsgesetzbuch*)		7	–
	Distributable profit		–	–

Frankfurt am Main, 15 February 2022

DEUTSCHE BUNDESBANK
Executive Board

Dr Joachim Nagel Professor Claudia Buch

Burkhard Balz Professor Johannes Beermann Dr Sabine Mauderer Professor Joachim Wuermeling

Unqualified independent auditor's report for statutory audits of annual financial statements

To the Deutsche Bundesbank, Frankfurt am Main

Auditor's opinion on the annual financial statements

We have audited the annual financial statements of the Deutsche Bundesbank, Frankfurt am Main, consisting of the balance sheet as at 31 December 2021 and the profit and loss account for the business year from 1 January 2021 to 31 December 2021.

In our opinion, based on the findings of our audit, the said annual financial statements comply, in all material respects, with the legal requirements and the principles for the accounting of the Deutsche Bundesbank approved by the Executive Board pursuant to Section 26(2) of the Bundesbank Act and give a true and fair view of the net assets and financial position of the Deutsche Bundesbank as at 31 December 2021 and the results of operations for the business year from 1 January 2021 to 31 December 2021 in accordance with German principles of proper accounting.

Pursuant to Section 322(3) sentence 1 of the German Commercial Code (*Handelsgesetzbuch* – HGB) in conjunction with Section 26(2) sentence 3 of the Bundesbank Act, we declare that our audit has not led to any reservations with regard to the regularity of the annual financial statements.

Basis for the auditor's opinion on the annual financial statements

We conducted our audit of the annual financial statements in accordance with Section 317 HGB and German generally accepted standards for the audit of financial statements promulgated by the *Institut der Wirtschaftsprüfer* [Institute of Public Auditors in Germany] (IDW) as well as, on a supplementary basis, the International Standards on Auditing (ISAs). Our responsibilities pursuant to these provisions and principles are further described in the "Auditor's responsibilities for the audit of the annual financial statements" section of our report. We are independent of the Deutsche Bundesbank in accordance with German commercial and professional laws and regulations and have fulfilled our other German 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 on the annual financial statements.

Other information

The Executive Board is responsible for other information. Other information comprises all information in the Annual Report with the exception of the audited annual financial statements and the respective auditor's report.

Our opinion on the annual financial statements does not cover this other information, and we therefore do not express an auditor's opinion or draw any other form of audit conclusion regarding this other information.

In connection with our audit, we have the responsibility to read the other information and to evaluate whether

– there are material inconsistencies between the other information and the annual financial statements or the findings of our audit, or

– the other information otherwise appears to contain a material misstatement.

If we conclude, on the basis of our audit, that the other information contains a material misstatement, we are obliged to draw attention to this matter. We have nothing to report in this regard.

Responsibilities of the Executive Board for the annual financial statements

The Executive Board is responsible for the preparation of the annual financial statements in accordance with the legal requirements and the principles for the accounting of the Deutsche Bundesbank approved by the Executive Board pursuant to Section 26(2) of the Bundesbank Act and for ensuring that the annual financial statements give a true and fair view of the net assets, financial position and results of operations of the Deutsche Bundesbank in accordance with German principles of proper accounting. Moreover, the Executive Board is responsible for such internal control as it determines necessary in accordance with German principles of proper accounting to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the annual financial statements, the Executive Board is responsible for assessing the Deutsche Bundesbank's ability to continue as a going concern. It is also responsible for disclosing, as applicable, matters related to going concern and using the going-concern basis of accounting, provided there are no factual or legal impediments thereto.

The Executive Board is responsible for overseeing the Deutsche Bundesbank's financial reporting process for the preparation of the annual financial statements.

Auditor's responsibilities for the audit of the annual financial statements

Our objectives are to obtain reasonable assurance about whether the annual 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 on the annual financial statements.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and German generally accepted standards for the audit of financial statements promulgated by the *Institut der Wirtschaftsprüfer* as well as, on a supplementary basis, the ISAs will always detect a material misstatement. 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 annual financial statements.

We exercise professional judgement and maintain professional scepticism throughout the audit. We also

– identify and assess the risks of material misstatement in the annual 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 opinions. 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 overriding of internal control.

– obtain an understanding of internal control relevant to the audit of the annual financial statements 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 Deutsche Bundesbank's internal control.

– evaluate the appropriateness of the accounting policies used by the Executive Board as well as the reasonableness of accounting estimates and related disclosures made by the Executive Board.

– conclude on the appropriateness of the going-concern basis of accounting used by the Executive Board and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Deutsche Bundesbank'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 in each case. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Deutsche Bundesbank to cease to continue as a going concern.

– evaluate the overall presentation, structure and content of the annual financial statements including the notes and whether the annual financial statements represent the underlying transactions and events in a manner that gives a true and fair view of the net assets, financial position and results of operations of the Deutsche Bundesbank in accordance with German principles of proper accounting.

We communicate with the Executive Board regarding, amongst other matters, the planned scope and timing of the audit and significant audit findings, including any deficiencies in internal control that we identify during our audit.

Frankfurt am Main, 22 February 2022

Baker Tilly GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft
(Düsseldorf)

Professor Thomas Edenhofer Wirtschaftsprüfer	Ralph Hüsemann Wirtschaftsprüfer

Overview of the Deutsche Bundesbank's accounting policies

General accounting principles
Reflection of economic reality, thus giving a true and fair view of the Bundesbank's net assets, financial position and results of operations; prudence; recognition of post-balance-sheet events; materiality; going-concern basis; accruals principle; consistency and comparability.

Recognition of spot transactions
Spot transactions denominated in gold and foreign currency shall be accounted for from the trade date to determine the average cost and the realised gains and realised losses. Recognition of these spot transactions and of spot transactions in securities shall be based on the cash/settlement approach.

Valuation rules
Gold, foreign currency instruments, securities and financial instruments shall be valued at mid-market rates and prices as at the balance sheet date. Securities held to maturity shall be valued at amortised cost; write-downs are charged if impairment is expected to be permanent. The same applies to non-marketable securities and securities held for monetary policy purposes by virtue of a decision adopted by the Governing Council of the ECB.

No distinction shall be made between price and currency revaluation differences for gold, but a single gold revaluation difference shall be accounted for, based on the euro price per defined unit of weight of gold derived from the euro/US dollar exchange rate as at the balance sheet date.

Revaluation shall take place on a currency-by-currency basis for foreign currency instruments (including off-balance-sheet transactions).

In the case of securities, each revaluation shall take place on a code-by-code basis (same ISIN number/type).

Repurchase agreements
A repurchase agreement (repo) shall be recorded as a collateralised inward deposit on the liabilities side of the balance sheet, while the assets serving as collateral remain on the assets side of the balance sheet. A reverse repurchase agreement (reverse repo) shall be recorded as a collateralised outward loan on the assets side of the balance sheet for the amount of the loan.

In the case of lending transactions, the assets shall remain on the transferor's balance sheet. Lending transactions where collateral is provided in the form of cash shall be accounted for in the same manner as that prescribed for repurchase operations.

Income recognition
Realised gains and realised losses can arise only in the case of transactions which reduce a securities or foreign currency position. They shall be derived from a comparison of the transaction value with the acquisition value as calculated using the average cost method; they shall be taken to the profit and loss account.

Revaluation gains and losses shall accrue from the revaluation of assets at market values compared to their acquisition value as calculated using the average cost method. Unrealised gains shall not be recognised as income but recorded in a revaluation account.

Unrealised losses shall be taken to the profit and loss account if they exceed previous revaluation gains registered in the revaluation account. Unrealised losses taken to the profit and loss account in prior periods shall not be reversed in subsequent years against new unrealised gains. Unrealised losses in any one security, in any currency or in gold holdings shall not be netted against unrealised gains in other securities, currency or gold.

The average cost method shall be used on a daily basis to compute the acquisition cost of assets subject to exchange rate and/or price movements. The average acquisition cost of the assets shall be reduced by unrealised losses taken to the profit and loss account at year-end.

In the case of securities, the difference between the acquisition and redemption value (premium or discount) shall be amortised over the remaining contractual life of the securities in accordance with the internal rate of return method, presented as part of interest income (amortisation) and included in the acquisition value (amortised cost).

Accruals denominated in foreign currency shall be translated at the mid-market rate on each business day and change the respective foreign currency position.

Accounting rules for off-balance-sheet instruments
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 shall be included in the net foreign currency position as from the trade date.

Interest rate swaps, futures, forward rate agreements and other interest rate instruments shall be accounted for and valued on an item-by-item basis.

Profits and losses arising from off-balance-sheet instruments shall be recognised and treated in a similar manner to those from on-balance-sheet instruments.

Tangible and intangible fixed assets
Tangible and intangible fixed assets shall be valued at cost less depreciation and amortisation. Depreciation and amortisation shall be calculated on a straight-line basis and applied over the expected economic life of the asset. A distinction shall be made as follows:

– computers, related hardware and software, and motor vehicles: 4 years;
– equipment, furniture and plant in building: 10 years;
– building and refurbishment expenditure: 25 years;
– depreciation shall not apply to land.

Tangible and intangible fixed assets costing less than €10,000 after deduction of value added tax shall be written off in full in the year of acquisition.

Provisions
With the exception of the provisions for Eurosystem monetary policy operations, provisions shall be accounted for in accordance with the regulations set forth in the Commercial Code (*Handelsgesetzbuch*). Pursuant to Section 26(2) of the Bundesbank Act (*Bundesbankgesetz*), it shall be possible to create provisions for general risks associated with domestic and foreign business.

Transitional arrangements
The assets and liabilities shown on the closing Deutsche Mark balance sheet as at 31 December 1998 shall be revalued as at 1 January 1999. Unrealised gains arising on or before 1 January 1999 shall be recorded separately from the unrealised gains which arise after 1 January 1999. The market rates/prices applied by the Bundesbank on the euro-denominated opening balance sheet as at 1 January 1999 shall be deemed to be the average acquisition rates/prices as at 1 January 1999. The revaluation accounts for unrealised gains accruing on or before 1 January 1999 shall be released only in connection with revaluation losses and in the event of disposals after 1 January 1999.

General information on the annual accounts

Legal basis

Sections 26 and 27 of the Bundesbank Act (*Gesetz über die Deutsche Bundesbank*) form the legal basis for the annual accounts and distribution of profit. The provisions on accounting laid down in Section 26(2) sentence 2 of the Bundesbank Act allow the Bundesbank to apply the ECB's accounting policies.

Accounting policies of the Deutsche Bundesbank

The Governing Council of the ECB adopted policies for the ECB's annual accounts in accordance with Article 26.2 of the Statute of the ESCB. The Bundesbank decided to adopt these policies as its own accounting policies.[1] An overview of the Deutsche Bundesbank's accounting policies can be found on the preceding pages. The annual accounts of the Bundesbank thus follow the harmonised accounting and financial reporting rules of Eurosystem operations, both in terms of the structure of the balance sheet and the profit and loss account, and with regard to the valuation and accounting policies applied.

Cost accounting at the Bundesbank

The Bundesbank is furthermore required, pursuant to Section 26(4) sentence 1 of the Bundesbank Act, to prepare a cost account to assist it in its management and administrative tasks. In compliance with this legislation, the Bank draws up a standard cost account and an investment plan before the start of each financial year. The harmonised Eurosystem accounting policies for internal accounting adopted by the Governing Council of the ECB and compiled in the Committee on Controlling (COMCO) manual are also taken into account in this regard. At the end of the financial year, the Bank makes a comparative analysis of the budgeted figures and the actual costs and investment. This analysis is reviewed separately by the external auditors.

Creation of reserves owing to the restriction on distribution pursuant to Section 253(6) of the Commercial Code

Pursuant to Section 253 of the German Commercial Code (*Handelsgesetzbuch*), provisions for post-employment benefit obligations must be discounted at the average market rate corresponding to their residual maturity calculated over the past ten financial years. The relief resulting from application of the ten-year rather than the seven-year observation period must be calculated annually and may not be distributed. In accordance with Section 253(6) sentence 2 of the Commercial Code, the distribution of profits shall be restricted to the part that exceeds the amount for which distribution is restricted less any disposable reserves. However, the Bundesbank does not have any such reserves. The amount for which distribution is restricted itself has to be treated as reserves, and transfers to them and withdrawals from them are taken to profit and loss once the profit or loss for the year has been determined as part of the appropriation of profit. The resulting amount is reported as distributable profit (net profit).

Recognition of euro banknotes and …

The ECB and the national central banks of the euro area countries, which together comprise the Eurosystem, issue banknotes denominated in euro. The following allocation procedure was approved for recognition of the euro banknotes in circulation in the financial statements of the individual central banks of the Eurosystem.[2] The respective share of the total value of euro banknotes in circulation due to each central bank in the Eurosystem is calculated on the last business day of each month in accordance with the key for allocating euro banknotes. The ECB is allocated an 8% share of the total value of the euro banknotes in circulation, whereas the remaining 92% is allocated to the national central banks in proportion to their respective paid-up shares in the capital of the ECB. As at 31 December 2021, the Bundesbank had a 26.4%

1 As last published in Deutsche Bundesbank Notice No 10001/2022.
2 Decision of the European Central Bank of 13 December 2010 on the issue of euro banknotes (ECB/2010/29), as last amended by the Decision of the European Central Bank of 22 January 2020 (ECB/2020/7).

share in the fully paid-up capital of the ECB and, therefore, a 24.3% share of the euro banknotes in circulation in accordance with the banknote allocation key. The value of the Bundesbank's share in the total amount of euro banknotes issued by the Eurosystem is shown in item 1 "Banknotes in circulation" on the liabilities side of the balance sheet.

… of intra-Eurosystem balances arising from the allocation of euro banknotes

The difference between the value of the euro banknotes allocated to each central bank of the Eurosystem in accordance with the banknote allocation key and the value of the euro banknotes that the central bank actually puts into circulation gives rise to remunerated intra-Eurosystem balances.[3] If the value of the euro banknotes actually issued is greater than the value according to the banknote allocation key, the difference is recorded on the balance sheet as an intra-Eurosystem liability in liability sub-item 9.2 "Net liabilities related to the allocation of euro banknotes within the Eurosystem". If the value of the euro banknotes actually issued is less than the value according to the banknote allocation key, the difference is recorded in asset sub-item 9.3 "Net claims related to the allocation of euro banknotes within the Eurosystem". These balances are remunerated at the respective rate on the main refinancing operations.

In the year of the cash changeover and in the following five years, the intra-Eurosystem balances arising from the allocation of euro banknotes in circulation within the Eurosystem are adjusted in order to avoid significant changes in national central banks' relative income positions as compared to previous years. The adjustments are based on the difference between the average value of the banknotes that each national central bank had in circulation in the reference period and the average value of the banknotes that would have been allocated to each of them during that period in accordance with the ECB's capital key. The adjustments are reduced in annual increments until the first day of the sixth year after the cash changeover year. Thereafter, income from euro banknotes in circulation is allocated fully in proportion to the national central banks' paid-up shares in the ECB's capital. No such adjustments took place during the reporting year. The interest income and expense arising from the remuneration of the intra-Eurosystem balances is cleared through the accounts of the ECB and disclosed under item 1 "Net interest income" of the Bundesbank's profit and loss account.

ECB's interim profit distribution

The ECB's income from the 8% share of the euro banknotes in circulation as well as from securities purchased by the ECB as part of the securities markets programme (SMP), the third covered bond purchase programme (CBPP3), the asset-backed securities purchase programme (ABSPP) and the public sector purchase programme (PSPP) as well as the pandemic emergency purchase programme (PEPP) is distributed to the national central banks of the Eurosystem as interim profit in the same financial year in which the income arises, unless the ECB's net profit is less than this income or the Governing Council of the ECB decides to retain the amount for allocation to the ECB risk provision.[4] For financial year 2021, €150 million of the aforementioned ECB income (2020: €1,260 million) was distributed among the national central banks as interim profit. The Bundesbank's share of €40 million (2020: €332 million) is included in item 4 "Income from participating interests" of its profit and loss account.

Change to the ECB's capital key with effect from 1 February 2020 and capital contribution with effect from 29 December 2021

In anticipation of the withdrawal of the United Kingdom from the European Union, the ECB's capital key was adjusted with effect from 1 February 2020. This adjustment increased the Bundesbank's share in the ECB's subscribed capital from 18.4% to 21.4% and raised its participat-

3 Decision of the European Central Bank 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), as last amended by the Decision of the European Central Bank of 12 November 2020 (ECB/2020/55).
4 Decision of the European Central Bank of 15 December 2014 on the interim distribution of the income of the European Central Bank (recast) (ECB/2014/57), as last amended by the Decision of the European Central Bank of 12 November 2020 (ECB/2020/56).

ing interest in the ECB from a nominal €1,988 million to €2,321 million. The contribution of capital associated with this adjustment will take place in three stages. With effect from 1 February 2020, the €58 million in paid-up capital repaid to the Bank of England was redistributed, with a share of €11 million being allocated to the Bundesbank. A further transfer payment, in the amount of €610 million, was made with effect from 29 December 2021, with a share of €161 million being allocated to the Bundesbank. This increased the participating interest in the ECB (asset sub-item 9.1) to a nominal €2,160 million and, including the Bundesbank's share of the ECB's net equity as at 1 February 2020 (in particular, the ECB's revaluation reserve and the ECB risk provision), to €2,417 million. The final transfer payment, again in the amount of €161 million, shall be effected as at the end of 2022. The Bundesbank's share in the fully paid-up capital of the ECB amounts to 26.3615%.

Preparation and auditing of financial statements

The Executive Board prepared the Deutsche Bundesbank's financial statements for financial year 2021 on 15 February 2022. The financial statements were audited by Baker Tilly GmbH & Co. KG Wirtschaftsprüfungsgesellschaft (Düsseldorf), whom the Executive Board engaged as external auditors on 1 September 2020 in accordance with Section 26(3) of the Bundesbank Act. The auditors issued an unqualified audit opinion on 22 February 2022 confirming that the Bundesbank's financial statements for 2021 – consisting of the balance sheet and the profit and loss account – comply, in all material respects, with the legal requirements and the accounting policies of the Deutsche Bundesbank approved by the Executive Board and give a true and fair view of the net assets, financial position and results of operations of the Deutsche Bundesbank. After studying the external auditors' unqualified audit opinion, the Executive Board decided that publication of the financial statements would take place on 2 March 2022.

Notes on the individual balance sheet items

Assets

1 Gold and gold receivables

As at 31 December 2021, the Bundesbank's physical holdings (bars) of fine gold amounted to 3,359,104 kg, or 108 million fine ounces (ozf). These are supplemented by an additional 4 kg of gold receivables that were generated by the settlement of margins in the context of gold transactions. The gold was valued at market prices at the end of the year (1 kg = €51,746.08, or 1 ozf = €1,609.483). Compared with the previous year's price (1 kg = €49,637.02, or 1 ozf = €1,543.884), this represents an increase of 4.2%. The gold holdings declined by 0.1% (3,390 kg, or 0.1 million ozf) in the year under review. This was due to the sale of gold to the Federal Government at market prices for the purpose of minting gold coins. The resulting income of €158 million is shown in sub-item 2.1 "Realised gains/losses arising from financial operations" in the profit and loss account.

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

This item comprises the receivables from the International Monetary Fund (IMF) as well as balances with banks and security investments, loans and other foreign currency claims on non-euro area residents.

2.1 Receivables from the IMF

Sub-item 2.1 contains the receivables from the IMF which are financed and held by the Bundesbank and which arise from the Federal Republic of Germany's membership of the IMF. The receivables, which total 44,435 million special drawing rights (SDRs) (€54,917 million), are made up of the drawing rights within the reserve tranche, the allocated special drawing rights and loans under the New Arrangements to Borrow (NAB).

Gold reserves by storage location

Storage location	31.12.2021 Tonnes	31.12.2021 € million	31.12.2020 Tonnes	31.12.2020 € million	Year-on-year change Tonnes	%	€ million	%
Deutsche Bundesbank, Frankfurt	1,710	88,489	1,710	84,882	–	–	3,607	4.2
Federal Reserve Bank, New York	1,236	63,970	1,236	61,363	–	–	2,607	4.2
Bank of England, London	413	21,361	416	20,659	−3	−0.8	703	3.4
Total	3,359	173,820	3,362	166,904	−3	−0.1	6,917	4.1

Deutsche Bundesbank

The drawing rights within the reserve tranche correspond to the amounts actually paid to the IMF in gold, special drawing rights, foreign currency and national currency under the German quota. The drawing rights held in the reserve tranche represent the difference between the German quota of SDR 26,634 million (€32,917 million) and the euro balances amounting to €24,868 million (SDR 20,121 million) at the IMF's disposal at the end of the year. In 2021, these rose on balance by SDR 216 million to SDR 6,513 million (€8,050 million).

Special drawing rights – by means of which freely usable currencies as per the IMF definition can be obtained at any time – increased in the reporting year due to a general allocation of SDR 25,528 million free of charge. A corresponding counterpart is shown as liability item 8 "Counterpart of special drawing rights allocated by the IMF". Without taking into account the free-of-charge allocation, the holdings of special drawing rights went up by SDR 199 million (€247 million) in 2021.

The NAB are multilateral credit lines with the IMF, which serve as a backstop for use in the

Receivables from the IMF

Item	31.12.2021 SDR million	31.12.2021 € million	31.12.2020 SDR million	31.12.2020 € million	Year-on-year change SDR million	%	€ million	%
German quota	26,634	32,917	26,634	31,391	–	–	1,526	4.9
less Euro balances	20,121	24,868	20,337	23,969	−216	− 1.1	898	3.7
Drawing rights within the reserve tranche	6,513	8,050	6,297	7,422	216	3.4	628	8.5
Special drawing rights	37,617	46,491	11,890	14,014	25,727	216.4	32,478	231.8
New Arrangements to Borrow	304	376	612	721	−307	−50.3	−345	−47.9
Total	44,435	54,917	18,799	22,156	25,636	136.4	32,761	147.9

Deutsche Bundesbank

event of a systemic crisis. They were not activated by the IMF in 2021, which means that the Bundesbank was not drawn upon. Following an extension of the term and the doubling of the size of the multilateral NAB at the beginning of 2021, the Bundesbank's credit line amounted to SDR 25.8 billion. At the end of the reporting year, this resulted in receivables from the IMF of SDR 304 million (€376 million) from earlier drawdowns. The new temporary bilateral credit line of €17.9 billion – likewise concluded at the beginning of 2021– additionally pledged by the Bundesbank to the IMF as a further backstop, was not drawn down as adequate IMF liquidity was available. There were, therefore, no receivables arising from bilateral loans at the end of the year.

If all items on the assets side and the liabilities side of the balance sheet are taken into account, the net holdings of special drawing rights amounted to SDR 6,848 million, compared with SDR 6,741 million in the previous year. Valuation is based on the reference rate of SDR 1 = €1.2359 (2020: SDR 1 = €1.1786) calculated by the ECB at the end of the year for all central banks participating in the Eurosystem.

2.2 Balances with banks and security investments, external loans and other external assets

Balances with banks and security investments, loans and other foreign currency claims reported under sub-item 2.2 amounted to €32,649 million as at the end of 2021, compared with €30,066 million in the previous year. These include, in particular, US dollar holdings in the amount of US$31,685 million (€27,976 million), representing an increase of US$342 million on the year. The sub-item also contains holdings in yen (¥203,080 million, equivalent to €1,558 million), Australian dollar (A$1,805 million, equivalent to €1,156 million), Canadian dollar (C$2,360 million, equivalent to €1,640 million) and Chinese yuan (renminbi) (2,042 million yuan, equivalent to €284 million), and a small amount of other currencies. The holdings are interest-bearing. The foreign currency holdings were valued at the respective end-of-year market rate.

3 Claims on euro area residents denominated in foreign currency

This item contains US$40 million (€35 million) of US dollar claims on credit institutions resulting from refinancing operations in the context of the standing swap agreement with the Federal Reserve Bank (Fed) (2020: €456 million). In order to carry out these operations, based on the swap agreement, the ECB receives US dollars from the Fed in return for euro; the ECB then allocates these to the national central banks, which pass them on to euro area credit institutions. The TARGET2 liabilities resulting from the swap transactions between the ECB and the Bundesbank lower the TARGET2 settlement

Balances with banks and security investments, external loans and other external assets

Item	31.12.2021 € million	31.12.2020 € million	Year-on-year change € million	%
Current account balances and overnight deposits	2,514	1,884	631	33.5
Fixed-term deposits and deposits redeemable at notice	3,311	1,182	2,129	180.2
Marketable securities				
Government bonds				
US dollar	19,934	17,980	1,954	10.9
Yen	314	339	– 25	– 7.4
Australian dollar	798	931	– 133	– 14.3
Canadian dollar	1,596	1,522	74	4.9
Chinese yuan (renminbi)	265	221	43	19.5
Supranational, sovereign and agency (SSA) bonds	3,748	5,852	– 2,104	– 35.9
Other	168	155	13	8.6
Total	32,649	30,066	2,583	8.6

Deutsche Bundesbank

Net foreign exchange positions in selected currencies

Balance of all reported asset and liability items in foreign currency at market rates (net foreign exchange position) in	31.12.2021		31.12.2020		Year-on-year change
	Million (currency)	Market rate per euro	Million (currency)	Market rate per euro	Million (currency)
US dollar	31,748	1.1326	31,426	1.2271	322
Yen	203,179	130.38	203,243	126.49	– 64
Australian dollar	1,814	1.5615	1,834	1.5896	– 21
Canadian dollar	2,366	1.4393	2,386	1.5633	– 20
Chinese yuan (renminbi)	2,062	7.1947	1,988	8.0225	74

Deutsche Bundesbank

balance shown in asset sub-item 9.4 "Other claims within the Eurosystem (net)".

4 Claims on non-euro area residents denominated in euro

Claims on non-euro area counterparties arising from bilateral repo transactions are shown in this item; there were no such claims as at the end of 2021 (2020: €1,455 million). These claims are the result of reverse repos transacted simultaneously with repos, in which securities in the PSPP portfolio as well as PEPP public sector holdings are lent against Federal securities on a cash-neutral basis; the transactions have a maximum term of seven days. The corresponding liabilities from the repos are shown under liability item 5 "Liabilities to non-euro area residents denominated in euro".

5 Lending to euro area credit institutions related to monetary policy operations denominated in euro

The volume and structure of liquidity-providing monetary policy operations carried out by the Bundesbank as part of the Eurosystem are shown in this item (main and longer-term refinancing operations and the marginal lending facility). As at the end of the reporting year, the outstanding volume of the Eurosystem's monetary policy operations amounted to €2,201,882 million (2020: €1,793,194 million), of which the Bundesbank accounted for €421,985 million (2020: €341,434 million). Pursuant to Article 32.4 of the Statute of the ESCB, risks from these operations, provided they materialise, are shared among the Eurosystem national central banks in proportion to the prevailing shares in the capital of the ECB. Losses arise only if the counterparty to a monetary policy operation defaults and the collateral it has provided proves insufficient upon realisation. The national central banks may accept certain types of collateral excluded from risk sharing on their own responsibility.

Main refinancing operations are regular weekly transactions with a standard one-week maturity, the purpose of which is to provide liquidity. In the reporting year, main refinancing operations continued to be conducted as fixed rate tenders with full allotment. At the end of the year, the main refinancing operations amounted to €300 million, which was €107 million more than at the end of the previous year. On a daily average, the outstanding volume of main refinancing operations came to €74 million (2020: €469 million).

In the year under review, the regular longer-term refinancing operations with maturities of three months were carried out as fixed rate tenders with full allotment at the average main refinancing rate. As at 31 December 2021, take-up of these totalled €20 million (2020: €485 million). The last of the targeted longer-term refinancing operations completed in 2016 and 2017 as part of the second series of operations

Lending to euro area credit institutions related to monetary policy operations denominated in euro

	31.12.2021	31.12.2020	Year-on-year change	
Item	€ million	€ million	€ million	%
Main refinancing operations	300	193	107	55.4
Longer-term refinancing operations				
Regular operations (3 months)	20	485	– 465	– 95.9
Targeted operations – second series (TLTRO-II)	–	6,682	– 6,682	– 100.0
Targeted operations – third series (TLTRO-III)	421,093	331,423	89,670	27.1
Pandemic emergency operations (PELTROs)	572	2,499	– 1,927	– 77.1
Subtotal	421,685	341,089	80,596	23.6
Marginal lending facility	0	152	– 152	– 100.0
Total	421,985	341,434	80,551	23.6

Deutsche Bundesbank

(TLTRO-II) matured in March 2021. The interest on these operations, which had a maturity of four years, was charged at an individual rate geared to the respective counterparty's eligible net lending. This rate lay between the main refinancing rate and the deposit facility rate prevailing at the time of allotment. In addition, TLTROs from the third series (TLTRO-III), which each have a term of three years, have been carried out since September 2019. The interest on these operations, which total €421,093 million (2020: €331,423 million), is charged at an individual rate geared to the respective counterparty's eligible net lending. This rate lies between the average main refinancing rate and deposit facility rate prevailing over the life of the respective operation. In response to the coronavirus crisis, the Governing Council of the ECB decided to lower the minimum interest rate over the period from 24 June 2020 to 23 June 2022 to 50 basis points below the deposit facility rate, but in any case to a maximum of -1%. The interest accrued for the period up to June 2021 is calculated using the parameters that have been set individually for this purpose since September 2021. For reasons of prudence, the rate for the interest period from June 2021 continues to be applied at 50 basis points below the deposit facility rate. The reporting year also saw additional pandemic emergency longer-term refinancing operations (PELTROs) being conducted as fixed rate tenders with full allotment at an interest rate that is 25 basis points below the average rate applied in main refinancing operations over the life of the respective PELTRO. As at 31 December 2021, take-up amounted to €572 million (2020: €2,499 million). The total volume of longer-term refinancing operations outstanding at year-end 2021 came to €421,685 million, which was €80,596 million up on the figure at the end of 2020; on a daily average, the volume amounted to €411,600 million (2020: €208,042 million).

The marginal lending facility is a standing facility which counterparties may use to obtain overnight liquidity at a pre-specified interest rate. Recourse to this facility was only minimal as at year-end 2021. Average daily use came to €6 million (2020: €10 million).

6 Other claims on euro area credit institutions denominated in euro

This item, amounting to €3,495 million (2020: €2,360 million), consists, in particular, of claims on euro area counterparties arising from bilateral repo transactions amounting to €3,495 million (2020: €2,359 million). These claims resulted from the reverse repos transacted simultaneously with the repos, in which securities in the PSPP portfolio as well as PEPP public sector holdings were lent against Federal securities on a cash-neutral basis; the transactions had a maximum term of seven days. The corresponding liabilities from the repos are shown under liability item 3 "Other liabilities to euro area credit institutions denominated in euro".

7 Securities of euro area residents denominated in euro

This item contains the holdings of securities denominated in euro resulting from purchases made within the framework of the Eurosystem purchase programmes announced by the ECB Governing Council, which are shown under sub-item 7.1 "Securities held for monetary policy purposes". These holdings are carried at amortised cost, irrespective of whether the securities are held to maturity. Net asset purchases under the asset purchase programme (APP, with the individual programmes CBPP3, PSPP, CSPP and ABSPP), which restarted at a monthly pace of €20 billion in November 2019, continued in the reporting year. Furthermore, the ECB Governing Council decided on 18 March 2020 to launch a new temporary €750 billion pandemic emergency purchase programme (PEPP) until the end of 2020, covering all the assets eligible under the existing purchase programmes. The Governing Council's decisions of 4 June 2020 and 10 December 2020 increased the overall envelope for the PEPP to a total of up to €1,850 billion, while its decision of 16 December 2021 discontinues net asset purchases under the PEPP at the end of March 2022. Maturing assets changed the composition of the terminated SMP, CBPP and CBPP2 programmes.

As at year-end, the Eurosystem national central banks' SMP holdings amounted to €5,486 million (2020: €26,335 million), their CBPP3 holdings to €273,233 million (2020: €263,536 million), their CSPP holdings to €309,676 million (2020: €250,403 million) and their PSPP holdings of securities issued by supranational institutions (of which the Bundesbank itself did not acquire any holdings) to €264,537 million (2020: €249,317 million). As at 31 December 2021, the Eurosystem national central banks' PEPP holdings amounted to €5,377 million in the covered bonds portfolio (2020: €2,815 million), to €43,782 million in the corporate sector portfolio (2020: €43,154 million) and to €130,590 million (2020: €47,796 million) in the portfolio of securities issued by supranational institutions (of which the Bundesbank itself did not acquire any holdings). Consistent with Article 32.4 of the Statute of the ESCB, all risks from the SMP, CBPP3, CSPP and the above-mentioned PSPP and PEPP holdings, provided they materialise, are shared among the Eurosystem national central banks in proportion to the prevailing shares in the capital of the ECB, as is the case with the income received. Risks and income resulting from the covered bonds purchased under the CBPP and CBPP2 as well as from the government bonds purchased under the PSPP and PEPP (including regional government bonds and bonds issued by eligible agencies located in the euro area), on the other hand, are borne or are collected, respectively, by the individual national central banks holding these bonds. For its PSPP and PEPP public sector portfolio, the Bundesbank purchases only bonds issued by German issuers.

The Governing Council of the ECB decided that there was no need to recognise any impairment losses on securities contained in the SMP, CSPP and PSPP holdings and in the three CBPP portfolios and the PEPP portfolios as at 31 December 2021, as it is expected that all payment obligations relating to the bonds and debt securities contained in Eurosystem central banks' holdings will continue to be met as agreed.

8 Claims on the Federal Government

This item shows the equalisation claims on the Federal Government and the non-interest-bearing debt register claim in respect of Berlin; both date back to the currency reform of 1948. They form the balance sheet counterpart of the amounts paid out at that time in cash per capita and per enterprise and of the initial provision of credit institutions and public corporations with central bank money. Equalisation claims yield interest at a rate of 1% per annum. In conjunction with Article 123 of the Treaty on the Functioning of the European Union (the Lisbon Treaty), it has been stipulated that the equalisation claims and the debt register claim are to be redeemed in ten annual instalments, starting in 2024.

Securities held for monetary policy purposes

Portfolio	31.12.2021		31.12.2020		Year-on-year change			
	Balance sheet value € million	Market value € million	Balance sheet value € million	Market value € million	Balance sheet value		Market value	
					€ million	%	€ million	%
Terminated purchase programmes								
SMP								
Portugal	15	17	49	53	– 34	– 70.2	– 36	– 68.7
Italy	230	232	4,271	4,394	– 4,041	– 94.6	– 4,162	– 94.7
Spain	–	–	1,251	1,278	– 1,251	– 100.0	– 1,278	– 100.0
SMP subtotal	244	249	5,571	5,725	– 5,327	– 95.6	– 5,477	– 95.7
CBPP	150	151	150	158	– 0	– 0.1	– 7	– 4.5
CBPP2	771	776	871	904	– 100	– 11.5	– 128	– 14.1
Terminated purchase programmes subtotal	1,165	1,175	6,592	6,787	– 5,427	– 82.3	– 5,611	– 82.7
APP								
CBPP3	74,412	74,686	68,839	70,659	5,573	8.1	4,027	5.7
PSPP	536,317	551,750	490,815	518,106	45,502	9.3	33,643	6.5
CSPP	72,113	73,083	60,576	62,762	11,537	19.0	10,321	16.4
APP subtotal	682,842	699,519	620,230	651,528	62,612	10.1	47,991	7.4
PEPP								
PEPP covered bonds	1,555	1,539	741	752	814	109.9	787	104.5
PEPP public sector	333,631	331,333	154,710	155,325	178,921	115.6	176,008	113.3
PEPP corporate sector	8,535	8,618	6,957	7,173	1,579	22.7	1,444	20.1
PEPP subtotal	343,720	341,489	162,407	163,251	181,313	111.6	178,239	109.2
Total	1,027,728	1,042,184	789,230	821,565	238,498	30.2	220,619	26.9

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9 Intra-Eurosystem claims

The Bundesbank's claims on the ECB and on the national central banks participating in the Eurosystem are consolidated in this item.

Sub-item 9.1 shows the Bundesbank's participating interest in the ECB. Pursuant to Article 28 of the Statute of the ESCB, the ESCB national central banks are the sole subscribers to the capital of the ECB. At the end of December 2021, a capital contribution of €161 million was made following the adjustment to the key for subscription of the ECB's capital caused by the United Kingdom's withdrawal from the European Union and the Bank of England's related withdrawal from the ESCB in 2020 (see "General information on the annual accounts"). The Bundesbank's participating interest in the ECB amounted to a nominal €2,160 million as at 31 December 2021; including the Bundesbank's share of the ECB's net equity, effective from 1 February 2020, it came to €2,417 million.

Sub-item 9.2 contains the Bundesbank's euro-denominated claims equivalent to the transfer of foreign reserves to the ECB. At the beginning of 1999, the central banks participating in the Eurosystem transferred foreign reserve assets (15% in gold and 85% in foreign currency) to the ECB in accordance with Article 30 of the Statute of the ESCB. Adjustments to the key for subscription of the ECB's capital also result in adjustments to the Bundesbank's claims equivalent to the transfer of foreign reserves to the ECB. As at 31 December 2021, these claims amounted to €10,635 million, unchanged from the previous year. As the transferred gold does not earn any interest, the claims are remunerated at 85% of the prevailing main refinancing rate.

Sub-item 9.3 "Net claims related to the allocation of euro banknotes within the Eurosystem" shows the claims which arise from applying the euro banknote allocation key. As in 2020, the Bundesbank did not have a claim as at the end of 2021 but a liability, which is shown in liability sub-item 9.2 "Net liabilities related to the allocation of euro banknotes within the Eurosystem".

A daily net balance vis-à-vis the ECB is derived from settlement balances between the central banks of the ESCB which result from cross-border payments as recorded in the Eurosystem's TARGET2 high-value payment system. As at the end of the year, the Bundesbank's net claim on the ECB was €124,671 million higher at €1,260,673 million, which is contained in sub-item 9.4 "Other claims within the Eurosystem (net)". The net balance (with the exception of unremunerated intra-Eurosystem balances resulting from the swap transactions between the ECB and the Bundesbank – see asset item 3 "Claims on euro area residents denominated in foreign currency") is remunerated at the respective main refinancing rate. On a daily average, the remunerated net claim amounted to €1,068,351 million (2020: €973,446 million). This item also contains liabilities of €1,179 million arising from the allocation of monetary income among the national central banks (see profit and loss item 5 "Net result of pooling of monetary income") and the €40 million claim on the ECB arising from the interim distribution of profit (see "General information on the annual accounts").

10 Items in course of settlement

This item contains the asset items arising from payments still being processed within the Bundesbank.

11 Other assets

The Bundesbank's holdings of euro coins are shown in sub-item 11.1 "Coins". New coins are received from the Federal mints at their nominal value for the account of the Federal Government, which holds the coin prerogative.

Sub-item 11.2 "Tangible and intangible fixed assets" amounted to €897 million, compared with €931 million in the previous year. It comprises land and buildings, furniture and equipment including computer equipment, and software.

Sub-item 11.3 "Other financial assets" amounted to €11,621 million, compared with €12,086 million in the previous year. It contains the Bundesbank's own funds portfolio as a counterpart to its capital, statutory reserves and long-term provisions for civil servant pensions and healthcare assistance. The own funds portfolio is invested not in government securities but exclusively in fixed rate covered bonds denominated in euro, which are generally held to maturity and are, therefore, valued at amortised cost. The duration is based on commonly used indices.

Tangible and intangible fixed assets

€ million

Item	Acquisition and production costs 31.12.2020	Additions	Disposals	Accumulated depreciation	Book value 31.12.2021	Book value 31.12.2020	Depreciation in 2021
Land and buildings	2,204	28	– 40	– 1,650	542	598	– 44
Furniture and equipment including computer equipment	1,064	125	– 58	– 786	346	326	– 103
Software	159	8	– 0	– 159	9	5	– 6
Total	3,427	162	– 98	– 2,594	897	931	– 153

Deutsche Bundesbank

Own funds portfolio

Portfolio	31.12.2021		31.12.2020		Year-on-year change			
	Balance sheet value € million	Market value € million	Balance sheet value € million	Market value € million	Balance sheet value € million	Balance sheet value %	Market value € million	Market value %
Euro-denominated covered bonds issued in								
Germany	5,714	5,817	6,683	6,915	– 968	– 14.5	– 1,098	– 15.9
France	2,321	2,401	2,454	2,611	– 133	– 5.4	– 211	– 8.1
Finland	985	996	902	932	83	9.2	64	6.9
Netherlands	781	793	734	760	47	6.4	33	4.3
Belgium	329	337	323	341	6	1.9	– 4	– 1.2
Total	10,131	10,343	11,097	11,559	– 966	– 8.7	– 1,216	– 10.5

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This item also includes €51 million in participating interests held by the Bundesbank. The Bundesbank's participating interest in the Bank for International Settlements, Basel, was unchanged at €50 million as at the end of the year; it holds 50,100 shares, with 25% of their par value being paid-in capital. As in the previous year, the participating interest in the cooperative society S.W.I.F.T., La Hulpe (Belgium), amounted to €1 million.

Claims on euro area counterparties other than credit institutions arising from bilateral repo transactions amounting to €1,439 million (2020: €939 million) are also shown in this item. These claims resulted from the reverse repos transacted simultaneously with the repos, in which securities in the PSPP portfolio as well as PEPP public sector holdings were lent against Federal securities on a cash-neutral basis; the transactions had a maximum term of seven days. The corresponding liabilities from the repos are shown under liability sub-item 4.2 "Other liabilities".

Sub-item 11.4 "Off-balance-sheet instruments revaluation differences" essentially comprises the net loss from the valuation of the US dollar forward liabilities to the ECB arising from the euro/US dollar swap agreement with the ECB (see asset item 3 "Claims on euro area residents denominated in foreign currency"). Only a slight net loss occurred at the close of 2021 (2020: €5 million).

Sub-item 11.5 "Accruals and prepaid expenditure" contains accruals and prepaid expenditure as at 31 December 2021. This chiefly consists of (accrued) coupon interest due in the new financial year from securities which were acquired or transacted in the financial year just ended.

Liabilities

1 Banknotes in circulation

The total value of euro banknotes issued by the central banks of the Eurosystem is distributed among these banks on the last business day of each month in accordance with the key for allocating euro banknotes (see "General information on the annual accounts"). According to the banknote allocation key applied as at 31 December 2021, the Bundesbank has a 24.3% share of the value of all the euro banknotes in circulation. During the year under review, the total value of banknotes in circulation within the Eurosystem rose from €1,434.5 billion to €1,544.4 billion, or by 7.7%. Taking into account the allocation key, the Bundesbank had euro banknotes in circulation worth €374,552 million as at the end of the year, compared with €347,905 million a year previously. The value of the euro banknotes actually issued by the Bundesbank increased in 2021 by 7.7% from €821,003 million to €884,392 million. As this was more than the allocated amount, the difference of €509,840 million (2020: €473,098 million) is shown in liability sub-item 9.2 "Net liabilities related to the allocation of euro banknotes within the Eurosystem".

2 Liabilities to euro area credit institutions related to monetary policy operations denominated in euro

Sub-item 2.1 "Current accounts" contains the deposits of credit institutions, amounting to €902,096 million (2020: €793,755 million), which are also used to meet the minimum reserve requirement and to settle payments. The main criterion for including these deposits in this sub-item is that the relevant counterparties appear in the list of institutions which are subject to the Eurosystem's minimum reserve regulations. The balances held to fulfil the minimum reserve requirement amounted to €41,199 million on an annual average. These balances are remunerated at the average main refinancing rate in the respective maintenance period. Since 30 October 2019, a two-tier system for calculating the remuneration of deposits in excess of the minimum reserve requirements has applied. Under this system, balances determined as a multiple (set by the Governing Council of the ECB; in 2021: six) of a credit institution's minimum reserve requirements are exempt from negative remuneration. Negative interest at the rate applicable to the deposit facility is applied only to the non-exempt excess reserve holdings; these holdings amounted to €738,902 million on an annual average. On a daily average, total current account deposits increased from €694,196 million in 2020 to €1,025,011 million in 2021.

Sub-item 2.2 "Deposit facility", amounting to €233,948 million (2020: €225,003 million), contains overnight deposits remunerated at the deposit facility rate (2021: -0.5%). On a daily average, the deposit facility amounted to €199,539 million, compared with €113,302 million in 2020.

Sub-item 2.5 "Deposits related to margin calls" contains cash collateral deposited by credit institutions in order to increase underlying assets. As at 31 December 2021, this item contained holdings of €2,186 million (2020: no holdings).

3 Other liabilities to euro area credit institutions denominated in euro

This item contains, in particular, liabilities to euro area credit institutions arising from bilateral repo transactions cleared centrally via Eurex. In these transactions, securities in the PSPP portfolio as well as PEPP public sector holdings are lent against cash as collateral, or in the case of simultaneous reverse repos, against Federal securities on a cash-neutral basis; the transactions have a maximum term of seven days. As at the end of the year, securities lending against cash as collateral gave rise to liabilities in the amount of €18,913 million (2020: €4,722 million), and securities lending against Federal securities resulted in liabilities of €3,495 million (2020: €2,359 million); the corresponding claims are reported in asset item 6 "Other claims on euro area credit institutions denominated in euro". Since mid-2021, pursuant to the Regulation on the application of minimum reserve requirements,[5] this item has also included account balances in the amount of €3,958 million that were reported in liability item 2 "Liabilities to euro area credit institutions related to monetary policy operations denominated in euro" in 2020, which are exempt from minimum reserve requirements due to the imposition of freezing orders. In addition, this item contains liabilities in the amount of €606 million (2020: €391 million) arising from account balances pledged for deposit protection pursuant to the Deposit Guarantee Act (*Einlagensicherungsgesetz*) in conjunction with the Regulation on the Financing of the Compensation Scheme (*Entschädigungseinrichtungs-Finanzierungsverordnung*).

4 Liabilities to other euro area residents denominated in euro

Sub-item 4.1 "General government deposits" encompasses the balances of the Federal Government, its special funds, the state governments, the European Stability Mechanism (ESM), the European Financial Stability Facility

5 Regulation (EU) 2021/378 of the European Central Bank of 22 January 2021 on the application of minimum reserve requirements (recast) (ECB/2021/1).

(EFSF) and other public depositors (social security funds and local governments). On 31 December 2021, general government deposits amounted to €246,658 million in all (2020: €195,996 million). On a daily average, the volume amounted to €199,610 million (2020: €167,365 million).

Sub-item 4.2 "Other liabilities" amounted to €52,239 million, compared with €13,701 million a year earlier. It mainly comprises deposits of financial intermediaries and individuals. In addition, liabilities to euro area counterparties other than credit institutions arising from bilateral repo transactions were included in this sub-item as at 31 December 2021. In these repo transactions, securities in the PSPP portfolio as well as PEPP public sector holdings are lent against cash as collateral, or in the case of simultaneous reverse repos, against Federal securities on a cash-neutral basis; the transactions have a maximum term of seven days. As at the end of the year, securities lending against cash as collateral gave rise to liabilities in the amount of €2,179 million (2020: €1,894 million), and securities lending against Federal securities resulted in liabilities of €1,439 million (2020: €939 million); the corresponding claims are reported in asset sub-item 11.3 "Other financial assets". On a daily average, the sub-item amounted to €19,715 million (2020: €20,127 million).

5 Liabilities to non-euro area residents denominated in euro

This balance sheet item, amounting to €404,339 million (2020: €256,804 million), contains the balances of non-euro area central banks, monetary authorities, international organisations and commercial banks held, inter alia, to settle payments. On a daily average, the volume amounted to €133,730 million (2020: €105,545 million). As at 31 December 2021, deposits of €382,554 million were attributable to non-euro area central banks and monetary authorities, of which €81,605 million was attributable to central banks within the European Union. Liabilities to non-euro area counterparties arising from bilateral repo transactions are also recorded in this item. In these repo transactions, securities in the PSPP portfolio as well as PEPP public sector holdings are lent against cash as collateral, or in the case of simultaneous reverse repos, against Federal securities on a cash-neutral basis; the transactions have a maximum term of seven days. As at the end of the year, only securities lending against cash as collateral gave rise to liabilities, in the amount of €10,208 million (2020: €3,686 million), and no liabilities arose from securities lending against Federal securities (2020: €1,455 million); the corresponding claims are reported in asset item 4 "Claims on non-euro area residents denominated in euro".

6 Liabilities to euro area residents denominated in foreign currency

This item contains US dollar deposits of banks resident in the euro area and of the Federal Government.

7 Liabilities to non-euro area residents denominated in foreign currency

Foreign currency-denominated liabilities to banks outside the euro area are recorded in this item. These are liabilities in US dollars which have arisen from repos. As in the previous year, this item contained no holdings as at 31 December 2021.

8 Counterpart of special drawing rights allocated by the IMF

The counterpart of the special drawing rights (SDRs) allocated by the IMF free of charge corresponds to the allocations of SDRs to the Federal Republic of Germany from 1970 to 1972, from 1979 to 1981, in 2009 and in 2021, which together totalled SDR 37,587 million (see asset sub-item 2.1 "Receivables from the IMF").

9 Intra-Eurosystem liabilities

The Bundesbank's liabilities to the ECB and to the other central banks participating in the Eurosystem are consolidated in this item.

Sub-item 9.1 contains "Liabilities related to the issuance of ECB debt certificates". The ECB issued no debt certificates in 2021.

Sub-item 9.2 "Net liabilities related to the allocation of euro banknotes within the Eurosystem" contains the liabilities arising from the application of the euro banknote allocation key (see liability item 1 "Banknotes in circulation"). As at the end of the year, these liabilities amounted to €509,840 million in total (2020: €473,098 million). The 8% share of the total value of euro banknotes in circulation attributable to the ECB (€1,544.4 billion) resulted in a liability of €32,570 million for the Bundesbank (according to its capital share of 26.4%). In addition, the difference between the Bundesbank's actual banknote issuance of €884,392 million and its notional share (again according to the capital share) in the allocation of the remaining 92% of euro banknotes in circulation to the balance sheets of the national central banks resulted in a liability of €477,270 million. The reason for the size of this liability was the Bundesbank's still disproportionately high share of banknote issuance (57.3%), which is largely due to net outflows of banknotes to other countries.

The net liabilities arising from other assets and liabilities within the Eurosystem would be shown in sub-item 9.3 "Other liabilities within the Eurosystem (net)". As at the end of 2021, the Bundesbank had a net claim, which is shown on the assets side under sub-item 9.4 "Other claims within the Eurosystem (net)" and outlined there.

10 Items in course of settlement

This item contains the liability items arising from payments still being processed within the Bundesbank.

11 Other liabilities

As at the end of 2021, as in the previous year, no holdings were reported under sub-item 11.1 "Off-balance-sheet instruments revaluation differences". These holdings are shown in asset sub-item 11.4.

Sub-item 11.2 "Accruals and income collected in advance" contains the accrued and collected income calculated as at 31 December 2021. This consists mainly of (accrued) interest expenses which are due in future financial years but were incurred in 2021 in connection with the negative remuneration of credit institutions' refinancing (particularly TLTRO-III).

Sub-item 11.3 "Sundry" mainly comprises the liabilities arising from Deutsche Mark banknotes still in circulation. Deutsche Mark banknotes are no longer legal tender. However, the Bundesbank has publicly undertaken to redeem Deutsche Mark banknotes that are still in circulation for an indefinite period. The Deutsche Mark banknotes still in circulation belong to the series BBk I/Ia and BBk III/IIIa and as at the end of 2021 totalled €2,941 million. The banknote series BBk I/Ia accounted for €1,183 million of this total and the banknote series BBk III/IIIa €1,757 million. In accordance with the accounting policies, the liabilities may be derecognised if it is virtually certain that claims are no longer to be expected. This is partly the case for Deutsche Mark banknotes still in circulation belonging to the BBk III/IIIa series, which ceased to be legal tender on 31 December 2001, pursuant to the Third Act on the Introduction of the Euro (*Drittes Euro-Einführungsgesetz*) of 16 December 1999; fewer and fewer of these banknotes are being redeemed. A partial amount of €1,296 million was therefore derecognised as at the end of 2021 (see profit and loss item 6 "Other income"). The amount derecognised was determined using mathematical/statistical calculations based on previous monthly redemption rates, taking into account an error probability of 1% and a forecast horizon of 50 years. The resultant amount to be derecognised accounts for 74% of the Deutsche Mark banknotes belonging to the series BBk III/IIIa still in circulation. This approach is based on the partial derecognition of Deutsche Mark banknotes belonging to the BBk I/Ia series in 2004; of the banknotes which ceased to be legal tender on 30 June 1995 as announced on 23 June 1994, most of the liabilities in this regard (91%, or €1,237 million) were taken off the books after around ten years in 2004. Taking account of this partial derecognition and the deposits that have been made in the meantime, the reported liabilities arising from the Deutsche Mark banknotes still in circulation have, since 2013, comprised only notes of the series BBk III/IIIa; following the partial derecognition, these liabilities still amounted to €461 million (2020: €1,771 million) as at the balance sheet date. Irrespective of the derecognition, all submitted banknotes belonging to the BBk III/IIIa series (like banknotes belonging to the BBk I/Ia series)

Provisions

Provisions for	31.12.2021 € million	31.12.2020 € million	Year-on-year change € million	 %
General risks	20,171	18,824	1,346	7.2
Direct pension commitments	6,861	6,212	650	10.5
Indirect pension commitments (supplementary pension funds for public sector employees)	692	638	53	8.4
Healthcare subsidy commitments to civil servants	1,774	1,674	100	6.0
Partial retirement scheme	17	15	2	14.1
Staff restructuring schemes	31	27	3	12.1
Other	91	99	−7	−7.5
Total	29,637	27,490	2,147	7.8

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will continue to be redeemable for an indefinite period. Deposits of Deutsche Mark banknotes in 2021 totalled €18 million, of which €13 million consisted of the BBk III/IIIa series banknotes and €4 million of the BBk I/Ia series banknotes (see profit and loss item 11 "Other expenses").

12 Provisions

The provisions for general risks are created pursuant to the regulations governing the Bundesbank's annual accounts laid down in Section 26(2) of the Bundesbank Act. They are established to hedge against general risks associated with domestic and foreign business. The level of funds to be allocated to the provisions for general risks is reviewed annually using value-at-risk and expected shortfall calculations, amongst others. These calculations consider the holdings of risk-bearing assets, their risk content, foreseeable changes to the risk situation, expected financial conditions in the coming year and the statutory reserves (€2.5 billion). The Bundesbank's risks, which are determined using a model-based approach, relate, in particular, to exchange rate risk, default risk from the asset purchase programmes and credit risk arising from refinancing loans as well as interest rate risk. Since the beginning of 2020, the risk level has increased strongly due to the pandemic. The main reason for the increase was higher interest rate risk and credit risk stemming from the APP and from the PEPP, which was launched in March 2020. The Bundesbank did not distribute any profits in 2020 as the strong increase in risk made it necessary to build up risk provisioning as much as possible. As a first step, €2,424 million was therefore added to the provisions for general risks and in the 2021 reporting year, owing to the less favourable earnings situation, a smaller amount of €1,346 million was added in a second step. The provisions for general risks thus amounted to €20,171 million as at 31 December 2021. A further increase in the risk provisions is expected to be reported in the annual accounts for 2022 as the higher risks could only be partially covered in the annual accounts for 2020 and 2021. The risk assessment does not take account of the risks arising from the Bundesbank's TARGET2 claim on the ECB and from the issuance of euro banknotes. The Bundesbank could hypothetically be affected (in the case of the TARGET2 claim, only indirectly as an ECB shareholder) by the risk to which the Eurosystem would be exposed if a euro area country were to leave the single currency area and its central bank failed to settle its TARGET2 liability to the ECB or its banknote liabilities to the ECB (8% share) and the national central banks. It considers this scenario to be unlikely to materialise, however, which means that credit risk arising from Eurosystem liquidity-providing operations is ultimately the main risk factor.

Discount rates and trends

Parameter	31.12.2021 %	31.12.2020 %
Discount rate for post-employment benefit obligations	1.98	2.38
Discount rate for comparable long-term staff obligations (healthcare subsidy commitments to civil servants)	1.44	1.73
Discount rate for short-term staff obligations (partial retirement scheme and staff restructuring schemes)	0.30	0.44
Wage trend	2.25	2.25
Career trend	0.50	0.50
Cost trend for healthcare subsidy commitments to civil servants	3.00	3.00
Pension trend for direct pension commitments	2.25	2.25
Pension trend for supplementary pension funds for public sector employees	1.00	1.00

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Provisions for post-employment benefit obligations (direct pension commitments and indirect pension commitments as a result of the Bundesbank's obligation to act as guarantor for pension payments out of the supplementary pension funds for public sector employees) as well as for healthcare subsidy commitments to civil servants are valued on the basis of actuarial expert opinions prepared using current mortality tables (Heubeck 2018 G mortality tables) according to the entry age normal method (*Teilwertverfahren*) (for current staff) and the present value method (*Barwertverfahren*) (for pensioners and ex-civil servants with portable pension entitlements), taking into account discount rates and trends. The discount rate used for post-employment benefit obligations is, in each case, a matched-maturity average market interest rate for the past ten years or, for healthcare subsidy commitments to civil servants, for the past seven years pursuant to the Regulation on the Discounting of Provisions (*Rückstellungsabzinsungsverordnung*).

Pursuant to Section 253(6) of the Commercial Code, the amount saved by applying the ten-year rather than the seven-year period for calculating the average market interest rate for post-employment benefit obligations is subject to a restriction on distribution. In 2019, the ten-year rate (2.75%) and the seven-year rate (2.11%) resulted in an interest margin of 64 basis points, representing a difference of €720 million. In 2020, the interest margin came to 65 basis points (2.38% versus 1.73%), which, taking stock effects into account, resulted in a larger difference of €768 million; owing to the balanced annual result there was no allocation to (other) reserves, however. In 2021, the interest margin came to 54 basis points (1.98% versus 1.44%), which resulted in a lower saving of €713 million.

Provisions for the partial retirement scheme and for payment commitments arising from staff restructuring schemes that had already been carried out as at the reporting date are valued based on actuarial expert opinions prepared using current mortality tables according to the present value method, or according to the entry age normal method in the case of the outstanding settlement amount for the partial retirement scheme, taking into account discount rates and trends. The discount rate is based on a matched-maturity average market interest rate for the past seven years pursuant to the Regulation on the Discounting of Provisions.

The other provisions are created for remaining holiday entitlement, overtime worked and positive balances of flexible working hours and long-term working hours accounts as well as for other uncertain liabilities.

Expenses in the amount of €752 million from marking up the provisions (including the effects of the change in the discount rates) are contained in profit and loss sub-item 1.2 "Interest expense". Profit and loss item 7 "Staff costs" shows a net allocation of €80 million, with a total allocated amount of €358 million standing against a total utilisation of €279 million. Other changes in provisioning gave rise, on balance, to an allocation of €2 million in profit and loss item 11 "Other expenses" and to utilisation-related relief of €4 million in profit and loss item 8 "Administrative expenses". The reversal of provisions resulted in income of €29 million in profit and loss item 6 "Other income".

13 Revaluation accounts

This item contains the disclosed hidden reserves from the initial valuation at the time of the changeover to market valuation as at 1 January 1999 (revaluation items "old") and the unrealised gains arising from market valuation as at 31 December 2021 (revaluation items "new").

Revaluation items "old"

A revaluation item "old" now remains only for gold. This item represents the difference between the market value of gold as at 1 January 1999 and the lower book value of gold prior to that date. On the balance sheet as at 31 December 1998, the book value for gold was 1 ozf = DEM 143.8065 (€73.5271), while the market value as at 1 January 1999 was 1 ozf = €246.368. Although the valuation gains arising from the initial valuation of the gold holdings are not eligible for distribution, they will be released under certain circumstances. Besides being released in the case of valuation losses on the gold position, a proportionate release will also take place in the event of net reductions if the end-of-year gold holdings are below their lowest end-of-year level since 1999.

The reduction of 3,390 kg, or 0.1 million ozf, in the gold holdings resulted in the release of €19 million in the year under review, which was taken to profit and loss sub-item 2.1 "Realised gains/losses arising from financial operations".

Revaluation items "new"

The revaluation items "new" show, for the gold holdings, the net positions in each foreign currency and the securities portfolios in each category of security (securities identification number), the positive difference in each case between the market value on 31 December 2021 and their value at average amortised cost since 1 January 1999.

As regards gold, this acquisition cost is 1 ozf = €246.369. As at the end of 2021, the market

Revaluation accounts

	Revaluation items "old"	Revaluation items "new"	Total as at 31.12.2021	Total as at 31.12.2020	Year-on-year change	
Item	€ million	€ million	€ million	€ million	€ million	%
Gold	18,666	147,213	165,880	158,956	6,924	4.4
US dollar	–	3,883	3,883	1,958	1,925	98.3
SDR	–	375	375	–	375	.
Yen	–	149	149	198	− 49	−24.8
Australian dollar	–	43	43	23	20	85.4
Canadian dollar	–	128	128	–	128	.
Chinese yuan (renminbi)	–	29	29	–	29	.
Securities in foreign currency	–	241	241	622	−381	−61.2
Total	18,666	152,063	170,729	161,757	8,972	5.5

Deutsche Bundesbank

value of the gold position exceeded its acquisition value, leading to a revaluation item of €147,213 million (2020: €140,270 million). In the case of the net foreign exchange positions in US dollars, SDRs, Japanese yen, Canadian dollars, Australian dollars and Chinese yuan (renminbi), the market values at year-end were also above their acquisition values (€1 = US$1.3165, €1 = SDR 0.8467, €1 = ¥144.17, €1 = C$1.5609, €1 = A$1.6219 and €1 = 8.0102 yuan, respectively), resulting in revaluation items.

The valuation gains on foreign currency-denominated securities shown on the balance sheet result predominantly from US Treasury notes (€229 million). However, for a portion of the foreign currency-denominated securities, the relevant acquisition values were higher than their corresponding market values on the reporting date, resulting in valuation losses (see profit and loss sub-item 2.2 "Write-downs on financial assets and positions"). In principle, securities denominated in euro are carried at amortised cost.

14 Capital and reserves

In accordance with Section 2 of the Bundesbank Act, the Bank's capital, amounting to €2.5 billion, is owned by the Federal Republic of Germany. As in the previous year, the statutory reserves pursuant to the Bundesbank Act are at the fixed upper limit of €2.5 billion laid down in Section 27 No 1 of the Bundesbank Act. The difference arising from the discounting of post-employment benefit obligations, which is subject to a restriction on distribution pursuant to Section 253(6) of the Commercial Code (see "General information on the annual accounts", liability item 12 "Provisions" and profit and loss item 12 "Allocation to/withdrawal from reserves owing to the restriction on distribution pursuant to Section 253(6) of the Commercial Code (*Handelsgesetzbuch*)"), decreased to €713 million. Since this non-distributable amount was €7 million lower than the level of (other) reserves in the previous year, a withdrawal from reserves in this amount was made as at the end of financial year 2021; (other) reserves therefore amounted to €713 million, compared with €720 million in 2020.

15 Distributable profit

The profit and loss account for 2021 closed with a loss for the year of €7 million (2020: balanced annual result). A withdrawal of €7 million was made from (other) reserves on account of the restriction on distribution pursuant to Section 253(6) of the Commercial Code (2020: no withdrawal/transfer; see "General information on the annual accounts", liability item 12 "Provisions" and profit and loss item 12 "Allocation to/withdrawal from reserves owing to the restriction on distribution pursuant to Section 253(6) of the German Commercial Code (*Handelsgesetzbuch*)"), resulting in a balanced financial result overall.

Notes on the profit and loss account

1 Net interest income

This item shows interest income, net of interest expense. Net interest income was lower than in the previous year, dropping by €369 million to €2,501 million. Net interest income in foreign currency was down by €180 million owing to lower yields, while net interest income in euro decreased by €190 million on account of higher negative interest on targeted longer-term refinancing operations (TLTRO-III) as from June 2020 and declining interest from monetary policy portfolios. The negative interest rates on deposits and refinancing operations gave rise, on balance, to net interest income of €752 million from credit institutions, compared with €953 million in the previous year.

1.1 Interest income

Interest income in foreign currency fell from €546 million in 2020 to €303 million in 2021

Net interest income

Item	2021	2020	Year-on-year change	
	€ million	€ million	€ million	%
Interest income in foreign currency				
IMF	18	42	– 24	– 57.5
Reverse repo transactions	1	14	– 14	– 96.4
Securities	282	437	– 155	– 35.5
Other	3	52	– 50	– 94.5
Subtotal	303	546	– 243	– 44.4
Interest income in euro				
Deposits of credit institutions (negative interest)	4,756	2,726	2,030	74.5
TARGET2 claim on the ECB	–	–	–	–
Monetary policy portfolios	101	444	– 343	– 77.2
Claims arising from the transfer of foreign reserves to the ECB	–	–	–	–
Own funds portfolio (financial assets)	72	94	– 22	– 23.4
Euro balances of domestic and foreign depositors (negative interest)	1,938	1,587	351	22.1
Repo transactions (negative interest)	100	29	71	249.1
Other	49	47	2	3.3
Subtotal	7,016	4,927	2,088	42.4
Total interest income	7,319	5,473	1,846	33.7
Interest expense in foreign currency				
IMF	14	30	– 16	– 54.6
Repo transactions	–	1	– 1	– 100.0
Other	0	46	– 46	– 99.4
Subtotal	14	77	– 63	– 81.9
Interest expense in euro				
Refinancing operations (negative interest)	4,003	1,773	2,231	125.8
Liabilities arising from the allocation of euro banknotes	–	–	–	–
Claims arising from central bank services (negative interest)	22	23	– 1	– 3.8
Marking up of staff provisions	752	710	42	6.0
Reverse repo transactions (negative interest)	26	20	6	29.0
Other	0	0	– 0	– 83.0
Subtotal	4,804	2,526	2,278	90.2
Total interest expense	4,818	2,603	2,215	85.1
Net interest income	2,501	2,870	– 369	– 12.9

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owing to lower yields. Interest income in euro increased by €2,088 million to €7,016 million compared with the previous year, of which a total of €6,693 million, or 95%, was attributable to interest income from negative remuneration (€4,313 million, or 88%, in 2020). In particular, interest income from the negative remuneration of credit institutions' deposits rose by €2,030 million to €4,756 million owing to the year-on-year increase of roughly 73% in remunerated balances. During the reporting year, as in the previous year, no income arose from the TARGET2 claim on the ECB as a consequence of the lowering of the main refinancing rate to 0% as from March 2016. Securities held for monetary policy purposes gave rise to interest income of €101 million on balance, compared with €444 million in the previous year. Income relating to the terminated purchase programmes (SMP and CBPP/CBPP2) fell by €216 million to a total of €171 million on account of the annual average decrease in holdings as securities reached maturity. Income from the APP portfolios (CBPP3, PSPP and CSPP portfolios) increased by €700 million to €1,107 million, particularly owing to the inflation-linked bonds in the PSPP portfolio, which yielded far better results thanks to the higher inflation rate in 2021. The PEPP portfolios gave rise to negative interest of -€1,177 million, compared with -€350 million in the previous year, due to the heavily increased holdings of negatively remunerated bonds in the PEPP public sector portfolio. Given virtually unchanged holdings and an average interest rate of 0.69% (2020: 0.83%), the Bundesbank's own funds portfolio saw its interest income contract by €22 million. Interest income arising from the negative remuneration of euro balances held by domestic and foreign depositors rose by €351 million because of increased average holdings. Repo transactions (see liability item 3 "Other liabilities to euro area credit institutions denominated in euro", liability sub-item 4.2 "Other liabilities" and liability item 5 "Liabilities to non-euro area residents denominated in euro") resulted in interest income of €100 million (2020: €29 million).

1.2 Interest expense

There was a year-on-year increase of €2,215 million to €4,818 million in interest expense. As regards monetary policy refinancing operations, the higher interest expense of €4,003 million compared with €1,773 million in 2020 stemmed, in particular, from the annual average increase in take-up by €203.2 billion and the lowering of the minimum interest rate for TLTRO-III (to the deposit facility rate minus 50 basis points as from 24 June 2020). Owing to the lowering of the main refinancing rate to 0% as from March 2016, there was, as in the previous year, no interest expense for the remuneration of the intra-Eurosystem balances arising from the allocation of euro banknotes (see "General information on the annual accounts"). Expenses arising from the marking up of staff provisions increased by €42 million (see liability item 12 "Provisions"). The reverse repos transacted simultaneously with the bilateral repo transactions (see asset item 4 "Claims on non-euro area residents denominated in euro", asset item 6 "Other claims on euro area credit institutions denominated in euro" and asset sub-item 11.3 "Other financial assets") resulted in an interest expense of €26 million (2020: €20 million).

2 Net result of financial operations, write-downs and risk provisions

Realised net income from foreign currency transactions reported in sub-item 2.1, largely from US dollar transactions (€191 million), declined due to exchange rate movements, in addition to which rebalancing from US dollars to Canadian dollars gave rise to additional realised gains in 2020. The strong year-on-year decline in realised gains on sales of securities, particularly US Treasury notes (€7 million; 2020: €388 million), was mainly explained by the decrease in US dollar capital market returns in 2020 and increase in the same in 2021.

Write-downs in sub-item 2.2 chiefly result from valuation losses on US Treasury notes, and in 2020 from exchange rate losses on special drawing rights in particular.

Sub-item 2.3 "Transfer to/from provisions for general risks" contains the increase of

Interest from monetary policy portfolios

Portfolio	2021	2020	Year-on-year change	
	€ million	€ million	€ million	%
SMP	142	350	− 209	− 59.6
CBPP and CBPP2	29	36	− 7	− 19.6
CBPP3	150	194	− 45	− 23.0
PSPP	524	− 150	674	449.7
CSPP	434	363	71	19.7
PEPP covered bonds	− 2	− 1	− 1	− 229.2
PEPP public sector	− 1,221	− 386	− 835	− 216.2
PEPP corporate sector	46	37	9	23.3
Total	101	444	− 343	− 77.2

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€1,346 million in the provisions for general risks (see liability item 12 "Provisions").

3 Net income from fees and commissions

Net income from fees and commissions came to €60 million, compared with €55 million in the previous year.

4 Income from participating interests

This item contains the Bundesbank's income of €172 million (2020: €579 million) from its participating interests in the ECB, the BIS and S.W.I.F.T. Of this, €141 million (2020: €579 million) was attributable to the ECB's profit distributions for financial years 2020 and 2021. The Bundesbank received €40 million from the interim profit distribution for financial year 2021 (2020: €332 million for financial year 2020) and a further €101 million from the distribution of the remainder of the profit for financial year 2020 in February 2021 (2020: €247 million for financial year 2019). An additional €31 million (2020: no payment) came from BIS dividends.

5 Net result of pooling of monetary income

This item comprises expenditure of €1,179 million in 2021. In 2020, risk provisioning for Eurosystem monetary policy operations resulted in income of €23 million. Expenditure from the

Net result of financial operations, write-downs and risk provisions

Item	2021	2020	Year-on-year change	
	€ million	€ million	€ million	%
Realised gains/losses				
Gold	158	184	− 26	− 14.2
Foreign currency	206	484	− 278	− 57.4
Securities	15	430	− 415	− 96.6
Subtotal	378	1,097	− 719	− 65.5
Write-downs				
Foreign currency	− 0	− 217	217	100.0
Securities	− 161	− 13	− 148	.
Subtotal	− 161	− 230	69	29.9
Transfer to/from provisions for general risks	− 1,346	− 2,424	1,078	44.5
Total	− 1,129	− 1,557	428	27.5

Deutsche Bundesbank

Net income from fees and commissions

Item	2021	2020	Year-on-year change	
	€ million	€ million	€ million	%
Income				
Cashless payments	27	26	1	3.3
Cash payments	6	6	– 1	– 10.4
Securities business and security deposit business	50	51	– 1	– 1.2
Other	31	22	9	42.3
Subtotal	113	104	9	8.4
Expense				
Securities business and security deposit business	44	41	3	7.8
Other	9	9	– 0	– 0.6
Subtotal	53	49	3	6.3
Total	60	55	6	10.2

Deutsche Bundesbank

pooling of monetary income amounted on balance to €779 million in 2020.

Monetary income of the Eurosystem national central banks is pooled in accordance with a decision taken by the Governing Council of the ECB.[6] Since 2003, the amount of monetary income allocated to each national central bank has been measured on the basis of the actual income that derives from the earmarked assets that each holds as a counterpart to its liability base.

The liability base contains, in particular, the following items: liability item 1 "Banknotes in circulation", liability item 2 "Liabilities to euro area credit institutions related to monetary policy operations denominated in euro", liability sub-item 9.2 "Net liabilities related to the allocation of euro banknotes within the Eurosystem" and the TARGET2 net liability contained in liability sub-item 9.3 "Other liabilities within the Eurosystem (net)". All interest paid on these items or received on them owing to the negative remuneration decreases or increases the amount of monetary income to be transferred by the national central bank concerned.

A national central bank's earmarked assets consist mainly of the following items: asset item 5 "Lending to euro area credit institutions related to monetary policy operations denominated in euro", asset sub-item 7.1 "Securities held for monetary policy purposes", asset sub-item 9.2 "Claims equivalent to the transfer of foreign reserves to the ECB", asset sub-item 9.3 "Net claims related to the allocation of euro banknotes within the Eurosystem", the TARGET2 net claim contained in asset sub-item 9.4 "Other claims within the Eurosystem (net)" and a limited amount of the national central banks' gold holdings corresponding to their share in the fully paid-up capital of the ECB. It is assumed that no income is generated from the gold and that the covered bonds purchased under the CBPP and CBPP2 as well as the government bonds (including regional government bonds and bonds issued by eligible agencies located in the euro area) purchased under the PSPP and PEPP generate income commensurate with the applicable main refinancing rate, as the ECB Governing Council has ruled out the possibility of pooling the risk and returns arising from these instruments among the national central banks.

6 Decision of the European Central Bank 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), as last amended by the Decision of the European Central Bank of 12 November 2020 (ECB/2020/55).

If the value of a national central bank's earmarked assets exceeds or falls short of the value of its liability base, the difference is offset by applying the main refinancing rate to the value of the difference. At the end of each financial year, the total monetary income transferred by all national central banks is allocated to the national central banks in proportion to their respective shares in the fully paid-up capital of the ECB. The transfer and allocation can cause redistribution effects among the national central banks under two conditions in practice. First, earmarked assets or liabilities as part of the liability base must have an interest rate that is different from the main refinancing rate (such as, for instance, the excess reserves remunerated at the deposit facility rate or TLTRO-III operations remunerated at individual rates and the remuneration of monetary policy portfolios). Second, the pro rata share of these earmarked assets or liabilities on the balance sheet of the respective national central bank must be higher or lower than its share in the ECB's capital. For example, the Bundesbank's average share of the Eurosystem's total TLTRO-III holdings, at around 19.7%, is well below the Bundesbank's capital share of 26.4%; the resultant disproportionately high interest expenses of the other national central banks are balanced out via the common pool of monetary income.

On aggregate, the pooling of monetary income resulted in a net expense of €1,179 million for the Bundesbank (2020: €779 million). This balance represents the difference between the €1,528 million (2020: €1,903 million) in monetary income paid by the Bundesbank into the common pool and the Bundesbank's claim of €349 million (2020: €1,124 million) – corresponding to the Bundesbank's share of the ECB's paid-up capital – on the common pool.

6 Other income

Other income amounted to €1,535 million, compared with €158 million in 2020. This included the equivalent of the partial derecognition of Deutsche Mark banknotes of the BBk III/IIIa series amounting to €1,296 million (see liability sub-item 11.3 "Sundry"). In addition, €65 million (2020: €75 million) was attributable to the contributions of the Eurosystem national central banks to the costs of developing and running Eurosystem services, €29 million (2020: €30 million) to the reversal of provisions (see liability item 12 "Provisions"), €21 million (2020: €19 million) to rental income, and €1 million (as in 2020) to proceeds from the sale of land and buildings.

7 Staff costs

Staff costs rose from €601 million to €1,068 million year on year. Expenditure on post-employment benefits was €467 million higher on balance owing to increased transfers to staff provisions in particular. This was because one-off effects from the 2020 annual accounts ceased to apply (see liability item 12 "Provisions"). In 2020, the decrease in the wage trend from 2.5% to 2.25% led to one-off relief of €373 million for the pension provisions and the reduction in the cost trend in the provision for healthcare subsidy commitments to civil servants from 3.25% to 3.0% led to one-off relief of €89 million, bringing the total to €462 million. Excluding transfers to staff provisions, staff costs rose by 2.8%. This was attributable to the general pay rises for salaried staff and civil servants as well as higher staff numbers.

The remuneration received by each member of the Executive Board is published in the Annual Report in accordance with item 9 of the "Code of Conduct for the members of the Executive Board of the Deutsche Bundesbank". For 2021, the President of the Bundesbank received a pensionable salary of €402,956.04, special non-pensionable remuneration of €76,693.78 and a standard expenses allowance of €5,112.96, amounting to a total of €484,762.78. The Vice-President of the Bundesbank received a pensionable salary of €322,364.85, special non-pensionable remuneration of €61,355.03 and a standard expenses allowance of €3,067.80, amounting to a total of €386,787.68 for 2021. The other members of the Executive Board each received a pensionable salary of €241,773.78, special non-pensionable remuneration of €46,016.27 and a

Staff costs

Item	2021 € million	2020 € million	2019 € million	2018 € million
Salaries and wages	662	664	618	591
Social security contributions	94	91	92	85
Expenditure on post-employment benefits	312	– 155	223	173
Total	1,068	601	933	849

Deutsche Bundesbank

standard expenses allowance of €2,556.48, amounting to a total of €290,346.53 each for the year 2021.

Total remuneration payments to serving and former members of the Executive Board, former members of the Bundesbank's Directorate and of the Executive Boards of the Land Central Banks, including their surviving dependants, amounted to €10,722,848.04 in 2021.

8 Administrative expenses

Administrative expenses increased from €510 million in 2020 to €579 million. This item shows not only operating expenditure but also, in particular, expenditure of €231 million on computer hardware and software (2020: €198 million) and of €115 million on office buildings (2020: €99 million) as well as expenditure of €63 million on Eurosystem services (as in 2020).

9 Depreciation of tangible and intangible fixed assets

Depreciation of land and buildings, of furniture and equipment including computer equipment and of software amounted to €153 million, compared with €124 million in 2020 (see asset sub-item 11.2 "Tangible and intangible fixed assets").

10 Banknote production services

Expenditure on banknote production services increased by €51 million year on year to €129 million owing to a larger procurement volume in the reporting year.

11 Other expenses

Other expenses amounted to €38 million (2020: €36 million) and contained, in particular, expenditure on residential buildings amounting to €18 million and on staff restructuring schemes in the amount of €14 million as well as expenditure on the encashment of the BBk I/Ia series Deutsche Mark banknotes, which are no longer shown on the balance sheet, in the amount of €4 million (see liability sub-item 11.3 "Sundry").

In 2021, the Bundesbank's donations totalled €527,650.46, including €321,134.49 for research projects, €81,015.97 for other specific projects, €78,000 for scholarships and prize money, and €47,500 for institutional financial assistance.

12 Allocation to/withdrawal from reserves owing to the restriction on distribution pursuant to Section 253(6) of the German Commercial Code (Handelsgesetzbuch)

Pursuant to Section 253(6) of the Commercial Code, the relief of €713 million resulting from application of the ten-year rather than the seven-year period for calculating the average market interest rate at which to discount post-employment benefit obligations is subject to a restriction on distribution (see "General information on the annual accounts", liability item 12 "Provisions" and liability item 14 "Capital and reserves"). Since this non-distributable amount was €7 million lower than the level of the relevant reserves at the close of 2020, a withdrawal from reserves in this amount was made as at the end of financial year 2021 (2020: no transfer/withdrawal).

Annex

The Deutsche Bundesbank: key figures

Staff[1]	2020	2021
Core staff (full-time equivalents)	10,407	10,383
– Contraction since 31 December 2001[2]	4,393 (= 29.7%)	4,417 (= 29.8%)

Locations/core staff (full-time equivalents)[1]	2020	2021
Central Office	1 / 5,240	1 / 5,347
Regional offices	9 / 2,726	9 / 2,697
Branches	35 / 2,441	31 / 2,338

Annual accounts[1]	2020	2021
Distributable profit	–	–
Net interest income	€2,870 million	€2,501 million
Total assets	€2,526,558 million	€3,011,124 million
Foreign reserve assets (total)	€219.1 billion	€261.4 billion
– Foreign currency	€30.1 billion	€32.6 billion
– Receivables from the IMF	€22.2 billion	€54.9 billion
– Gold	(3,362 t) €166.9 billion	(3,359 t) €173.8 billion
Allocation across the various storage locations		
Frankfurt	(1,710 t) €84.9 billion	(1,710 t) €88.5 billion
New York	(1,236 t) €61.4 billion	(1,236 t) €64.0 billion
London	(416 t) €20.7 billion	(413 t) €21.4 billion

ECB capital key[1]	2020	2021
Share of subscribed capital	21.4394%	21.4394%
Share of paid-up capital	26.3615%	26.3615%
Amount of the participating interest in the ECB	€2.00 billion	€2.16 billion
Foreign reserve assets transferred to the ECB	€10.64 billion	€10.64 billion

Monetary policy operations[1]	2020	2021
Open market operations in the euro area		
– Main refinancing operations	€0.47 billion	€0.39 billion
– Longer-term refinancing operations[3]	€1,792.57 billion	€2,201.50 billion
of which counterparties of the Bundesbank	€341.09 billion	€421.69 billion
– Banks participating in refinancing operations (total) / of which via the Bundesbank	995 / 659	975 / 650
Standing facilities		
– Marginal lending facility in the euro area	€0.15 billion	€0
– Deposit facility in the euro area	€683.86 billion	€779.60 billion
Asset purchase programmes (Bundesbank's share)		
CBPP3 portfolio	€68.8 billion	€74.4 billion
PSPP portfolio	€490.8 billion	€536.3 billion
CSPP portfolio	€60.6 billion	€72.1 billion
PEPP public sector portfolio	€154.7 billion	€333.6 billion
PEPP corporate sector portfolio	€7.0 billion	€8.5 billion
PEPP covered bonds portfolio	€0.7 billion	€1.6 billion

1 As at 31 December. **2** Core staff (full-time equivalents) on 31 December 2001 (year before the structural reform began): 14,800. **3** Including targeted longer-term refinancing operations (TLTROs), excluding US dollar tenders.

Cash payments	2020	2021
Volume of euro banknotes in circulation (Eurosystem)[1]	€1,434.5 billion	€1,544.4 billion
Volume of coins in circulation (Eurosystem)[1]	€30.4 billion	€31.2 billion
Returned DEM banknotes and coins	DEM 57.2 million	DEM 48.3 million
Unreturned DEM banknotes and coins	DEM 12.40 billion	DEM 12.35 billion
Incidence of counterfeit money in Germany	**2020**	**2021**
Euro banknotes (number)	58,800	41,200
Euro coins (number)	44,800	41,100
Cashless payments	**2020**	**2021**
Payments via the Bundesbank (number of transactions)	6,266.5 million	6,891.1 million
of which via RPS	6,148.8 million	6,762.9 million
of which via TARGET2-BBk	114.9 million	125.7 million
– payment transactions in T2 and TIPS	48.2 million	51.1 million
– settlement of securities transactions in T2S	66.7 million	74.6 million
Payments via the Bundesbank (value)	€245.5 trillion	€254.5 trillion
of which via RPS	€3.7 trillion	€4.2 trillion
of which via TARGET2-BBk	€240.6 trillion	€249.3 trillion
– payment transactions in T2 and TIPS	€187.2 trillion	€184.6 trillion
– settlement of securities transactions in T2S	€53.4 trillion	€64.6 trillion
Share of TARGET2-BBk transactions in EU-wide TARGET2 system (number of payment transactions)	54.3%	52.2%
Banking supervision	**2020**	**2021**
Number of institutions supervised	2,983	2,917
On-site inspections[4]	113	193
Cooperation with foreign central banks	**2020**	**2021**
Training and advisory events[4]	239	245
– Number of participants (total)	3,713	3,922
– Number of participating countries (total)	89	97
Selected economic publications	**2020**	**2021**
Annual Report	1	1
Financial Stability Review	1	1
Monthly Report	12	12
Statistical Series[5]	80	104
Research Centre Discussion Papers[5]	67	56
Technical Papers[5]	3	13
Publications in academic journals	75	86
External communication/public relations	**2020**	**2021**
Visitors to the Money Museum[4]	14,097	11,089
Economic education events / number of participants[4]	1,107 / 30,721	1,173 / 31,871
Written answers to queries	11,543	14,074
Press releases	443	470
Training sessions on counterfeit prevention / number of participants[4]	560 / 12,000	170 / 2,900

4 Due to the COVID-19 pandemic, in-person events, museum visits and inspection activities only took place to a limited extent in 2020 and 2021. **5** Only available in electronic form.

Branches of the Deutsche Bundesbank on 31 December 2021

Locality number	Bank location	Locality number	Bank location
720	Augsburg	810	Magdeburg
		550	Mainz
100	Berlin	700	Munich
480	Bielefeld		
		150	Neubrandenburg
870	Chemnitz	760	Nuremberg
370	Cologne		
		280	Oldenburg
470	Dortmund	265	Osnabrück
820	Erfurt	750	Regensburg
		640	Reutlingen
500	Frankfurt/Main	130	Rostock
680	Freiburg		
		590	Saarbrücken
260	Göttingen	600	Stuttgart
200	Hamburg	630	Ulm
250	Hanover		
		694	Villingen-Schwenningen
660	Karlsruhe		
570	Koblenz	790	Würzburg
860	Leipzig		
545	Ludwigshafen		

Deutsche Bundesbank

Staff of the Deutsche Bundesbank on 31 December 2021*

Item	Staff numbers[1]				Year-on-year changes			
	Total	Regional offices	Branches	Central Office	Total	Regional offices	Branches	Central Office
Civil servants	6,207	1,610	905	3,692	37	6	-67	98
Salaried staff	5,784	1,427	1,650	2,707	-68	-56	-64	52
Total	11,991	3,037	2,555	6,399	-31	-50	-131	150
of which: trainees	774	105	17	652	38	-2	-10	50
Remainder: core staff	11,217	2,932	2,538	5,747	-69	-48	-121	100
Memo item: core staff pro rata (full-time equivalents)	10,382.6	2,697.0	2,338.2	5,347.4	-24.6	-28.5	-103.2	107.0

	End-2021	End-2020
* Not included:		
Members of staff on secondment	79	85
Members of staff on unpaid leave	262	243
Members of staff in the second phase of the partial retirement scheme	81	56
1 Of which: part-time employees	2,949	3,122
Of which: staff with temporary contracts	247	329

Deutsche Bundesbank

Offices held by members of the Executive Board of the Deutsche Bundesbank

Pursuant to the Code of Conduct for members of the Executive Board of the Deutsche Bundesbank, the Annual Report shall disclose details of offices held by Board members on supervisory boards or similar inspection bodies of business enterprises.[1]

In 2021, the Board members held the offices indicated below.

– Dr Jens Weidmann, President:
  Chairman of the Board of Directors, BIS;
  Member of the Financial Stability Board (FSB);[2]
  Vice-President of Deutsches Aktieninstitut

– Professor Claudia Buch, Vice-President: Member of the Board of Trustees, Monetary Stability Foundation

– Professor Joachim Wuermeling:
  Alternate, Board of Directors, BIS

1 Membership of other official bodies is not listed.
2 Ex officio.