DEUTSCHE
BUNDESBANK
EUROSYSTEM

Annual Report
2015

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(since 16 January 2015)

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We mourn the death of the following members of our staff

Winfried Rauch	9 January 2015
Paul Klaus Günther Költsch	15 January 2015
Ursula Maria Dietz	29 January 2015
Wolfgang Franz Schad	20 March 2015
Andreas Polte	25 March 2015
Franz Josef Thurmwald	27 March 2015
Ron Papo	2 April 2015
Horst Wetterau	16 June 2015
Andreas Zerter	11 September 2015
Anita Grund	6 October 2015
Ingo Spohn	1 November 2015
Dieter Hansmeier	10 November 2015
Klaus Fuchs	23 November 2015
Doris Hofmann	14 December 2015

We also remember the retired staff members of the bank who died in 2015.

We will honour their memory.

DEUTSCHE BUNDESBANK

Deutsche Bundesbank
Wilhelm-Epstein-Strasse 14
60431 Frankfurt am Main
Germany

Postal address
Postfach 10 06 02
60006 Frankfurt am Main
Germany

Tel +49 69 9566 0
Fax +49 69 9566 3077

http://www.bundesbank.de

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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 Figure unknown, not to be published or not meaningful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

Bundesbank round-up

Challenges for monetary policy

In the past year, low inflation and the prospect of a lengthy period of low inflation rates stoked an intense monetary policy debate in the Governing Council of the European Central Bank (ECB), particularly at the beginning and the end of the year. In order to expedite the process of returning euro-area inflation to the target of price stability, ie a level of below, but close to, 2%, in January 2015 the Governing Council decided to launch an expanded asset purchase programme. Under this programme, the Eurosystem has, since March 2015, been purchasing a monthly volume of €60 billion worth of private sector, and more importantly, government bonds.

Since the Eurosystem's macroeconomic projections from last December indicate that, despite these purchases, inflation will only gradually approach the target, the Governing Council decided in its early-December meeting not only to further reduce the deposit rate to -0.3% but also to extend the original lifetime of the asset purchase programme by six months to March 2017. At its March meeting, it will review the monetary policy situation based on the ECB staff's update of the projection for economic output and price developments and adopt, if need be, an even more expansionary monetary policy stance.

A protracted period of low inflation undoubtedly represents a particular challenge for monetary policy, especially as the downside risks to euro-area price developments have recently increased.

Doubts have therefore arisen, in particular, as to whether the global economy is still providing the stimulus to euro-area economic growth which had been factored into the Eurosystem's December projection. That had forecast euro-area economic growth in 2016 and 2017 of 1.7% and 1.9%, respectively.

Uncertainty with respect to global economic activity in general, and the Chinese economy in particular, has been weighing on the financial markets since the beginning of the year. However, the stock market sell-off in China also represents a renewed correction of earlier sharp gains. Although China's growth has decelerated, there are currently no signs of a severe slump. This growth shift is very much consistent with China's transition to a more services-oriented, domestically-driven economic model.

Moreover, the appreciating US dollar could foster doubts as to the robustness of the US upswing. Additionally, the protracted plunge in oil and commodity prices is dampening economic dynamics worldwide. Many oil and commodity-exporting countries, such as Saudi Arabia and Russia, are either on the verge or in the midst of a recession, which means that their government budgets are suffering a substantial shortfall in revenue. They have therefore been curbing their private and public expenditure, which has hit euro-area exporters, amongst others.

Meanwhile, the impact on the euro area of falling energy costs is, *per se*, unmistakably positive. The drop in energy prices compared with the level forecast in the December Eurosystem staff projection will probably yield savings equating to just over ½ percentage point of gross domestic product (GDP) for consumers and enterprises this year – both in Germany and in the euro area as a whole.

Although the transfer of purchasing power from oil-exporting to oil-importing countries does not translate directly into consumption

or investment, it can help consumers and enterprises to deleverage, which, all other things being equal, can remove brakes on growth in the euro area. On the whole, the drop in oil prices is contributing in important measure to the upward trend in domestic activity.

All things considered, the economic outlook for the euro area is thus not as bad as it is sometimes made out to be. However, falling oil prices not only provide a tailwind for economic activity; they unfortunately also act as a headwind for the price stability target. The renewed drop in energy prices is likely to further delay the very sluggish rise in the inflation rate towards the target for price stability. With oil prices at current levels, last December's predicted annual average inflation of 1% for 2015 is not feasible. However, the short-run inflation outlook is not decisive for monetary policy, especially if it is dictated to a major extent by energy price fluctuations. If a price index excluding such energy price swings is therefore used, inflation is currently at 1%. Although the domestic price pressure under this measure is also below the price stability target, it is rising and is far removed from the dangerous territory of deflation, that is to say the territory in which there would be cause to fear a downward spiral of sinking prices, falling wages and an economic downswing.

What matters most for the monetary policy assessment is the medium-run outlook for prices. The latter is contingent on, first and foremost, an assessment of the risk of second-round effects from falling oil prices, ie whether the protracted period in which the monetary target has been missed will cause financial market participants or wage bargainers, for instance, to begin to doubt that the Eurosystem will, in the medium term, actually ensure an inflation rate of below, but close to, 2%.

Such a loss of confidence could make it difficult for the Eurosystem to fulfil its monetary policy mandate in future, and a decline in inflation expectations would also imply a more restrictive monetary policy stance. Against this background, monetary policymakers should not take the decline in the longer-run inflation rate lightly. A lasting drop in longer-run inflation expectations would then also entail lower interest rates over the long haul. However, that would mean that the central bank would have only very little room for manoeuvre to cut interest rates in economically difficult times so as to boost aggregate demand and achieve the objective of price stability. This margin vis-à-vis what is known as the zero lower bound is also one of the justifications for the ECB Governing Council's efforts to maintain a medium-term inflation rate of below, but close to, 2% – as opposed to zero inflation.

Looking at the potential second-round effects of the very low inflation rates, some observers already see the current, relatively low euro-area wage growth rates as a warning signal. However, I regard such fears as far-fetched at the moment. Some crisis countries will have to increase their price competitiveness further in order to recoup lost global market share. However, this means that wages in those countries will have to lag behind productivity growth.

The current interest rate policy being pursued by the Eurosystem as well as the central banks of Denmark and Switzerland shows that the zero lower bound is not a fixed lower bound for policy rates anchored at zero, but that negative rates are possible. That being so, there is no disputing the possibility of evasive action towards the holding of cash if interest rates fall too far below zero. In order to eliminate this possibility of evasive action and thus to increase the operational leverage of monetary policy, some economists have called for the abolition of cash, as this would enable central banks to broadly enforce negative interest rates. For me that is the wrong way to respond to the monetary policy challenges close to the zero lower bound. Instead of focusing on financial repression, we should be discussing how to return to higher interest rates through increased growth.

Cash, moreover, has a number of advantages. First of all, it allows transactions to be settled on a delivery-versus-payment basis: goods or services in exchange for money. Physical currency is perceived to be simple, safe and quick, and some consumers find it easier to keep track of their own spending when using cash. In addition, no technology is needed to use banknotes and coins; consumers without a bank account can likewise use cash for payments. Moreover, it must not be forgotten that euro banknotes are the only unrestricted legal tender and, for many investors, are the only way to hold secure central bank money, which is not exposed to default risk. On balance, cash is still the most popular payment medium in Germany – just under 80% of all point-of-sale (POS) transactions are settled using cash. An article in this issue of the *Annual Report* contains more details.

Situation in Germany

The German economy remains in good shape. Employment reached yet another record high last year; unemployment continued to decline. While wage growth was marked, inflation remained subdued; this led to a distinct rise of 2.2% in real disposable income. All these factors boosted private consumption last year, and for the current year, too, economic growth is likely to remain on a clear upward path thanks to buoyant domestic demand. The Bundesbank projects GDP growth of 1.8% for 2016. Stimuli will be provided not only by low energy prices but also by expenditure on providing for refugees. This year and next, this expenditure could account for roughly ½% and ¼% of GDP, respectively. While government consumption expenditure will initially predominate, monetary transfers to households will subsequently take on increasing weight.

Overall, the cumulative expansionary demand stimulus provided by spending on refugees up to 2017 could amount to around ¾% of GDP. As regards Germany's general government budget, we nonetheless expect it to be more or less balanced this year and next.

The Bundesbank, moreover, currently assumes that the migration of refugees to Germany will cause potential growth as measured by potential output to rise by just over ¼% in 2016 and 2017, if the migrants are available to the labour market. However, it would be illusory to believe that the influx of refugees will solve Germany's demographic problem in the long term.

Success in integrating refugees into society and, in particular, the longer-run economic impact of immigration will hinge in large measure on how quickly and smoothly these immigrants can be absorbed by the labour market. This task will require time and patience, however, because the vast majority of refugees will probably have deficits in terms of both their language skills and their qualifications.

Creating a coherent framework for monetary union

National adjustment processes are crucially required in order to further reduce the existing imbalances and vulnerabilities in the euro area. But for European monetary union to be able to deliver on its promise of stability and prosperity permanently, it has to be enshrined in a coherent framework.

The renewed escalation of the situation in Greece last year clearly brought the challenges to the fore. National sovereignty and common solidarity may conflict with one another, which can lead to political and economic uncertainty and thus jeopardise the stability of monetary union. This is especially the case whenever a member state fails to take the economic policy measures necessary in a monetary union.

Until this potential source of conflict is resolved, monetary union will remain vulnerable. This is because the combination of a single monetary policy and 19 national fiscal policies

harbours the risk that the cost of unsustainable policies pursued by an individual member state can be shifted to the union as a whole – either through the ESM rescue shield or by mutualising risks through the Eurosystem balance sheet.

However, the safeguards to prevent this from happening that were put in place when monetary union was founded, such as the Stability and Growth Pact and the no-bail-out rule, have proved unable to eliminate misguided policies, especially as there was, at times, insufficient political will to implement the safeguards. In addition, while the numerous rescue and crisis resolution measures taken over the past few years prevented an even worse escalation of the crisis, they entailed the mutualisation of sovereign default risks without a simultaneous extensive transfer of political responsibility to the European level.

As a result, sovereign actions and the responsibility for their consequences in monetary union have drifted increasingly out of kilter. This weakens incentives for sustainable budgets and for a growth-oriented economic policy, as the Greek example has shown. For the framework of monetary union to remain structurally sound in the long term, liability and control have to be returned to a state of equilibrium. Conceivable options include both strengthening the decentralised approach laid down in the existing Maastricht framework, in which the member states are responsible for their own fiscal and economic policies, and also transferring extensive powers to a central European body – ie fiscal union.

Were fiscal policy to be transferred from the national to the European level, shared control would make up for the increase in shared liability. A fiscal union would be the biggest step in the integration process since the euro's introduction. It would necessitate a raft of Treaty amendments and referendums in the member states. Last year, European Commission President Jean-Claude Juncker and the presidents of other EU institutions presented a report entitled "Completing Europe's Economic and Monetary Union". Their proposals, too, essentially centre on establishing joint liability and on sharing risk. However, they remain vague when it comes to the transfer of fiscal sovereignty which this would necessitate. This is understandable. After all, there is very little political support for the transfer of fiscal sovereignty to the European level. However, anything less than an extensive transfer of sovereignty would be insufficient to realign sovereign actions and liability.

If there is insufficient political support for this course of action, the only other option would be to eliminate the weaknesses and inconsistencies of the current framework, which is based on individual responsibility.

One way would be to reduce the existing incentives for banks to fund their sovereigns in a harmful way, as this bank-sovereign nexus has turned out to have fanned the flames of the crisis.

Although the Maastricht Treaty prohibits member states from bailing out other countries as well as the monetary financing of governments by resorting to the printing press, the capital regimes for banks nonetheless treat government bonds as risk-free. In the crisis, if not beforehand, this assumption turned out to be a fallacy. Sufficient capital has to be held against sovereign bonds on banks' balance sheets, as is the case for loans to any private borrower. However, it is perhaps even more important to limit banks' exposure to individual sovereigns.

Country risk is a cluster risk, ie a risk which is so great that one defaulting borrower could bring down an entire bank. In order to avoid cluster risk, banks are required to comply with large exposure rules. What this means specifically is that no exposure to a single borrower may exceed 25% of a bank's own funds. That way, even if this borrower were to default, banks would still have enough capital at their disposal.

Government bonds, however, are currently not covered by large exposure rules. Consequently, banks often hold so many home country sovereign bonds that this item alone exceeds their total capital.

For this reason, there is currently a risk that restructuring sovereign debt could bring down the affected country's banking system, which is why it is not even considered. This is why a decentralised framework should be supplemented by introducing large exposure rules for banks' sovereign loans, too.

Limiting the amount of debt issued by a single sovereign that a bank is permitted to hold does not necessarily mean that a bank has, in all, less sovereign debt in its portfolio. It can – up to the appropriate limit – still acquire other countries' debt. However, what this does mean is that sovereign debt ceases to be a dangerous cluster risk. And that will prevent a restructuring of sovereign debt from bringing down a country's banking system.

Moreover, there is no compelling economic argument as to why banks should be sovereigns' most important creditors. As a general rule, the relationships between banks and their customers, built up over many years, allow credit institutions to make a well-founded assessment of their customers' credit rating. This enables banks to provide capital more efficiently than other intermediaries, thereby providing added value to the economy as a whole.

However, banks have no such informational advantage with regard to a country's debt, especially concerning central government liabilities. Although it makes sense for banks to hold a certain quantity of government bonds for liquidity purposes, there is no reason why governments should not tap the capital markets for funding to a greater extent.

Doing away with the preferential regulatory treatment of government debt would create incentives to take greater account of differences between individual countries' risk profiles. Countries that stubbornly pursue unsustainable policies would then have to expect risk premiums to go up. And as a last resort, sovereign debt could be restructured without bringing down the financial system.

It is an encouraging sign that, this year, intensive discussion will be devoted, at the global and European levels, to the regulatory treatment of sovereign debt.

However, a functioning decentralised approach will require more than merely adjusting the capital requirements for government bonds. In a framework based on individual responsibility, the party that took the risks in the first place must be liable for the consequences.

A member state with no access to the markets can apply for an ESM rescue programme, under which financial assistance is conditional on economic reform. However, if market access is not re-established despite the adjustment measures, and the sustainability of the sovereign debt can only be achieved by means of debt restructuring, this means that part of the liability has already shifted from private creditors to the European taxpayer.

One way of changing this would be to automatically extend the maturity of all bonds by three years if a government were to apply for ESM assistance. This would drastically reduce the need for funding through such a programme, which would then only be required in order to spread the fiscal adjustment over a longer period, thus simplifying this procedure, but not to replace maturing sovereign bonds with ESM loans. That way, investors would initially retain responsibility.

Current status of banking union

First pillar of banking union already in operation

Europe's Single Supervisory Mechanism (SSM) was launched on 4 November 2014, a step which saw responsibility for supervising banks classified as "significant" pass to the European Central Bank. The Bundesbank is playing an instrumental role in making effective European banking supervision a reality, accounting as it does for one-sixth of the banking supervisors from the euro area's national competent authorities (NCAs) who serve on the SSM's Joint Supervisory Teams (JSTs). Responsibility for the direct supervision of the "less significant" institutions, meanwhile, remains with the national authorities, although the ECB does supervise these institutions indirectly in the sense of an oversight function. Thanks in part to the culture of close cooperation and intensive dialogue between the ECB and national supervisors, experience so far in cooperating in the SSM's supervision of less significant institutions has been positive. Looking to the future, a key requirement will be to pay due heed to the proportionality principle and the clear division of responsibilities between the ECB and NCAs as supervisory processes and practices become increasingly harmonised.

Second pillar: Single Resolution Mechanism up and running

The SSM is augmented by the Single Resolution Mechanism (SRM), which establishes a uniform regulatory regime for winding up distressed credit institutions in participating SSM member states.

The final legal hurdle for launching this institutional mechanism – which is composed of a newly established Single Resolution Board (SRB) and a Single Resolution Fund (SRF) – on 1 January 2016 was passed on time when the intergovernmental agreement (IGA) was ratified by a significant proportion of the member states participating in the SSM. The IGA complements the SRM Regulation and governs the transfer of the bank contributions raised nationally to the SRF as well as the manner in which the national compartments initially created within the fund will be progressively mutualised over an eight-year period.

The SRM Regulation puts shareholders and creditors first in line to absorb losses in a resolution event. Only after this bail-in will the SRF come into play, followed, as a last resort and only under certain circumstances, by the taxpayer. The smooth functioning and credibility of the SRM will hinge on institutions having sufficient loss-absorbing capacity should they need to be resolved. That is one of the reasons why all banks throughout the EU now need to satisfy a new minimum requirement for own funds and eligible liabilities (MREL), which comprises regulatory capital in addition to certain debt instruments and is set by the resolution authorities on an institution-specific basis based on qualitative criteria. On top of this, global systemically important banks (G-SIBs) will also be asked to meet more stringent total loss-absorbing capacity (TLAC) requirements starting in 2019.

Germany has brought the country's bank resolution legislation into line with the SRM Regulation by enacting the Resolution Mechanism Act (*Abwicklungsmechanismusgesetz*). One major feature of this new legislation is the change in the insolvency hierarchy from January 2017 which will turn claims arising from unsecured bank debt securities into subordinated bank debt in an insolvency or resolution event. The intention behind this new rule is to make it easier for German banks to comply with minimum loss-absorbing capacity requirements such as MREL and to thereby ensure the effective use of the bail-in tool.

Third pillar: European deposit insurance scheme on the table

The European Commission put forward proposals in autumn 2015 outlining how a European deposit insurance scheme could be put in place as the third pillar of banking union. According to the Commission, a single European deposit protection scheme could better contain the effects of economic shocks that hit one country and could potentially overwhelm its national deposit guarantee scheme. While this is an understandable goal in principle, it should be borne in mind that the Deposit Guarantee Scheme Directive already constitutes a major step towards harmonising and strengthening the financial firepower of deposit insurance schemes across the European Union. And as for the mutualisation of risk which a single deposit protection arrangement would entail, a number of key conditions will need to be met upfront. For one thing, banks will need to de-risk their balance sheets. It will therefore be crucial to proceed in the right order to maintain the necessary equilibrium of liability and control.

One key precondition for introducing a common deposit insurance scheme is therefore for banks to scale back their exposure to risk. The abolition, mentioned earlier, of the privileged regulatory treatment afforded to banks' sovereign exposures would be highly conducive to achieving this goal. Another prerequisite is national implementation of the Bank Recovery and Resolution Directive (BRRD), because the scope for supervisory intervention enshrined in this legislation and the bail-in rules significantly reduce the risk to which the deposit protection scheme is exposed. Further action also needs to be taken towards harmonising economic policy across the European Union. Under the current set-up, for instance, member states can tailor their insolvency regimes to favour creditors over banks. Were this to cause a bank to run into difficulties, the financial consequences might end up being mutualised via a European deposit protection scheme.

Current challenges facing the banking sector

German banks may have made further progress in strengthening their capital adequacy levels over the past year, but there is no disputing that a protracted spell of very low interest rates could be a test of their financial stamina.

That was why the Bundesbank and the Federal Financial Supervisory Authority (BaFin) conducted a survey in mid-2015 on the profitability and resilience of German credit institutions in the low-interest-rate setting. The results indicate that small and medium-sized German credit institutions expect to see a further drop in their profitability levels. The low-interest-rate setting is forcing credit institutions to replace higher-yielding credit and securities transactions, as they mature, with new positions that generate a lower rate of return. While funding costs are diminishing at the same time, credit institutions need to keep deposit rates in positive territory for business policy and competitive reasons. Looking ahead, these developments will squeeze margins in banking business, even if the benign economic backdrop prevailing at the moment is shoring up the business performance and projections of German credit institutions. Indeed, the past year saw the supply of credit to the private sector gain a little traction, with private housing loans showing notable growth, while loans to enterprises remained on the sluggish side as many businesses' large financial cushions combined with muted investment depressed demand for bank credit.

Low interest rates are not the only challenge facing the banking sector. The digitalisation of banking services is another trend that is posing a challenge to the industry. Innovative IT firms (known as "fintechs") are now trying to encroach on traditional bank domains such as payment services and investment advice. Institutions are also being forced to fend off cyber attacks, which are becoming much more common and, potentially, a more severe threat. In-

deed, operational risk as a whole has become a more significant factor for the banking sector. This year also saw costs as a result of misconduct once again take a heavy financial toll on individual institutions.

Safeguarding financial stability

Experience has shown that financial crises have, more often than not, been triggered by an overvalued real estate market accompanied by a marked increase in mortgage lending. Typical side-effects observed during such periods are an erosion of credit standards associated with over-optimistic expectations regarding the prices of the financed properties and borrowers' ability to service debt. That is why the Bundesbank is keeping a very close eye on both the real estate markets and property funding practices as part of its macroprudential monitoring activities and contributing its analytical findings to the work of Germany's Financial Stability Committee.

Although real estate prices have risen materially in a number of urban areas, the quantitative and qualitative credit situation does not currently indicate that financial stability is at risk. However, systemic risk can gradually accumulate over time, and it is difficult to predict when an overvaluation, should one exist, will be corrected. Hence the need to make the necessary preparations in good time so that macroprudential instruments can be used if required.

Germany's Financial Stability Committee has assessed the country's macroprudential toolkit and found it to be inadequately suited to effectively combat critical developments originating in the real estate market. As it stands, Germany's macroprudential toolkit mainly gives authorities the power to intervene at credit institutions and force them to strengthen their capital levels. Notably, it allows authorities to tighten the capital standards for lending institutions, for instance, by raising risk weights. The shortcomings in the macroprudential toolkit prompted the Committee, on 30 June 2015, to submit a recommendation to the Federal Government (based on preparatory work by the Bundesbank) proposing the creation of the legal basis for new macroprudential instruments. International organisations (IMF, ESRB and the European Commission) have echoed the call to review and, if necessary, complete the macroprudential toolkit. The four instruments recommended by Germany's Financial Stability Committee are (i) a mandatory cap on a borrower's total debt in a residential real estate loan as a share of the market value of the property used as collateral (loan-to-value ratio, LTV), (ii) the setting of a final deadline for the amortisation of a certain fraction of a loan or the setting of a maximum maturity (amortisation requirement), (iii) a cap on a borrower's debt service burden as a share of their income (debt service-to-income ratio, DSTI), and (iv) a cap on the borrower's total debt relative to their income (debt-to-income ratio, DTI). These instruments are already operational in many countries.

Unlike the existing regulatory powers of intervention, these new instruments will enable macroprudential authorities to target the determinants of systemic risk directly. As a case in point, the LTV ratio could ensure that borrowers contribute a sufficient share of equity capital towards financing the property and reduce loss given default (LGD) if the loan turns sour. Income-related instruments such as the DSTI and DTI metrics could lessen the risk of households overestimating their future income patterns and thus taking on an unsustainable debt burden. Last but not least, the amortisation requirement can help to reduce the outstanding loan amount more quickly while countering any attempt to circumvent the income-related instruments. A raft of instruments is needed because it will enable authorities to tackle a broad spectrum of risk drivers – such as an inappropriately high debt burden combined with an ambitious interest and principal payment schedule – and to combat possible evasive action.

Implementing reforms at the International Monetary Fund

The 2010 quota and governance reforms at the International Monetary Fund (IMF) entered into force on 26 January 2016 after a lengthy delay. Implementation of these measures is also a matter for the Bundesbank, which is required by law to exercise the financial rights and obligations arising from Germany's membership of the IMF. The quota reform doubles the IMF's quota resources to roughly €600 billion, which is raised from contributions by all 188 members. Germany's contribution of around €15 billion was made by the Bundesbank. The increase in the IMF's quota resources is counterbalanced by a roughly identical decrease in what are known as "New Arrangements to Borrow" (NAB), in which the Bundesbank is also involved. In sum, therefore, the Bundesbank's financial obligations towards the IMF have remained largely unchanged. The IMF's overall funding base has only been lifted slightly by the reform package, but the structural make-up of its financial resources has been considerably transformed, with the Fund's quota resources being raised at the expense of credit lines, which in any case are only provided by some of its members in special situations. The reform package also shifts IMF quota shares and voting rights to emerging market economies. China has overtaken Germany to become the third-largest member country in the IMF. In addition, all 24 members of the Fund's Executive Board will be elected in future. Germany will continue to have a say in the IMF's affairs since it has its own Executive Director and the Bundesbank President is a member of the Fund's Board of Governors. This means that funding and voting powers are in full alignment.

TARGET2-Securities successfully launched

The Eurosystem opened a new chapter in the integration of financial market infrastructure on 22 June 2015 with the successful launch of the TARGET2-Securities (T2S) system. Around ten years of preparation went into making a single pan-European platform for securities settlement in central bank money a reality. The overall significance of T2S extends far beyond merely streamlining securities settlement and driving down settlement costs. It also enables banks to reap cost-cutting potential, especially in liquidity and collateral management, an area which has gained significantly in importance in the wake of the financial crisis. What also makes T2S such a major initiative for the Bundesbank is the fact that the Bank developed and is running T2S on behalf of the Eurosystem jointly with the central banks of France, Italy and Spain.

Following extensive testing and rigorous preparations, T2S began with the five central securities depositories (CSDs) of Greece, Malta, Romania, Switzerland and Italy. The remaining 18 CSDs are scheduled to migrate their securities settlement operations to T2S in further waves by autumn 2017, by which time almost all of Europe's securities settlement activities will be running on the T2S platform. T2S already settles roughly 90,000 transactions worth almost €500 billion every business day.

The T2S migration timeline did, however, need to be rescheduled recently because preparations to move the Euroclear group to T2S ran into a delay. As a result of this, the migration of Germany's CSD, Clearstream Banking Frankfurt, to T2S has been put back from the scheduled date of September 2016 to February 2017. All the stakeholders now need to make full use of the time that remains to carry out the necessary testing and preparation work so as to ensure that all markets can migrate smoothly to the T2S platform.

Investment in cash management

The Bundesbank has a statutory mandate to promote the smooth functioning of payment transactions and payment systems. It is a mandate

the Bank fulfils in the field of cashless payment operations by running the TARGET system. As for the area of cash management, the turf-cutting ceremony for the new Dortmund superbranch marks the advent of a new approach to this mandate in the Rhine-Ruhr region. It is a move that also illustrates the Bundesbank's commitment to cash as an enduring means of payment. The new superbranch, the Bank's largest, will supply cash not only throughout the Ruhr area but also across other parts of North Rhine-Westphalia. The Bundesbank is investing more than €300 million in this branch's state-of-the-art logistics and security approach. Another forward-looking investment, this time in the area of cash processing, was made last year when the Bank agreed to purchase the latest generation of more efficient banknote processing machines. The three-year project starting in 2017 will revamp the machinery and equipment used throughout the Bundesbank's branch network up to the state of the art.

New €20 banknote successfully launched

November 2015 saw the introduction of the new €20 banknote, the third in the Europa series. Compared to the first series of banknotes, the Europa series offers new and improved security features such as the eye-catching emerald numeral and raised print on the left and right edges of the front. One special new element is the portrait window where the face of Europa – the mythological figure who gave her name to this second series of euro banknotes – appears when the note is held up to the light. This is the first time that this technology has been used anywhere in the world to produce banknotes in such quantities. The new and improved security features mean that the Europa series now offers even greater protection against counterfeits. Last year saw a sharp increase in the number of counterfeits, underscoring yet again the need to maintain the very highest security standards. The €20 banknote was put into circulation smoothly and without a hitch. The bulk of ATMs had already been converted when the new banknote was rolled out.

Microdata projects making brisk progress

One of the Bundesbank's main activities in the area of statistics last year was to make the methodological and legal preparations for capturing, processing and presenting microdata statistics. In particular, the Bank laid the technical and organisational groundwork for implementing the new harmonised ESCB money market statistics. These statistics will capture daily data on the secured and unsecured money market transactions, foreign exchange and overnight index swaps entered into by credit institutions in Germany and thus shed much greater light on institutions' funding conditions in the money market and provide deeper insights into the effectiveness of monetary policy. The first regular data delivery is scheduled for 1 July 2016.

Last year also saw the Bundesbank work intensely and in close dialogue with the banking industry on conceptual and project planning work for the widely debated ESCB milestone initiative entitled "Analytical Credit Datasets" (AnaCredit). The idea behind this project is to build a granular microdatabase on lending and borrowing on a loan-by-loan and a borrower-by-borrower basis. In the first stage, only legal entities will be captured as borrowers. AnaCredit will provide a much clearer picture of conditions in Europe's credit markets for numerous policy areas (monetary policy, financial stability, market operations, risk control, research and development) and for the institutions authorised to access the database, and it will establish a harmonised framework for doing so (see also "Microdata – paradigm shift in central banks' statistics" on pages 47 to 59). The ECB Governing Council made a policy decision on AnaCredit in November 2015, which is reflected in a draft ECB regulation. This draft and further background information can be found on the Bundesbank's website. The

implementation of AnaCredit in Germany will be coordinated by a working group composed of representatives from the Bundesbank, the banking industry and their IT service providers.

Enhanced training and education programmes for staff and public

With the introduction of the Single Supervisory Mechanism, the Bundesbank's staff are being asked to meet new and constantly evolving demands in terms of their qualifications, and the Bank has drawn up an extensive training programme to help them step up to this challenge. As in previous years, the Bundesbank once again placed a high premium on internal education and training for its own staff. The Bank launched additional seminars to ensure that its bank examiners have the latest expertise at their fingertips, while the examiners who are members of the Joint Supervisory Teams attend training sessions with their counterparts from other prudential institutions to ready them for the new tasks that await them. The Bundesbank rolled out these intensive training measures to help ensure efficient and effective banking supervision in Germany and Europe.

The Bank also offers a range of economic education services with a view to improving the general public's understanding of financial matters in Europe and the activities of the relevant public institutions. To achieve this aim, the Bank is implementing a number of initiatives, including currently renovating and extending its Money Museum, in an effort to bring the wide and varied world of monetary policy even closer to the general public.

Bundesbank re-certified as a family-friendly employer

The Bundesbank's certification as a family-friendly employer came up for its second regular review in 2015. The audit set out to explore whether the measures already adopted by the Bank to help employees balance their work and family commitments had become part of day-to-day working life at the Bank. Interviews with staff at locations throughout the Bank and management discussions all the way up to Executive Board level helped the auditors form their opinion. The Bank scored high marks in the audit, and its Work and Family Audit certificate was renewed in June 2015.

Honing management skills

After 2014 saw the successful launch of an initiative to implement a defined set of management principles, the focus in 2015 was on incorporating these guidelines into day-to-day management practice. Every single manager engaged in an open dialogue with staff from his or her business unit to explore how they could embed these management principles into their working routines. The individual feedback sessions will, it is hoped, encourage managers to reflect on their personal leadership style and thus help to create collectively a more constructive working atmosphere throughout the Bank. Sound management conduct and a strong focus on work-life considerations are key factors in making the Bundesbank an attractive employer. The Bank believes that this far-sighted approach to human resources sets it in good stead to attract junior staff in an increasingly fierce competitive environment, and surveys confirm this view. A cornerstone of this approach is constituted by the Bank's in-house training courses, which produce highly qualified young staff in all career paths who can move straight into a great many areas of the Bank, such as the field of harmonised European banking supervision.

Right-sizing the branch network

Following on from the last round of downsizing in 2012, a number of Bundesbank branches

– in Bayreuth, Bremen, Dresden, Giessen, Kiel and Lübeck – were shut down in 2015. This brings down the number of branches from 210 at the time of German reunification to the current level of 35, as envisaged in the Bank's long-term business policy. The staff members affected by the closures were guided through the resulting adjustment processes in a socially humane manner; use was notably made of job guarantee arrangements, mobility assistance along with staff reduction instruments. Once the new superbranch in Dortmund opens for business as scheduled in 2019, a move that will involve the closure of five nearby branches, the process of consolidating the branch network will have been concluded at 31 branches.

Celebrating "20 years of equal opportunities"

The first equal opportunities officer, then known as the representative for women's issues, was elected at the Bundesbank 20 years ago. To mark this anniversary, the Bank hosted a series of events in 2015, attended by members of the Executive Board, that aimed to highlight the strategic importance of this topic at the Bank, raise staff awareness and continue to foster a corporate culture that embraces equal opportunities.

Before I conclude, there is one point I would like to make that is particularly close to my heart. And that is to thank all members of staff, both on behalf of the Executive Board and also personally, for their input and dedication in 2015. They are the key to the Bundesbank's success, and it is thanks to their skill and hard work that the Bank was once again able to rise to the challenges it faced during the past year. My thanks also go to the staff representation committees for their invariably constructive cooperation.

Frankfurt am Main, February 2016

Dr Jens Weidmann
President of the Deutsche Bundesbank

Cash as a means of payment and a store of value

Cash can be used as a means of payment for purchases of goods and services and also as a store of value. In Germany, cash is the most commonly used means of payment by consumers for making day-to-day purchases and accounts for around 79% of all transactions at the point of sale. The circulation of euro currency, which reflects the total volume of euro banknotes and coins that are in use inside and outside the euro area both for payment purposes and as a store of value, has been rising continuously since the single currency was introduced. As at 31 December 2015, the value of euro currency in circulation amounted to €1,109 billion, compared with an initial figure of €234 billion at the end of January 2002. Euro banknotes and coins have therefore become a firmly established means of payment among the general public. Nevertheless, given the growing availability of cashless payment instruments, a number of economic experts and other market players are calling into question the significance that cash will have in future.

The future economic status of cash will first of all be determined by the extent to which enterprises and consumers choose to continue to use it. Cash is much in demand as a means of payment as it is seen by users as being quick, easy and secure, and it is also valued as an instrument that enables users to keep track of their spending and facilitates budgeting. Cash is also being held to an increasing extent as a store of value, mostly for liquidity or security-related reasons. While it is likely that cashless means of payment will continue to gain in importance, in the absence of regulatory restrictions or lasting substantial changes in user preferences, cash is likely to continue to be in significant demand as a means of payment and as a store of value in the long run.

Regulatory measures to influence the use of cash by, for instance, setting maximum limits for cash payments or abolishing the €500 banknote are currently being discussed as a way of hindering the financing of terrorism and illegal transactions. How far the desired objectives can actually be achieved by implementing these measures, however, still appears to be an open question. The preferences of large sections of the population could also be used as an argument against such interventions in cash payment behaviour. Cash ensures anonymity when conducting payment transactions and consequently allows users to exercise their right to protect their personal data. Moreover, cash can virtually always be used to make payments without the need for a technical infrastructure, thus ensuring the smooth functioning of payment transactions also in crisis situations.

The Bundesbank has a statutory mandate to promote the smooth functioning of payment transactions and payment systems in Germany and, within this mandate, is following the ongoing debate about cash. Economic agents, especially consumers, should decide for themselves what role cash should play in the future.

Cash in focus

Significance of money for the economy

Money fulfils a variety of economic functions. In modern societies, which are based on the division of labour, enterprises generally offer a wide range of highly differentiated products and services. Money enables these products and services to be quickly and easily exchanged, and the availability of money as a generally accepted means of payment is therefore a basic requirement for economic prosperity. Money also plays an important role as a benchmark or as a unit of account for determining the relative value of goods and services and therefore helps enterprises and consumers when making production or consumption decisions. In addition, money enables wealth to be transferred over time. Cash, which is one of the forms that money takes, fulfils all of these functions. It is used as a means of payment, primarily by consumers for making day-to-day transactions. Cash can also be used as a store of value.

Where is cash heading?

Compared with cash, other means of payment have gained in relative importance. In Germany, the second most important means of payment after cash for making transactions at the point of sale is the debit card (girocard, formerly known as "ec card"). New payment methods, using a smartphone for example, have been of secondary importance to date, but could become more widely used in future. The range of cashless means of payment is increasing overall. These are also being accepted by a growing number of retail outlets and are slowly being taken up by more and more consumers. This therefore raises the question as to the role that cash will play in the future. A debate is currently ongoing as to whether a ceiling should be imposed for cash payments and whether the €500 banknote should be abolished. Furthermore, some are calling for the total abolition of cash on monetary policy grounds.

Cash will continue to play an important role

The Bundesbank believes that it should essentially be left to enterprises and consumers to decide how much and how often they use cash. The Bundesbank therefore does not influence consumers' payment behaviour and does not make recommendations on the use of individual means of payment. This stance implies that the future role of cash will be determined primarily by developments in the demand for cash, which ultimately reflects the needs and wishes of its users. Cash is, after all, currently the most commonly used means of payment at the point of sale in Germany and the volume of euro currency in circulation, ie the value of the cash held by enterprises and consumers, is steadily rising. It can therefore be assumed that cash will still be playing a major role in future as a means of payment and as a store of value.

The Bundesbank's involvement in cash payments

Bundesbank mandate to promote smoothly functioning payment systems

As a central bank, the Bundesbank has a statutory mandate to promote the smooth functioning of payment transactions and payment systems and, as such, is also actively involved in cash management. The Bundesbank is responsible for issuing euro banknotes in Germany and it also purchases euro coins from the Federal Government at their nominal value and brings them into circulation. The volume of coins that the euro-area member states are

allowed to issue is subject to the approval of the Governing Council of the ECB, a measure which serves to prevent indirect monetary financing. In Germany, banknotes and coins are generally brought into circulation via the commercial banks. In this context, the central bank assumes the task of ensuring that the commercial banks' demand for banknotes and coins is fully met at all times. The commercial banks, in turn, generally procure cash from the Bundesbank if a corresponding need arises from their customers – enterprises or consumers. The number of banknotes and coins in circulation is therefore ultimately determined by the volume of cash that is used for payment purposes or as a store of value.

Cash cycle

Besides issuing banknotes and coins, the Bundesbank also takes them out of circulation again if their quality is no longer deemed to be fit for circulation. The flow of cash from the moment that it is paid out by one of the Bundesbank's branches up to its final destruction can be aptly described by means of the cash cycle.[1] The central bank issues cash to commercial banks against central bank credit balances. The commercial banks then pay out this cash to enterprises and consumers. In 2015, the Bundesbank paid out a total of around €498 billion in banknotes, and an additional amount of around €3.82 billion in coins. The Bundesbank's net issuance of banknotes in 2015 amounted to €44.2 billion and in the case of coins to around €340 million. Enterprises and consumers can either keep hold of cash on a long-term basis, ie use it as a store of value, or use it to make payments. In the latter case, the cash circulates between the banking industry, retailers and consumers, up to the point where it is finally paid back in again at the Bundesbank. In 2015, around €453 billion worth of banknotes and €3.47 billion worth of coins were paid in at the Bundesbank. Cash-in-transit companies perform a transport and service provider function in the cash cycle. The deposited banknotes are checked for authenticity and quality, and any banknotes that no longer meet the requirements to be paid back out again are destroyed. Private cash handlers also perform an important role in banknote processing: credit institutions and other cash handlers are legally obliged to check any banknotes and coins that they intend to reissue for authenticity and fitness for circulation. This is done, for instance, on an automated basis using cash-recycling machines or manually by qualified staff at the bank counter.[2] The Bundesbank tests the cash processing machines in operation to check that they are able to reliably detect and filter out any counterfeits and banknotes that are no longer fit for circulation.

In the field of coin processing, the Bundesbank restricts its involvement, with the exception of *ad hoc* checks, to the issuance of newly minted coins, smoothing the supply during peak times and withdrawing coins that are no longer fit for circulation. The bulk of coin processing is therefore performed by private cash handling parties. The Bundesbank closely monitors market developments, which indicate that the cost of supplying coins is becoming increasingly expensive.

Euro banknotes are secure against counterfeiting

Protection against counterfeiting on is a particularly important task in terms of ensuring confidence in the euro currency. This is why euro banknotes are equipped with various security features which either cannot be reproduced or can only be imperfectly imitated by counterfeiters. Furthermore, the Eurosystem central banks are constantly working on improvements to the banknotes, especially the security features, in order to make them even more secure against counterfeiting. One concrete example in this connection is the issuance of the second series of euro banknotes, known as the "Europa" series, which will gradually replace all the banknote denominations of the first series of euro notes. November 2015 saw

1 A detailed description of the banknote cycle may be found in Deutsche Bundesbank, The banknote cycle and banknote recycling in Germany, Monthly Report, January 2011, pp 17-27.
2 In 2014, credit institutions checked banknotes in the amount of around €144 billion for authenticity and fitness for circulation using banknote processing machines.

the launch of the new €20 banknote, which offers greatly enhanced counterfeit protection, for instance by means of a foil stripe with a portrait hologram and a window. All cash users can make use of these security features to check their banknotes for authenticity by applying the "feel, look and tilt" test. The central bank also provides relevant information materials as well as training courses. On the whole, the incidence of counterfeit money is low. In 2015, the financial loss resulting from counterfeit banknotes amounted to €39.1 million for the euro area as a whole given a total banknote volume of around €1,100 billion at the end of 2015; the equivalent loss figure for Germany was €4.4 million. Statistically, this equates to 27 counterfeit banknotes per 10,000 euro-area citizens per year, and no more than 12 for Germany taken in isolation. The likelihood of ever coming into contact with a counterfeit banknote is therefore very small.

The Bundesbank's cash payment objectives

In these various ways, the Bundesbank fulfils its statutory mandate to promote the smooth functioning of payment transactions and the payment systems *in toto*. It supplies the commercial banks with cash and ensures that the demand for cash is met in full at all times, also in times of crisis. It monitors the authenticity and quality of the banknotes in circulation and assists credit institutions, cash-in-transit companies, retailers as well as consumers in all matters relating to cash. In line with its goal of providing an economically efficient payment infrastructure, the Bundesbank is also following the debate about the future role of cash.

The functions of cash

Cash as a means of payment

Cash as legal tender

Euro banknotes and regular-issue euro coins are legal tender throughout the euro area. Unless otherwise contractually stipulated in individual cases, nobody is permitted, without legal detriment, to reject legal tender, ie euro banknotes or coins, as payment in settlement of a monetary debt. A further advantage of cash is its ability to instantaneously fulfil a payment obligation.

In terms of its function as a means of payment, cash, in Germany, is generally used by consumers at the point of sale for making purchases of goods and services. In economic terms, the point of sale is the place where a consumer conducts a transaction. This can be a physical location, such as a retail outlet when purchasing a product, or a household when a service is provided by a tradesman, for instance. The term is, however, also used for remote sales or online trading. It is estimated that 27.6 billion transactions were settled in cash in Germany in 2011.[3]

The Bundesbank regularly analyses payment behaviour

The Bundesbank conducts a payment study at regular intervals to examine the behavioural characteristics of consumers in Germany with regard to different means of payment and how they are used at the point of sale.[4] To this end, a representative study was conducted in 2008, 2011 and 2014, each time among a group of around 2,000 persons. A key element of the study on payment behaviour is a payments diary in which the respondents make notes about

3 See M Krüger and F Seitz (2014), Costs and benefits of cash and cashless payment instruments – overview and initial estimates, study commissioned by the Deutsche Bundesbank.

4 Deutsche Bundesbank (2015), Payment behaviour in Germany in 2014 – third study of the utilisation of cash and cashless payment instruments; Deutsche Bundesbank (2012), Payment behaviour in Germany in 2011 – an empirical study of the utilisation of cash and cashless payment instruments, and Deutsche Bundesbank (2009), Payment behaviour in Germany – an empirical study of the selection and utilisation of payment instruments in the Federal Republic of Germany.

Share of payment instruments broken down by turnover and number of transactions*

%

Payment instrument	Breakdown by turnover			Breakdown by number of transactions		
	2008	2011	2014	2008	2011	2014
Cash payment	57.9	53.1	53.2	82.5	82.0	79.1
Debit card (girocard)	25.5	28.3	29.4	11.9	13.4	15.3
Credit card	3.6	7.4	3.9	1.4	1.8	1.3
Direct debit	1.9	0.7	3.0	0.6	0.3	0.5
Credit transfer	8.9	8.2	5.3	1.8	1.3	1.0
Prepaid payment card	0.6	0.1	0.0	0.7	0.2	0.0
Retailer card with a payment function	0.2	0.1	0.1	0.1	0.1	0.0
E-payment scheme	0.3	1.7	2.8	0.1	0.7	0.9
Contactless card payment	–	0.1	0.1	–	0.0	0.1
Mobile payment	–	0.0	0.0	–	0.0	0.0
Other	0.4	0.2	0.1	0.2	0.1	0.1
Cashless, using an unspecified payment instrument	–	–	2.3	–	–	1.7

* Source: Deutsche Bundesbank, Payment behaviour in Germany in 2014. The figures refer to the transactions made by the respondents (2,019 persons) during the diary-recording week and are representative for Germany.

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all the transactions that they make and also which means of payment they used in each case. This yields a detailed picture of payment behaviour in Germany.

Cash is the most commonly used means of payment at the point of sale

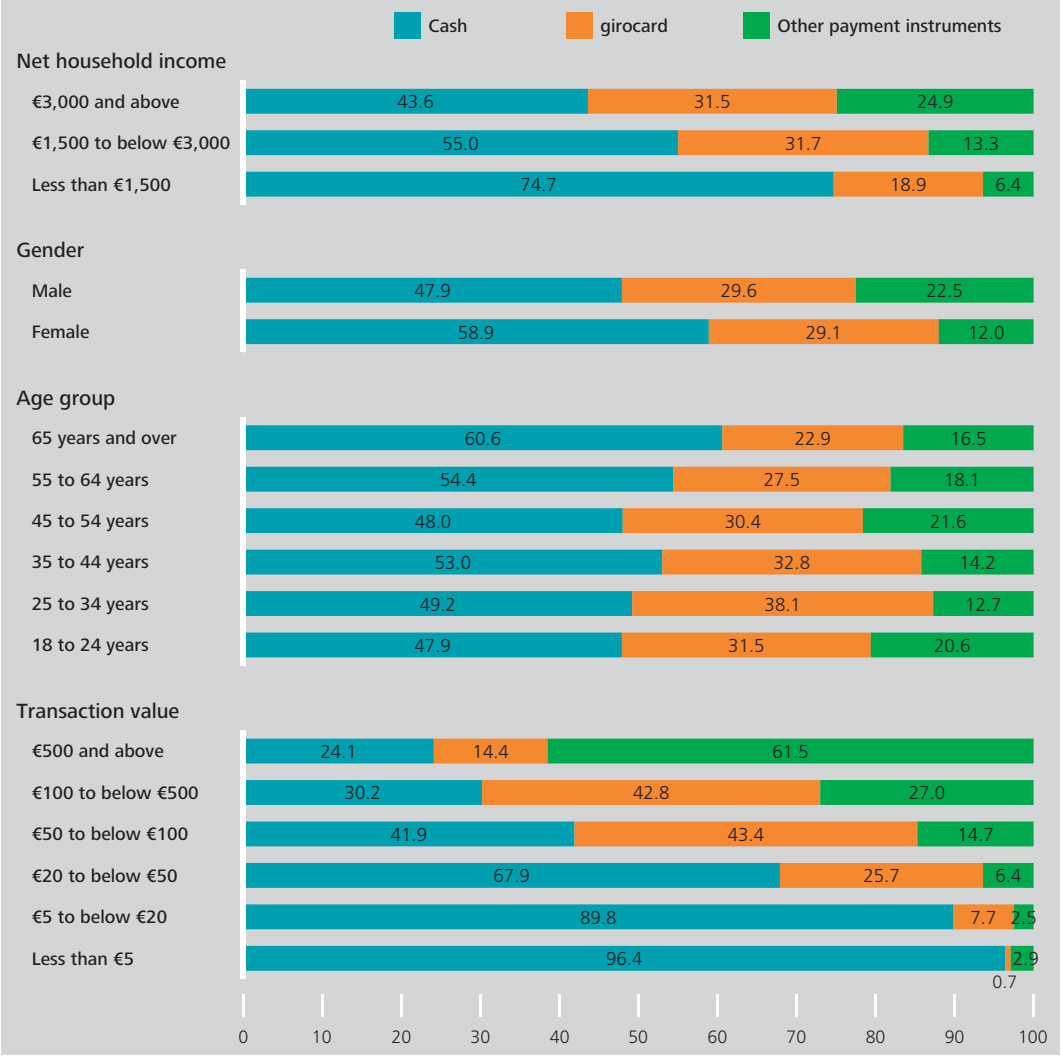
Some of the results of the study can be seen in the above table, which shows the percentage share of various payment instruments broken down by turnover and the number of transactions for 2008, 2011 and 2014. Cash is used to settle 53% of transacted sales and 79% of all transactions, and is by far the most commonly used means of payment at the point of sale in Germany. Compared with the results from 2008 and 2011, a slight downward trend can be seen in the use of banknotes and coins as a means of payment, although this trend slowed down between 2011 and 2014. The debit card (girocard) is the second most frequently used means of payment after cash; 97% of respondents own a debit card (girocard), but they use it for making only around 30% of their turnover. In terms of value, credit cards and credit transfers, with shares of 3.9% and 5.3% respectively, continue to play a significant role. E-payment schemes figure among the new range of payment methods that have already become well established. These are, of course, primarily used in connection with online trading and account for a total share in turnover of 2.8%, after having played a negligible role back in 2008. Other new payment methods, based on contactless card payments or payments via mobile phone, have been insignificant so far.

Cash shares broken down by socio-economic features

How much and how often cash or cashless means of payment are used varies among consumers in Germany. The chart on page 30 shows the average shares of value for cash, the debit card (girocard) and other means of payment for 2014, broken down by household income, gender, age and transaction value. Households with a higher income tend to make cashless payments more often. One possible explanation for this could be that households

Choice of payment instrument

2014, as a percentage of turnover; according to payments diary



Source: Deutsche Bundesbank, Payment behaviour in Germany in 2014.
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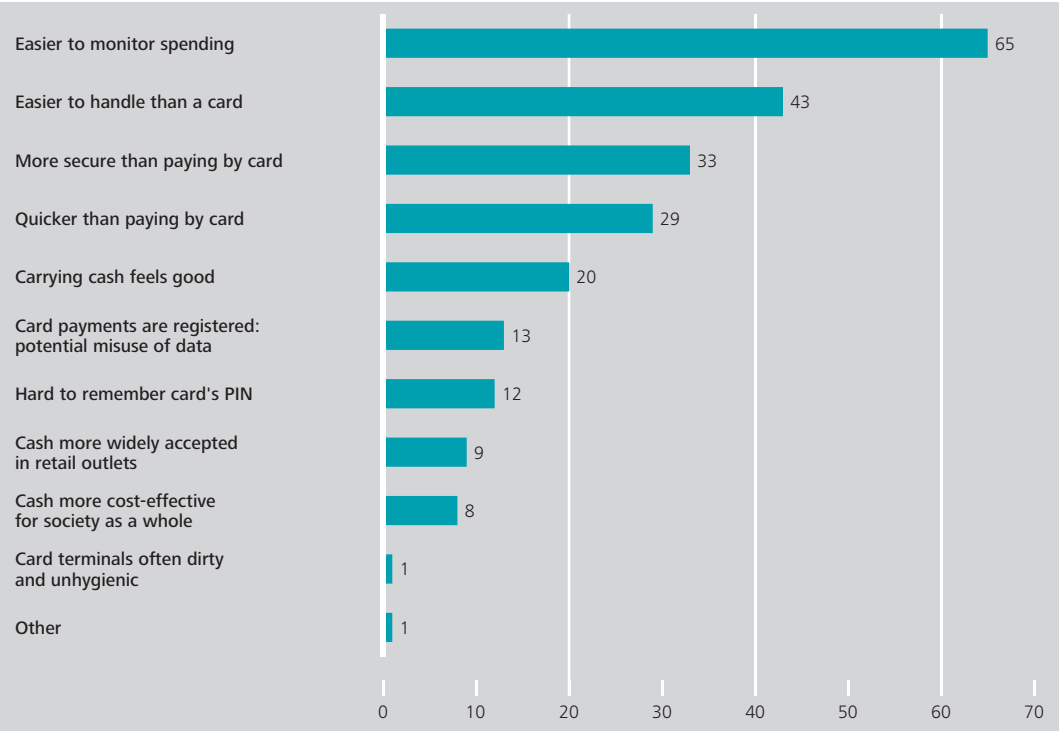
with a higher income make a greater number of large-value transactions, which tend to be settled by cashless means. It is also conceivable that households with a low income see a particular need to keep a closer eye on their spending and therefore tend to make greater use of cash as a means of payment. Generally speaking, women pay more frequently with cash than men and, as expected, the importance of cash as a means of payment increases with age. In the group of 18 to 24 year olds, around 47.9% of all transactions are settled in cash, compared with 60.6% in the group of respondents over the age of 65. Cash is therefore particularly important as a means of payment for older segments of the population and households with a low income, and the availability of cash as a means of payment could be an important factor in ensuring that all segments of the population can take an appropriate part in economic life. Finally, the above chart also shows the percentage shares accounted for by various means of payment broken down by transaction value. The vast majority of low-value transactions are primarily settled in cash, whereas the percentage share accounted for by the girocard and other cashless instruments tends to increase as the transaction value rises. In the transaction amount category above €500, the credit transfer is the

Reasons for paying exclusively with cash

2014, percentages, multiple responses possible (max 3); as reported by respondents[1]



Source: Deutsche Bundesbank, Payment behaviour in Germany in 2014. **1** Basis: respondents stating that they paid exclusively with cash.

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preferred means of payment, with e-payment schemes and, not least, cash also playing a major role.

Future role of cash as a means of payment

Based on the results presented so far, it is apparent that cash is the most commonly used means of payment for day-to-day purchases at the point of sale, yet the importance of cashless means of payment in settling such purchases is increasing. There is an ever growing range of different cashless means of payment, which are also enjoying increasing acceptance at the various points of sale and are also being used more frequently by consumers for making payments. In this connection, some analysts are raising the question of how payments, taken as a whole, can be settled efficiently at the point of sale and what benefits cash offers in this regard.

Cash perceived as useful

In most cases, consumers are currently free to choose their preferred means of payment at the point of sale, although cashless means of payment are not yet accepted at all payment locations. As cash is used in a large number of transactions, it can be assumed that consumers find it useful.[5] The payment behaviour study also examined why certain means of payment are preferred. Respondents were first asked whether they used a single chosen means of payment. Around 33% of consumers stated they generally paid in cash, even though they possessed payment cards, while 17% stated they used cashless means of payments for the vast majority of transactions and only resorted to cash if this was the only possible means of payment. Those who paid exclusively in cash were then asked to state the reasons for this decision. The

5 It is possible to deduce which means of payment consumers regard as useful from the decision they make between the various means of payment. However, because consumers do not know or bear all the costs for the various means of payment, their choice does not necessarily lead to an economically efficient choice of payment method. As explained in the box "The debate surrounding the abolition of cash" on page 32, payments with cash do not necessarily entail higher macroeconomic costs than card payments.

The debate surrounding the abolition of cash

Recently, a number of economists have been engaged in a debate concerning the economic merits of abolishing cash altogether. Their arguments can be summed up by saying that cash is more unwieldy and expensive to use than other means of payment and has the added downside of being used to facilitate crime and tax evasion. They further claim that its continued existence imposes limits on central banks' monetary policy actions because cash in its current form makes it impossible to lower interest rates much below zero.[1] In view of its statutory mandate to ensure the smooth functioning of payment transactions and payment systems, the Bundesbank has been following this debate with interest, adopting a neutral stance towards all the arguments presented.

The costs of cash

Some economists argue that cash payments are costlier to the economy than payments effected using cashless instruments.[2] A recent study involving 13 national central banks (NCBs) belonging to the European System of Central Banks (ESCB) looked at the costs attached to the various payment instruments used in these countries.[3] It proved difficult to systematically capture all the relevant cost factors; the results are thus, by nature, subject to some uncertainty. According to the findings of the study, the average costs per transaction in the participating countries were €0.42 for cash payments, €0.70 for debit cards and €2.39 for credit cards. All the same, in no fewer than five of the 13 surveyed countries, it cost less to make a payment by debit card than to use cash. In terms of the value of an individual transaction, the average cost of paying in cash was found to be €0.023 per euro of turnover, compared with €0.014 and €0.034 for, respectively, debit card and credit card payments.[4] In terms of turnover, payments by debit card therefore work out to be cheaper than cash. Overhead costs account for a considerable chunk of the costs arising from a payment transaction. Cash is generally used to pay for low-priced items, with cards mostly being used for larger-value purchases. This fact has the broad effect of pushing up the costs of cash in terms of turnover. It is also conceivable that cash payments are particularly inexpensive where larger amounts are involved.

Research findings present a mixed picture overall. While cash might be the less expensive option for some types of payments, cashless instruments could prove cheaper in other cases. Either way, there is no evidence to suggest that cash is generally any more costly to use than other means of payment. Merely analysing and comparing the costs of different payment methods is too simplistic an approach; when gauging the efficiency of a payment means, it is also necessary to look at the potential benefits.

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1 See P Bofinger (2015), Bargeld ist ein Anachronismus, Der Spiegel, 21, p 56 and K S Rogoff (2015), Costs and benefits to phasing out paper currency, in NBER Macroeconomics Annual 2014, 29, 2015, pp 445-456, J A Parker and M Woodford (eds).
2 See P Bofinger, op cit.
3 See H Schmiedel, G Kostova and W Ruttenberg (2012), The social and private cost of retail payment instruments – a European perspective, ECB Occasional Paper Series 137. The NCBs of the following countries took part in the study: Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Portugal, Romania, Spain and Sweden.
4 Other studies have also established that cash payments are effectively cheaper per transaction, while the costs of card payments relative to turnover are often smaller. See F Hayashi and W R Keeton (2012), Measuring the costs of retail payment methods, Federal Reserve Bank of Kansas City Economic Review 97(2), pp 37-77.

Use of cash for illicit purposes

It is additionally argued that cash is also put to use for illicit purposes such as tax evasion and crime.[5] Around one-third of all euro currency in circulation is accounted for by €500 notes, yet these notes are rarely used for making payments. This has prompted some critics to conclude that these notes are being used to pursue illicit activities on a large scale. In their opinion, doing away with cash, or at least large-denomination notes, could help to combat tax evasion and crime.

There is scant concrete information on the extent to which cash is being used to facilitate illicit activity. The volume of euro banknotes in circulation in Germany (cumulated net issuance by the Bundesbank) has been broken down into the following components: cash balances held for domestic transaction purposes, cash hoarded in Germany and foreign demand (ie both within and outside the euro area) for euro banknotes issued in Germany.[6] However, this says noting about how much of each component is devoted to lawful activity and how much, in fact, is channelled into criminal activity. The same applies to other countries for which estimated data on these separate uses of banknotes in circulation are available. In any event, the share of large-denomination banknotes in the total volume of notes in circulation does not suggest that these notes are being put to illicit use, nor does it in any way quantify such activity as large-value banknotes are, moreover, particularly well suited as a store of value and therefore much sought after, both in Germany and abroad. This has been demonstrated in a number of crises, for instance in the wake of the Lehman crisis that broke out in September 2008. The increase in demand witnessed back then was undoubtedly triggered by the quest for stores of value. The chart on page 34 shows the year-on-year change in the overall volume of euro banknotes in circulation in 2008 and 2009 for larger denominations, namely €100, €200 and €500 notes. Beginning in September 2008, there was a sharp rise in the volume of high-value banknotes in circulation, notably €100 and €500 notes. For example, between October 2007 and October 2008, the value of €500 notes in circulation went up by around €40 billion.

Aside from the instance cited above, it is fair to say that, while some of the demand for high-value banknotes might be attributable to illicit dealings, the volume of notes devoted to such transactions is unknown and would be extremely difficult, if not impossible, to estimate.

It is quite possible that cash restrictions could contain illicit activity to some degree, especially where very high amounts and large denominations are involved. Nonetheless, in many instances, such activity could be continued by switching to alternative methods of payment, say cashless instruments, or using foreign currency. Moreover, the economic literature mainly points to structural reasons for illicit work and tax evasion and is less concerned with the availability of particular forms of payment.[7]

Cash and the zero lower bound

Lastly, some economists have argued that abolishing cash is desirable from a mone-

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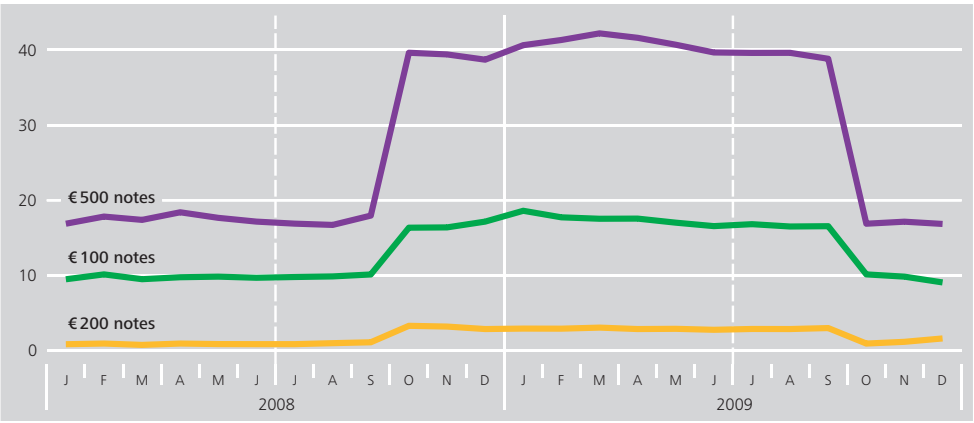
5 See P Bofinger, op cit and K S Rogoff, op cit.
6 See Deutsche Bundesbank, Foreign demand for euro banknotes issued in Germany, Monthly Report, January 2011, pp 29-41.
7 See F Schneider (2015), Schattenwirtschaft und Schattenarbeitsmarkt: Die Entwicklungen der vergangenen 20 Jahre, Perspektiven der Wirtschaftspolitik, 16 (1), pp 3-25.

Increase in the volume of euro banknotes in circulation by denomination

Year-on-year change in € billion



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tary policy standpoint.[8] The conventional operational target of monetary policy is the short-term interest rate, with which a central bank can indirectly influence the inflation rate. As long as cash exists, short-term interest rates can never be pushed far into negative territory. As soon as interest payable exceeds the expected costs arising from storing and insuring cash, commercial banks and savers could decide to cash in their savings. Hence the existence of cash constitutes an effective lower bound for short-term interest rates. However, as the negative deposit facility rate has shown, this bound lies below zero.

For some years now, inflation rates and interest rates alike have been very low in the major currency areas. Looking ahead, some economists anticipate recurring situations where both interest rates and inflation rates are low, constraining the ability of monetary policy to effect a return to price stability using its standard instrument: the short-term interest rate.[9]

For this reason, opponents of cash argue that its abolition could give monetary policy greater scope of action. The hypothesis that low-interest and low-inflation scenarios are likely to be a frequent event in the future has no robust foundation at present, and the economic debate on the matter does not seem to be over just yet.[10] There are, in any case, other policy options available, including in periods of combined low interest rates and low inflation. Indeed, from the outset of the financial crisis, the central banks have not just resorted to interest rate cuts but have also taken a raft of non-standard monetary policy measures. Instead of debating the outright abolition of cash, it would be wiser to discuss ways of boosting growth, as this would have the welcome side-effect of pushing the interest rate back up, thus giving monetary policy greater room to manoeuvre.

8 See P Bofinger, op cit and K S Rogoff, op cit.
9 See L H Summers (2014), US economic prospects: secular stagnation, hysteresis, and the zero lower bound, Business Economics, 49 (2), pp 65-73.
10 The question as to whether the natural (real) interest rate compatible with price stability actually could be negative in future is, for example, discussed and broadly negated in Deutsche Bundesbank, Secular stagnation and economic growth, Monthly Report, April 2014, pp 16-19.

results of the survey are shown in the chart on page 31. The most frequent response, given by 65% of respondents, was that cash makes it possible to keep a check on spending. Cash can therefore be a useful instrument in budgetary planning. If a given budget, say, for household expenditure or holiday spending, is held in cash, the amount remaining signals to consumers how much they can still spend.[6] It is also possible that the consciously tangible nature of cash presents consumers with higher obstacles to further spending. Another factor cited by respondents was that paying in cash is easy, secure and quick. At all events, as many as around 20% of respondents stated that holding cash in their hands was a good feeling. Only around 9% of those surveyed paid solely in cash on account of its greater acceptability among retailers. Consumers therefore opted to use cash because they see it as useful, even though cashless means of payment are accepted at many places of payment.

However, it seems that users of cash and those using cashless means of payment essentially cite the same reasons and advantages for their choice.[7] This suggests that consumers should be allowed a free choice in their means of payment.

Cash provides unique advantages and benefits

Besides the factors already mentioned, cash also has other basic advantages.[8] First of all, cash allows transactions on a delivery-versus-payment basis, ie goods or services in exchange for money. In addition, cash transactions are anonymous, which means that the type and scope of the underlying transaction cannot be tracked by third parties. Latterly, this property of cash has been frequently linked to the problem of illegal activities and has thus come in for criticism. However, this argument disregards the fact that the overwhelming majority of law-abiding users of cash likewise have a legitimate interest in being able to conduct their payment transactions anonymously. Using cash therefore enables consumers to exercise their right to protect their personal data. In addition to providing psychological benefits, the anonymity of cash may also hold other advantages for the consumer. If consumers predominantly use cash to settle payments, enterprises cannot, unlike with cashless payments, gather information on their preferences, for example, or use such information to cream off consumer surpluses.[9] An additional aspect is that cash can be used for payments without any significant access restrictions. This allows sections of the population without full access to cashless means of payment, such as children, to take part in economic life.[10] It is of particular importance that cash can also be used as a means of payment in the event of a crisis. In the case of cash, no significant technical infrastructure is required to conduct a transaction. Therefore, cash ensures the viability of payment transactions even in extreme situations in which payment transactions are potentially required as a matter of great urgency.

Cash as a store of value

Cash as a store of value

Cash can be used not only as a means of payment but also as a store of value. From an individual's perspective (despite the risk of loss or theft), protection against default risks or liquidity considerations mostly argue in favour of building up a stock of cash. Cash provides a special degree of liquidity, as it is legal tender and can therefore be used in Germany, in principle, at any time to settle a financial obligation. Moreover, the technical infrastructure needed for cashless payments is not available

6 See U von Kalckreuth, T Schmidt and H Stix (2014), Using cash to monitor liquidity: implications for payments, currency demand, and withdrawal behaviour, Journal of Money, Credit and Banking, Vol 46(8), pp 1753-1785.
7 See Deutsche Bundesbank (2015), Payment behaviour in Germany in 2014, op cit.
8 For more on these aspects, see M Krüger and F Seitz (2015), Bargeldlos oder bar jeglichen Verstands? Was die Abschaffung des Bargeldes bringt oder eben gerade nicht, ifo Schnelldienst, Vol 68(13), pp 9-12.
9 This, of course, does not apply if the customer pays in cash but takes part in a bonus system such as Payback.
10 Pursuant to the EU Payment Accounts Directive, which must be transposed into national law by 18 September 2016, all residents will in future be allowed to open an account. This right also applies to asylum seekers and people who are not granted a residence permit but whose expulsion is impossible de jure or de facto ("tolerated persons"). However, the customer must be competent to contract.

Policy options for cash payments

The future significance of cash for the economy is currently being debated. Besides drastic measures such as abolishing physical currency altogether, somewhat less severe restrictions to cash payments are being proposed. One proposal on the table is to do away with high-value euro banknotes, especially the €500 euro banknote. There have been voices in favour of introducing upper limits on cash payments in Germany, as is already the case in some other EU countries. While the aim of these proposals is to obstruct shadow economy and criminal activities, the objective of the discussion surrounding 1 and 2 cent coins is to increase the efficiency of cash payments.

Abolishing the €500 banknote

Some economists have suggested that high-value euro banknotes be abolished. Whereas euro banknote denominations go as high as €200 and €500, the highest value denomination of the British pound is £50; in the case of the US dollar, US$100. However, the CHF 1,000 banknote issued by the Swiss National Bank has a considerably higher value. Some argue that these high denominations are not being used, for the most part, to effect every-day legal transactions, but are often associated with tax evasion or illicit transactions. Removing these high-value banknotes from circulation could, therefore, help contain such illicit activity.[1]

The share of €100, €200 and €500 banknotes in the overall volume of banknotes in circulation in the euro area in terms of value stood at around 52% at the end of 2015. In 2014, the corresponding share of the US$100 banknote was around 78% of the volume of US dollars in circulation and that of CHF 100, CHF 200, CHF 500 and CHF 1,000 banknotes in the overall volume of Swiss banknotes in circulation 92%. Hence, compared with other currencies, there is no notable concentration of high denominations in the euro area. There are a number of arguments in favour of continuing to issue the €500 banknote. High-denomination euro banknotes can be used for one-off large-value payments. To a large extent, banknotes with high denominations are ultimately also used as a store of value. This became particularly apparent when the financial crisis escalated in autumn 2008 in the sudden rise in demand for high-denomination banknotes.

The availability of high-denomination banknotes facilitates the use of cash for all players involved (ie consumers, businesses and central banks). If the €500 banknote were to be abolished, the demand for €100 and €200 banknotes could well increase drastically, along with the corresponding costs of production, logistics and storage for the additional banknotes. Moreover, it is uncertain whether removing the €500 banknote from circulation alone would notably contribute to combating illicit dealings, as lower-denomination banknotes issued by other central banks, too, appear to be used in the context of illicit activities.

Overall, there are arguments both in favour and against the provision of banknotes in high denominations, which is why the Bundesbank sees no compelling reasons to change the existing structure of banknote denominations.

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1 See, for example, P Bofinger (2015), Bargeld ist ein Anachronismus, Der Spiegel, 21, p 56 and K S Rogoff (2015), Costs and benefits to phasing out paper currency, in NBER Macroeconomics Annual 2014, 29, pp 445-456, J A Parker and M Woodford (eds).

Restrictions on cash payments

In some euro-area countries, ie Belgium, France, Greece, Italy, Portugal and Slovakia, limits up to which payments can be made using cash have been imposed. In France, for example, transactions between retailers and consumers may be settled in cash only up to €1,000, though exceptions apply to foreign consumers. These restrictions on cash payments are intended to help obstruct money laundering, tax evasion and illicit work.

Introducing upper limits to cash payments does not fall within the Bundesbank's remit, however. It remains unclear at this juncture to what extent such restrictions will, indeed, help to reduce illicit activities. For transactions which already take place without the knowledge of the government, restrictions on cash payments can, at most, exert a minor indirect influence. Although prescribing the use of cashless payments for "big-ticket" purchases could conceivably make it more difficult for retailers to commit tax fraud, there are doubtless other ways to get round the cash limit. In addition, consumers already pay for a significant percentage of big-ticket items using cashless payment instruments.

A further argument in favour of introducing cash payment restrictions is that they could represent an obstacle to money laundering activities if higher-priced goods can no longer be purchased using cash. However, pursuant to the Money Laundering Act (*Geldwäschegesetz*), retailers and other players in Germany are already subject to an increased duty of care regarding purchases of high-priced goods. Furthermore, the purchase of more valuable goods is only one of many conceivable ways of laundering money, which means that the likelihood that introducing caps on cash payments will make a meaningful dent in money laundering is tenuous at best.

An evaluation of the effectiveness of the restrictions put in place in other countries has not yet been carried out. Consumers also have a legitimate interest in protecting their personal data when purchasing big-ticket items.

Rounding rules and the discussion surrounding small coins

Unlike the previously mentioned suggestions promoting the abolition of high-denomination euro banknotes and the introduction of cash payment restrictions, the discussion surrounding small coins seeks to explore options for reducing the cost of cash payments. Small coins of 1 and 2 cent are usually needed in retail trade to provide customers with exact change. In some euro-area countries, eg the Netherlands, a rounding rule is applied by which the amount due is usually rounded up – or down – to 5 cent. The responsibility to decide whether to change the denominational structure of coins does not lie with the Bundesbank but instead with the Council of the European Union following a proposal from the European Commission. As a rule, the Bundesbank adopts a neutral stance with regard to the use of small coins and the introduction of a rounding rule.

The idea is that phasing out exact change to the cent could help all players, ie consumer and retailers, make cash payments more efficient and save costs. In an EHI Retail Institute survey commissioned by the Bundesbank, this assumption was largely refuted, however.[2] The rounding rule

2 See F Horst (2015), Münzgeldstudie – Folgenabschätzung einer Rundungsregel im Einzelhandel, EHI Retail Institute in cooperation with the Bundesbank.

would increase the demand for 5 and 10 cent coins for change; in addition, logistical costs would remain largely unaffected because the higher-denomination coins, too, would need to be delivered.

Surveys provide information as to whether the parties affected wish to see small coins abolished and a rounding rule introduced in retail trade. In a general public opinion survey commissioned by the Bundesbank and conducted in 2011, the responses given on the rounding rule did not paint a clear picture, with 44% leaning for and 48% leaning against its introduction.[3] Merely 39% of the survey participants supported the idea of abolishing small coins. The Eurobarometer of October 2015,[4] too, contained questions on people's opinion on small coins and a potential rounding rule. It was found that 69% of the German population thought the denominational structure of coins was just right, while only 25% held the view that there were too many coin denominations. Of these 25%, more than four out of five persons believed 1 and 2 cent coins were unnecessary. As in the above-mentioned Bundesbank survey, the opinion on the rounding rule was mixed, with 50% for and 47% against its introduction. A clear preference cannot be derived from the survey results, which is one of the reasons why legislation introducing a rounding rule throughout Germany or abolishing small coins does not appear necessary.

3 See Deutsche Bundesbank (2012), Payment behaviour in Germany in 2011 – an empirical study of the utilisation of cash and cashless payment instruments.
4 See European Commission (2015), Flash Eurobarometer 429 – the euro area.

in every situation in which a consumer needs to make a payment. For some consumers, this could be reason enough always to have a reserve of cash on hand, so that they can make payments in such cases. Some savers might also mistrust the stability of the banking and financial system and keep cash in reserve for this reason. From the perspective of these consumers, cash is secure central bank money which, in principle, is not subject to a default risk. The significance of this cash hoarding motive for the demand for cash was apparent, for example, in the autumn of 2008, when demand for large-denomination banknotes saw a sudden sharp rise on account of the crisis.

Other motives for hoarding cash

Other motives for hoarding cash are also conceivable. Some consumers might put aside cash to save for major outgoings. While banking and financial sector investment products may seem fundamentally more suitable on account of their potential returns, the greater tangibility of cash when compared with book money could mean that keeping a stock of cash for the intended purchase could be useful for consumers in keeping a check on their own expenditure. Furthermore, in principle, not every saver in Germany can access all investment products, either owing to material access hurdles or a lack of financial market skills. Investments in cash form are particularly tangible and universally accessible.

Hoarding cash is not always free of problems

Cash is also generally useful in its function as a store of value, as otherwise enterprises and consumers would not decide to use cash as a store of value. From an economic standpoint, however, cash hoarding poses some problems. From the point of view of investors, holding cash means making a loss in a normal interest rate environment, as cash hoardings are not remunerated and, moreover, lose value as a result of inflation. Furthermore, not all motives for hoarding cash are legitimate. For example, earnings from illicit work, tax evasion or criminal activities can, at least to some extent, be

saved as cash. Further research on cash hoarding is needed in order to make a definitive assessment of cash hoarding from an economic perspective.

The economic importance of cash

Cash in circulation

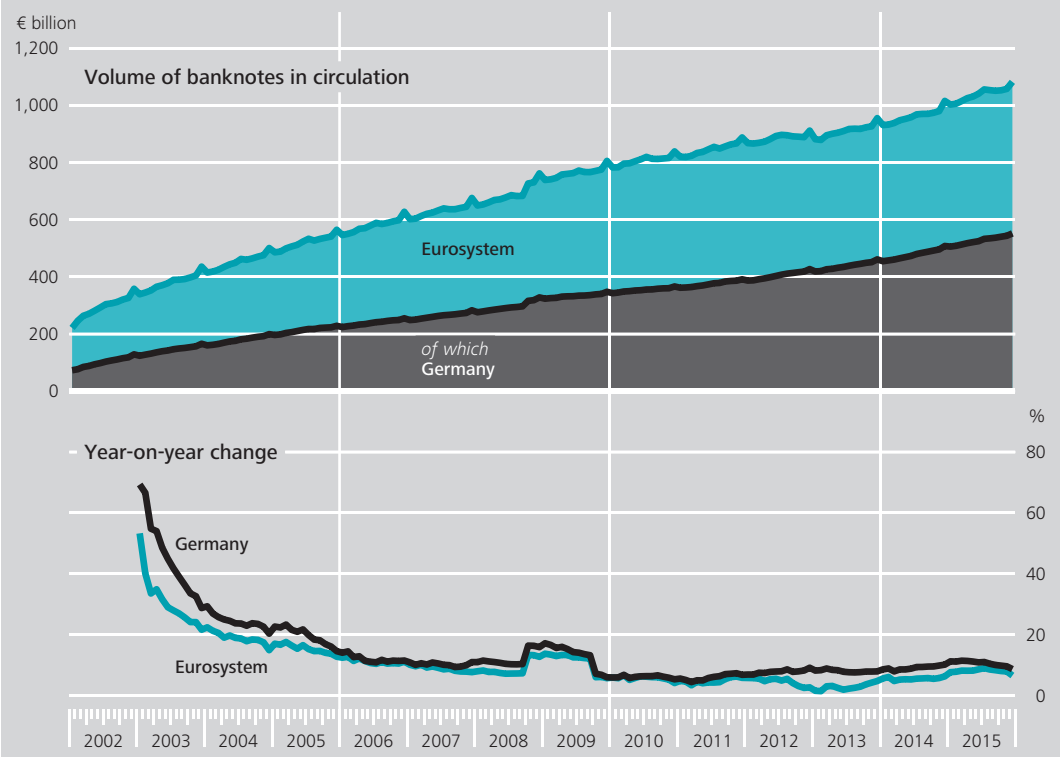
Importance of cash measured by demand for banknotes

There is currently a debate centring on the economic importance of cash. The volume of euro banknotes in circulation is one measure of the importance of euro cash both as a means of payment and as a store of value. The volume of banknotes in circulation indicates the value of outstanding banknotes issued by the Eurosystem on a given date. In statistical terms, the volume of banknotes in circulation is derived from the cumulative difference, in terms of value, of the banknotes paid out by the central bank and those deposited with it. In the Eurosystem, 19 national central banks can currently introduce euro banknotes into and then take them out of circulation. The upper chart on page 40 shows the value of euro banknotes in circulation for the euro area as a whole as well as the net issuance of euro banknotes by the Bundesbank. This shows that a total of around €1,083 billion is in circulation in the form of euro banknotes. The chart also shows the growth rates of euro banknotes in circulation compared to the same month in the previous year. Between December 2004 and December 2015, the value of banknotes in circulation increased by roughly 7% annually on average, while the value of banknotes in circulation issued by the Bundesbank grew by about 10% on an annual average. At present, around €26 billion of cash in the form of coins is in circulation in the euro area as a whole. The lower chart on page 40 shows the value of D-Mark banknotes in circulation in comparison with German gross domestic product (GDP) and the German monetary aggregate M3. The chart on page 41 shows the value of euro banknotes in circulation in relation to euro-area GDP and the euro-area monetary aggregate M3. Over the period from 1950 to 1998, the value of D-Mark banknotes in circulation did not grow at a significantly slower pace than GDP. However, the value of D-Mark banknotes in circulation declined in relation to German M3. While the ratio of D-Mark banknotes in circulation to M3 stood at roughly 24% in 1955, in 1970 the figure stood at around 13% and in 1998 at around 11%. The relative loss of importance of banknotes in circulation in relation to M3 could be explained at least partly by the increasing prevalence from the 1960s onwards of current accounts, but the percentage share of banknotes in circulation in M3 has been quite stable since 1970. The chart on page 41 shows that the value of euro banknotes in circulation has grown faster than GDP and M3. A loss of economic importance, as cited by some observers in connection with cash, has thus far not materialised. Rather, the robust demand for cash shows a growing need on the whole for banknotes and coins. The box on page 42 shows estimates of the breakdown of banknote demand into domestic transaction balances, domestic hoarding and foreign demand.

Special role of the Bundesbank for euro cash

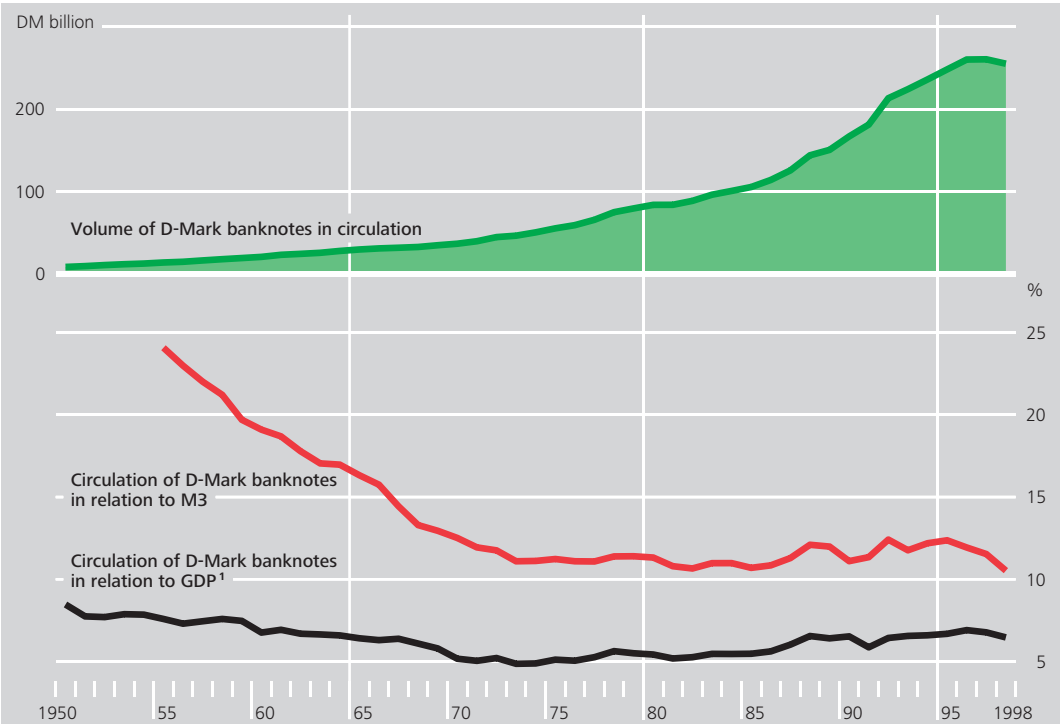
In the euro area, all the national central banks can both introduce cash into and also take it out of circulation, with cash being able to migrate freely within the euro area. The mathematical volume of banknotes in circulation issued by a single national central bank therefore does not initially say anything about how much cash is actually in circulation in the issuing country. Of the volume of euro banknotes in circulation in the amount of €1,083 billion, more than €553 billion in statistical terms, ie just over half, was issued by the Bundesbank. These figures show

Circulation of euro banknotes



Deutsche Bundesbank

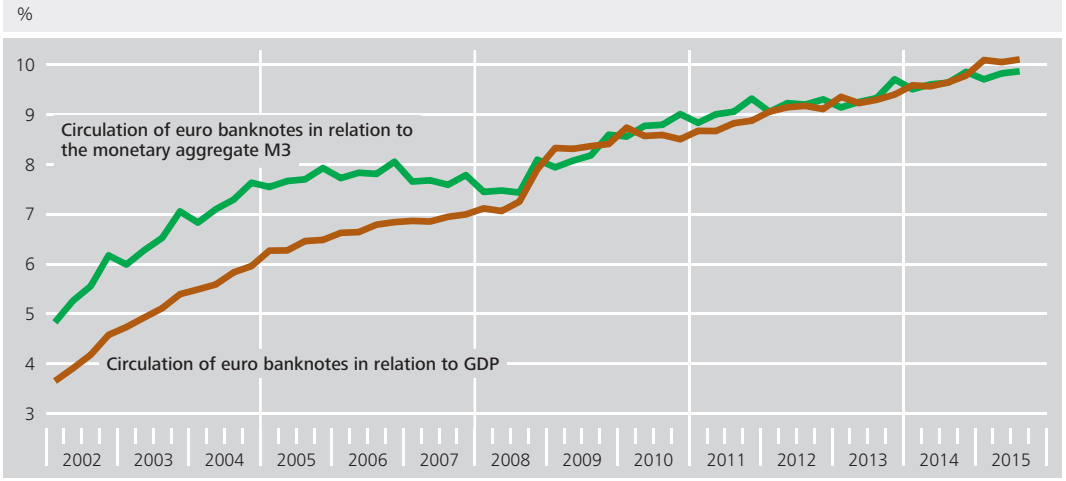
Circulation of D-Mark banknotes in relation to GDP and the monetary aggregate M3



Sources: Federal Statistical Office and Bundesbank calculations. **1** GDP up to and including 1959 excluding West Berlin and Saarland. Break in time series in 1970 due to revision of the national accounts in 2005. From 1991 for Germany as a whole.

Deutsche Bundesbank

Circulation of euro banknotes in relation to GDP and the monetary aggregate M3*



Sources: Eurostat, ECB and Bundesbank calculations. * Data for the Eurosystem in line with its changing composition.
Deutsche Bundesbank

that the Bundesbank plays a key role in the cash cycle of the euro area as whole. Through its work in its core business area of cash management, the Bundesbank plays a particular part in ensuring the quality, and thus also the standing, of euro banknotes and makes a major contribution to the seigniorage of the Eurosystem as a whole. The disproportionately large role played by the Bundesbank for euro cash is also attributable to demand from outside the euro area, a large part of which is serviced by the Bundesbank (see the box on pages 42 and 43).

Outlook for cash

Changes in the demand for cash

Euro cash is currently used to a large extent as a means of payment and store of value, both domestically within the euro area and outside; the question thus arises as to how these components of cash demand will change in the future. Demand from outside the euro area is chiefly responsible for the increase in the volume of cash in circulation. If things develop as they have done in the past, cash is unlikely to become less important, even in the medium term.

Cash as a means of payment

The amount of cash in circulation is only one of several possible indicators of the importance of currency for the economy. In terms of the social and economic significance of cash, its use as a means of payment at the point of sale is likely to be of particular relevance. However, this is captured inadequately by the aggregate volume of cash in circulation, as transaction balances make up only a small part of cash in circulation in terms of value. Furthermore, in the past there has been a slow but steady change in payment habits, with cashless payments tending to become more important. The question therefore arises as to how demand for cash might change in the future.

Changes in payment habits

One possible driver of a change in payment habits could be technological advances in the field of cashless payments. For payments at the point of sale, consumers now have a variety of different means of payment available. However, new payment methods will probably be accepted and used by consumers only if they are just as easy, secure and quick as the established payment procedures as well as providing an added benefit. Furthermore, options for contactless payment by card or smartphone will probably gain market shares from other cashless means of payment rather than from cash alone. Another potential driver of a change in payment habits could be demographic effects. It is true that older population cohorts tend to pay more often in cash, but cash is the most frequently used means of payment among younger people, too, even though they

Components of banknote demand

Banknote demand as a whole can be broken down into transaction balances, hoarding and foreign demand. Transaction balances comprise banknotes held by enterprises and consumers to conduct transactions, while banknotes are counted as hoarding if they serve as a store of value. Foreign demand, in turn, comprises transaction balances and hoarding outside the country of issue. An approximate breakdown of banknote circulation into the subcomponents mentioned is the subject of economic research.[1]

A study by the European Central Bank estimates the share of the total volume of euro banknotes in circulation outside the euro area to be at least – and probably considerably more than – 18%.[2] In terms of the share of euro banknotes in circulation issued by the Deutsche Bundesbank – around €553 billion in total – it is estimated that slightly less than 10% are held for transaction purposes and 20% are hoarded in Germany. Of the remaining 70%, an estimated 20% are located in other euro-area countries and around 50% are located in countries outside the euro area.[3] According to these Bundesbank estimates, the value of banknotes held for transaction purposes in Germany is fairly constant. The slight increase in the growth rate of the statistical quantity of Bundesbank-issued banknotes observed again in recent years is probably attributable to a rise in foreign demand. Strong demand from abroad for banknotes issued by the Bundesbank has also been observed historically; according to a seminal study, an estimated 30% to 40% of D-Mark currency in circulation was located abroad.[4]

The introduction of the second series of euro banknotes – the Europa series – provides an opportunity to observe the migration of banknotes within the euro area. The new €5 banknote was launched in 2013, the new €10 banknote in 2014 and the new €20 banknote in 2015. The introduction of the new banknotes was highly successful. As the chart on the following page shows, only 12 months after their introduction in May 2013, around 92% of €5 banknotes paid in to the Bundesbank were from the second series; 12 months after the launch of the new €10 banknote in September 2014, the share of the new series in the inpayment volume amounted to as much as 96%. These figures suggest that the transaction balances were already exchanged shortly after the introduction of the new notes.

As things currently stand, the Bundesbank has, in statistical terms, brought a significantly larger quantity of old €5 and €10 banknotes into circulation than the Eurosystem as a whole. This is explained by the migration of banknotes for transaction purposes within the euro area. The Bundesbank originally issued a large quantity of banknotes, while another central bank withdrew these notes from circulation altogether.

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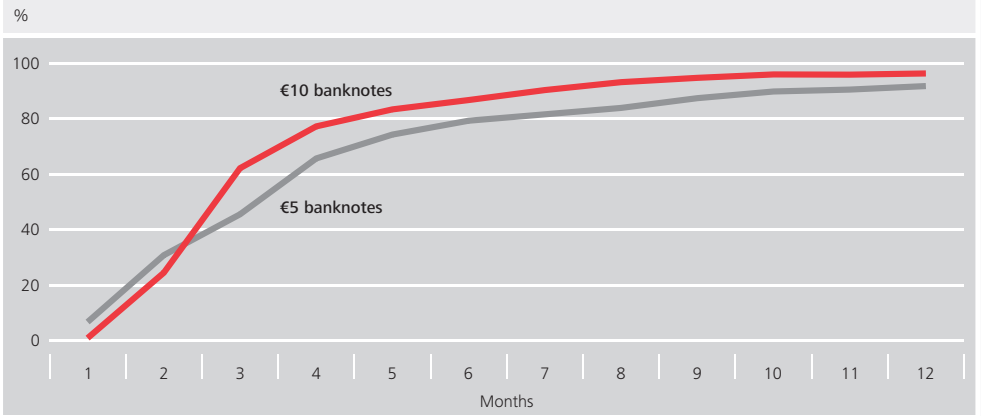
1 This box focuses on banknote demand, since the value of coins in circulation is lower than that of banknotes in circulation. An analysis of coin demand components can be found in Deutsche Bundesbank, Euro coins held for transaction purposes in Germany, Monthly Report, April 2015, pp 61-74.
2 European Central Bank, The international role of the euro, July 2015.
3 These figures are derived from the extrapolation of an estimation published in N Bartzsch, G Rösl and F Seitz, Foreign demand for euro banknotes issued in Germany: estimation using direct approaches, Deutsche Bundesbank Discussion Paper, Series 1: Economic Studies, No 20/2011. See also the summary in Deutsche Bundesbank, Foreign demand for euro banknotes issued in Germany, Monthly Report, January 2011, pp 29-41.
4 See F Seitz, The circulation of Deutsche Mark abroad, Discussion Paper 1/95, Economic Research Group of the Deutsche Bundesbank, May 1995.

Share of the second series of €5 and €10 banknotes in gross inpayments to the Bundesbank*



* In the first 12 months after their introduction.
Deutsche Bundesbank

The various components of banknote demand also include the use of banknotes for illicit aims, such as in connection with illicit work, tax evasion or criminal activity. Further research is required in order to quantify the share of banknote demand attributable to these illicit aims.

Cash payments – an international comparison

are undoubtedly more familiar with the new technologies. This is because the average value of their transactions is usually lower. For the future, however, it is unclear whether the currently younger population cohorts will use new instruments more frequently when they are older, or whether they will increasingly resort to cash.

In some other countries, cash is used significantly less often as a means of payment than in Germany. While around 80% of transactions at the point of sale are made in cash in Germany and Austria, only around 50% of all payments at the point of sale are made in cash in the Netherlands or the USA.[11] It is also known that cashless payments are used significantly more often in the Scandinavian countries than in Germany. It is unclear whether payment habits in the various countries will converge over the long term, ie whether the situation in other countries is a model for possible future developments in Germany, or whether countries have their own distinct payments cultures that will remain in place over the long term.

11 See J Bagnall, D Bounie, K P Huynh, A Kosse, T Schmidt, S D Schuh and H Stix, Consumer cash usage: a cross-country comparison with payment diary survey data, International Journal of Central Banking, forthcoming.

Summary and standpoints

Cash in focus

Cash fulfils important economic tasks because, as a means of payment, it makes possible the efficient exchange of goods and services and can additionally be used as a store of value. Nevertheless, the increasing availability of cashless means of payment raises the question of how important cash will be in future. For some, cash is an outdated concept. Others go as far as proposing regulatory measures to reduce the use of cash or abolish it altogether.

Cash as a means of payment

As a means of payment, cash is mostly used by consumers to settle day-to-day transactions. At the moment, cash in Germany is the most frequently used means of payment for such transactions at the point of sale, accounting for around 79% of all transactions and roughly 53% of their value. One argument for the general provision of cash as a means of payment is, first of all, that consumers, for various reasons, show a preference for using cash. Cash is perceived as easy to use, secure and quick, and many consumers find it easier to keep track of their own spending when they use cash. These properties of payment media are, however, perceived subjectively, as other consumers associate cashless means of payment with the aforementioned criteria. The Bundesbank believes that consumers, in line with the idea of consumer sovereignty, are best placed to judge the advantages and drawbacks of the various means of payment. Interventions in the choice of payment media therefore require a special, objective justification. Additional benefits and advantages of cash argue in favour of continuing to make it available to consumers as a means of payment in the future. Cash protects consumers' privacy when settling transactions and allows them to exercise their right to informational self-determination. Cash allows transactions on a delivery-versus-payment basis; ie goods or services in exchange for money. Moreover, no technological infrastructure is needed to use cash; even consumers without a bank account can use it to make payments. When all is said and done, it is not inconceivable that electronic payment procedures could stop functioning in crises, say in the event of technical disruptions or natural disasters. But no technical infrastructure is required to settle payments in cash, which means that cash can also safeguard the viability of payment transactions in extreme situations.

Cash as a store of value

Cash can also be used as a store of value. The motives for choosing cash as a store of value are usually based on liquidity or security considerations. Assets held as cash are particularly liquid because cash can be used for payment at any time. Furthermore, cash continues to be the only possibility many investors have of holding safe central bank money. Therefore, it could be held by investors for security reasons, despite the risk of being lost or stolen.

Demand for cash growing steadily and continuously

The economic importance of cash as both a means of payment and a store of value can be measured by the value of currency in circulation, which reflects the value of cash held by consumers and enterprises, and thus their demand for cash. According to the latest figures, national central banks in the euro area have brought into circulation roughly €1,109 billion in cash (approximately €1,083 billion in the form of euro banknotes and some €26 billion in the form of euro coins). The value of euro banknotes in circulation has grown steadily and continuously since the introduction of the euro from an initial level of approximately €220 billion and is also becoming more important in relation to GDP and the monetary aggregate M3. However, the use of cash as a means of payment is particularly important in terms of its economic significance. While cash is still the most frequently used means of payment in Germany for day-to-day transactions, overall a slow change in payment habits is taking place, with a growing number of consumers paying by payment card or, less frequently, with cash.

However, as yet there has been no identifiable loss of economic importance for cash.

Position of the Bundesbank

The Bundesbank has a statutory mandate to promote the smooth functioning of payment transactions and payment systems. In performing this responsibility, it is following the debate on the future role of cash and appraising the arguments put forward impartially and in line with economic criteria. Cash is a traditional, reliable instrument for the settlement of payments and for storing value that is firmly established among the general public. It is also a sign of the trust placed in the single currency. It would therefore be disastrous if the current debate on the abolition of the €500 banknote or on introducing a ceiling for cash payments were to give the general public the impression that cash was gradually being taken away from them.

Microdata – paradigm shift in central banks' statistics

Microdata have gained considerably in importance for central banks in recent years. This is partly attributable to technological progress, driven by digitalisation, which now makes it comparatively easy to work with the large volumes of data contained in a microdata pool and to use more sophisticated methods and analytical options. Moreover, the recent financial crisis has shown how important microdata are in understanding complex economic relationships. Many of the new questions raised can only be answered using microdata, as only they provide detailed information on distributions and links, thus making it possible to examine how the decisions of individual players impact on aggregate variables.

In order to take advantage of the opportunities made available by microdata, central banks need to make a paradigm shift in their statistics, moving away from simply providing aggregated statistics towards holding microdata that have multidimensional uses. Promising examples of this are the securities reference database of the European System of Central Banks and the securities holdings information system. Furthermore, the Bundesbank has set up a Research Data and Service Centre to facilitate internal and external analysis and research. This centre provides selected and specifically anonymised datasets on banks, securities, investment funds, enterprises and households, and advises users on data selection, data content and analytical options.

The goal of the microdata initiatives is for data to only have to be collected once where possible and then used to compile various statistics within the scope of the legal framework. Although such a paradigm shift entails initial investment costs, both for the reporting entities and for the central banks processing the data, these are offset by manifold information gains and potential future savings as a result of consolidating or even replacing existing reporting requirements for traditional statistics.

The overriding principle of compliance with the statutory secrecy and data protection requirements and thus of maintaining the confidentiality of the information submitted by the reporting agents also applies to work with microdata. The legal framework for the statistics of the European System of Central Banks, and thus for the Bundesbank, regulates both the user group and the access channels to microdata, prescribes the required data anonymisation and obliges data providers and data recipients to maintain data confidentiality at all times.

Microdata are changing the world of data

Opportunities and challenges

Microdata have radically changed the world of statistics in recent years. Technological progress, predominantly driven by digitalisation, has made it comparatively easy to collect and work with large volumes of data. Consequently, rapid progress has been made in research using microdata, with the methods and analysis options becoming ever more sophisticated. This presents both opportunities and challenges for central banks. On the one hand, they are increasingly using the research results and the underlying microdata to fulfil their tasks. On the other hand, they have to collect, check the plausibility of, document and make available a larger pool of microdata.

Definition

The term "microdata" generally refers to the originally collected datasets at the level of the individual observation units. Depending on the statistical survey in question, this could be a financial or non-financial corporation or another statistical unit. Sometimes, the term is also used for even more detailed information. For example, the fine-level data on securities statistics refer to features of individual securities (such as issuer, issue volume and maturity).

Data protection is overriding principle

The greater disaggregation of data brings with it an increased need to ensure that the data are protected. The overriding principle when working with microdata is compliance with the statutory secrecy and data protection requirements, and thus maintaining the confidentiality of the information submitted by the reporting agents. European and national legal provisions therefore regulate both the user group and the access channels to microdata, prescribe the required data anonymisation and oblige data providers and data recipients to maintain data confidentiality at all times.

Four fundamental advantages

The four fundamental advantages of microdata, which supplement the established macroeconomic analyses, can be summarised as "distribution, interconnectedness, flexibility and policy evaluation". Microdata enable differences between the economic players to be taken into account in analyses and the players' interconnections to be presented in detail. Moreover, microdata can be prepared in a flexible manner. They can be used as a basis for more tailored cause-effect analyses to simulate economic policy measures *ex ante* and evaluate them *ex post*.

Mapping detailed differences and interconnections

Modelling diversity

Microdata provide detailed information on individual economic players which becomes lost in the aggregate or in averages when data are consolidated. Observing an "average" bank, an "average" enterprise or an "average" household does not provide sufficient information to identify potential risks which are found, in particular, in deviations from the averages. If differences in the behaviour of the players and/or various detailed structures have an impact on the functioning of policy measures, then analyses based on microdata are essential. For instance, a consolidated figure might be in "safe territory", but a look at the underlying distribution might reveal risky "outliers".

Example from monetary policy ...

In the field of monetary policy analysis, taking into account different bank characteristics and borrower features enables a more precise distinction to be made between the supply and demand-side determinants of credit dynamics. Although aggregate data can provide indications as to whether a lower credit volume results from restrained real economic activity or from banks experiencing major funding difficulties, only data at the level of individual credit relationships between borrower and bank permit a more robust analysis, taking into account detailed information on loan requests (includ-

ing those completely rejected), the enterprise's economic situation, its creditworthiness and the bank's financial situation. In the current low-interest-rate environment, microdata can be used to analyse whether banks' risk appetite is increasing and what conclusions should be drawn from this when setting monetary policy.[1] The significance of microdata is also demonstrated by initiatives such as the International Banking Research Network, whose goal is to gain a better understanding of the behaviour of internationally active banks.[2]

… and its implementation

However, microdata play a role not only in monetary policy analysis but also in the implementation of monetary policy. They are used when assessing the money market and relevant financial market segments and included in credit assessments when making a valuation of credit claims as collateral for central bank money. In addition, the Bundesbank's Risk Control Division uses granular data to conduct risk analyses of the Bundesbank's portfolios. Moreover, stress tests for payment systems simulate the consequences of the technical failure of critical participants or liquidity bottlenecks in order to identify and measure risks.

Microdata are essential for macroprudential supervision

Furthermore, microdata play a key role in analysing financial stability. In order to be able to assess whether the failure of individual institutions might threaten the functioning of the entire system, information is required on the scale of financial linkages between institutions within a country or also with institutions abroad.[3] This is the only way to trace, simulate and forecast the different transmission channels and the mutual strengthening or dampening mechanisms. The impact of the actions of systemically important units on individual financial institutions, sectors as well as on entire states or currency areas can only be examined using microdata.[4]

Flexible structures for diverse applications

Starting out from previous world of data

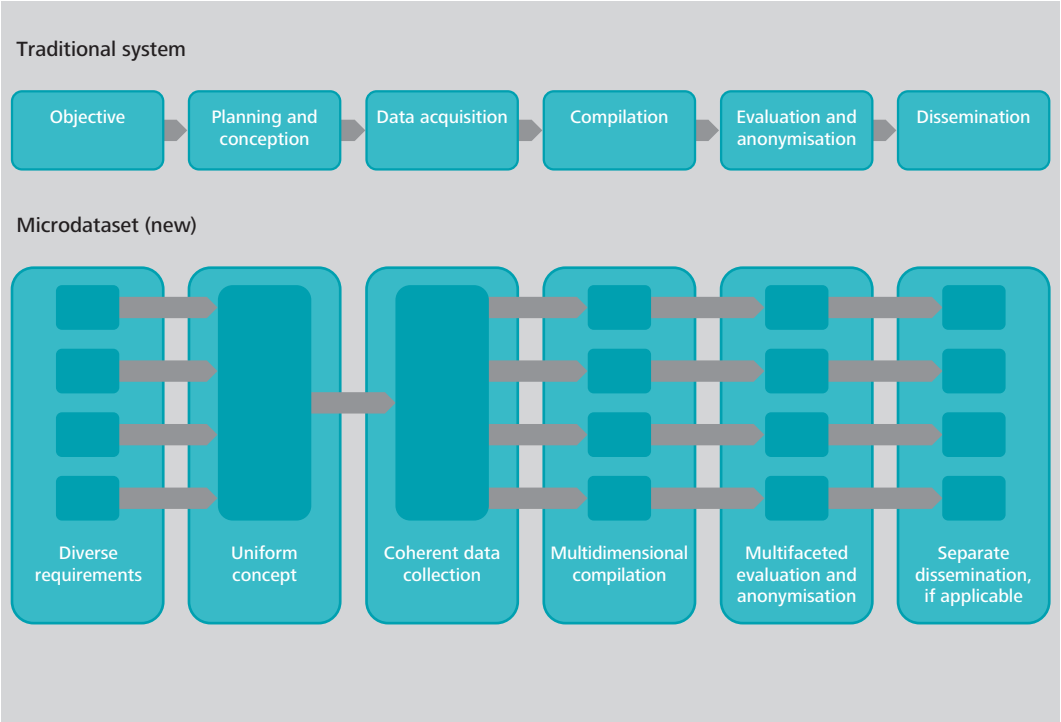
This increasing need for microdata meets a world of data that, thanks to technological progress, looks completely different today to the way it did just a few years ago. In the traditional system of official statistics, reporting forms were and still are used to obtain targeted information, which is, in turn, used to compile and publish specific statistics in a pre-defined aggregation form. The respective reports are collected, checked for plausibility, supplemented by estimates for missing data, extrapolated if need be and then consolidated via pre-defined dimensions. Using the underlying microdata in order, for instance, to create an aggregation feature that differs from the previous one is often neither permitted by law nor technically feasible.

Technical progress facilitates processing of huge data volumes

However, new techniques are now available for recording and handling huge data pools and processing them via various dimensions. Digital advances have led to a rapid drop in storage and processing costs, making it easier to hold and provide specially prepared statistical data. If the information is stored in the form of standardised datasets and can be retrieved using a wide range of compilation and evaluation procedures, it can be used again and again. The advantage of such data structures is that they can be put together comparatively quickly for the intended purpose, whether this be a research project or analysing problems or issues that have arisen unexpectedly. In the past, such cases would have required new surveys, something which can be avoided in the world of

1 See Deutsche Bundesbank, Effects of monetary policy on risk taking, Monthly Report, March 2015, pp 50-54.
2 See C M Buch and L Goldberg (2015), Mini-symposium on international banking, in IMF Economic Review, Vol 63, No 3, pp 375-376.
3 See, for example, P Abbassi, F Fecht, F Bräuning and J Peydró (2014), Cross-border liquidity, relationships and monetary policy: evidence from the euro area interbank crisis, Deutsche Bundesbank Discussion Paper No 45/2014.
4 See Deutsche Bundesbank, Micro data and macroprudential policy, Financial Stability Review 2015, pp 80-81.

The statistical value chain



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microdata, which offers a comprehensive range of data ready for use.

Balance between information gains and data protection

The long-term goal of central banks' statistics is therefore to move away from separate collections of special statistics towards the multifunctional use of a granular database. However, what is theoretically possible and academically desired has to be reconciled with the right to privacy of information and the reporting burden. There is therefore a need to strike a balance between the confidentiality and data minimisation requirements, the legitimate interest in using the available information to draw up policies and make decisions, and the wish on the part of reporting agents and data processing to avoid unnecessary burdens due to multiple surveys.

More precise evaluation of economic policy measures

Evidence-based economic policy

The increasing availability of extensive microdatasets and the new technical options have propelled the progress made in academic work and research with microdata in recent years. The buzzwords "evidence-based economic policy" and "evaluation" refer to work based on econometric methods that enable economic policy measures to be better simulated and assessed using microdata.[5] Is a specific instrument really suitable for achieving the desired goal cost-effectively? The goal of such an "evidence base" is to evaluate the microdata in such a way that the cause-effect correlations between the instrument and the achievement

5 For an overview with further in-depth literature references, see F Kugler, G Schwerdt and L Wössmann (2014), Ökonometrische Methoden zur Evaluierung kausaler Effekte der Wirtschaftspolitik, in Perspektiven der Wirtschaftspolitik, Vol 15, Issue 2, pp 105-132.

The challenges involved in identifying causal effects

Clinical tests conducted under highly manageable "laboratory conditions" may be the gold standard in measurement theory, but a number of difficulties prevent them from being put into practice without further ado in many key policy areas.

- Legal and moral issues, particularly with regard to determining group participants: these can stem from the primacy of equal treatment enshrined in a given piece of legislation, such as that governing the Eurosystem's monetary policy counterparties. Generally speaking, "social experiments" are viewed in a very poor light indeed in the political debate. That being said, they could represent an acceptable and feasible solution in cases where a treatment cannot simultaneously benefit all individuals in the first place on capacity grounds.

- Self-selection and endogeneity: in many cases, material differences between individuals that have a major bearing on achieving the desired outcome cannot be observed. For instance, how well an employee performs at work will also depend in part on his or her motivation, while the success of a business start-up will hinge on the inventiveness and dynamism of its founders. So if individuals with particularly favourable or particularly unfavourable characteristics have a stronger incentive to opt for a certain type of treatment, the differences observed between the treatment group and the control group will no longer substantiate the success of the treatment. These differences may instead be down to the fact that the participants in the treatment group already exhibited significantly more favourable or less favourable characteristics than those in the control group.

- Lack of variation: if a treatment, such as a change in interest rates, affects all banks concurrently, it is impossible to create a control group and obtain simultaneous information about banks unaffected by that treatment.

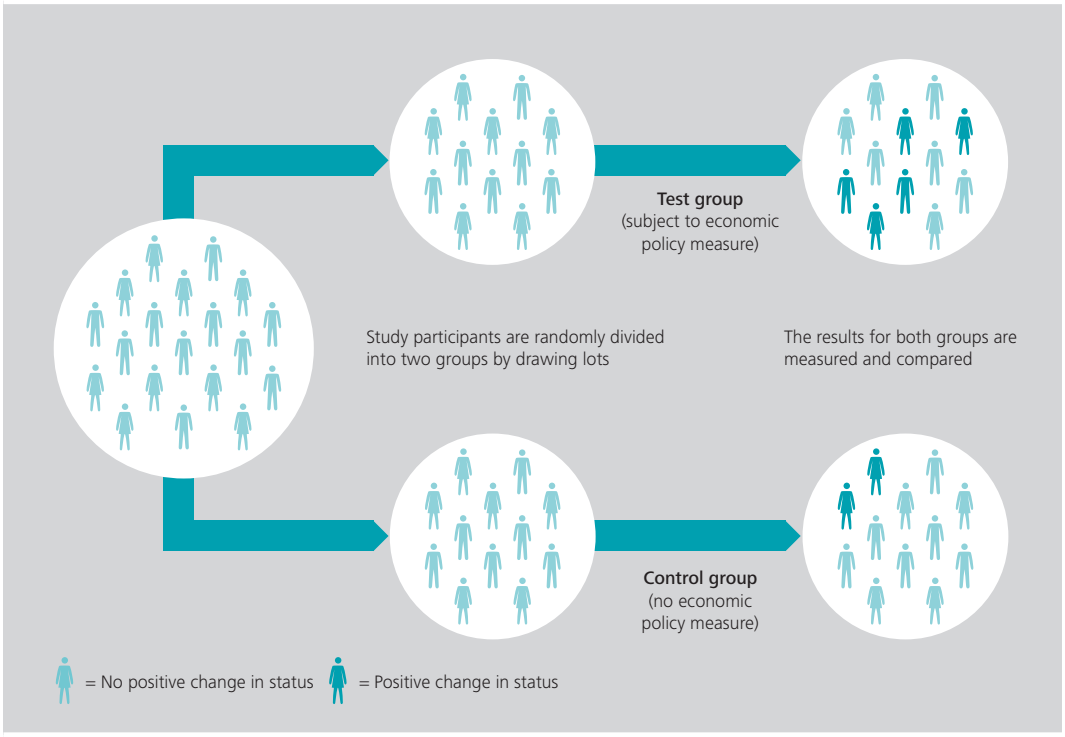
- Unclear formulation of objectives at the micro level: although systemic objectives such as financial stability, innovation, competition and social cohesion are defined at the macro level, they often lack clear, readily measurable equivalents at the micro level.

In areas where randomised and controlled trials are not possible, alternative approaches need to be used. These alternative methods use what are known as exogenous variables – ie differences between individuals that are not inherent in or triggered by the treatment itself – as a proxy for distinguishing between the treatment and control groups. So if the impact of interest rate changes on investment behaviour, say, is being explored, it can help to look at changes in taxation or the easing of depreciation requirements. Just like interest rate changes, these variables also have a bearing on enterprises' user cost of capital, but not all enterprises are necessarily affected in the same way.

Microeconometrics provides some methodological guidance for dealing with cases in which the aforementioned problems arise.[1]

1 Strategies used to identify effects of this kind go by the names of natural experiments, statistical matching, difference in differences, instrumental variables estimations, fixed-effects panel estimations or regression discontinuity. An overview can be found in textbooks such as J M Wooldridge (2010), Economic Analysis of Cross Section and Panel Data, second edition, Cambridge (Massachusetts) and London (England), The MIT Press, and T Bauer, M Fertig and G Schmidt (2009), Empirische Wirtschaftsforschung: Eine Einführung, Berlin, Springer Verlag.

Clinical test of the effectiveness of economic policy measures



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of the goal can be substantiated. Ideally, at the same time as determining the goal and the instrument, an evaluation process should be drawn up and it should be ensured that an adequate database is available.

Example: targeted longer-term refinancing operations (TLTROs)

The Eurosystem's targeted longer-term refinancing operations (TLTROs) provide an example of an economic policy measure with clear objectives involving statistical reporting duties for the participating institutions and individual monitoring of success. On 5 June 2014, the Governing Council of the European Central Bank (ECB) decided to support bank lending to the euro-area non-financial sector through a series of eight targeted longer-term refinancing operations with a maturity of up to four years and an early repayment option.[6] This measure entailed, *inter alia,* precise quantitative minimum requirements and the introduction of quarterly reporting in order to monitor the success of the participating institutions. The steps that would be taken if lending were too low were defined from the outset. If the eligible net loans of the individual participants within a precisely defined period of time are below the individual reference variable, these participants must repay the funds borrowed in full or part prematurely. However, this monitoring of compliance with pre-defined thresholds is not a substitute for cause-effect analyses, where the question to be answered would be whether lending would have been different in the hypothetical case without the TLTROs.

Microeconomic causality tests present challenges, ...

The objective of not only observing correlations but additionally of proving causalities is very challenging. This is because the complex nature of reality makes it difficult to determine whether an observed correlation is attributable to an economic policy measure or to other factors. If, for instance, increased bank lending is

6 See Deutsche Bundesbank, Monetary policy and banking business, Monthly Report, August 2014, p 32.

recorded, it is not possible to observe directly whether this has been caused by an economic upturn, a monetary policy measure or perhaps another reason not taken into consideration.

... as not conducted under laboratory conditions

The ideal case of clinical tests is offered by the prime example of microeconometric causality tests, where under isolated laboratory conditions an experimental group and a control group are subjected to a measure in one case and treated with a placebo in the other. However, the economic reality is that such a procedure cannot be applied in practice and also encounters legal constraints. The options are far more limited here than in the world of science, where experiments can be set up and conducted in a laboratory. However, advances in econometric methods for evaluating economic policy mean that it is perfectly possible to approximate the identification of causal effects.

Further studies needed

Although microeconometric research has so far not focused on monetary or financial market policy but rather on other areas, such as labour market policy, the application of the new academic methods for policy analysis also shows great promise in the areas of monetary policy and financial stability. For example, the Third International Monetary Fund Statistical Forum addressed the topics of microdata and policy evaluation.[7] Macroprudential supervision is still a relatively new policy field, with many of its potential instruments not yet in use, and it remains to be seen whether they actually work as expected. Academics and central banks can develop joint methods in this regard and provide the required database so that macroprudential measures can be simulated *ex ante* as well as checked and assessed *ex post*. In other policy areas – such as labour market policy or the promotion of economic development – an evaluation has often been established at an institutional level.[8]

7 See Third IMF Statistical Forum, Official statistics to support evidence-based economic policymaking, November 2015, http://www.bundesbank.de/Navigation/EN/Bundesbank/Research/Conferences/statsforum.html?startpageId=Startseite-DE&startpageAreaId=Teaserbereich&startpageLinkName=statsforum+347826

8 See Scientific Advisory Committee to the Federal Ministry for Economic Affairs and Energy (Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Energie) (2013), Evaluierung wirtschaftspolitischer Fördermassnahmen als Element einer evidenzbasierten Wirtschaftspolitik. In September 2015, the Association of German-speaking Economists (Verband deutschsprachiger Ökonomen) agreed on guidelines for conducting evaluation studies. Verein für Socialpolitik, Leitlinien und Empfehlungen des Vereins für Socialpolitik für Ex-post-Wirkungsanalysen, 6 September 2015. The Economic and Financial Affairs Council of the European Union (Ecofin) also advocates this course. See Council conclusions on EU statistics, adopted by the Council (Ecofin) at its 3,435th meeting held on 8 December 2015 in Brussels.

International, European and national microdata initiatives

Detailed data collected at the international level by …

Following the global financial and economic crisis that emerged in 2008, the resulting demand for information and the new tasks to be performed by statisticians have been reflected in an array of initiatives. These are intended to provide data with the aim of analysing and safeguarding the stability of the international financial system against the backdrop of ever greater economic and financial integration, which shows no signs of abating.

… G20 Data Gaps Initiative, …

For example, the finance ministers and central bank governors of the G20 set up the Data Gaps Initiative (DGI) back in 2009. The initiative comprises a set of 20 recommendations designed to close existing data gaps and collect new data to monitor the financial system. The action plans for data development and enhancement range from collecting granular microdata on the ties between global systemically important financial institutions to propos-

als concerning the preparation of available microdata for the greater sectoral breakdown of the national and financial accounts.[9] As underlined in the Sixth Progress Report on the DGI in September 2015, many of the recommendations have either already been implemented or are close to implementation.[10] The second phase of the initiative (from 2016 to 2020) is set to improve the provision of, and access to, internationally comparable data, with a focus on microdata.

… Special Data Dissemination Standard Plus …

At the same time, the International Monetary Fund has expanded its existing data initiatives. For instance, its Special Data Dissemination Standard (SDDS), which was in place for almost 20 years, served as the foundation for the much more rigorous SDDS+. Adhering to this standard involves providing data in additional data categories, which should give a better picture of risks in the financial sector, cross-border linkages and the vulnerability of an economy to external shocks. The degree of detail contained in the requested data is significantly higher than previously. The initiative is a testament to the strict standards in place regarding modern data management and microdata's advantageous ability to respond flexibly to new requirements. At the end of 2014, the United States, Germany, France, Italy, Spain, the Netherlands, Portugal and Sweden committed themselves to observing this ambitious data standard – while some work is still required, they have already begun publishing sets of indicators. Further categories are scheduled to follow by 2019.

… and Financial Stability Board

With its expanded mandate to monitor and elaborate on recommendations for the global financial system, the Financial Stability Board (FSB) expressly supports these recommendations and initiatives to improve the data pool. The members of the FSB have pledged, *inter alia*, to implement 12 key international standards and codes for the financial sector, including the IMF's data standards and the Data Hub Initiative for interlinking global systemically important institutions.

Further institutional need for data at the European …

At the European level, the need for detailed information in the wake of the financial crisis has likewise grown. For example, the European Systemic Risk Board (ESRB) requires sound, detailed data for the purpose of macroprudential supervision, while the Single Supervisory Mechanism (SSM) is another driving factor behind the need for new and/or supplementary information.

… and national level

Following the entry into force of the Act on Monitoring Financial Stability (*Gesetz zur Überwachung der Finanzstabilität*) in 2013, the Bundesbank was granted comprehensive data access rights for the purpose of macroprudential analyses. In order to place as little strain as possible on those entities required to report data, analysis of internal Bundesbank sources can, where necessary, be supplemented by data requested primarily from other authorities. Only if these data prove insufficient, may the Federal Ministry of Finance, in agreement with the Bundesbank, stipulate collection of the necessary additional data by way of a regulation. The Bundesbank can then order financial enterprises to supply these data. This is intended, not least, to put the Financial Stability Committee's activities at the Federal Ministry of Finance on an empirically solid footing. As a member of this committee, the Bundesbank has the task of establishing the working basis using its data and analyses.

Three examples of European microdata initiatives

Pioneering project centres on development of fine granular securities statistics

As part of a pioneering project launched by the European System of Central Banks (ESCB), granular microdata pools were established in various areas, starting with securities statistics. The first step here was to develop a joint securities

9 See https://www.bundesbank.de/Navigation/EN/Statistics/IMF_related_data/FSI/fsi.html

10 See Financial Stability Board, International Monetary Fund, The financial crisis and information gaps, sixth progress report on the implementation of the G-20 Data Gaps Initiative, September 2015.

reference database, known as the Centralised Securities Database (CSDB).[11] This database contains information on all securities issued or held in the European Union or denominated in euro (around ten million securities at the current juncture). In addition, it stores information on issuers: up to 100 individual attributes are available for each instrument and issuer, and these can be freely combined.

The national central banks are responsible, in line with the principle of decentralisation and the network concept under which the ESCB operates, for supplying data on the securities issued by the respective national issuers as well as examining – and correcting, if necessary – the supplementary data of commercial providers within the scope of quality assurance. The CSDB now permits a number of in-depth analyses of securities and issue structures, making it possible, for instance, to determine the securities-related funding requirements of public sector entities over time based on the securities' maturity structure.[12] Furthermore, it is possible to calculate an issuer's average debt service or foreign exchange risk.

Follow-up project on securities investments

The next step was to launch Europe-wide securities holdings statistics in 2013.[13] This involves requesting the portfolios of individual investors (at banks and investment funds at present; also at insurance enterprises in the future) and consolidated sectors (non-financial corporations, public sector entities, households) on a security-by-security basis and expanding on these to include data on selected major banking groups. Responsibility for collecting and performing quality assurance again lies with the respective central banks. The microdata pools of all central banks are merged in the ESCB's Securities Holdings Statistics Database (SHSDB), which is jointly run by the ECB and the Bundesbank. Their data are fully linked with those in the CSDB so that even bilateral creditor-debtor relationships associated with holding and issuing securities can be analysed by legally authorised users for financial corporations at the most granular level. It is thus possible, for example, to determine the exposures of individual investors and investor groups to a bank at risk of failing – and this can be done with little time lag and without the additional costs, qualitative constraints and undesirable market signals of a special survey.

AnaCredit as next stage of development

The next major ESCB project "Analytical Credit Datasets" (or AnaCredit for short) is currently in the pipeline and represents the next expansion stage of the microdata strategy.[14] The aim of this project is to set up a granular database of lending and borrowing on a loan-by-loan basis, much like the database already established for securities. As is the case for securities statistics, the database will allow for flexible analyses at a range of aggregation levels in the future. Unlike in the case of securities statistics, borrowing by non-financial corporations is to be captured at both the individual and sectoral level. AnaCredit will broaden the scope of analysis for numerous fields of activity (monetary policy, financial stability, market operations, risk control and research) and institutions. Looking ahead, collecting granular, broad-based data on lending and lenders on a corresponding scale would even open up the possibility of consolidating,

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11 ECB, The centralised securities database in brief, February 2010.

12 See, for example, C M Buch, M Koetter and J Ohls, Banks and sovereign risk: a granular view, Deutsche Bundesbank Discussion Paper, No 29/2013; and P Abbassi, R Iyer, J Peydró and F R Tous, Securities trading by banks and credit supply: micro-evidence, Deutsche Bundesbank Discussion Paper, No 08/2015.

13 See Deutsche Bundesbank, Securities holdings statistics for analysing holdings of securities in Germany and Europe: methodology and results, Monthly Report, March 2015, pp 95-107; and M Amann, M Baltzer and M Schrape (2012), Microdatabase: Securities Holdings Statistics – a flexible multi-dimensional approach for providing user-targeted securities investment data, Deutsche Bundesbank, Technical Documentation.

14 The latest information on AnaCredit can be found on the Bundesbank's website (http://www.bundesbank.de/Redaktion/DE/Standardartikel/Service/Meldewesen/anacredit.html?searchArchive=0&submit=Suchen&searchIssued=0&templateQueryString=AnaCredit). See also Deutsche Bundesbank, AnaCredit (Analytical Credit Datasets): Hintergrund, aktuelle Beschlusslage und nächste Schritte, event with German banking industry representatives and service providers on 18 December 2015 (https://www.bundesbank.de/Redaktion/DE/Downloads/Service/Meldewesen/Bankenstatistik/Anacredit/2015_12_18_praesentation.pdf?__blob=publicationFile).

reducing or even replacing existing traditional data ("collect data only once" principle), although the scope of data to be collected is to be restricted initially during stage one.

Legal framework

Robust legal framework combines data protection with multiple use of collected data

Safeguarding data protection is of the utmost importance to the central banks in the ESCB. It is defined in Articles 8 and 8a of Regulation (EC) No 2533/98, which outlines the legal framework for collecting ESCB data. Pursuant to Article 8c of the cited regulation, general European data protection rules determined by the fundamental rights set out in the EU Charter of Fundamental Rights, particularly Articles 7 and 8, also apply. The regulation implies protection rules for handling confidential statistical data – rules that are fundamentally similar to the relevant data rules already in force in Germany in that measures such as stringent access checks are defined. At the same time, the legal framework for the group of users authorised to access data should be designed in such a way that it takes into account the desired use of data for different purposes, entities and statistical applications (with the aim of increasing efficiency and consistency). This objective was achieved by making two amendments to the aforementioned regulation.[15]

Need-to-know principle

Access to confidential data is given only to the extent and level of detail required for the user to perform his or her task. This is checked by the central banks. In addition, within the group of authorised users, access is limited to members of staff who can demonstrate a legitimate interest (need-to-know basis); these staff members are also registered individually and must be briefed on data protection legislation beforehand. Access is not restricted to the confidential data of each of the national central banks; provided the procedures set out are complied with, the data of other ESCB central banks may also be used.

High target achievement

With these rules in place, the microdata pools developed in the ESCB can be expanded to create European "data hubs" in the future. Doing so will deliver major analytical benefits and make it possible to consolidate or scale back the reporting requirements of various institutions – a development that reporting parties will welcome.

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15 The entry into force of Regulation (EC) No 951/2009, which amended Regulation (EC) No 2533/98, established legal grounds for the dissemination of confidential ESCB data to authorised users and statistics producers within the ESCB and the European Statistical System (Eurostat and national statistical offices). Under the banking union, this authorisation was expanded by Regulation (EU) No 2015/373, which amended Regulation (EC) No 2533/98, to include users of the Single Supervisory Mechanism, national competent authorities, the European Stability Mechanism and European institutions responsible for microprudential and macroprudential supervision (the European Banking Authority, the European Insurance and Occupational Pensions Authority, the European Securities and Markets Authority and the European Systemic Risk Board).

The Bundesbank's microdata initiative: IMIDIAS

Supply side: IMIDIAS

In response to the increased demand for microdata for analyses geared towards both financial stability and monetary policy as well as for internal and external economic research, the Bundesbank set up the Integrated Microdata-based Information and Analysis System (IMIDIAS) in 2013. IMIDIAS consists of two components: the "House of Microdata" (HoM) and the recently established Research Data and Service Centre (RDSC). Further information on the anonymised datasets provided for external scientific research and on the special access channels required for data protection purposes may be found on the RDSC's webpage.[16]

HoM as informational basis

The HoM consists of a secured, separate database system within the Statistics Department in which selected quality-controlled microdatasets are stored in a standardised format. Furthermore, access rights are determined for each individual dataset and user in line with statutory provisions and based on the need-to-know principle.

RDSC facilitates research

One major user of the HoM is the RDSC. It applies a standardised procedure to generate high-quality datasets that cover a large part of the data requested for research purposes, thus granting internal and external researchers access – subject to clear conditions – to selected microdata provided by the Bundesbank, and serves as an interface between data producers and data users.

Range of services comprises documenting, providing advice on and reviewing data

Requests to use microdata are first reviewed pursuant to legal requirements. In addition, the RDSC provides advice on data selection, data content and analytical options. Together with the relevant statistical experts, it ensures that the microdata provided are documented in detail and archived. In doing so, the RDSC works according to globally recognised standards and was recently accredited as a research data centre by the German Council for Social and Economic Data (*Rat für Sozial- und Wirtschaftsdaten*).[17]

What the RDSC provides

The RDSC provides anonymised datasets on banks, securities, investment funds, enterprises and households, all of which can be accessed at dedicated researcher workstations. Outside Bundesbank premises (off-site), only data specially prepared for academic research purposes (scientific use files) from the Panel on Household Finances (PHF) study, a representative survey on the structure and composition of households' wealth, may be used.

Microdatabase Direct investment

One database that meets with great interest from external researchers is the Microdatabase Direct investment (MiDi), which comprises data on direct investment by German firms abroad and by foreign firms in Germany, including respective data on employees.[18] Using MiDi, it is possible to examine issues such as, in the case of multinational enterprises, how international wage differences affect the demand for labour across locations.[19] Another area of analysis is the impact of taxation in various countries on the investment behaviour of German enterprises.[20]

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16 See https://www.bundesbank.de/Navigation/EN/Bundesbank/Research/RDSC/rdsc.html?https=1

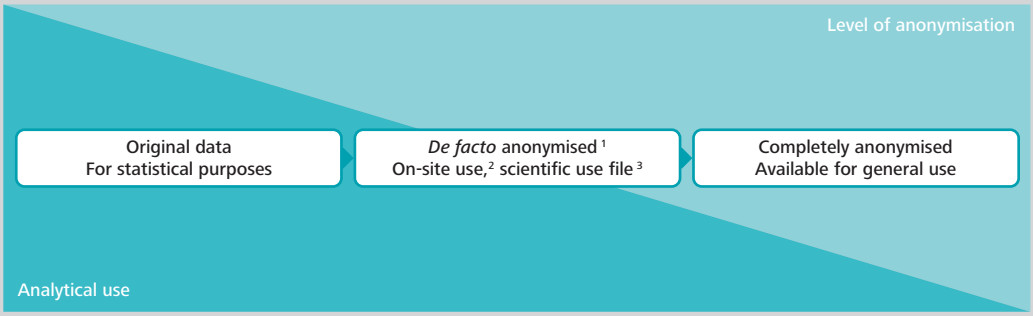
17 See http://www.ratswd.de/en/data-infrastructure/rdc/deutsche-bundesbank-research-data-and-service-centre-rdsc

18 Use of MiDi has resulted in the formation of an active research network of external and internal researchers that examines and publishes literature on key issues relating to direct investment. For example, the Bundesbank hosts an annual workshop at which members of the FDI (foreign direct investment) network are given the opportunity to present and discuss new papers based on these data. In addition, Bundesbank specialists inform participants of new developments to the dataset. http://www.bundesbank.de/Redaktion/EN/Standardartikel/Bundesbank/Research_Centre/research_data_micro_data_midi.html

19 See M-A Mündler and S Becker (2010), Margins of multinational labor substitution, American Economic Review, 100(5), pp 1999-2030.

20 See T Büttner and M Ruf (2007), Tax incentives and the location of FDI: evidence from a panel of German multinationals, International Tax and Public Finance 14(2), pp 151-164.

Analysis potential, data anonymisation and data access



1 Data access in accordance with section 16 (6) of the Federal Statistics Act (Bundesstatistikgesetz). Microdata may be provided to academic institutions for the purposes of academic research if these data can only be traced to their source with a disproportionately large amount of time, costs and labour (de facto anonymisation). **2** Use only within the Research Data and Service Centre. Results are subject to a mandatory disclosure control. **3** Scientific use files are anonymised in such a way that they may be used on the premises of the academic institution requesting the data.

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Balance between data protection and research interests

On the one hand, the range of access methods satisfies researchers' need for the rapid provision of high-quality data, on the other hand it keeps sensitive information confidential. The Bundesbank is thus adhering to an established global standard: it is ensured that analytical findings that are to be published are anonymised such that no inferences may be drawn regarding particular individuals or enterprises. The international standard may be briefly summarised as follows: "Safe People, Safe Projects, Safe Settings, Safe Outputs, Safe Data".

Conclusion

Microdata are a longer-term investment

In the years to come, central banks will be faced with the challenge of structuring the upcoming paradigm shift away from solely providing aggregated data to providing microdata that have multidimensional uses in line with the legal framework and in a single process. Initially, newer microdata will need to be collected in addition to the data that are currently collected. The aim of collecting data only once and subsequently using them to create a wide variety of statistics requires a fundamental rethink of the reporting system and will need time. Different statistical fields and users of statistics will have to harmonise and standardise their information needs and translate these into new reporting requirements. The technical implementation and conversion will initially entail costs for both the reporting institutions and the central banks that process the data. Efficiency gains can be achieved, however, if new data aggregates are derived from available information rather than – as in the previous system – requiring special surveys to be conducted or additional data collected. It will be comparatively simple in the "world of microdata" to respond to a new request by carrying out an appropriate aggregation of data that have already been collected.

Further scope for increasing efficiency and consistency by standardising reporting requirements

Consistency across individual data will also increase if more or less all data are part of the same data pool. By contrast, discrepancies can arise under the current system if, for example, transaction figures and stock data are derived from different sources. The idea of collecting data only once for multiple statistical purpos-

es could be pursued to even greater effect if the reporting requirements for different statistics were aligned from a content-based and conceptual perspective. With this objective in mind, the ESCB Statistics Committee has started reflecting on moving towards a standardised European reporting framework to further promote the use of data for multiple purposes, efficiency and data consistency.[21] These considerations incorporate the ESCB's existing and planned microdatabases as well as conventional aggregated monetary and financial statistics. The Bundesbank supports this move, and will continue to tread the path that has been embarked upon.

21 See also P Bull (2013), Statistics for economic and monetary union, enhancements and new directions 2003-12, ECB.

Chronology of economic and monetary policy measures

1 January 2015

Lithuania becomes the 19th EU member state to adopt the euro as its currency; Lietuvos bankas becomes a member of the Eurosystem.

The Single Resolution Mechanism (SRM) commences its preparatory work. As a complement to the Single Supervisory Mechanism (SSM), it will be responsible for the recovery and resolution of credit institutions in the euro area as of 1 January 2016. Use of the SRM will be linked to a Single Resolution Fund, which is being funded by contributions from banks.

Germany introduces a general minimum wage of €8.50 per hour (with transitional periods for certain sectors). The Minimum Wage Commission will regularly review this rate and, if necessary, recommend adjustments every two years. The Commission comprises the chairperson and six voting members (nominated in equal part by employer and employee representatives). Additionally, two non-voting academics are part of the commission.

The contribution rate to the statutory pension insurance scheme is cut from 18.9% to 18.7%, while the public long-term care insurance scheme contribution rate is raised from 2.05% to 2.35% (plus an extra 0.25% in each case for childless persons). The size of the contribution to be paid solely by members of the health insurance scheme (previously a uniform rate of 0.9%) will henceforth be set by the individual health insurance institutions. The option of charging additional contributions in the form of fixed euro amounts is abolished. The new average additional contribution rate is just under 0.1 percentage point lower than the previous uniform rate.

The basic income tax allowance is raised by €118 to €8,472, child tax allowance is increased by €144 to €7,152, and monthly child benefits are raised by €4 per child. These tax relief measures will apply retroactively from the second half of 2015, as the relevant law will not be announced until 22 July 2015.

22 January 2015

The ECB Governing Council announces an expanded asset purchase programme (APP), under which bonds issued by euro-area central governments, agencies located in the euro area and supranational European institutions will be purchased. This is in addition to the covered bonds and asset-backed securities purchased under the two existing purchase programmes. A combined monthly purchase volume of €60 billion is envisaged. The purchases are due to commence in March 2015 and are intended to be carried out until September 2016, and in any case until the ECB Governing Council sees a sustained adjustment in the path of inflation that is consistent with its aim of achieving inflation rates close to, but below, 2% over the medium term. In addition, the ECB Governing Council decides to exclude risk-sharing amongst Eurosystem central banks for 80% of purchases.

Furthermore, it decides to remove the previous 10 basis point spread and settle each of the remaining targeted longer-term refinancing operations (TLTROs) at the prevailing main refinancing rate.

29 January 2015

In its Annual Economic Report, the Federal Government anticipates real GDP growth of 1.5% in 2015. The main factors fuelling demand stem from consumption and private residential investment, stimulated by sustained employment growth and substantial increases in income. Net exports are expected to rise slightly.

4 February 2015

The ECB Governing Council decides to lift the waiver of minimum credit rating requirements for marketable instruments issued or guaranteed by Greece, with effect from 11 February 2015.

12 March 2015

The Bundesbank presents its annual accounts for the 2014 financial year. The profit of €2,954 million is transferred to central government.

18 March 2015

The Federal Cabinet approves the benchmark figures for the 2016 central government budget and for the fiscal plan up to 2019. The aim of a balanced budget with no net new borrowing is maintained. A reduction in interest expenditure appropriations allows for additional benefit increases between 2016 and 2018 as well as the financing of a central government investment programme. In addition, the first supplementary Federal budget for 2015 is introduced into the legislative process. It earmarks a large portion of the prospective budget relief, stemming mainly from higher tax revenue and lower interest expenditure, to provide frontloaded funding towards a €3.5 billion special fund designed to promote investment by financially weak local authorities. In addition, any profit generated by the Bundesbank exceeding €2.5 billion is to be used for budget financing rather than the repayment of existing debt.

19 March 2015

The third out of the eight targeted longer-term refinancing operations (TLTROs) adopted in June 2014 is conducted: 143 banks borrow €97.8 billion.

23 March 2015

The Eurosystem and the Central Bank of Montenegro (CBCG) complete the EU-funded technical cooperation programme intended to support the CBCG's preparations to join the European System of Central Banks (ESCB) as soon as the country has qualified for EU membership.

27 March 2015

The Eurosystem, the Bank of Albania (BoA), the Central Bank of the Republic of Kosovo (CBK) and the National Bank of the Republic of Macedonia (NBRM) complete the EU-funded technical cooperation programme intended to support the three central banks' preparations to join the European System of Central Banks (ESCB) as soon as the countries have qualified for EU membership.

15 April 2015

The Federal Cabinet presents an updated stability programme for Germany. It assumes real GDP growth of 1.5% in 2015, 1.6% in 2016 and 1¼% annually in the years thereafter up to 2019. According to the plans on the table, up until 2016 the general government budget surplus will be run down to a balanced budget before subsequently being expanded again to ½% of GDP by 2019. The aim is to achieve a moderate structural surplus of ½% of GDP in the medium term whilst maintaining at least a slight structural surplus throughout the entire period. The debt ratio is expected to fall significantly to 61½% in 2019.

21 April 2015

The general government deficit and debt figures reported by the EU member states in their spring notifications are published under the European budgetary surveillance procedure, after validation by Eurostat. According to these data, in 2014 Germany recorded a general government fiscal balance of 0.7% of GDP coupled with a year-end debt ratio of 74.7%. For 2015, the Federal Government announces a planned surplus of 0.3% of GDP and a fall in the debt ratio to 71.4%.

22 May 2015

The Bundestag approves the first supplementary Federal budget for 2015. Compared with the draft of 18 March, expenses worth €1 bil-

lion have occurred, mainly due to a downward revision of tax revenue, which are covered by a further reduction in interest expenditure appropriations.

3 June 2015

In the course of monitoring the structural general government fiscal deficit, the Stability Council finds that the ceiling of 0.5% of GDP is being adhered to. The Advisory Board of the Stability Council comes to the same conclusion in its statement. The Stability Council also concludes that the federal states in receipt of consolidation assistance (Berlin, Bremen, Saarland, Saxony-Anhalt and Schleswig-Holstein) have fulfilled their obligation to reduce their structural deficit in 2014 and thus approves the aid payout of €800 million in total on 1 July 2015.

5 June 2015

The Bundesbank expects real GDP growth of 1.7% (1.5% in calendar-adjusted terms) in 2015, 1.8% in 2016 and 1.5% in 2017 (1.7% in calendar-adjusted terms, in each case). Potential growth is estimated at 1.2% per year for this period. Consumer price inflation, as measured by the Harmonised Index of Consumer Prices (HICP), is forecast to rise from 0.5% in 2015 to 1.8% in 2016 and 2.2% in 2017 due to upward pressure on domestic costs. Excluding energy, the inflation rate is expected to climb from 1.2% in 2015 to 2.2% in 2017.

18 June 2015

In its ruling on the ECB's outright monetary transactions programme (OMT), the European Court of Justice (ECJ) finds that the programme does not exceed the ECB's mandate as it aligns with the Eurosystem's mandate of maintaining price stability and includes sufficient safeguards to avoid the monetary financing of governments. The ECJ also ruled that the ECB Governing Council should be granted a large degree of discretion for preparing and implementing an open market operations programme.

The fourth out of the eight targeted longer-term refinancing operations (TLTROs) is conducted: 128 banks borrow €73.8 billion.

19 June 2015

An auction of frequencies for mobile broadband launched in May by the Federal Network Agency closes. The proceeds for the rights of use amount to a total of €5.1 billion, the majority of which is allotted to the central government's budget in 2015.

22 June 2015

The European Commission publishes the Five Presidents' Report (presented by the presidents of the European Commission, the European Council, the Eurogroup, the European Parliament and the ECB) on the future development of the economic and monetary union (EMU). The report focuses on a change from the rule-based coordination of national policymaking decisions towards a regime of joint decision-making and risk sharing. The aim of the proposed reforms is to create an economic, capital markets, fiscal and political union. Based on the existing regulatory framework, the first stage, ending in 2017, is to establish an advisory European Fiscal Board, to create a European system of national competitiveness boards and to launch the Capital Markets Union. Furthermore, the banking union is to be completed, primarily by creating a common deposit insurance scheme. In a second stage, the reforms are to be incorporated into the EU Treaty and common convergence criteria are to be agreed on by 2025. Access to a new euro-area macroeconomic stabilisation function will hinge on compliance with these criteria. Institutional strengthening and democratic legitimacy are important aspects. The report proposes greater sharing of sovereignty. A group of experts is to be set up by mid-2016 and a White Paper containing the next steps will be presented to the Commission in 2017.

30 June 2015

The Financial Stability Committee recommends that the Federal Government create a legal basis for new macroprudential instruments. This is aimed at restricting the granting of loans to build or acquire domestic residential real estate secured by a mortgage.

1 July 2015

The Federal Government approves the draft central government budget for 2016 and the fiscal plan up to 2019. Central government is to transfer €½ billion of its turnover tax revenue to state and local governments in 2016 to assist them in dealing with the growing number of refugees. Throughout the entire planning period, the goal to refrain from net new borrowing is maintained. However, the budget appears to factor in buffers for expenditure resulting from the forthcoming federal financial equalisation scheme reform towards the end of the period. Given the favourable macroeconomic outlook, the benchmark figures reflect an easing of the budgetary stance.

21 July 2015

The Federal Constitutional Court declares the childcare supplement of €150 a month for parents who do not place their children in state funded daycare, granted by the central government since summer 2013, null and void. It finds that central government lacks the legislative authority to grant this supplement as the relevant requirements set out in Article 72 II of the Basic Law are not met.

19 August 2015

The European Commission and Greece sign a Memorandum of Understanding for a third assistance programme after the second one expired before its completion on 30 June. This promises Greece up to €86 billion in funds from the ESM in addition to the bilateral loans from euro-area countries and assistance from the IMF and the EFSF which it has received since 2010. Successive loans with low interest rates (currently around 1%) and long-term maturities (on average 32.5 years) are planned. The first tranche, a planned €26 billion, is paid in several stages. Of the €10 billion provided for bank recapitalisation only €5.4 billion is used at first. The programme review, which was planned for October 2015, could not be successfully concluded before mid-February 2016 (press date of the 2015 *Annual Report*).

3 September 2015

Following the review after the first six months of purchases, which was announced when the programme was launched, the ECB Governing Council decides to increase the issue share limit for purchases of individual public sector assets from the initial limit of 25% to 33%. However, for each individual issue, it must be verified that a situation in which the Eurosystem has a blocking minority is avoided. Where this is not possible, the purchasing limit remains at 25%.

16 September 2015

The ECB Governing Council decides that national central banks can henceforth communicate publicly about the provision of emergency liquidity assistance (ELA) to banks in their country.

23 September 2015

The ECB Governing Council increases the proportion of purchases made by national central banks under the ABS purchase programme (ABSPP), resulting in fewer purchases being made by external service providers. The Banque de France and the Nationale Bank van België/ Banque Nationale de Belgique will carry out these purchases as the Eurosystem's asset managers, while the Banque de France will undertake purchases in additional jurisdictions. Furthermore, the Governing Council decides to extend the contracts with two external asset managers. The Eurosystem continues to per-

form purchase price and due diligence checks before every transaction.

24 September 2015

The fifth out of the eight targeted longer-term refinancing operations (TLTROs) is conducted: 88 banks borrow €15.5 billion.

Since the number of refugees migrating to Germany remains high (at this point, the Federal Government expects around 800,000 refugees in 2015), central and state governments agree to speed up asylum procedures and to divide the costs nationally. From 2016, central government will contribute to benefits for asylum-seekers and for those whose applications were unsuccessful in the form of a monthly lump sum, as well as to the higher costs associated with underage refugees arriving alone and additional costs for child care. Central government increases its transfers of tax revenue to a total of €2 billion in 2015. In 2016, payments will amount to €4½ billion and will include an increase in housing construction subsidies and additional funding for local public rail transport. At the end of each year, it will make a final settlement based on the case-based lump sum payments for asylum-seekers.

29 September 2015

The Federal Cabinet approves the draft of a second supplementary Federal budget for 2015. The €5 billion reserve stemming from budget relief from the frequency auction at the beginning of the year as well as from higher tax revenue and lower interest expenditures will be used for additional expenditure related to refugees over the next few years.

10 October 2015

The Federal Government submits its draft budgetary plan for the 2016 general government budget to the European Commission. A balanced budget is envisaged in 2016, as noted in the stability programme. The structural surplus is also to be reduced by 2016. The debt ratio is projected to fall to 68¾% in 2016.

21 October 2015

The general government deficit and debt figures reported by the EU member states in their autumn notifications are published under the European budgetary surveillance procedure, after validation by Eurostat. According to these data, in 2014 Germany recorded a general government fiscal balance of 0.3% of GDP coupled with a year-end debt ratio of 74.9%. For 2015, the Federal Government announced a planned surplus of 0.9% of GDP and a fall in the debt ratio to 71.4%.

Based on the reforms outlined in the Five Presidents' Report of 22 June 2015, the European Commission establishes a European Fiscal Board. The five experts appointed to the committee by the Commission (three of whom are chosen in consultation with the national fiscal councils, the ECB and the Eurogroup) are remunerated by the Commission and supported by its staff. The Fiscal Board reports to the Commission and evaluates to what extent the fiscal rules are consistently implemented in the euro-area countries. It also assesses the fiscal policy stance of the individual euro-area countries and, in particular, the aggregate fiscal policy stance of the euro area. Furthermore, the Commission recommends the creation of national competitiveness boards, whose task is to monitor developments and policy decisions in terms of competitiveness in order to further economic convergence and to strengthen national responsibility.

5 November 2015

The Bundesbank's bilateral borrowing agreement with the IMF is extended by another year. Under the bilateral borrowing arrangements, a total of 35 countries agreed to provide the IMF with additional resources over four years, beginning in 2012. The Bundesbank's share

of the overall volume of around €360 billion amounts to €41.5 billion.

The Bundestag approves the second supplementary Federal budget for 2015. Compared with the draft of 29 September, interest expenditure figures, in particular, are lowered by nearly €1 billion. The additional budgetary relief is counterbalanced by proportionately higher expenditure appropriations, especially in connection with long-term unemployment benefits.

11 November 2015

In its Annual Economic Report, the German Council of Economic Experts forecasts real GDP growth of 1.6% in 2016 (1.5% in calendar-adjusted terms). Private consumption is again expected to contribute to growth. The German labour market situation should continue to improve. Additionally, government transfers and consumption expenditure are predicted to expand as the number of refugees arriving is expected to remain high. Business investment is likely to experience only a moderate increase owing to factors such as a smaller increase in exports.

13 November 2015

The Bundestag adopts the Second Act to Strengthen Long-term Care (*Zweites Pflegestärkungsgesetz*). From 2017, the three long-term care levels currently in place will be replaced by a system of five care grades intended to provide greater support for those with dementia-related conditions, in particular. The increases in expenditure are initially to be covered by increasing the contribution rate by 0.2 percentage point as of 2017.

18 November 2015

The ECB Governing Council makes a policy decision to launch the analytical credit dataset (AnaCredit) project, a granular, statistical credit reporting system. According to the ECB's current draft regulation, the first phase will consist of recording the loans granted by monetary financial institutions (MFIs) to legal entities. AnaCredit will broaden the scope of analysis for numerous fields of activity (monetary policy, financial stability, market operations, risk control as well as research) and institutions.

25 November 2015

The Eurosystem brings the new €20 banknote with improved security features into circulation.

27 November 2015

The Bundestag approves the 2016 Federal budget. A funding gap of €6.1 billion is to be covered by withdrawals from the reserves replenished in 2015. This shortfall does not count toward the limit defined by the debt brake rules – unlike the national account deficit, which is relevant for the EU's budgetary surveillance procedure. The initial limit of 0.35% of GDP is undershot by €4½ billion given the €5½ billion stemming from the small degree of cyclical relief identified, a slight surplus from financial transactions and an expected deficit in the incorporated off-budget entities such as the flood assistance fund, the fund to promote municipal investment and the Energy and Climate Fund.

3 December 2015

As of 9 December 2015, the ECB Governing Council lowers the deposit rate by 10 basis points to –0.30%. The interest rates on the main refinancing operations and the marginal lending facility remain the same at 0.05% and 0.30% respectively.

The Council also extends the asset purchase programme (APP) by six months. The monthly purchases of €60 billion under the APP are now intended to run until March 2017, or beyond, if necessary, and in any case until the ECB Governing Council sees a sustained adjustment in the path of inflation that is consistent with its

aim of achieving inflation rates close to, but below, 2% over the medium term.

It also decides to reinvest principal payments of maturing securities as part of the APP and, in future, to also include purchases of euro-denominated marketable debt instruments issued by regional and local governments in the euro area.

The ECB Governing Council furthermore announces that the main refinancing operations and the three-month longer-term refinancing operations will continue to be carried out as fixed-rate tenders with full allotment for as long as necessary, and at least until the end of the last maintenance period of 2017.

The prime ministers of the federal states agree on a proposal to reform federal financial relations from 2020, with the aim of improving the finances of all the federal states. However, increased shares in turnover tax revenue for state governments, expanded general supplementary central government grants and new special supplementary central government grants are expected to result in an additional burden of €9½ billion for central government. The federal states of Bremen and Saarland will receive permanent special assistance due to their especially high debts and continuing deficits.

4 December 2015

The Bundesbank forecasts economic growth of 1.8% for 2016 and 1.7% for 2017 (1.7% and 1.9% in calendar-adjusted terms). Based on an estimated potential growth rate of 1.3% per year, aggregate capacity utilisation is expected to climb substantially and to increasingly exceed normal levels. Despite the expansionary effect which migration is having on the labour supply, the labour market is likely to experience shortages to a growing extent, driving up wage increases. Consumer price inflation, as measured by HICP, could initially go up to 1.1% in 2016 and rise to 2.0% in 2017.

The German Council for Social and Economic Data accredits the Bundesbank's Research Data and Service Centre (RDSC). The RDSC now is officially part of the social and economic sciences' research infrastructure and one of the 31 accredited research data centres in Germany. The Bundesbank grants external researchers standardised and transparent access to its anonymised microdata.

9 December 2015

The Stability Council gives Berlin (one of the states undergoing restructuring) particularly good marks and also expresses confidence regarding Schleswig-Holstein. Bremen and Saarland are advised to make further progress towards consolidation. It declares that the ceiling for the structural general government deficit of 0.5% of GDP will be adhered to for the entire financial planning period up to 2019. The independent Advisory Board shares this view.

11 December 2015

The sixth out of the eight targeted longer-term refinancing operations (TLTROs) is conducted: 55 banks borrow €18.3 billion.

15 December 2015

For the first time, the Federal Financial Supervisory Authority (BaFin) fixes a quota for the countercyclical capital buffer. Given the risk situation, like in many other countries, this will be set at 0% in the first quarter of 2016.

18 December 2015

The Federal Financial Supervisory Authority (BaFin), in agreement with the Bundesbank, confirms Deutsche Bank's classification as a global systemically important institution and requires that this institution maintain an additional capital buffer consisting of common equity tier 1 (CET1) capital of 2% of its risk-weighted assets. This capital buffer will gradually be phased in from 1 January 2016.

31 December 2015

At the end of the year, after multiple extensions, credit institutions will no longer be able to apply for assistance from the Financial Market Stabilisation Fund (SoFFin), which was established in autumn 2008 during the financial market crisis.

1 January 2016

The rates set by the individual statutory health insurance institutions for the additional contributions paid by insured persons rise significantly on average. The previous level of 0.8% goes up to nearly 1.1%.

The basic income tax allowance is raised by €180 to €8,652. Other tax brackets are also increased. The child tax allowance is increased by €96 to €7,245 and the monthly child benefit allowance is increased by €2 per child.

13 January 2016

According to provisional figures, the 2015 Federal budget envisages a surplus of €12 billion, which will be transferred in full to the reserve for additional expenditure related to refugees. This is an improvement of €12 billion compared to the previous year, due in large part to the absence of the ESM contribution and the proceeds from the frequency auction. The surplus planned for in the supplementary budget in November 2015 is surpassed by additional revenue worth €4½ billion and by a reduced expenditure of around €2½ billion.

14 January 2016

According to the initial data from the Federal Statistical Office, the general government fiscal balance (pursuant to the Maastricht criteria) was 0.5% of GDP for 2015.

27 January 2016

In its Annual Economic Report, the Federal Government anticipates real GDP growth of 1.7% in 2016, driven primarily by the domestic economy, especially consumer spending and private housing construction investment, underpinned by a further rise in employment and substantial income growth.

12 February 2016

The Federal Statistical Office reports economic growth of 1.7% for 2015.

16 February 2016

Following the ECJ's ruling, which did not fully consider the German supreme court's reservations regarding the lawfulness of the OMT programme, the Federal Constitutional Court resumes hearings in the ongoing proceedings.

24 February 2016

The Bundesbank publishes its annual accounts for the 2015 financial year. The profit of €3,189 million is transferred to central government.

Annual accounts of the Deutsche Bundesbank for 2015

Balance sheet of the Deutsche Bundesbank as at 31 December 2015

Assets

			31.12.2014
		€ million	€ million
1 Gold and gold receivables		105,792	107,475
of which: gold receivables €272,585.72			*(0)*
2 Claims on non-euro-area residents denominated in foreign currency			
2.1 Receivables from the IMF	20,317		(20,624)
2.2 Balances with banks, portfolio investment, external loans and other external assets	33,423		(30,646)
		53,740	51,270
3 Claims on euro-area residents denominated in foreign currency		–	–
4 Claims on non-euro-area residents denominated in euro		–	–
5 Lending to euro-area credit institutions related to monetary policy operations denominated in euro			
5.1 Main refinancing operations	9,127		(32,544)
5.2 Longer-term refinancing operations	48,630		(32,944)
5.3 Fine-tuning reverse operations	–		(–)
5.4 Structural reverse operations	–		(–)
5.5 Marginal lending facility	339		(84)
		58,095	65,572
6 Other claims on euro-area credit institutions denominated in euro		3,540	2,011
7 Securities of euro-area residents denominated in euro			
7.1 Securities held for monetary policy purposes	172,275		(50,224)
7.2 Other securities	–		(–)
		172,275	50,224
8 Claims on the Federal Government		4,440	(4,440)
9 Intra-Eurosystem claims			
9.1 Participating interest in the ECB	1,948		(1,948)
9.2 Claims arising from the transfer of foreign reserves to the ECB	10,430		(10,430)
9.3 Claims related to the allocation of euro banknotes within the Eurosystem (net)	–		(–)
9.4 Other claims within the Eurosystem (net)	584,551		(460,629)
		596,929	473,007
10 Items in course of settlement		1	1
11 Other assets			
11.1 Coins	963		(908)
11.2 Tangible and intangible fixed assets	788		(799)
11.3 Other financial assets	12,376		(12,452)
11.4 Off-balance-sheet instruments revaluation differences	0		(0)
11.5 Accruals and prepaid expenses	2,727		(1,354)
11.6 Sundry items	305		(1,330)
		17,159	16,842
		1,011,969	770,842

Liabilities

			31.12.2014
		€ million	€ million
1 Banknotes in circulation		254,844	240,518
2 Liabilities to euro-area credit institutions related to monetary policy operations denominated in euro			
2.1 Current accounts	155,149		(81,176)
2.2 Deposit facility	53,584		(9,019)
2.3 Fixed-term deposits	–		(–)
2.4 Fine-tuning reverse operations	–		(–)
2.5 Deposits related to margin calls	8		(–)
		208,740	90,196
3 Other liabilities to euro-area credit institutions denominated in euro		–	–
4 Liabilities to other euro-area residents denominated in euro			
4.1 General government deposits	11,647		(1,940)
4.2 Other liabilities	60,242		(7,930)
		71,889	9,870
5 Liabilities to non-euro-area residents denominated in euro		27,179	12,262
6 Liabilities to euro-area residents denominated in foreign currency		35	34
7 Liabilities to non-euro-area residents denominated in foreign currency		571	788
8 Counterpart of special drawing rights allocated by the IMF		15,349	14,380
9 Intra-Eurosystem liabilities			
9.1 Liabilities related to the issuance of ECB debt certificates	–		(–)
9.2 Liabilities related to the allocation of euro banknotes within the Eurosystem (net)	297,786		(267,914)
9.3 Other liabilities within the Eurosystem (net)	–		(–)
		297,786	267,914
10 Items in course of settlement		2	1
11 Other liabilities			
11.1 Off-balance-sheet instruments revaluation differences	–		(–)
11.2 Accruals and income collected in advance	53		(45)
11.3 Sundry items	2,004		(2,695)
		2,058	2,739
12 Provisions		19,608	19,696
13 Revaluation accounts		105,720	104,491
14 Capital and reserves			
14.1 Capital	2,500		(2,500)
14.2 Statutory reserves	2,500		(2,500)
		5,000	5,000
15 Profit for the year		3,189	2,954
		1,011,969	770,842

Profit and loss account of the Deutsche Bundesbank for the year 2015

		€ million	2014 € million
1.1	Interest income	3,260	(4,039)
1.2	Interest expense	– 962	(– 898)
1	Net interest income	2,299	3,141
2.1	Realised gains/losses arising from financial operations	956	(488)
2.2	Write-downs on financial assets and positions	– 82	(– 12)
2.3	Transfers to/from provisions for general risks, foreign exchange risks and price risks	780	(–)
2	Net result of financial operations, write-downs and risk provisions	1,654	476
3.1	Income from fees and commissions	58	(60)
3.2	Expenses relating to fees and commissions	– 26	(– 24)
3	Net income from fees and commissions	32	35
4	Income from participating interests	282	485
5	Net result arising from allocation of monetary income	133	213
6	Other income	228	98
	Total net income	4,627	4,449
7	Staff costs	722	911
8	Other administrative expenses	460	339
9	Depreciation of tangible and intangible fixed assets	101	99
10	Banknote printing	111	98
11	Other expenses	43	48
	Profit for the year	3,189	2,954

Frankfurt am Main, 10 February 2016

DEUTSCHE BUNDESBANK
Executive Board

Dr Jens Weidmann Professor Claudia Buch

Dr Johannes Beermann Dr Andreas Dombret Dr Joachim Nagel Carl-Ludwig Thiele

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

We have audited the annual financial statements – consisting of the balance sheet and the profit and loss account – together with the bookkeeping system of the Deutsche Bundesbank for the business year from 1 January 2015 to 31 December 2015. The maintenance of the books and records and the preparation of the annual financial statements in accordance with generally accepted accounting principles and the principles for the accounting of the Deutsche Bundesbank approved by the Executive Board pursuant to section 26 (2) of the Bundesbank Act are the responsibility of the Executive Board of the Deutsche Bundesbank. Our responsibility is to express an opinion on the annual financial statements, together with the bookkeeping system, based on our audit.

We conducted our audit of the annual financial statements in accordance with section 317 HGB ["Handelsgesetzbuch": "German Commercial Code"] 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 (ISA). Those standards require that we plan and perform the audit such that misstatements materially affecting the presentation of the net assets, financial position and results of operations in the annual financial statements in accordance with [German] principles of proper accounting are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the Deutsche Bundesbank and expectations as to possible misstatements are taken into account in the determination of audit procedures. The effectiveness of the accounting-related internal control system and the evidence supporting the disclosures in the books and records as well as the annual financial statements are examined primarily on a test basis within the framework of the audit. The audit includes assessing the accounting principles used and significant estimates made by the management, as well as evaluating the overall presentation of the annual financial statements. We believe that our audit provides a reasonable basis for our opinion.

Our audit has not led to any reservations.

In our opinion, based on the findings of our audit, the annual financial statements comply with the legal requirements and the principles for the accounting 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 in accordance with these principles and [German] principles of proper accounting.

Frankfurt am Main,
18 February 2016

KPMG AG
Wirtschaftsprüfungsgesellschaft

Mock
Wirtschaftsprüfer

Müller
Wirtschaftsprüfer

Overview of the principles for the accounting of the Deutsche Bundesbank

General accounting principles
Record of economic reality, thus reflecting the Bundesbank's assets and liabilities, financial position and profitability; prudence; account to be taken of post-balance-sheet events that affect the balance sheet; materiality; going-concern principle; accruals principle (income and expense to be recognised in the accounting period in which they are earned or incurred); consistency and comparability.

Recording of spot transactions
Spot transactions in gold and foreign currencies shall be taken into account as from the trade date for ascertaining the average acquisition costs and the realised gains and losses. The balance sheet recording of these spot transactions and of spot transactions in securities shall be based on the date of payment (settlement date).

Balance sheet valuation rules
Gold, foreign currency instruments, securities and financial instruments shall be valued at mid-market rates and prices on the balance sheet date. Securities held to maturity shall be valued at amortised cost. The same is true of 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 on the basis of the euro price per defined unit of weight of gold derived from the euro-US dollar exchange rate on the balance sheet date.

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

In the case of securities, each revaluation shall be 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 item that has been given as collateral remains 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 security lending transactions, the assets shall remain on the balance sheet of the transferor.

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

Unrealised gains and unrealised losses arise as a result of the revaluation through a comparison of the market value with the acquisition value as calculated using the average cost method. Unrealised gains shall not be recognised as income but shall be transferred directly to a revaluation account.

Unrealised losses shall be taken into the profit and loss account if they exceed previous unrealised gains registered in the corresponding revaluation account. Unrealised losses recorded in the profit and loss account in previous years shall not be reversed in subsequent years in the event of new unrealised gains. There shall be no netting of unrealised losses in any one security,

in any currency or in gold holdings against unrealised gains in other securities, currency or gold.

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

In the case of securities, the difference between the acquisition value and the redemption value (premium or discount) shall be distributed over the contractual residual maturity in accordance with the internal rate of return method, treated as part of the interest income (amortisation in accordance with the internal rate of return method) and recognised at acquisition value (amortised cost).

Accrual and deferral items covering foreign currency holdings shall be converted 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, the 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 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.

Gains and losses arising from off-balance-sheet instruments shall be treated in a similar manner to those from spot transactions.

Tangible and intangible fixed assets

Tangible and intangible fixed assets shall be valued at cost less depreciation, which 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: four years
- Equipment, furniture and installed equipment: ten years
- Building and capitalised major refurbishment expenditure: 25 years
- Depreciation shall not apply to land

Tangible and intangible fixed assets, the acquisition value of which, after deduction of value added tax, is less than €10,000 shall be fully amortised in the year in which they were acquired.

Provisions

With the exception of the provisions for Eurosystem monetary policy operations, the regulations set forth in the Commercial Code (*Handelsgesetzbuch*) continue to apply to the reporting of provisions in the balance sheet. Pursuant to section 26 (2) of the Bundesbank Act (*Bundesbankgesetz*), the creation of liability items for general risks associated with domestic and foreign business is possible.

Transitional arrangements

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

General information on 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 the distribution of profit. In accordance with the provisions on accounting laid down in section 26 (2) sentence 2 of the Bundesbank Act, the Bundesbank may apply the accounting principles governing the annual accounts of the ECB.

Accounting principles of the Deutsche Bundesbank

The Governing Council of the ECB adopted the principles it applies to its annual accounts in accordance with Article 26.2 of the ESCB Statute. The Bundesbank decided to adopt those principles as the "accounting principles of the Deutsche Bundesbank".[1] An overview of the principles for the accounting of the Deutsche Bundesbank is given on the preceding pages. The annual accounts of the Bundesbank are in alignment with the harmonised rules applied in the Eurosystem, both in terms of the structure of the balance sheet and the profit and loss account, and with regard to the balance sheet valuation and accounting principles.

Balance sheet entry 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 recording the euro banknotes in circulation in the financial statements of the individual central banks in 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 banknote allocation key. 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 2015, the Bundesbank had a 25.6% share in the fully paid-up capital of the ECB and, therefore, a 23.5% 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 in the balance sheet as an intra-Eurosystem liability in liability sub-item 9.2 "Liabilities related to the allocation of euro banknotes within the Eurosystem (net)". 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 "Claims related to the allocation of euro banknotes within the Eurosystem (net)". These balances are remunerated at the respective rate of 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 within the Eurosystem are adjusted in order to avoid significant changes to national central banks' relative income positions from

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1 Published as a revised edition in Deutsche Bundesbank Notice No 10001/2016 of 4 February 2016.
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 27 November 2014 (ECB/2014/49).
3 Decision of the European Central Bank of 25 November 2010 on the allocation of monetary income of the national central banks of member states whose currency is the euro (ECB/2010/23), as last amended by the Decision of the European Central Bank of 19 November 2015 (ECB/2015/37).

those in previous years. The adjustments are made by taking into account 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 them during that period in accordance with the ECB's capital key. The adjustments are reduced in annual stages until the first day of the sixth year after the year of the cash changeover. 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. In the year under review, the adjustments resulted from the accession of the Estonian central bank in 2011, the Latvian central bank in 2014 and the Lithuanian central bank in 2015; the adjustments will finish accordingly on 31 December 2016, 2019 and 2020. The interest income and interest expense arising from the remuneration of the intra-Eurosystem balances are cleared through the accounts of the ECB and are shown in the profit and loss account of the Bundesbank in item 1 "Net interest income".

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, the Third Covered Bond Purchase Programme, the Asset-Backed Securities Purchase Programme and the Public Sector Purchase Programme 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 the financial year 2015, €812 million of the aforementioned ECB income (2014: €841 million) was distributed among the national central banks as interim profit in January 2016. The Bundesbank's share of €208 million (2014: €216 million) is shown under item 4 "Income from participating interests" in its profit and loss account.

Change to the ECB's capital key on 1 January 2015

The Lithuanian central bank joined the Eurosystem on 1 January 2015 and paid up its capital share in the ECB in full. As a result, the Bundesbank's share of the fully paid-up capital of the ECB dropped from 25.7% to 25.6% on 1 January 2015.

Preparation and auditing of financial statements

The Executive Board drew up the Deutsche Bundesbank's financial statements for the financial year 2015 on 10 February 2016. The financial statements were audited by KPMG AG Wirtschaftsprüfungsgesellschaft, Frankfurt am Main. The Executive Board had appointed the firm as external auditors on 27 January 2015 in accordance with section 26 (3) of the Bundesbank Act. The auditors confirmed without qualification on 18 February 2016 that the Bundesbank's financial statements for 2015 – consisting of the balance sheet and the profit and loss account – comply with the statutory provisions and the principles for the accounting 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' report, the Executive Board decided to publish the financial statements and transfer the Bundesbank's profit to the Federal Government on 24 February 2016.

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 2 July 2015 (ECB/2015/25).

Notes on the individual balance sheet items

Assets

1 Gold and gold receivables

As at 31 December 2015, the Bundesbank's physical holdings (bars) of fine gold (ozf) amounted to 3,381,012 kg or 109 million ounces. These are supplemented by an additional 9 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 = €31,289.91 or 1 ozf = €973.225). Compared with the previous year's price of 1 kg = €31,757.51 or 1 ozf = €987.769, this represents a decline of 1.5%. The gold holdings decreased by just 0.1% in the year under review (by 3,219 kg or 0.1 million ounces). 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 in the amount of €104 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 claims on the International Monetary Fund (IMF) as well as balances with banks, portfolio investment, loans and other foreign currency claims on non-euro-area residents.

2.1 Receivables from the IMF

Sub-item 2.1 contains the claims on the IMF which are financed and held by the Bundesbank and which arise from Germany's membership of the IMF. The claims, which total SDR 15,963 million (€20,317 million), are made up of the drawing rights within the reserve tranche, special drawing rights and loans under the New Arrangements to Borrow (NAB).

The drawing rights within the reserve tranche correspond to the amounts actually paid to the IMF in gold, special drawing rights, foreign exchange and national currency under the German quota. The drawing rights held represent the difference between the German quota of SDR 14,566 million (€18,539 million) and the euro balances amounting to €16,535 million (SDR 12,992 million) at the IMF's disposal at the end of the year. In 2015, there was a net decline of SDR 811 million to SDR 1,574 million (€2,003 million) in the holdings of drawing rights within the reserve tranche.

Gold reserves by storage location

	31.12.2015		31.12.2014		Year-on-year change			
Storage location	Tonnes	€ million	Tonnes	€ million	Tonnes	%	€ million	%
Deutsche Bundesbank, Frankfurt	1,402	43,883	1,192	37,869	210	17.6	6,014	15.9
Federal Reserve Bank, New York	1,347	42,160	1,447	45,950	– 100	– 6.9	– 3,791	– 8.2
Bank of England, London	435	13,603	438	13,908	– 3	– 0.7	– 305	– 2.2
Banque de France, Paris	196	6,146	307	9,747	– 110	– 36.0	– 3,601	– 36.9
Total	3,381	105,792	3,384	107,475	– 3	– 0.1	– 1,683	– 1.6

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Receivables from the IMF

Item	31.12.2015		31.12.2014		Year-on-year change			
	SDR million	€ million	SDR million	€ million	SDR million	%	€ million	%
German quota	14,566	18,539	14,566	17,368	–	–	1,170	6.7
less euro balances	12,992	16,535	12,181	14,525	811	6.7	2,011	13.8
Drawing rights within the reserve tranche	1,574	2,003	2,385	2,844	– 811	– 34.0	– 841	– 29.6
Special drawing rights	11,931	15,185	11,959	14,261	– 29	– 0.2	925	6.5
New Arrangements to Borrow	2,458	3,129	2,952	3,520	– 494	– 16.7	– 391	– 11.1
Total	15,963	20,317	17,296	20,624	– 1,333	– 7.7	– 307	– 1.5

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Special drawing rights – by means of which convertible currencies can be obtained at any time – in the amount of SDR 12,059 million were allocated free of charge. A corresponding counterpart is shown as liability item 8 "Counterpart of special drawing rights allocated by the IMF". In 2015, the holdings of special drawing rights declined by SDR 29 million to SDR 11,931 million (€15,185 million).

First activated on 1 April 2011, the NAB is a set of multilateral lines of credit granted by the IMF which serve as a backstop for use in the event of a systemic crisis. The Bundesbank's NAB credit arrangement amounts to SDR 25.4 billion. At the end of the reporting year, this resulted in receivables from the IMF of SDR 2,458 million (€3,129 million). The additional bilateral credit line of €41.5 billion pledged by the Bundesbank to the IMF in October 2012 was not drawn upon, 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 3,904 million, compared with SDR 5,237 million in 2014. The valuation is based on the reference rate of SDR 1 = €1.2728 (2014: SDR 1 = €1.1924) calculated by the ECB at the end of the year for all central banks participating in the Eurosystem.

2.2 Balances with banks, portfolio investment, external loans and other external assets

The balances with banks, portfolio investment, loans and other foreign currency claims which are shown in sub-item 2.2 amounted to €33,423 million at the end of 2015, compared with €30,646 million on 31 December 2014. These include, in particular, US dollar holdings in the amount of US$33,532 million (€30,800 million), representing a decline of US$707 million on the year. The sub-item also contains holdings in yen (¥202,852 million equivalent to €1,548 million) and in Australian dollars (A$1,596 million equivalent to €1,071 million) as well as a very small amount in other currencies. The holdings are interest-bearing. If all items on the assets side and the liabilities side of the balance sheet are taken into account, the net US dollar holdings valued at market prices amounted to US$32,959 million (2014: US$33,331 million), the net yen holdings to ¥203,007 million (2014: ¥202,773 million) and the net Australian dollar holdings to A$1,609 million (2014: A$1,569 million). The foreign currency holdings were valued at the respective end-of-year market rate; in the case of the US dollar holdings these came to €1 = US$1.0887 (2014: €1 = US$1.2141), for the holdings of yen

Balances with banks, portfolio investment, external loans and other external assets

Item	31.12.2015 € million	31.12.2014 € million	Year-on-year change € million	Year-on-year change %
Current account holdings and overnight deposits	1,651	1,396	255	18.3
Claims arising from reverse repurchase agreements	2,068	2,328	– 260	– 11.2
Fixed-term deposits and deposits redeemable at notice	1,791	–	1,791	.
Marketable securities				
Government bonds				
US dollar	24,867	22,370	2,497	11.2
Yen	449	812	– 364	– 44.8
Australian dollar	1,054	1,025	29	2.8
Supranational institutions	1,394	2,586	– 1,192	– 46.1
Other	148	127	21	17.0
Total	33,423	30,646	2,777	9.1

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€1 = ¥131.07 (2014: €1 = ¥145.23) and for the Australian dollar holdings €1 = A$1.4897 (2014: €1 = A$1.4829).

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, structural operations and the marginal lending facility). At the end of the reporting year, the Eurosystem's corresponding outstanding volume of monetary policy operations amounted to €558,989 million (2014: €630,341 million), of which the Bundesbank accounted for €58,095 million (2014: €65,572 million). Pursuant to Article 32.4 of the ESCB Statute, risks from these operations, should 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 involved in a monetary policy operation defaults and the collateral it has provided proves insufficient upon realisation. However, the Governing Council of the ECB has ruled out risk-sharing for certain types of collateral, which the national central banks may nevertheless accept as collateral on their own responsibility. The Bundesbank does not accept such collateral.

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 €9,127 million, which was €23,417 million less than on 31 December 2014. On a daily average, the outstanding volume of main refinancing operations came to €4,253 million (2014: €10,984 million).

In the year under review, 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. In addition, targeted longer-term refinancing operations (TLTROs) which will mature in September 2018 were settled quarterly at the main refinancing rate applicable at the time the transactions were conducted. Each counterparty's potential recourse to these operations is limited according to the scope of their lending to the real economy. The volume of all longer-term refinancing operations combined amounted to €48,630 million at the end of 2015 and was, therefore, €15,685 million higher than in the previous year. Increased recourse to the TLTROs in the amount of €39,368 million overall (2014: €19,084 million)

more than offset the decline in volume caused by the expiry of three-year tenders in 2015 (in 2014, these amounted to €3,033 million) and the limited use of the three-month tenders (€9,262 million, compared with €10,828 million in 2014). On a daily average, the volume of longer-term refinancing operations amounted to €36,306 million (2014: €14,210 million).

The marginal lending facility is a standing facility which counterparties may use to obtain overnight liquidity at a predetermined interest rate. At the end of 2015, recourse to this facility amounted to €339 million (2014: €84 million). The extent to which it was being used on a daily average came to €28 million (2014: €52 million).

6 Other claims on euro-area credit institutions denominated in euro

This item, amounting to €3,540 million (2014: €2,011 million) consists, in particular, of fixed-term deposits which are held at credit institutions and arise from funds received in connection with central bank services (see liability item 5 "Liabilities to non-euro-area residents 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. In 2015, purchases were made under the third covered bond purchase programme (CBPP3) and the public sector purchase programme (PSPP) announced by the ECB Governing Council on 4 September 2014 and 22 January 2015 respectively. By contrast, bonds purchased under the terminated programmes CBPP, securities markets programme (SMP) and CBPP2 matured.

At the end of 2015, the Eurosystem national central banks' SMP holdings amounted to €114,080 million (2014: €134,162 million), of which the Bundesbank held €27,670 million (2014: €33,623 million). The CBPP3 holdings of the Eurosystem national central banks came to €131,883 million (2014: €27,333 million), of which the Bundesbank held €32,703 million (2014: €6,576 million). The Eurosystem national central banks' PSPP holdings of securities issued by supranational institutions stood at €59,760 million, although the Bundesbank itself did not acquire any holdings. Pursuant to Article 32.4 of the ESCB Statute, all risks from the abovementioned SMP, CBPP3 and PSPP holdings, provided they materialise, are shared among the Eurosystem national central banks in proportion to the prevailing shares

Securities held for monetary policy purposes

Item	31.12.2015		31.12.2014		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	%
SMP portfolio								
Greece	2,942	2,952	3,885	3,523	– 942	– 24.3	– 571	– 16.2
Ireland	1,774	2,063	1,761	2,115	13	0.7	– 53	– 2.5
Portugal	2,623	2,916	3,099	3,485	– 476	– 15.3	– 569	– 16.3
Italy	14,313	16,451	17,994	20,529	– 3,681	– 20.5	– 4,079	– 19.9
Spain	6,018	6,713	6,884	7,770	– 866	– 12.6	– 1,057	– 13.6
Total	27,670	31,095	33,623	37,423	– 5,952	– 17.7	– 6,328	– 16.9
CBPP portfolio	4,774	5,120	6,732	7,256	– 1,958	– 29.1	– 2,136	– 29.4
CBPP2 portfolio	2,900	3,083	3,294	3,531	– 394	– 12.0	– 448	– 12.7
CBPP3 portfolio	32,703	32,623	6,576	6,587	26,127	397.3	26,036	395.3
PSPP portfolio	104,227	103,719	–	–	104,227	100.0	103,719	100.0
Total	172,275	175,640	50,224	54,796	122,050	243.0	120,844	220.5

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in the capital of the ECB. Risks from the covered bonds purchased under the Eurosystem programmes CBPP and CBPP2, by contrast, are borne by the individual national central banks holding them. The same applies to the government bonds purchased under the PSPP (including bonds issued by eligible agencies located in the euro area). The Bundesbank purchases only German bonds under the PSPP.

The Governing Council of the ECB decided that no write-downs were required for securities contained in the SMP and PSPP holdings and in the three CBPP portfolios as at 31 December 2015, as it is expected that all payment obligations relating to the bonds and covered bonds 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 (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 the year 2024.

9 Intra-Eurosystem claims

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

Sub-item 9.1 shows the Bundesbank's participating interest in the ECB. Pursuant to Article 28 of the ESCB Statute, the ESCB national central banks are the sole subscribers to the capital of the ECB. On 31 December 2015, the Bundesbank's participating interest in the ECB stood at €1,948 million.

Sub-item 9.2 contains the Bundesbank's euro-denominated claims arising from 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 ESCB Statute. Adjustments to the key for subscribing to the ECB's capital also result in adjustments to the Bundesbank's claims arising from the transfer of foreign reserves to the ECB. On 31 December 2015, these claims amounted to €10,430 million, unchanged on the 2014 figure. As the transferred gold does not earn any interest, the claims are remunerated at 85% of the respective main refinancing rate.

Sub-item 9.3 "Claims related to the allocation of euro banknotes within the Eurosystem (net)" shows the claims which arise from applying the euro banknote allocation key. Like at the end of 2014, the Bundesbank had no claims at the end of 2015 and instead recorded liabilities, which are shown in liability sub-item 9.2 "Liabilities related to the allocation of euro banknotes within the Eurosystem (net)".

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 part of the Eurosystem's TARGET2 large-value payment system. The German banking system received extensive central bank money via TARGET2 in 2015. At the end of the year, the Bundesbank's net claim on the ECB thus rose by €123,364 million to €584,210 million and is shown under sub-item 9.4 "Other claims within the Eurosystem (net)". The net balance is remunerated at the respective main refinancing rate. On a daily average, the interest-bearing net claim amounted to €550,928 million (2014: €482,370 million). This item also contains the claims of €133 million arising from the allocation of monetary income to the national central banks (see profit and loss item 5 "Net result arising from allocation of monetary income") and the €208 million claim on the ECB arising from the interim dis-

tribution of profit (see General information on 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 €788 million, compared with €799 million in 2014. It comprises land and buildings, furniture and equipment and computer software.

Sub-item 11.3 "Other financial assets" amounted to €12,376 million, compared with €12,452 million in 2014. It contains the Bundesbank's own funds portfolio (euro portfolio) as a counterpart to the capital, statutory reserves, provisions for general risks and long-term provisions for pensions and healthcare assistance. The own funds portfolio is not invested 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. Securities intended for sale are valued at market prices. On 31 December 2015, the value of the own funds portfolio at amortised cost amounted to €12,324 million, of which German Pfandbriefe accounted for €9,572 million and French covered bonds for €2,752 million. The total market value of the own funds portfolio stood at €12,875 million.

This item also includes €52 million (2014: €89 million) in participating interests held by the Bundesbank. The Bundesbank's participating interest in the BIS, Basel, was unchanged at €50 million at the end of 2015; it holds 50,100 shares. The Bundesbank's participating interest in Liquiditäts-Konsortialbank GmbH i. L., Frankfurt am Main, which amounted to €38 million in 2014, was reduced to zero following repayment of the contributed capital in December 2015. In 2015, the participating interest in the cooperative society SWIFT, La Hulpe (Belgium), amounted to €2 million (2014: €1 million).

Sub-item 11.5 "Accruals and prepaid expenses" contains the accrued and prepaid expenditure calculated as at 31 December 2015. This chiefly consists of (accrued) interest income due in 2016 from securities, refinancing operations for credit institutions and the interest-bearing

Tangible and intangible fixed assets

€ million

Item	Purchase/ production costs 31.12.2014	Additions	Disposals	Accumulated depreciation	Book value 31.12.2015	Book value 31.12.2014	Depreciation in 2015
Land and buildings	2,279	14	– 14	– 1,654	626	661	– 44
Furniture and equipment	756	81	– 32	– 645	160	135	– 54
Computer software	139	3	– 0	– 140	3	3	– 3
Total	3,174	98	– 46	– 2,438	788	799	– 101

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The role of the Agreement on Net Financial Assets (ANFA) in monetary policy implementation

The purchase of securities by Eurosystem national central banks (NCBs) outside the monetary policy purchase programmes has been the subject of public debate since the end of 2015. The Agreement on Net Financial Assets (ANFA), a contractual agreement among all Eurosystem national central banks, is often referred to in this context. The overarching aim of ANFA is to ensure that the NCBs' non-monetary policy balance sheet management is consistent with the smooth and efficient implementation of the single monetary policy of the Eurosystem.

In addition to their common tasks enshrined in the Statute of the European System of Central Banks (ESCB), such as the implementation of monetary policy and conduct of foreign exchange operations, the Eurosystem NCBs also carry out national tasks autonomously on the basis of the central banking legislation in place in their respective country. These national tasks can include, for example, on the asset side of the central bank's balance sheet the purchase of non-monetary policy securities for general investment purposes or on the liability side the acceptance of government deposits. According to Article 14.4 of the Statute, all functions that are not related to monetary policy must be consistent with the objectives and tasks of the ESCB. With regard to the conduct of the single monetary policy, this means specifically that the liquidity effects resulting from NCBs' on-balance sheet non-monetary policy management must not interfere with the conduct of monetary policy. This is precisely where ANFA comes into play: its purpose is to provide a restricting framework for the net liquidity effect that results from non-monetary policy activities. In the context of managing the banking sector's structural balance sheet position vis-à-vis the Eurosystem,[1] ANFA, in conjunction with the monetary policy decisions adopted by the ECB Governing Council, regulates the maximum permissible total net amount of financial assets[2] in the Eurosystem that are not related to monetary policy operations and distributes it among the NCBs. ANFA is therefore designed to safeguard monetary policy.

However, ANFA does not stipulate any specific limits for individual balance sheet items or purchases of securities: it merely imposes a limit for each NCB on the net liquidity effects resulting from non-monetary policy operations. Notwithstanding the provisions specified in ANFA, Eurosystem central banks must observe the prohibition of monetary financing with regard to purchasing financial assets (Article 123 of the Treaty on the Functioning of the European Union (TFEU)). Hence, NCBs are not allowed to buy sovereign bonds on the primary market or carry out transactions that serve to circumvent this prohibition. The ECB monitors and reports on compliance with the prohibition of monetary financing.[3]

The Bundesbank bases its balance sheet management on the principle of a "lean central bank balance sheet" and only holds financial assets in such volumes as it needs to fulfil its tasks. As at 31 December 2015, the Bundesbank held euro-denominated securities worth a total of €12.324 billion in its non-monetary policy euro portfolio. These investments constitute a counterpart to the capital, statutory reserves, provisions for general risks and long-term provisions for pension commitments and healthcare subsidy commitments for civil servants (see asset sub-item 11.3 "Other financial assets").

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1 See box "Structural liquidity position of the banking system", Deutsche Bundesbank, Monthly Report, June 2015, pp 36-37.

2 The Eurosystem balance sheet distinguishes between items related to monetary policy operations and non-monetary policy items. The following balance sheet items are related to monetary policy: monetary policy refinancing operations (A 5), securities held for monetary policy purposes (A 7.1), intra-Eurosystem claims and liabilities (A 9 and L 10), banknotes in circulation (L 1), liabilities to credit institutions related to monetary policy operations (L 2) and ECB debt certificates issued (L 4). Thus, the net financial assets can be calculated as the balance of all non-monetary policy balance sheet items on the asset side less all non-monetary policy items on the liability side.

3 See ECB Annual Report 2014, Chapter 2.6.4: "The ECB also monitors the EU central banks' secondary market purchases of debt instruments issued by the domestic public sector, the public sector of other Member States and EU institutions and bodies. […] The monitoring exercise conducted for 2014 confirms that the provisions of Articles 123 and 124 of the Treaty and the related Council Regulations were in general respected."

TARGET2 claim on the ECB which were acquired or transacted in 2015.

In previous years, sub-item 11.6 "Sundry items" contained mainly the nominal value of claims against one counterparty that defaulted from monetary policy operations undertaken by the Eurosystem; in 2015, these have now been settled in full by payments from the insolvency estate of the counterparty and its group parent company in the United States.

Liabilities

1 Banknotes in circulation

The total value of euro banknotes issued by the central banks in 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 annual accounts). According to the banknote allocation key applied on 31 December 2015, the Bundesbank has a 23.5% share of the value of all euro banknotes in circulation. During the year under review, the total value of banknotes in circulation within the Eurosystem rose from €1,016.6 billion to €1,083.5 billion, or by 6.6%. According to the allocation key, the Bundesbank had euro banknotes in circulation worth €254,844 million at the end of the year, compared with €240,518 million at the end of 2014. The value of the euro banknotes actually issued by the Bundesbank in 2015 increased by 8.7% from €508,432 million to €552,630 million. As this was more than the allocated amount, the difference of €297,786 million (2014: €267,914 million) is shown in liability sub-item 9.2 "Liabilities related to the allocation of euro banknotes within the Eurosystem (net)".

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 €155,149 million (2014: €81,176 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 respective business partners 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 €30,347 million on an annual average. Minimum reserve balances are remunerated at the average main refinancing rate in the respective maintenance period. Any deposits exceeding this amount were subject to negative interest equivalent to the deposit facility rate in the year under review. On a daily average, the current account deposits increased from €61,124 million in 2014 to €119,415 million in 2015.

Sub-item 2.2 "Deposit facility", amounting to €53,584 million (2014: €9,019 million), contains overnight deposits at the deposit facility rate (a negative interest rate applied in the year under review). On a daily average, the deposit facility amounted to €32,540 million, compared with €8,916 million in 2014.

Sub-item 2.5 "Deposits related to margin calls" contains cash collateral of €8 million deposited by credit institutions in order to increase underlying assets.

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 and other public depositors. The deposits of other public depositors constitute balances held by social security funds and local authorities. On 31 December 2015, general government deposits totalled €11,647 million (2014: €1,940 million). This increase resulted in particular from higher deposits of the Federal Government and of the Financial Market Stabilisation Agency (Bundesanstalt für Finanzmarktstabilisierung – FMSA).

Sub-item 4.2 "Other liabilities" amounted to €60,242 million, compared with €7,930 million on 31 December 2014. It mainly comprises deposits of financial intermediaries and individuals. The increase is primarily due to a rise in deposits of the European Stability Mechanism (ESM).

5 Liabilities to non-euro-area residents denominated in euro

This balance sheet item, amounting to €27,179 million (2014: €12,262 million), contains the balances of non-euro-area central banks, monetary authorities, international organisations and commercial banks held, *inter alia*, to settle payments. These include fixed-term deposits of central banks accepted as part of the Bundesbank's central bank services which are then invested in the money market (see asset item 6 "Other claims on euro-area credit institutions denominated in euro").

6 Liabilities to euro-area residents denominated in foreign currency

This item, amounting to €35 million (2014: €34 million), contains US dollar deposits of banks domiciled in the euro area and of the Federal Government.

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

The foreign-currency-denominated liabilities to banks outside the euro area are recorded in this item. These are liabilities in US dollars, amounting to €571 million (2014: €788 million), which have arisen from securities repurchase agreements (repos).

8 Counterpart of special drawing rights allocated by the IMF

The counterpart of the special drawing rights allocated by the IMF free of charge corresponds to the allocations of special drawing rights to the Federal Republic of Germany from 1970 to 1972, from 1979 to 1981 and in 2009, which together totalled SDR 12,059 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 combined in this item.

Sub-item 9.1 contains "Liabilities related to the issuance of ECB debt certificates". The ECB did not issue any such paper in 2015.

Sub-item 9.2 "Liabilities related to the allocation of euro banknotes within the Eurosystem (net)" contains the liabilities arising from the application of the euro banknote allocation key (see liability item 1 "Banknotes in circulation"). At the end of the year, these liabilities amounted to €297,786 million in total (2014: €267,914 million). The 8% share of the total value (€1,083.4 billion) of euro banknotes in circulation attributable to the ECB resulted in a liability of €22,160 million for the Bundesbank (according to its capital share of 25.6%). In addition, the difference between the Bundesbank's actual banknote issuance of €552,630 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 €275,626 million. The main reason for the total increase of €29,873 million in the year under review was the Bundesbank's still disproportionately high share of banknote issuance, largely due to net outflows of banknotes to other countries through tourism in particular.

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)". At the end of 2015, 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 in the explanatory notes above.

10 Items in course of settlement

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

11 Other liabilities

Sub-item 11.2 "Accruals and income collected in advance" contains the accrued and collected income calculated as at 31 December 2015. This consists mainly of (accrued) interest expenditure which is due in 2016 but was incurred in 2015 and which arose in connection with the allocation of banknotes within the Eurosystem.

Sub-item 11.3 "Sundry items" comprises mainly the liabilities arising from the Deutsche Mark banknotes still in circulation. Although Deutsche Mark banknotes are no longer legal tender, 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 circula-

tion belong to the series BBk I/Ia and BBk III/IIIa. The liabilities arising from Deutsche Mark banknotes in circulation now comprise only notes of the series BBk III/IIIa in the amount of €1,876 million (2014: €1,906 million). In addition, there are still banknotes in circulation belonging to the series BBk I/Ia, which has already been written off, amounting to €1,217 million. Deposits of Deutsche Mark banknotes in 2015 totalled €37 million, of which €30 million was made up of the BBk III/IIIa series and €7 million of the BBk I/Ia series (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 (*Gesetz über die Deutsche Bundesbank*). 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. In doing so, the holdings of risk-weighted assets, their risk content, foreseeable changes in the risk situation, the financial situation expected for the coming years and the statutory reserves (€2.5 billion) are taken into account. In the reporting year, the default risks of the SMP and the credit risks arising from refinancing loans decreased, primarily on account of the decline in holdings of risk-weighted assets. However, the Bundesbank was exposed to additional credit risk, albeit on a comparatively smaller scale, as a result of the decisions by the ECB Governing Council of 4 September 2014, 22 January 2015 and 3 December 2015 to purchase asset-backed securities, euro-denominated covered bonds and public sector securities as part of programmes – ABSPP, CBPP3 and PSPP respectively – to run for (at least) two and a half years (until the end of March 2017). Moreover, the annual result expected for 2016, and hence the available financial resources (risk coverage potential), is no longer declining, unlike in the previous two years. Taking into account all of the aforementioned factors, the existing risk provisions were tentatively reduced by €780 million as at 31 December 2015. The provisions for general risks thus amounted to €13,600 million as at 31 December 2015. The Bundesbank's risks, which are determined using a model, relate, in particular, to exchange rate risks, default risks of the asset purchase programmes and credit risks arising from refinancing loans. This analysis 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 (in the case of the TARGET2 claim, only indirectly as an ECB shareholder) be affected by the risk to which the Eurosystem is exposed if a euro-area country were to exit and its central bank did not settle its TARGET2 liability to the ECB or its banknote liabilities to the ECB (8% share) and the national central banks. The Bundesbank considers this scenario to be unlikely, however, which means that the credit risks arising from Eurosystem operations to provide liquidity are ultimately the decisive factor.

The provisions for direct pension commitments, for 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 and for healthcare subsidy commitments to civil servants are valued on the basis of an actuarial expert opinion based on current mortality tables (mortality table 2005 G produced by Dr Klaus Heubeck) pursuant to the entry age normal method (*Teilwertverfahren*) (for employees) and pursuant to the present value method (*Barwertverfahren*) (for pensioners), with a discount rate of 3.81% used in the reporting year (2014: 4.51%). For financial year 2015, as in 2014, it is estimated that there was a wage trend of 2%, a career trend of 0.5% as well as a pension trend of 2% for civil servants and of 1% for public sector employees. The cost trend for healthcare subsidy commitments to civil servants amounted to 3%, compared with 2.75% in the previous year. The provisions for the partial retirement scheme

Provisions

Provisions for	31.12.2015 € million	31.12.2014 € million	Year-on-year change € million	Year-on-year change %
General risks	13,600	14,380	– 780	– 5.4
Direct pension commitments	4,241	3,744	497	13.3
Indirect pension commitments (supplementary pension funds)	485	427	58	13.5
Healthcare subsidy commitments to civil servants	1,056	890	166	18.6
Partial retirement scheme	38	58	– 20	– 35.1
Staff restructuring schemes	125	148	– 23	– 15.3
Other	62	48	14	29.6
Total	19,608	19,696	– 88	– 0.4

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and for payment commitments arising from staff restructuring schemes that had already been carried out by the balance sheet date are calculated using a discount rate of 2.16% (2014: 3.06%) based on an actuarial expert opinion pursuant to the present value method, or pursuant to the entry age normal method in the case of the outstanding settlement amount for the partial retirement scheme. As in 2014, a wage trend of 2% is taken into consideration. The discount rate used is, in each case, a maturity-matched average market rate for the past seven years in accordance with the Regulation on the Discounting of Provisions (*Rückstellungsabzinsungsverordnung*).

Expenses in the amount of €789 million from marking up the aforementioned staff provisions (including the effects of changing the discount rate) are contained in profit and loss sub-item 1.2 "Interest expense". Other changes to these provisions on balance resulted in usage-related relief of €67 million in profit and loss item 7 "Staff costs" and of €35 million in profit and loss item 11 "Other expenses" as well as in dissolution-related income of €9 million in profit and loss item 6 "Other income".

The other provisions have been created for remaining holiday entitlement, overtime and positive balances of flexible working hours as well as for other uncertain liabilities.

13 Revaluation-accounts

This item contains the disclosed hidden reserves from the initial valuation at the time of the changeover to market valuation on 1 January 1999 (revaluation items "old") and the unrealised profits arising from market valuation on 31 December 2015 (revaluation items "new").

Revaluation items "old"

A revaluation item "old" now remains only for the item gold. It represents the difference between the market value of gold on 1 January 1999 and the lower value of gold prior to that date. In the balance sheet on 31 December 1998, the value for gold was 1 ozf = DM143.8065 (€73.5271) while the market value on 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 dissolved under certain circumstances. Besides a dissolution in the case of valuation losses on the gold item, a proportionate dissolution also takes 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 3,219 kg or 0.1 million ozf in the gold holdings resulted in a dissolution amount of €18 million in the year under re-

Revaluation accounts

Item	Revaluation items "old"	Revaluation items "new"	Total 31.12.2015	Total 31.12.2014	Year-on-year change	
	€ million	€ million	€ million	€ million	€ million	%
Gold	18,788	79,011	97,799	99,475	– 1,676	– 1.7
US dollars	–	7,129	7,129	4,277	2,852	66.7
SDRs	–	481	481	369	111	30.1
Yen	–	149	149	–	149	.
Australian dollars	–	33	33	38	– 5	– 14.3
Securities denominated in foreign currency	–	130	130	196	– 66	– 33.6
Securities denominated in euro	–	–	–	136	– 136	– 100.0
Total	18,788	86,932	105,720	104,491	1,229	1.2

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view. This amount is included in profit and loss sub-item 2.1 "Realised gains/losses arising from financial operations".

Revaluation items "new"

In the case of gold holdings, the net positions in each foreign currency and the securities portfolios in each category of security (securities identification number), the positive difference between their market value on 31 December 2015 and their value in terms of the average amortised acquisition cost from 1 January 1999 is shown in the revaluation items "new".

As regards gold, the acquisition cost is 1 ozf = €246.370. At the end of 2015, the market value of the gold item exceeded its acquisition value, leading to a revaluation item of €79,011 million (2014: €80,669 million). In the case of the net foreign exchange items in US dollars, special drawing rights, yen and Australian dollars, the market values at year-end were also above their acquisition values (€1 = US$1.4257, €1 = SDR 0.8698, €1 = ¥145.03 and €1 = A$1.5367), with the result that there were revaluation items.

The valuation gains from foreign-currency-denominated securities shown in the balance sheet result almost exclusively from US Treasury notes (€114 million). However, for a portion of the US Treasury notes, the relevant acquisition values were higher than their corresponding market values on the balance sheet 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. At year-end, there were no securities earmarked for sale in the own portfolio, which would be valued at market price in this case; in 2014, this resulted in valuation gains of €136 million.

14 Capital and reserves

In accordance with section 2 of the Bundesbank Act, the liable capital amounts to €2.5 billion and is attributable to the Federal Government. The statutory reserves are in line with the fixed upper limit which is laid down in section 27 number 1 of the Bundesbank Act and which is likewise €2.5 billion.

15 Profit for the year

The profit and loss account for the year 2015 closed with an annual surplus of €3,189 million. Pursuant to section 27 of the Bundesbank Act, it will be transferred in full to the Federal Government as the statutory reserves were at their maximum level of €2.5 billion at the end of 2015.

Notes on the profit and loss account

1 Net interest income

This item shows interest income less interest expense. Net interest income, at €2,299 million, was €843 million lower than in the previous year. This was due, in particular, to key interest rates being just over two-thirds lower on an annual average, but also to the maturity-based reduction in securities held for monetary policy purposes owing to the terminated purchase programmes (SMP portfolio and CBPP/CBPP2 portfolio). The latter factor was only partly, and only indirectly, compensated for by the current purchase programmes (CBPP3 and PSPP portfolios). Although these new asset purchases led to a significant increase in total assets in the year under review, they do not make a substantial contribution to net interest income because of their low remuneration; interest income arises only indirectly from the resulting excess reserves, and from the negative interest rate on credit institutions' deposits.

1.1 Interest income

Interest income in foreign currency rose from €275 million in 2014 to €354 million in 2015, primarily owing to exchange rate changes. Interest income in euro declined on the year by €858 million to €2,907 million. Interest income from monetary policy refinancing operations fell by €6 million. Although the annual average volume of refinancing operations increased by around €15 billion compared with the previous year, lower key interest rates resulted in a considerably reduced average remuneration of 0.10% compared with 0.18% in 2014. Interest income generated from the negative remuneration of credit institutions' deposits (excluding minimum reserves), which first accrued from June 2014, rose by €212 million in the year under review owing to increased excess reserves and the higher negative interest rate on average. Income arising from the TARGET2 claim on the ECB fell by €530 million. This was mainly due to the lower average rate of interest of 0.05% compared with 0.17% in the previous year (given an increase in the TARGET2 claim of around €69 billion on an annual average). Income from securities held for monetary policy purposes relating to the terminated purchase programmes (SMP portfolio and CBPP/CBPP2 portfolio) declined by €489 million to a total of €1,939 million on account of the annual average decrease in holdings of €10 billion. In the current programmes (CBPP3 and PSPP portfolio), purchases are made significantly above par because of the low market yields. The large difference between the acquisition value and the redemption value will be accounted for by allocating it over the residual maturity as a negative portion of interest income (alongside coupon rates), so that on balance there is only low remuneration. In the CBPP3 portfolio, bonds bearing positive rates (€53 million) outweigh those bearing negative rates (€3 million), resulting in interest income of €50 million on balance. In the PSPP portfolio, on the other hand, securities bearing negative rates (€50 million) outweigh those bearing positive rates (€39 million), resulting in net interest income of -€11 million. On the back of the lower average interest rate (2.11% compared with 2.84% in 2014), the Bundesbank's own funds portfolio saw its interest income reduced by €88 million to €253 million.

1.2 Interest expense

There was a year-on-year increase of €64 million to €962 million in interest expense. In the case of interest expense denominated in euro, there was a year-on-year rise of €68 million to €953 million. Owing to the lower average rate of interest (0.05% compared with 0.16% in 2014), the interest expense for intra-Eurosystem balances arising from the allocation of euro banknotes fell by €258 million, despite the fact that liabilities were around €36 billion higher on an annual average (see General information on annual accounts). Interest expense on liabilities related to minimum reserves decreased by €29 million on account of the lower annual average rate of interest (0.05% com-

Net interest income

Item	2015 € million	2014 € million	Year-on-year change € million	Year-on-year change %
Interest income in foreign currency				
IMF	10	17	– 7	– 41.8
Reverse repo transactions	6	2	3	147.8
Securities	334	252	82	32.6
Other	4	3	1	21.7
Total	354	275	79	28.7
Interest income in euro				
Main refinancing operations	2	21	– 19	– 89.6
Longer-term refinancing operations	38	24	14	55.8
Deposits of credit institutions (negative interest)	248	36	212	583.4
TARGET2 claim on the ECB	279	809	– 530	– 65.5
SMP portfolio	1,684	2,089	– 405	– 19.4
CBPP and CBPP2 portfolio	255	339	– 83	– 24.6
CBPP3 portfolio	50	1	49	.
PSPP portfolio	– 11	–	– 11	.
Claims arising from the transfer of foreign reserves to the ECB	4	15	– 10	– 69.4
Liabilities arising from central bank services (negative interest)	42	8	34	455.4
Own funds portfolio (financial assets)	253	341	– 88	– 25.8
Other	61	81	– 20	– 24.6
Total	2,907	3,765	– 858	– 22.8
Interest income	3,260	4,039	– 779	– 19.3
Interest expense in foreign currency				
IMF	8	12	– 4	– 34.7
Other	1	1	0	26.9
Total	8	12	– 4	– 31.9
Interest expense in euro				
Minimum reserves	16	45	– 29	– 65.4
Fixed-term deposits	-	51	– 51	– 100.0
Liabilities arising from the allocation of euro banknotes	142	400	– 258	– 64.5
Claims arising from central bank services (negative interest)	6	0	6	.
Marking up of staff provisions	789	383	405	105.7
Other	1	6	– 5	– 83.5
Total	953	886	68	7.6
Interest expense	962	898	64	7.1
Grand total interest income	2,299	3,141	– 843	– 26.8

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

Item	2015	2014	Year-on-year change	
	€ million	€ million	€ million	%
Realised gains/losses				
Gold	104	85	19	22.5
Foreign currency	602	197	405	205.7
Securities	250	206	45	21.7
Total	956	488	469	96.1
Write-downs				
Foreign currency	– 0	– 6	6	99.2
Securities	– 82	– 6	– 76	.
Total	– 82	– 12	– 71	.
Transfers to/from provisions for general risks, foreign exchange risks and price risks	780	–	780	.
Grand total	1,654	476	1,178	247.5

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pared with 0.16% in 2014). Expenses arising from the marking up of staff provisions went up by €405 million owing to changes in the discount rates (see liability item 12).

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

The realised net income from foreign currency transactions reported in sub-item 2.1 tripled owing to exchange rate changes and mainly concerns transactions with special drawing rights (€304 million) and US dollars (€295 million). The realised gains from sales of securities chiefly relate to euro-denominated securities (€147 million), US Treasury notes (€87 million) and Australian government bonds (€13 million).

Write-downs in sub-item 2.2 primarily result from valuation losses on US Treasuries.

Sub-item 2.3 "Transfers to/from provisions for general risks, foreign exchange risks and price risks" contains the reduction of €780 million in the provision for general risks (see liability item 12 "Provisions").

3 Net income from fees and commissions

Net income from fees and commissions came to €32 million compared with €35 million in the previous year.

4 Income from participating interests

This item contains the Bundesbank's income from its participating interests in the ECB, BIS and Liquiditäts-Konsortialbank GmbH (in liquidation). The total income of €282 million (2014: €485 million) includes, in particular, the Bundesbank's share of the ECB's profit distribution for the financial years 2014 and 2015. The share of the ECB's interim distribution of profit for financial year 2015 is €208 million (previous year: €216 million for financial year 2014); a further €38 million came from the (remaining) profit distribution for financial year 2014 which took place in February 2015 (previous year: €16 million for financial year 2013). Furthermore, in connection with the reduction in the participating interest in the ECB (owing to the adjustment of the ECB capital key on 1 January 2014), the item contained a compensatory payment of €240 million in the previous year for the smaller share of the ECB's net assets.

5 Net result arising from allocation of monetary income

This item comprises income of €133 million overall in 2015 (2014: €213 million).

The monetary income of the Eurosystem national central banks is allocated in accordance with a decision taken by the Governing Council of the ECB.[5] Since 2003, the amount of mon-

5 Decision of the European Central Bank of 25 November 2010 on the allocation of monetary income of the national central banks of member states whose currency is the euro (ECB/2010/23), as last amended by the Decision of the European Central Bank of 19 November 2015 (ECB/2015/37).

Net income from fees and commissions

Item	2015	2014	Year-on-year change	
	€ million	€ million	€ million	%
Income				
Cashless payments	23	24	– 1	– 4.9
Cash payments	9	9	– 0	– 3.3
Securities business and security deposit business	12	10	2	15.6
Other	14	16	– 1	– 8.3
Total	58	60	– 1	– 2.0
Expense				
Securities business and security deposit business	18	16	2	12.7
Other	8	8	– 0	– 2.8
Total	26	24	2	7.4
Grand total	32	35	– 3	– 8.4

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etary income allocated to each national central bank has been measured on the basis of the actual income which arises 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 "Liabilities related to the allocation of euro banknotes within the Eurosystem (net)" 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 contained in them owing to the negative interest rates 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 arising from the transfer of foreign reserves to the ECB", asset sub-item 9.3 "Claims related to the allocation of euro banknotes within the Eurosystem (net)", 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 public sector bonds (including bonds issued by authorised agencies located in the euro area) purchased under the PSPP generate income in the amount of the applicable main refinancing rate.

If the value of a national central bank's earmarked assets is above or below the value of its liability base, the difference is offset by applying to the value of the difference the applicable interest rate for the main refinancing instrument. At the end of each financial year, the total monetary income transferred by all national central banks is distributed among the national central banks in proportion to their respective shares in the fully paid-up capital of the ECB. The 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 interest rate of the main refinancing instrument; second, the quota 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.

The allocation of monetary income resulted in net income of €133 million for the Bundesbank (compared with €213 million in 2014, when incoming payments from the realisation of collateral held for monetary policy purposes in connection with the default of a Eurosystem counterparty were recognised as income). This balance represents the difference between the €2,160 million in monetary income paid by the Bundesbank into the common pool and the Bundesbank's claim of €2,293 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 €228 million compared with €98 million in 2014. This increase was mainly due to the contributions of the national central banks in the Eurosystem to the Bundesbank's development costs for the Eurosystem project TARGET2-Securities; these amounted to €81 million and were recorded in this item when the system went live in June 2015. Besides the reimbursement of costs by the national central banks for the development and operation of Eurosystem projects, which totalled €117 million (2014: €25 million), €36 million was attributable to gains on the sale of land and buildings (2014: €15 million), a further €20 million to rental income (2014: €24 million) and €9 million to the reversal of provisions (2014: €8 million) (see liability item 12 "Provisions"). In addition, €21 million was accounted for by reimbursements from the supplementary pension scheme for 2013 and 2014.

7 Staff costs

Staff costs fell from €911 million to €722 million year-on-year. In particular, expenditure relating to staff provisions (see liability item 12 "Provisions") was, on balance, €198 million lower than the previous year, but social security contributions also decreased owing to a reimbursement by the supplementary pension scheme in 2015 of the special payments charged during the changeover from the pay-as-you-go system to the capital-funded system (see profit and loss item 6 "Other income"). Excluding these effects, staff costs rose by around 2%, primarily on account of general pay rises for salaried staff and civil servants as well as slightly higher staff levels.

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 2015, the President of the Bundesbank received a pensionable salary of €354,548.82, a special non-pensionable remuneration of

Staff costs

Item	2015	2014	Year-on-year change	
	€ million	€ million	€ million	%
Salaries and wages	507	499	8	1.6
Social security contributions	77	87	– 10	– 11.8
Expenditure on retirement pensions	138	324	– 186	– 57.4
Grand total	722	911	– 188	– 20.7

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€76,693.78 and a standard expenses allowance of €5,112.96, amounting to a total of €436,355.56. The Deputy President of the Bundesbank received a pensionable salary of €283,639.00, a special non-pensionable remuneration of €61,355.03 and a standard expenses allowance of €3,067.80, amounting to a total of €348,061.83 for 2015. Three other members of the Executive Board each received a pensionable salary of €212,729.38, a special non-pensionable remuneration of €46,016.27 and a standard expenses allowance of €2,556.48, amounting to a total of €261,302.13 for 2015. One member of the Executive Board left their position at the end of 2014. Their successor (in office since 16 January 2015) received a pensionable salary of €204,306.01, a special non-pensionable remuneration of €44,098.93 and a standard expenses allowance of €2,453.40, amounting to a total of €250,858.34 in 2015.

Total payments to serving and former members of the Executive Board, former members of the Bundesbank's Directorate and of the Executive Boards of Land Central Banks, including their surviving dependants, amounted to €11,251,980.13 in 2015.

8 Other administrative expenses

Other administrative expenses increased from €339 million in 2014 to €460 million. This increase was mainly due to the share in the development costs for the Eurosystem project TARGET2-Securities; this amounted to €87 million and was recorded in this item when the system went live in June 2015. Besides expenditure totalling €114 million (2014: €25 million) for Eurosystem IT projects, this item particularly includes expenses of €93 million for IT hardware and software (2014: €100 million) and of €88 million for office buildings (2014: €81 million).

9 Depreciation on tangible and intangible fixed assets

The depreciation of land and buildings, of furniture and equipment and of computer software amounted to €101 million compared with €99 million in 2014 (see asset sub-item 11.2 "Tangible and intangible fixed assets").

10 Banknote printing

Expenditure on banknote printing increased by €13 million year-on-year to €111 million owing to the procurement of higher-denominated banknotes in the reporting year.

11 Other expenses

Other expenses amounted to €43 million compared with €48 million in 2014, and contained, in particular, expenditure on residential buildings amounting to €23 million and on staff restructuring schemes in the amount of €11 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 €7 million (see liabilities sub-item 11.3 "Sundry items").

Annex

The Deutsche Bundesbank: key figures

Staff[1]	2014	2015
Core staff (full-time equivalents)	9,532	9,636
– contraction since 31 December 2001[2]	5,268 (= 35.6%)	5,164 (= 34.9%)

Locations/core staff (full-time equivalents)[1]	2014	2015
Central Office	1 / 4,318	1 / 4,623
Regional Offices	9 / 2,602	9 / 2,524
Branches	41 / 2,612	35 / 2,489

Annual accounts[1]	2014	2015
Profit for the year	€2,954 million	€3,189 million
Net interest income	€3,141 million	€2,299 million
Balance sheet total	€770,842 million	€1,011,969 million
Foreign reserve assets (total)	€158.7 billion	€159.5 billion
– foreign currency	€30.6 billion	€33.4 billion
– receivables from the IMF	€20.6 billion	€20.3 billion
– gold	(3,384 t) €107.5 billion	(3,381 t) €105.8 billion
Allocation across the various storage locations[3]		
Frankfurt	(1,192 t) €37.9 billion	(1,402 t) €43.9 billion
New York	(1,447 t) €46.0 billion	(1,347 t) €42.2 billion
London	(438 t) €13.9 billion	(435 t) €13.6 billion
Paris	(307 t) €9.7 billion	(196 t) €6.1 billion

ECB capital key[1]	2014	2015
Share of subscribed capital	17.9973%	17.9973%
Share of paid-up capital	25.7184%	25.5674%
Amount of the participating interest in the ECB	€1.95 billion	€1.95 billion
Foreign reserve assets transferred to the ECB	€10.43 billion	€10.43 billion

Money market transactions[4]	2014	2015
Open market operations in the euro area		
– Main refinancing operations	€111.28 billion	€92.89 billion
– Longer-term refinancing operations[5]	€472.21 billion	€433.54 billion
of which counterparties of the Bundesbank	€25.19 billion	€40.56 billion
– Banks participating in the main refinancing operations (average)	150	127
– *of which* via the Bundesbank	60	38
Standing facilities		
– Marginal lending facility in the euro area	€0.24 billion	€0.29 billion
– Deposit facility in the euro area	€30.75 billion	€114.18 billion
Asset purchase programme (Bundesbank's share)		
CBPP3 portfolio	€6.6 billion	€32.7 billion
PSPP portfolio	–	€104.2 billion

1 On 31 December. **2** Core staff (full-time equivalents) on 31 December 2001 (year before the structural reform began): 14,800. **3** Discrepancies in the totals are due to rounding. **4** Daily average of the individual amounts outstanding. **5** Including targeted longer-term refinancing operations (TLTROs).

Cash payments	2014	2015
Volume of euro banknotes in circulation (Eurosystem)[1]	€1,016.5 billion	€1,083.4 billion
Volume of coins in circulation (Eurosystem)[1]	€25.0 billion	€26.0 billion
Returned DM banknotes and coins	DM112.2 million	DM107.7 million
Unreturned DM banknotes and coins	DM12.93 billion	DM12.82 billion

Incidence of counterfeit money in Germany	2014	2015
Euro banknotes (number)	63,000	95,400
Euro coins (number)	45,900	34,100

Cashless payments	2014	2015
Payments via the Bundesbank (number of transactions)	4,122.9 million	3,868.9 million
– *of which* via RPS	4,075.3 million	3,821.9 million
– *of which* via TARGET2-BBk	44.0 million	43.9 million
Payments via the Bundesbank (value)	€161.2 trillion	€162.7 trillion
– *of which* via RPS	€3.5 trillion	€3.2 trillion
– *of which* via TARGET2-BBk	€156.9 trillion	€158.2 trillion
Share of TARGET2-BBk transactions in EU-wide TARGET system	~ 49%	~ 50%

Banking supervision	2014	2015
Number of institutions to be supervised	3,466	3,388
On-site inspections	182	222
Inspection reports processed	4,956	5,182
Meetings with senior management	2,761	2,251

Cooperation with foreign central banks	2014	2015
Training and advisory events	249	240
– number of participants (total)	2,885	3,431
– number of participating countries (total)	86	98

Selected economic publications (editions/circulation)	2014	2015
Annual Report	1 / 9,500	1 / 8,500
Financial Stability Review	1 / 8,000	1 / 7,700
Monthly Report	12 / 7,700	12 / 7,500
Statistical Supplements	52 / 1,150	52 / 1,170
Research Centre Discussion Papers	46 / 300	48 / 300
Publications in academic journals	61	10

External communication/public relations	2014	2015
Visitors to the Money Museum[6]	28,728	0
Written answers to queries	11,963	13,895
Press releases	345	312
Visits to the website (www.bundesbank.de)	6,342,742	6,224,535
Training sessions on counterfeit prevention	2,400	1,850
– number of participants	50,000	39,500

6 2014: January to August due to renovation. The money museum was closed in 2015.

Branches of the Deutsche Bundesbank on 1 April 2016

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

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Staff of the Deutsche Bundesbank on 31 December 2015*

	Staff numbers[1]				Year-on-year changes			
Item	Total	Regional Offices	Branches	Central Office	Total	Regional Offices	Branches	Central Office
Civil servants	5,496	1,464	1,140	2,892	104	– 47	– 61	212
Salaried staff	5,505	1,427	1,570	2,508	39	– 26	– 69	134
Total	11,001	2,891	2,710	5,400	143	– 73	– 130	346
of which Trainees	566	136	0	430	16	7	0	9
Remainder Core staff	10,435	2,755	2,710	4,970	127	– 80	– 130	337
Memo item								
Core staff *pro rata* (full-time equivalents)	9,636.3	2,524.4	2,489.4	4,622.5	104.6	– 77.1	– 122.6	304.3

		End-2015	End-2014
*	Not included:		
	Members of staff on secondment	216	186
	Members of staff on unpaid leave	249	304
	Members of staff in the second phase of the partial retirement scheme	497	617
1	Of which part-time employees	2,434	2,279
	Of which staff with temporary contracts	126	146

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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]

The Board members hold the offices indicated below.

- Dr Jens Weidmann, President:
  Chairman of the Board of Directors, BIS (since 1 November 2015; Member of the Board of Directors until 31 October 2015[2]);
  Member of the Financial Stability Board (FSB);[2]
  Vice-President of Deutsches Aktieninstitut[2]

- Professor Claudia Buch, Deputy President:
  Member of the Board of Trustees, Monetary Stability Foundation (since 1 February 2015; Alternate until 31 January 2015)

- Dr Andreas Dombret:
  Member of the Board of Directors, BIS;
  Member of the Administrative Council, LIKO-Bank (in liquidation);[3]
  Alternate, Board of Trustees, Monetary Stability Foundation

- Dr Joachim Nagel:
  Alternate, Board of Directors, BIS;[2]
  Senior Vice-Chairman of the Administrative Council, LIKO-Bank (in liquidation);[3]
  Vice-Chairman of the Credit Committee, LIKO-Bank (in liquidation);[3]

- Mr Carl-Ludwig Thiele:
  Alternate, Administrative Council, LIKO-Bank (in liquidation);[3]
  Member of the Board of Trustees, Monetary Stability Foundation

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1 Membership of other official bodies is not listed. **2** Ex officio. **3** Partnership agreement.