Volksbanken Raiffeisenbanken
cooperative financial network

2018
Annual Financial Statements and Management Report of DZ BANK AG

DZ BANK
Bank on Germany

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Note

DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, (DZ BANK) implements the transparency requirements as specified in section 289 of the German Commercial Code (HGB) with the publication of this management report. In addition, the report satisfies German accounting standard no. 20 (Group Management Report), which relates to management reports that apply at group level.

All figures are rounded to the nearest whole number. This may result in very small discrepancies in the calculation of totals and percentages.

I DZ BANK AG fundamentals

1 Business model and strategic focus

The strategic focus at DZ BANK follows the guiding principle of fulfilling the role of a network-oriented central institution and financial services group. Business activities are centered on the local cooperative banks and their customers. The objective of this strategic approach is to consolidate the positioning of the cooperative financial network as one of the leading financial services providers in Germany on a long-term basis.

In 2018, DZ BANK launched 'Verbund First 4.0', a strategic program designed to ensure the organization's resilience for the future. The program is aimed at improvements in three key areas: market offering (network orientation, customer focus, and a digital experience), control and production processes (efficient, effective, and focused), and corporate culture (performance-driven and integrative).

At the same time, DZ BANK is aiming to significantly increase earnings from operating activities in the central institution and corporate bank each year between now and 2022, while remaining risk-conscious. This applies to the Corporate Banking, Capital Markets, and Transaction Banking business lines. The plan is to step up capital expenditure on market- and sales-related matters, with a focus on the primary banks. Examples include investment in products and platforms in the capital markets business, acquisition of further customers and expansion of portal solutions in corporate banking, and investment in transaction banking.

Measures to reduce costs are also planned in order to secure the growth and future viability of DZ BANK. As well as reducing the costs for external service providers, this includes the loss of 485 jobs by the end of 2023 – on top of the job losses in connection with synergies from the 2016 merger that are yet to be harnessed. This is because fewer employees are required as a result of advancing digitalization and the simplification of processes. The restructuring is to be implemented with the minimum possible social impact.

DZ BANK has also maintained its strategic focus in the individual business lines, as described below.

1.1 Cooperative Banks/Verbund

The Cooperative Banks/Verbund division is responsible for providing end-to-end support for the cooperative banks, which are the most important customer group, and shareholders of DZ BANK. The Regionaldirektoren [regional directors] are the first port of call and customer relationship manager for the cooperative banks and they assist them with their business in the regional markets.

In this context, DZ BANK offers consultancy and other services at every stage of the strategic bank management process as well as regarding regulatory matters. This is particularly important to the cooperative banks, both from an earnings and risk perspective and from a regulatory perspective.
DZ BANK helps the local cooperative banks with all treasury and controlling aspects of bank management, such as planning and risk management, as well as with optimization for strategic bank management purposes and with own-account investing activities. These services, along with the systems offered (including GENO-SAVE and EGon) that support own-account investing, reporting, and accounting, are enhanced on an ongoing basis.

1.2 Corporate Banking

In the corporate banking market, DZ BANK operates both on a decentralized basis through the local cooperative banks and directly in the market. It rigorously pursues a policy of regional focus, guaranteeing proximity to the local cooperative banks and the shared customers. In collaboration with its subsidiaries and international branches, DZ BANK offers its customers the entire range of corporate banking services.

DZ BANK's clear strategic priority is its joint corporate banking business with the cooperative banks (joint lending business). In view of the crucial importance of this business for the shared success and positioning of the cooperative financial network in the market, DZ BANK carefully examined how to strengthen and improve this business. On the back of this, it is working on various initiatives aimed at significant process improvements – including standardized rating systems – and greater transparency in the product range.

DZ BANK offers comprehensive advisory services and expertise to customers in its international business. In June 2018, it signed a cooperation agreement with PT Bank Central Asia Tbk in order to strengthen its range of products and services in key

markets. This partnership – supported by DZ BANK's representative office in Jakarta, which opened in 2017 – enables better support for customers doing business in Indonesia. The fast-growing Indonesian market is gaining in importance, especially for German small and medium-sized enterprises (SMEs). DZ BANK plans to enter into further partnerships with Asian banks over the next few years.

DZ BANK constantly works on further developing innovative ideas and using new technologies. The many different activities being carried out in this context include VR BusinessOnline, an online service that enables corporate customers' business inquiries to be processed seamlessly, and VR GeschäftsNavigator, which strengthens collaboration with the local cooperative banks in joint corporate banking business. DZ BANK is also increasingly working on the deployment of new technologies and digitalized processes in the development lending business, for example in connection with the integrated GENO-STAR application for development loans.

1.3 Retail Banking

DZ BANK offers the cooperative banks and carefully selected partners or third-party banks end-to-end services (generally platform- and process-driven) in the securities business, focusing on personal investments. These include a comprehensive range of investment services, intelligent liability products to strengthen and support the cooperative banks' market offering and balance sheets, as well as consulting services, market data, research, and trading/advisory/e-business platforms.

DZ BANK is steadily expanding its digital options for providing information and generating sales in order to support the omnichannel approach of the cooperative financial network. It is enabling customers to benefit not only from conventional banking but also from digital access to their bank via mobile login, online tools (such as VR-ProfiBroker and VR-ProfiTrader), and the DZ BANK derivatives portal.

1.4 Capital Markets

In the Capital Markets business line, DZ BANK offers its customers comprehensive research services along with advisory and sales services in relation to investment and risk management products covering the interest rate, credit, equities, and currency asset classes in both primary and secondary markets.

DZ BANK is optimizing its sales approach and giving it a clear edge as well as expanding digital trading activities for its customers. It constantly adapts its range of products and services to customers' evolving needs. In 2018, within just a few days of German lawmakers creating the necessary legal framework, DZ BANK helped its customers to enter the market for a new type of unsecured senior bank bond, responding to the new regulatory environment in collaboration with its customers.

On behalf of the cooperative financial network, the Group Treasury division at DZ BANK carries out the cash-pooling function and ensures access to global liquidity markets as well as to liquidity provided by central banks. In addition, Treasury acts as the product portfolio manager for secured and unsecured money market business, currency swaps and forwards, and the issue of short-term commercial paper.

In 2018, DZ BANK successfully placed the first green bond of its own on the market. The senior preferred green bond, which had a volume of €250 million, was significantly oversubscribed and attracted particularly strong interest from cooperative banks and institutional investors. By issuing its own bond, DZ BANK also gained additional expertise that will help it to advise customers in this segment.

1.5 Transaction Banking

In the Transaction Banking business line, DZ BANK provides efficient, high-performance platforms and services, helping cooperative banks and the entities in the DZ BANK Group to exploit the potential available in the market. To this end, it offers products and services covering payments, payments services, and acquiring, together with securities processing, depositary, and settlement services in connection with capital market products.

The current market environment presents major challenges for transaction banking. Customers have higher expectations regarding speed, security, and personal service, while regulatory requirements are forcing DZ BANK to adjust the processes, infrastructure, and range of services in this business line. DZ BANK constantly analyzes the trends, assessing how it can benefit from the changes and position itself in the new market environment. In this context, a key requirement is to continuously adapt the range of products and services to customer needs.

In the payments processing business, the implementation of instant payments reflects the continuing trend for making payments anytime and anywhere. Instant payments cater to liquidity requirements, particularly those of corporate customers, and are increasingly taking precedence over traditional bank transfers. Tapping into this trend, the banks in the cooperative financial network have been able to receive instant transfers since November 2018 and, in spring 2019, will also enable their customers to make instant payments.

The focus in the securities and capital markets services business continues to be on implementing regulatory requirements. DZ BANK supports the cooperative banks in this regard, mainly by enhancing the range of services in relation to transaction-based reporting. It also continued to expand the depositary business, with assets under depositary reaching a record level.

DZ BANK is maintaining its omnichannel approach when it comes to payment services. The bank is among the pioneers of contactless mobile payments by credit card. Customers of the cooperative financial network can now use both their debit card and their credit card to make payments via their smartphone. The optimization and better positioning of paydirekt, an e-commerce payment method, remains particularly important. Supplementary services are becoming increasingly attractive. Initiatives to expand the cooperative banks' merchant customer business and the introduction of VR Smart Guide paved the way for extending the range of solutions for SMEs. DZ BANK is also playing a major part in strengthening the competitiveness and positioning of the cooperative financial network in the market for transaction banking products by adding value-added products such as VR-ExtraPlus to its range. Going forward, these support services for the cooperative banks will be a key element of long-standing and stable customer relationships.

2 Management of DZ BANK

2.1 Management units

The DZ BANK Group comprises DZ BANK as the parent company, the DZ BANK Group's fully consolidated subsidiaries in which DZ BANK directly or indirectly exercises control, and other long-term equity investments that are not fully consolidated.

All entities in the DZ BANK Group are integrated into groupwide management. In the case of subgroups, the disclosures in the management report on management units relate to the entire subgroup comprising the parent company of the subgroup plus its subsidiaries and second-tier subsidiaries. The management units are managed by the parent company in the subgroup, which is responsible for compliance with management directions in the subsidiaries and second-tier subsidiaries. The following management units are each managed as a separate operating segment:

- DZ BANK
- Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, (Bausparkasse Schwäbisch Hall; subgroup abbreviated to BSH)
- DVB Bank SE, Frankfurt am Main, (DVB Bank; subgroup abbreviated to DVB)
- DZ HYP AG, Hamburg and Münster, (DZ HYP)
- DZ PRIVATBANK S.A., Strassen, (DZ PRIVATBANK S.A.; subgroup abbreviated to DZ PRIVATBANK)
- R+V Versicherung AG, Wiesbaden, (R+V Versicherung; subgroup abbreviated to R+V)
- TeamBank AG Nürnberg, Nuremberg, (TeamBank)
- Union Asset Management Holding AG, Frankfurt am Main, (Union Asset Management Holding; subgroup abbreviated to UMH)
- VR-LEASING AG, Eschborn, (VR-LEASING AG; subgroup abbreviated to VR LEASING).

These fully consolidated entities are management units and form the core of the financial services group. DZ BANK forms a separate management unit from a higher-level perspective.

The terms DZ BANK Group and DZ BANK financial conglomerate are synonymous and refer to all the management units together. The context dictates the choice of term. For example, in the case of disclosures relating to economic management, the focus is on the DZ BANK Group, whereas in the case of regulatory issues relating to all the management units in the DZ BANK Group, the term DZ BANK financial conglomerate is used.

The DZ BANK financial conglomerate largely comprises the DZ BANK banking group and R+V. DZ BANK acts as the financial conglomerate's parent company.

2.2 Governance

Governance in the DZ BANK Group is characterized by the general management approach of the DZ BANK Group, appointments to key posts in the subsidiaries, and the committee structure.

2.2.1 General management approach

The general management approach consists of a combination of centralized and decentralized management tools. It is aligned with the business model and risks of the DZ BANK Group as a diversified financial services group that is integrated into the Volksbanken Raiffeisenbanken cooperative financial network and that provides this network with a comprehensive range of financial products.

The DZ BANK Group is a financial services group comprising entities whose task as product specialists is to supply the Volksbanken Raiffeisenbanken cooperative financial network with an entire range of financial services. Given the particular nature of the group, the Board of Managing Directors of DZ BANK consciously manages the group with a balanced centralized and decentralized approach with clearly defined interfaces and taking into account business policy requirements.

2.2.2 Appointments to key posts in the subsidiaries

For the purposes of managing the subsidiaries through appointments to key posts, a representative of DZ BANK is appointed in each case as the chairman of the supervisory body and generally also as the chairman of any associated committees (risk and investment committee, audit committee, human resources committee).

2.2.3 Corporate management committees

The **Group Coordination Committee** is the highest-level management and coordination committee in the DZ BANK Group. The objectives of this committee are to strengthen the competitiveness of the DZ BANK Group and to coordinate fundamental product and sales issues. The committee ensures coordination between the key entities in the

DZ BANK Group to achieve consistent management of opportunities and risks, allocate capital, deal with strategic issues, and leverage synergies. The members of this committee comprise the Board of Managing Directors of DZ BANK and the chief executive officers of BSH, DZ HYP, DZ PRIVATBANK, R+V, TeamBank, UMH, and VR LEASING.

Various committees consisting of representatives from all strategic business lines and group functions assist the Group Coordination Committee's decision-making by preparing proposals. These are the following committees: the Group Risk and Finance Committee, the Group IT Committee, the Group HR Committee, the product and sales committees for retail customers, corporate customers, and institutional customers, the Heads of Internal Audit working group, the Heads of Compliance working group, the Economic Roundtable, and the Innovation Roundtable.

The **Group Risk and Finance Committee** is the central committee in the DZ BANK Group responsible for proper operational organization and, in particular, risk management in accordance with section 25 (1) of the German Supervision of Financial Conglomerates Act (FKAG) and section 25a (1) in conjunction with section 25a (3) of the German Banking Act (KWG). It assists DZ BANK with groupwide financial and liquidity management and provides support for risk capital management throughout the group. The Group Risk and Finance Committee also assists the Group Coordination Committee in matters of principle. The members of this committee include the relevant executives at DZ BANK responsible for finance, strategy and group development, risk, and treasury. The committee members also include representatives of the executives of various group companies. The Group Risk and Finance Committee has set up the following working groups to prepare proposals for decision-making and to implement management action plans relating to financial and risk management at group level:

– The **Group Risk Management working group** supports the Group Risk and Finance Committee in all matters concerning risk and the management of risk capital and market risk in the DZ BANK Group, and in matters relating to external risk reporting. At DZ BANK level, the monitoring and control of the aggregate risks to the bank is coordinated by the **Risk Committee**. The Risk Committee makes recommendations to the entire Board of Managing Directors in matters relating to risk management, risk methodology, risk policies, risk processes, and the management of operational risk.

– The **Architecture and Processes Finance/Risk working group** assists the Group Risk and Finance Committee with the further development of the integrated finance and risk architecture in the DZ BANK Group. In terms of the corporate management of the DZ BANK Group, this committee works on refining the blueprint for the business, process, and data architecture, ensuring a coordinated roadmap and a transparent project portfolio, and establishing overarching data governance.

– The management of credit risk throughout the group is the responsibility of the **Group Credit Management working group** of the Group Risk and Finance Committee. This working group monitors compliance with the rules in the group credit risk policy in connection with its involvement in drawing up group credit standards and related monitoring processes as the basis for groupwide management of counterparty default risk. In particular, this covers all measures relating to the monitoring and management of the limit allocation at individual counterparty level. The working group also participates in the further development and harmonization of the credit risk management organization and processes, and it discusses and continually develops the group credit risk strategy, group credit risk management, and group credit standards. It thus assists the Group Risk and Finance Committee with the groupwide harmonization of credit-related processes with due regard to their economic necessity. The monitoring and control of DZ BANK's overall portfolio for credit risk is coordinated by the **Credit Committee**. This committee normally meets every two weeks and makes decisions on material lending exposures at DZ BANK, taking into account the credit risk strategy of both the bank and the group. The Credit Committee is also responsible for managing credit risk at DZ BANK and country risk throughout the DZ BANK Group.

– The Group Risk and Finance Committee's **Market working group** is responsible for providing implementation support throughout the group in the following areas: liquidity management, funding activities, balance sheet structure management, and capital management. This body also focuses on

coordinating and dovetailing funding strategies and liquidity reserve policies, as well as on planning the funding within the DZ BANK Group. In addition, the Market working group is responsible for refining the management of centrally measured market risk. At DZ BANK level, the **Treasury and Capital Committee** is the central body responsible for the operational implementation of the strategic requirements in the following areas to ensure integrated resource management: capital management, balance sheet and balance sheet structure management, liquidity and liquidity risk management, and income statement and profitability management. This committee also discusses overarching issues and current regulatory matters with the aim of identifying those requiring management action.

- The **Finance working group** advises the Group Risk and Finance Committee on matters concerning the consolidated financial statements, tax law at group level, regulatory law at group level, group controlling, and the management of financial resources. It discusses new statutory requirements and works out possible implementation options. The groupwide management framework (definitions, nomenclature, methods) is constantly updated, including in light of inquiries from the regulator.

The **Group IT Committee**, comprising the members of the boards of managing directors of the main group entities with responsibility for IT, supports the Group Coordination Committee in matters relating to IT strategy. This committee manages all overarching IT activities in the DZ BANK Group. In particular, the Group IT Committee makes decisions on collaboration issues, identifies and realizes synergies, and initiates joint projects.

The members of the **Group HR Committee** comprise the members of the boards of managing directors with responsibility for HR and the HR directors from the main entities in the DZ BANK Group. This committee helps the Group Coordination Committee address HR issues of strategic relevance. The Group HR Committee initiates and coordinates activities relating to overarching HR issues while at the same time exploiting potential synergies. It also coordinates the groupwide implementation of regulatory requirements concerning HR systems and facilitates the sharing of HR policy information within the DZ BANK Group.

The **product and sales committees** perform insight, coordination, and bundling functions relating to the range of products and services provided by the DZ BANK Group.

- The **retail customers** product and sales committee coordinates products and services, and the marketing activities of its members where there are overarching interests affecting the whole of the group. The common objective is to generate profitable growth in market share for the cooperative banks and the entities in the DZ BANK Group with a focus on customer loyalty and customer acquisition by providing needs-based solutions (products and processes) as part of a holistic advisory approach across all sales channels (omnichannel approach).

- The **corporate customers** product and sales committee is responsible for coordinating the strategies, planning, projects, and sales activities in the DZ BANK Group's corporate banking business if overarching interests are involved. The objective is closer integration in both the joint lending business with the cooperative banks and the direct corporate customer business of the entities in the DZ BANK Group.

- The **institutional clients** product and sales committee helps to strengthen the position of the DZ BANK Group in the institutional clients market.

The DZ BANK Group **Heads of Internal Audit working group**, which is led by DZ BANK, coordinates group-relevant audit issues and the planning of cross-company audits and activities based on a jointly developed framework approved by the relevant members of the Board of Managing Directors. This working group also serves as a platform for sharing specialist information across the group – especially information on current trends in internal audit – and for refining group audit activities. On behalf of this working group, the Head of Group Audit reports to the member of the Board of Managing Directors responsible for group audit and, where appropriate, to the Group Coordination Committee.

The **Heads of Compliance working group**, whose members comprise the heads of compliance in the management units and at ReiseBank AG, Frankfurt am Main (ReiseBank) and GENO Broker GmbH, assists

DZ BANK with compliance management across the group if this is legally required. It also advises the DZ BANK Group's Group Coordination Committee on fundamental compliance-related issues. The Heads of Compliance working group is also responsible, in particular, for drawing up certain compliance standards in the DZ BANK Group that are discretionary under a comply-or-explain approach; in addition, it serves as a platform enabling specialists to share information across the group. When fulfilling its responsibilities, the Heads of Compliance working group must respect the individual responsibility of the heads of compliance in the group entities and ensure specific regulatory requirements are observed. The working group reports to the member of the DZ BANK Board of Managing Directors responsible for compliance and, where appropriate, to the Group Coordination Committee.

The **Economic Roundtable**, the members of which comprise the economists from the main group companies, helps the Group Coordination Committee to assess economic and capital market trends, providing a uniform basis for consistent planning scenarios throughout the group, and to prepare risk scenarios required by regulators.

The members of the **Innovation Roundtable** comprise specialists, executive managers, and innovation managers from the various divisions of DZ BANK and the group companies. The Innovation Roundtable is therefore the Group Coordination Committee's key point of contact for information on innovations and trends relevant to the group. The objectives of the Innovation Roundtable are to systematically examine innovative topics with group relevance on an ongoing basis, to bring together the divisions involved in innovation projects and to ensure that innovation activities in the DZ BANK Group are transparent. Innovation topics are broadly based throughout the DZ BANK Group and are promoted in the relevant DZ BANK departments and subsidiaries via the product and sales committees.

2.3 Key performance indicators

DZ BANK's KPIs for profitability, volume, productivity, liquidity adequacy, and capital adequacy are presented below.

- **Profitability figures:**
  The profitability figures (primarily loss allowances, profit/loss before taxes, net income for the year) are presented in chapter II, sections 3.1 and 3.2 of this management report.

- **Volume figures:**
  The main volume-related KPIs include equity and total assets, which are presented in chapter II, section 4 of this management report and in the annual financial statements (balance sheet as at December 31, 2018).

- **Productivity:**
  The KPI for productivity is the cost/income ratio. This figure is described in chapter II, section 3.1 of this management report.

- **Liquidity adequacy:**
  Appropriate levels of liquidity reserves in relation to the risks associated with future payment obligations are demonstrated using the ratios for economic and regulatory liquidity adequacy presented in chapter VI, section 6.2 and section 6.3 of this management report. The minimum liquidity surplus reflects economic liquidity adequacy. Regulatory liquidity adequacy is expressed in terms of the liquidity coverage ratio (LCR).

- **Capital adequacy:**
  The KPIs and the calculation method for economic capital adequacy are described in chapter VI, section 7.2 of this management report. The KPIs for regulatory capital adequacy (coverage ratio for the financial conglomerate, total capital ratio, Tier 1 capital ratio, common equity Tier 1 capital ratio, and leverage ratio) are included in chapter VI, section 7.3.

Forecasts for core KPIs at DZ BANK are set out in the Outlook section of the management report.

2.4 Management process

In the annual strategic planning process, the entities in the DZ BANK Group produce a business strategy (objectives, strategic direction, and action plan), a finance and capital requirements plan, and risk strategies derived from the business strategy.

The planning by the management units is then validated and the plans are also discussed in strategy meetings. When the individual entity planning has been completed, the process then moves on to consolidated group planning, allowing active management of the DZ BANK Group's economic and regulatory capital adequacy.

The action plans to attain the targets are discussed in a number of ways, notably in quarterly meetings with the

subsidiaries and in review meetings with DZ BANK's divisions.

At DZ BANK level, the main divisions involved in the strategic planning process are Strategy & Group Development, Group Risk Controlling, Group Finance, Bank Finance, and Research and Economics. The planning coordinators in the front-office divisions of DZ BANK and the subsidiaries are also incorporated into the process. The Strategy & Group Development division is responsible for overall coordination of the strategic planning process.

II Business report

1 Economic conditions

The pace of economic growth slowed during the year under review. Average inflation-adjusted gross domestic product (GDP) in Germany rose by 1.4 percent year on year.

Domestic economic output in the first quarter of 2018 was up by 0.4 percent compared with the preceding quarter. This was followed by a similar GDP gain of 0.5 percent in the second quarter. However, the third quarter saw a contraction in German economic output of 0.2 percent, one of the reasons being the automotive industry's hesitant switch to the new European emissions testing requirements. In the fourth quarter of 2018, the country's GDP growth was 0.0 percent.

Once again, higher consumer spending provided a boost to the German economy in the reporting year, although not to the extent of the previous year. Growth in government spending continued to slip back. Consumer demand rose by 1.0 percent year on year, aided by robust trends in the labor market and no improvement in the extremely low returns available on consumer investments. One of the consequences of an intensification of trade disputes during the year was a lower trade balance compared with the previous year. In the year under review, businesses stepped up capital spending at a faster rate with production capacity utilization remaining at a high level.

The increase in tax receipts generated by the overall robust economic growth meant that public finances in Germany ended 2018 once again with a budget surplus of 1.7 percent of GDP.

In the year under review, economic output in the eurozone grew by 1.8 percent year on year, the economic recovery being sustained in the first and second quarters of 2018 with growth rates of 0.4 percent (in each case compared with the previous quarter). In both the third and final quarters of 2018, the economy grew at a rate of 0.2 percent in each case.

Consumer spending once again proved to be a key driver behind the economic recovery in the eurozone in the reporting year. However, geopolitical crises, various conflicts, and above all the uncertainty arising from the Brexit negotiations and the United Kingdom's EU exit planned for March 29, 2019 as well as from current US trade policy did have some impact on consumer confidence during the year. Furthermore, rising energy prices also had an adverse effect on consumer willingness to spend in 2018. Over the course of the year, it became clear that businesses were increasing their spending on capital equipment. In view of the geopolitical factors referred to above, which have weighed on the global economy, and because export growth in the eurozone is likely to have lost momentum, it is anticipated that the trade balance will not have made any notable contribution to economic growth.

In the United States, economic growth in the reporting year was 2.9 percent. The economy has therefore gained further significant traction compared with 2017, when the year-on-year rate of expansion was 2.2 percent. Overall, the principal economic driver in the US remained the recovery in consumer spending, which was bolstered by further improvements in the labor market, notably a further fall in the unemployment rate and a sharp rise in recruitment. Investment by businesses in plant and machinery once again rose at a stronger rate, boosted not least by the impact of the corporate tax reforms that came into force at the beginning of the year. The recovery in house-building was also sustained.

Trends toward economic recovery in key emerging markets such as India and Russia were sustained in the year under review. On the other hand, some of the highly indebted newly industrializing countries, such as Argentina and Turkey, suffered new economic crises. The Chinese economy was unable to maintain the really high level of growth achieved in the previous year. By and large, the stimulus for German exports derived from the demand from emerging markets was weaker in the year under review.

2 The banking industry amid continued efforts to stabilize the economy of the eurozone

The return of a trend toward economic policy driven first and foremost by national interests gained significant momentum in individual countries in the year under review.

The policy of 'America first' introduced by the US government in the first few months of 2018 with the

imposition of customs duties on products from China, the EU, Canada, and Mexico was then ratcheted up over the rest of the year. The increasingly tough reciprocal customs tariff barriers between the US and China, together with the associated price increases on products affected by the customs duties, pose the risk of depressing global trade and weakening global economic growth as a consequence of the resulting downward pressure on the demand for goods.

These negative economic influences were reinforced throughout the EU by the dispute between Rome and Brussels regarding the compatibility with the EU's stability targets of the draft Italian budget for 2019 initially submitted by the Italian government; this dispute came to a head toward the end of the year under review. To add to this, a notable feature over the whole of the reporting year was the ongoing uncertainty surrounding the details of how the UK was going to leave the EU.

At the end of November 2018, the UK and the EU managed to reach an agreement in principle regarding the structure of the transition period to follow the Brexit implementation date of March 29, 2019. This agreement allowed for a transition period up to no later than 2022 during which time the UK and the EU intended to enter into a comprehensive trade agreement. However, this agreement in principle was rejected by a UK parliamentary vote on January 15, 2019.

Not least in view of past crises in the eurozone, the developments described above highlight the need for an overhaul and strengthening of European Monetary Union (EMU), initial proposals for which have been put forward by French President Emmanuel Macron and German Chancellor Angela Merkel. Joint EU-wide implementation of these initiatives was instigated at an EU summit at the end of June 2018, consisting of the first decisions in principle in relation to strengthening the European Stability Mechanism (ESM) and in particular concerning a backstop for the Single Resolution Fund (SRF).

At the beginning of December 2018, eurozone finance ministers (with the consent of the European Parliament) and, a few days later, the EU heads of state or government agreed to broaden the responsibility of the ESM so that it acts as the SRF backstop referred to above. This new structure is intended to take the form of a revolving credit line provided by the ESM for the SRF in an amount of approximately €60 billion to come into force no later than 2024. In addition, comprehensive resolutions were adopted related to a re-adjustment of EU banking regulation subject to the proviso of a further fall in the risk to which the EU banking sector is exposed.

At the same time, the agreed strengthening of the ESM specifies that, in the event of asymmetric shocks (such as possible negative effects on Ireland from Brexit), ESM precautionary credit lines can, for the most part, be utilized by EU countries whose economic conditions are generally still sound only if all debt criteria are satisfied, no excessive debt procedures (EDPs) have been instigated against these countries, and the countries concerned are not evidencing any excessive macroeconomic imbalances.

The content of the reform package described above and decided at EU level in December 2018 makes it clear that these measures at macroeconomic level alone are insufficient to increase the stability of the eurozone; it is also imperative that the individual EU countries themselves implement structural reforms with the aim of reducing their government debt.

On the whole, only limited progress was made in reducing new and total borrowing in the eurozone. These efforts were supported by the ongoing phase of low interest rates and the continued path of economic recovery in the year under review, although the increase in the eurozone's economic output of 1.8 percent year on year during the reporting period was lower than the corresponding rise of 2.4 percent in 2017.

At the end of the third quarter of 2018, the total borrowing of the 19 eurozone countries equated to 86.1 percent of their GDP, a decrease of 2.1 percentage points compared with the figure of 88.2 percent as at September 30, 2017.

Even though France and Italy, countries that are important in generating overall economic growth in Europe, along with Portugal and Spain, which had been reliant on EU aid during the sovereign debt crisis, all made further gains in economic efficiency in the first nine months of 2018 compared with the first three quarters of 2017, they continued to suffer from a high level of indebtedness in the same way as some other eurozone countries, notably Greece.

Greece's public debt as a percentage of GDP stood at 182.2 percent in the third quarter of 2018 (third

quarter of 2017: 174.9 percent) but the country continued on its path of economic recovery in 2018 compared with the previous year. Greece successfully exited its third economic adjustment program (loan of up to €86 billion) on August 20, 2018. However, if Greece is to make any noticeable impact in reducing its high level of indebtedness, it must sustain economic growth and continue with its reform policy and stringent budgetary discipline.

Italy is suffering from a high volume of non-performing loans in the banking sector and, above all, from having the highest relative government debt ratio in the eurozone after Greece; its public debt as a percentage of GDP stood at 133.0 percent in the third quarter of 2018 (third quarter of 2017: 133.6 percent).

This reflects a serious structural crisis, requiring sweeping reforms. Nevertheless, the coalition formed at the beginning of June 2018 between the far-right nationalist Lega and the populist Five Star Movement (M5S) based on the outcome of the parliamentary elections held on March 4, 2018 still put forward a proposed budget in mid-October 2018 for the coming year that involved new indebtedness of 2.4 percent of GDP. This included the withdrawal of social security cuts and suspension of the planned increase in value added tax. The new indebtedness of 2.4 percent, which ran counter to the EU's stability policy targets because of Italy's existing high level of indebtedness, led to a protracted dispute with the European Commission. Eventually, an agreement was reached with the Italian government on a slightly lower deficit ratio of 2.04 percent, which was enough to avert action by the EU authorities to instigate an excessive deficit procedure.

Portugal's public debt as a percentage of GDP stood at 125.0 percent in the third quarter of 2018 (third quarter of 2017: 129.5 percent) and the country made further progress on stabilizing its economy during the reporting year. The Portuguese economy was boosted in particular by steady consumer demand and a fall in unemployment. However, the banking sector continues to have significant legacy issues in the form of non-performing loans.

Spain's public debt as a percentage of GDP stood at 98.3 percent in the third quarter of 2018 (third quarter of 2017: 98.4 percent) and its economy continued to enjoy a pleasing rate of growth in the year under review.

However, the new minority government with socialist Pedro Sanchez as Prime Minister, which took over after the previous conservative administration under Mariano Rajoy was ousted with a vote of no confidence at the beginning of June 2018, only has limited leeway because of the difficulty in securing a majority. The political instability is therefore hampering the necessary reform of the labor market and pension systems.

France's public debt as a percentage of GDP stood at 99.5 percent in the third quarter of 2018, only a slight reduction compared with the figure a year earlier (third quarter of 2017: 99.9 percent). The enthusiasm of the general public for the structural reforms introduced by President Emmanuel Macron in the first year of his term of office waned increasingly over the course of the year. Following a rail strike that dragged on for several months and that had a notable adverse impact on economic growth in the second quarter of 2018, the 'yellow vest' protest movement sparked off by higher carbon taxes on fuel rapidly gathered pace during the last few weeks of 2018 and became such a strong opposition force that it is likely more extensive reforms, such as the standardization of the system of competing pension regimes to cut costs, will have to undergo a retrospective review.

The trends in the eurozone described above show that the European Central Bank (ECB) with its policy of quantitative easing has 'bought' the necessary time for the EU countries burdened with significant debt to reduce their fundamental budget deficits. Nonetheless, the countries specified above have for the most part made only limited efforts to reduce their high levels of indebtedness and bring in the necessary structural reforms. This is especially worrying because it is questionable whether the EMU countries concerned will be in any position at all (because of the size of their debt burden) to cope with substantially higher interest rates arising from further normalization of the ECB's monetary policy.

It is clear that the current low level of interest rates has also had the effect of decreasing various EMU countries' efforts to implement austerity measures because the availability of low interest rates is noticeably reducing the debt burden anyway.

One of the main reasons why politicians are generally reluctant to introduce the necessary structural improvement measures to reduce public debt is that various EU countries are still seeing strong political

movements that oppose the jointly agreed stabilization efforts of the single currency area. Aside from the UK's decision to leave the EU, the parliamentary elections in Austria, Italy, and Hungary have also shown, in particular, that increasingly anti-EU forces are gaining momentum and, as in the case of Italy recently, have even made it into government.

A key reason for the European Commission's reluctance to strictly implement the stability criteria under the Fiscal Compact agreed by the EU member states at the beginning of 2012 is most probably also the widespread return to a more nationalistic focus apparent within the eurozone. In the Fiscal Compact, the signatory countries committed to reducing their debt (as a proportion of GDP) each year by one twentieth of the difference between the debt level and the Maastricht limit of 60 percent of GDP.

At the same time, the ECB's current policy of zero and negative interest rates is making it harder for savers to build up sufficient capital and, in particular, to ensure they have adequate provision for old age. Although the weakness of the euro resulting from low interest rates is boosting companies' exports, it is also diminishing their efforts to lower costs and improve productivity. Furthermore, the ECB's policy of maintaining extremely low interest rates boosts the risk of misallocations and even the formation of bubbles in real estate and equities markets, which could jeopardize the stability of financial markets.

There is also a danger that future interest-rate rises in individual eurozone countries could lead to a wave of insolvencies among companies with chronic profitability problems. This may subdue economic growth and even trigger a recession if the situation worsens sufficiently. The countries giving rise to concerns about a sharp rise in insolvencies in the event of an interest-rate hike are Greece, Portugal, and Italy, because they each have a high proportion of non-performing loans to companies. This indicates a prevalence of firms with a sustained lack of profitability.

Another problem facing the ECB is that it will find itself with insufficient leeway in the event of an economic downturn and accompanying fall in inflation, because key interest rates will still be close to zero.

At its meeting on December 13, 2018, the ECB decided that its asset purchase program (quantitative easing, QE) launched in March 2015 would be discontinued at the end of 2018 following the reduction in the volume of monthly bond purchases from €30 billion to €15 billion in October 2018. At the same time, however, the ECB would continue to reinvest funds from maturing QE bonds. Explaining this move, ECB President Mario Draghi said that there was increased confidence that inflation in the eurozone was moving in the medium term in the direction of the central bank's target of below, but close to, 2 percent. At the meeting on December 13, 2018, the ECB also decided to leave the main refinancing rate unchanged at 0.00 percent and the deposit facility for banks at minus 0.40 percent.

By contrast, the Federal Reserve (Fed) raised its target range for the federal funds rate by 25 basis points on March 21, June 13, September 26, and again on December 19, 2018, taking the target range to the current level of 2.25 percent to 2.50 percent.

Against a backdrop of challenging market conditions, all the major German banks had to accept a fall in operating profits in 2018. The loss allowances for loans and advances recognized by the major banks were mostly lower than in 2017. Administrative expenses increased slightly year on year in the majority of cases.

3 Financial performance

3.1 Financial performance at a glance

DZ BANK successfully consolidated its position in the year under review in challenging market conditions influenced primarily by the extremely low level of interest rates and demanding regulatory requirements. In terms of financial performance, other net income and expense was affected by expenses relating to the subsidiaries DVB Bank and DZ PRIVATBANK S.A.

The year-on-year changes in the key figures that made up the operating profit generated by DZ BANK in 2018 were as described below.

Operating income amounted to €1,722 million, a year-on-year fall of €391 million (2017: €2,113 million). It is made up of net interest income, net fee and commission income, net trading income, and other net operating income/expense.

Administrative expenses went down by €77 million or 5.0 percent to €1,452 million (2017: €1,529 million).

The **cost/income ratio** (i.e. the ratio of administrative expenses (2017: including merger-related expenses of €91 million) to operating income) for 2018 was 84.3 percent (2017: 72.4 percent).

Operating profit before loss allowances decreased by €314 million to €270 million (2017: €584 million).

Loss allowances amounted to a net reversal of €229 million (2017: net reversal of €14 million).

The **operating profit** amounted to €499 million (2017: €598 million), a year-on-year decrease of €99 million.

FIG. 1 – INCOME STATEMENT

€ million	2018	2017	Change (%)
Net interest income[1]	**1,071**	1,340	-20.1
of which: income from long-term equity investments[2]	**498**	737	-32.4
Net fee and commission income[3]	**388**	376	3.2
Net trading income	**363**	424	-14.4
Administrative expenses	**-1,452**	-1,529	-5.0
Staff expenses	**-636**	-643	-1.1
Other administrative expenses[4]	**-816**	-886	-7.9
Other net operating income/expense	**-100**	-27	>100.0
Operating profit before loss allowances	**270**	584	-53.8
Loss allowances[5]	**229**	14	>100.0
Operating profit	**499**	598	-16.6
Other net income/expense[6]	**-189**	-278	-32.0
of which: reversal of reserves required by section 340g HGB	**425**	250	70.0
Profit before taxes	**310**	320	-3.1
Income taxes[7]	**12**	250	-95.2
Net income for the year	**322**	570	-43.5

1 See annual financial statements, income statement, total of nos. 1. to 4.
2 See annual financial statements, income statement, total of nos. 3.b), 3.c), and 4.
3 See annual financial statements, income statement, total of nos. 5. and 6.
4 See annual financial statements, income statement, total of nos. 9.b) and 10.
5 See annual financial statements, income statement, no. 12.
6 See annual financial statements, income statement, total of nos. 13. to 16. and nos. 18. and 19.
7 See annual financial statements, income statement, total of nos. 21. and 22.

The details on the financial performance of DZ BANK set out above and below (section 3.2) include the following variances compared with the information provided in the outlook in chapter V of the 2017 management report.

The operating profit before loss allowances achieved in the reporting year was €183 million lower than the forecast for 2018. Firstly this was because net trading income was lower than the budgeted figure, mainly due to spread-induced measurement losses in interest-rate and fixed-income trading and on flow derivative products. The second reason was that the distributions from Union Asset Management Holding, TeamBank, and DZ PRIVATBANK were below budget because business at each of these entities fell short of expectations.

3.2 Financial performance in detail

The individual year-on-year changes in the financial performance of DZ BANK in 2018 are described in detail below.

Net interest income declined by 20.1 percent to €1,071 million (2017: €1,340 million).

Net interest income (excluding income from long-term equity investments), which is primarily attributable to the lending business portfolios (Corporate Banking business line and a separately managed real estate lending portfolio) and the portfolios from the money and capital markets business, declined by 5.0 percent to €573 million (2017: €603 million). Net interest income also includes the interest expense and income relating to issued subordinated bonds and those purchased by group entities. The amounts of the individual items and the effects on the change in net interest income are described below.

In the lending business, net interest income fell by 1.1 percent to €466 million (2017: €471 million).

Within this figure, net interest income in Corporate Banking declined marginally, by 1.1 percent, to €430 million (2017: €435 million). Net interest income from the separately managed real estate lending portfolio remained at the prior-year level of €36 million (2017: €36 million).

At DZ BANK, the Corporate Banking business line comprises the five regional corporate customer divisions that focus on corporate banking in Germany (Northern and Eastern Germany, Western Germany, Central Germany (from January 1, 2019: Central Corporate Banking), Baden-Württemberg, and Bavaria), the Investment Promotion division, and the Structured Finance division covering business with German corporate customers and foreign customers with links to Germany.

In accordance with the cooperative principle of decentralization, the distribution of responsibilities in the Volksbanken Raiffeisenbanken cooperative financial network, and the focus on the needs of companies, customer relationship management for corporate customers is provided by the local

cooperative bank in conjunction with DZ BANK, or directly by DZ BANK.

The cooperative financial network has been pivotal in supporting the sustained economic upturn experienced by Germany's large and medium-sized companies that began some years ago. This is confirmed by its position in the corporate finance market.

Over the past ten years, the cooperative financial network's volume of lending has grown at a much faster rate than that of the market as a whole. As a result, the group's share of the corporate finance market in Germany has now increased to approximately 22 percent.

The macroeconomic conditions in Germany are generally positive for the corporate banking business operated jointly by DZ BANK and the cooperative banks, even though the pace of growth in the German economy slackened over the year under review. The country's large and medium-sized companies remain in robust financial health.

At the same time, however, the competitive environment in corporate banking is becoming increasingly challenging and there is still a great deal of pressure on credit margins. The game changers of our age, digitalization and the accompanying shift in customer behavior, are further intensifying this competition and significantly increasing the need for innovation and optimization in the Corporate Banking business line.

Moreover, the vast majority of large and medium-sized companies continue to be able to meet their capital investment requirements from their own cash flows or reserves thanks to their sound capital and liquidity position.

According to a survey carried out by DZ BANK in the autumn of 2018, German large and medium-sized companies' significant propensity to invest has eased off slightly compared with the spring of 2018, even though capacity utilization has remained at a high level. One of the key reasons for this is likely to be the shortage of skilled employees, which is an ever-growing concern for these firms. Geopolitical factors, particularly the worldwide trade disputes and the uncertainties linked with the approach of Brexit, are acting as a further brake on the inclination of businesses to invest.

Partly as a result of the stable German economy and companies' robust financial health, large and medium-sized companies have increasingly ventured into international business over the last few years. More than half of large and medium-sized companies operate internationally through exports, imports, joint ventures, foreign production facilities, or partnerships. DZ BANK has recognized this trend and, in the reporting year, entered into a cooperation agreement with Indonesia's third-largest bank, PT Bank Central Asia Tbk. The aim of this agreement is to provide support for each other's corporate customers, i.e. direct and cooperative financial network customers in Germany that are targeting the Indonesian market as well as PT Bank Central Asia's Indonesian customers that are looking to enter the German market.

Net interest income from the money and capital markets business went down by 18.3 percent to €192 million (2017: €235 million), mainly in connection with a contraction in the portfolio of bonds and other fixed-income securities in the year under review. Securities were sold to reduce the duration of the portfolio. The decrease in net interest income was partly offset by gains on long-term securities (other net income and expense).

The adverse impact of subordinated capital (balance of subordinated own issues and subordinated securities purchased by group entities) on net interest income declined by 17.5 percent in 2018 to €85 million (2017: €103 million) as a consequence of a contraction in the liability portfolios.

DZ BANK's reported income from long-term equity investments went down by 32.4 percent to €498 million (2017: €737 million).

This reduction is primarily attributable to the year-on-year decline in income from the long-term equity investments in Union Asset Management Holding (down by €64 million) and R+V Versicherung (down by €44 million). Moreover, the prior-year figure had included non-recurring income from the long-term equity investment in WGZ Finance plc, Dublin (formerly DZ BANK IRELAND plc, Dublin) as a result of its liquidation (€106 million).

Net fee and commission income rose by 3.2 percent to €388 million (2017: €376 million).

The principal sources of income were service fees in the Corporate Banking business line (encompassing, in

particular, lending business including guarantees and international business), in the Capital Markets business line (mainly comprising securities issuance and brokerage business, agents' fees, transactions on futures and options exchanges, financial services, and the provision of information), and in the Transaction Banking business line (mainly consisting of payments processing including credit card processing, safe custody, and gains/losses from the currency service business).

As part of service procurement arrangements, DZ BANK AG has transferred processing services in the lending business to Schwäbisch Hall Kreditservice, in the payments processing business to Equensworldline, and in capital markets business/transaction banking to Deutsche WertpapierService Bank. The expenses arising in connection with obtaining services from the above external processing companies amounted to a total of €167 million (2017: €164 million) and are reported under net fee and commission income for the individual Corporate Banking (€12 million) and Transaction Banking (€155 million) business lines.

The Corporate Banking business line saw a slight overall rise in net fee and commission income of 2.9 percent to €105 million (2017: €102 million). In the five regional corporate customer divisions, net fee and commission income went down by 22.9 percent to €27 million (2017: €35 million). By contrast, net fee and commission income in the Structured Finance division rose by 10.5 percent to €84 million (2017: €76 million). Net fee and commission income in corporate finance increased to €5 million (2017: €2 million).

In the Capital Markets business line, the contribution to net fee and commission income rose by 6.3 percent to €152 million (2017: €143 million). In this regard, net fee and commission income from securities issuance activities went up by 46.4 percent to €41 million (2017: €28 million) on the back of additional client portfolios in the bond issuance business.

In addition, net fee and commission income in the Transaction Banking business line amounted to €120 million, which equated to a year-on-year increase of €8 million or 7.1 percent. This increase was primarily attributable to higher income from the securities safe custody business and payments processing.

Net fee and commission income from other financial services fell by 38.9 percent in the reporting year to €11 million (2017: €19 million). €4 million of this decline was accounted for by first-time fee and commission expenses for rating information in connection with services for cooperative banks and €1 million by higher commission expenses related to own issues.

Net trading income amounted to €363 million in 2018 (2017: €424 million).

Income from trading on behalf of customers matched the high level achieved in the prior year. The deterioration of gains and losses on trading activities was attributable to market-price-related measurement losses, specifically spread-induced measurement losses in interest-rate and fixed-income trading.

The liabilities recognized at fair value gave rise to a positive effect on earnings of €13 million in 2018 (2017: loss of €26 million) that was largely attributable to DZ BANK's own issues.

During the reporting period, the special reserve pursuant to section 340e (4) HGB was reduced by €35 million due to the required minimum funding being exceeded. This reversal was recognized in the income statement (2017: addition of €7 million recognized in the income statement).

Key influences on capital markets during the reporting year were the continuation of the ECB's program of quantitative easing up to the end of the year, as mentioned earlier, and its decision to leave the main refinancing rate unchanged at 0.00 percent and the deposit facility for banks at minus 0.40 percent beyond the end of 2018.

Furthermore, during the course of 2018, the Fed raised its target range for the federal funds rate in four stages (in March, June, September, and December 2018), in each case by 25 basis points, with the target range at the end of the year then standing at 2.25 percent to 2.50 percent.

The weakening of economic growth that was discernible in Germany and the eurozone from the start of 2018, but especially in the second half of the year, took hold against a backdrop of far-reaching geopolitical changes. The principal factor weighing on economic trends, other than the Brexit negotiations and the increasingly entrenched positions in the debt

dispute between Rome and Brussels as the year progressed, was the trade disputes between the US and China, leading to an escalation in the reciprocal imposition of customs tariff barriers. These trade disputes in particular had a detrimental impact on the German economy, which is heavily dependent on exports.

In this environment, the DAX averaged out at 12,270 points in the year under review, which was virtually unchanged on the equivalent figure of 12,435 points for 2017. However, market prices were far more volatile in 2018 than in the previous year.

The regulatory environment also impacted on the markets and market players, which again had to cope with the demanding requirements imposed by banking regulators in the year under review.

The products and services of DZ BANK's customer-oriented capital markets business are geared to the needs of cooperative banks, specialized service providers within the cooperative sector, and their retail and corporate customers.

In addition, DZ BANK has business relationships with direct corporate customers and institutional customers in Germany and abroad. The portfolio comprises competitively priced investment and risk management products involving the asset classes of interest rates, equities, loans, and foreign exchange. These products are complemented by a broad range of advisory and research services, structuring expertise, and platforms. In respect of all customer groups, the proportion of business conducted through electronic systems is rising significantly and increasingly replacing traditional telephone trading.

Against the current backdrop of low interest rates, German retail investors' top priorities are safety and understandable investment solutions. By focusing on these customer needs, and thanks to the successful sales performance of the cooperative banks, the cooperative banking group was able to achieve investment certificate sales of more than €4.5 billion in the year under review, repeating the record sales level achieved in 2017. DZ BANK's performance – as measured by data from the Deutscher Derivate Verband (DDV) [German Derivatives Association] – has once again been impressive, demonstrating its market strength with a market share of 17.6 percent as at the end of December 2018, based on the market volume invested in structured securities (96.4 percent of which is accounted for by investment products). The comprehensive range of high-quality services also earned DZ BANK the Best Issuer of 2018/2019 award from an independent panel of experts in this year's Investment Certificates Awards, the second time that DZ BANK has received this accolade following its success in the 2017/18 awards.

DZ BANK continued to focus on steadily and effectively digitalizing and optimizing securities processes in retail securities business. DZ BANK also has an advanced quality management system for customer service and product development based on the new ISO 9001:2015 standard. The system has been audited and certified by DQS GmbH Deutsche Gesellschaft zur Zertifizierung von Managementsystemen.

In order to stabilize their financial performance over the long term, the cooperative banks acquired investments with residual maturities of more than five years as part of their own-account investing activities. They stepped up their investments in corporate bonds and simply structured credit products in the form of credit-linked notes. Demand for structured bullet maturity bonds and share bonds was also brisk. The cooperative banks also aimed for broad diversification in their securities portfolios, particularly with regard to investments in equities and real estate. To this end, the main focus of demand was on fund products from the Union Investment Group, whose inflows again increased year on year.

The ECB's monetary policy of negative interest rates and the accompanying distortion of market prices and risk premiums also influenced DZ BANK's capital markets business with institutional customers. Income sources ranged across the entire fixed-income product segment but were primarily focused on bond trading in the secondary market. In the case of interest-rate structures and credit-linked notes, DZ BANK has been supporting its institutional customers for many years by offering a broad range of products, and in 2018 even managed to slightly exceed the high trading volumes seen in previous years.

A growing prevalence of trading business conducted on electronic platforms was observable in the year under review, resulting in a sharp rise in trading volumes with asset managers and banks both in Germany and abroad. Insurance companies and pension funds were increasingly directing their investing activities toward alternative asset classes, such as real estate and infrastructure. In the case of banks and asset managers, interest focused on flow

products as well as spread products such as corporate bonds and bonds from emerging markets. Another key area of product activity in 2018 comprised the deals between DZ BANK and institutional customers relating to multi-tranche bonds from international and supranational issuers.

DZ BANK's capital markets business with large and medium-sized companies as well as major corporations is underpinned by a broad spectrum of products, with a particular focus on currency and interest-rate hedging in order to manage currency and interest-rate risk. The year under review saw encouraging growth in the currency business. This range is complemented by basic products in the core deposit-taking business and securities business for liquidity management.

The ongoing, ECB-driven policy of low interest rates, combined with limited demand for credit given that the majority of large and medium-sized companies have ample liquidity, meant that these companies' interest-rate hedging activities were concentrated on maturities of more than ten years.

An increase in active money market business was also evident.

New bond issuance business was significantly influenced in the reporting year by the ECB's measures in connection with its bond-buying program, as previously described. As a result of the ECB's plans to scale back its asset-buying program, there was a notable increase in risk premiums for bond issuers and, as a consequence, a reduced level of bond issuing activity compared with 2017. Banks obtained part of their traditional funding through unsecured bonds in the secured Pfandbrief market and/or in the international covered bond market. DZ BANK was able to benefit from this trend and expand its market share in the primary market for covered bonds. Overall, against the backdrop of a contracting new issues market, DZ BANK was able to significantly lift both its relative market share and also the absolute volume of its supported bond issues in some market segments.

Administrative expenses at DZ BANK amounted to €1,452 million, a decrease of €77 million or 5.0 percent on the comparable figure in 2017 (€1,529 million).

Other administrative expenses fell by €70 million in 2018 to €816 million (2017: €886 million). It should be noted, however, that the prior-year figure was adversely affected by non-recurring merger-related expenses of €91 million related to the migration of data. On the other hand, there was a notable increase in the year under review of €12 million in the expenses incurred for the bank levy (2018: €36 million; 2017: €24 million).

The €7 million drop in staff expenses to €636 million (2017: €643 million) was predominantly due to lower variable remuneration in the reporting year.

Other net operating income/expense at DZ BANK amounted to a net expense of €100 million in the reporting year (2017: net expense of €27 million).

This included a net expense of €128 million (2017: net expense of €69 million) that resulted from the measurement of the occupational pension plan and primarily comprised the interest cost of €115 million reported in 2018 (2017: €86 million) in connection with the measurement of defined benefit obligations and the expense resulting from plan assets in 2018 of €13 million (2017: income generated of €17 million). The other net operating expense in 2018 also consisted of a net loss of €24 million under gains and losses on exchange differences in the banking book and income of €54 million from the reversal of provisions.

Loss allowances amounted to a net reversal of €229 million (2017: reversal of €14 million).

Under loss allowances for loans and advances, there was a net reversal of €219 million in 2018 (2017: net reversal of €8 million). The additions to loss allowances for loans and advances – particularly in corporate banking – were offset by reversals resulting from the continued success of efforts to aid the recovery of non-performing loans and receipts from loans and advances previously impaired. Overall, the change in loss allowances for loans and advances, which also benefited from the stable economic environment, reflects the stability of the credit portfolio and DZ BANK's sustainable risk policy.

In 2018, adjustments were made to the risk parameters applied. This change resulted in income of €88 million (effect of initial application) that is largely attributable to portfolio loan loss allowances (use of individual rates of loss given default and different credit conversion factor (CCF) parameters).

Further detailed disclosures regarding the measurement of loss allowances for loans and

advances can be found in note 2 in the notes to the 2018 annual financial statements.

In the year under review, DZ BANK's **other net income and expense** amounted to an expense of €189 million (2017: expense of €278 million).

Within this figure, losses on investments of €384 million (2017: gains of €225 million) included both losses from long-term equity investments of €421 million (2017: gains of €185 million) and gains on long-term securities totaling €37 million (2017: gains of €40 million).

The losses from long-term equity investments in 2018 included, in particular, write-downs of €220 million and €200 million respectively on the carrying amounts of DZ BANK's directly held long-term equity investments in DZ PRIVATBANK and DVB Bank.

The gains from long-term equity investments in the previous year had included, in particular, gains of €126 million on the disposal of DZ BANK's long-term equity investment in Concardis GmbH, Eschborn, and a €44 million reversal of a write-down on the carrying amount of DZ BANK's long-term equity investment in WL BANK.

In the reporting year, the net gain on long-term securities primarily comprised income of €40 million (2017: €49 million) on the disposal of liquidity-pool securities and the closing out of derivatives used for hedging.

The €159 million expense in respect of the transfer of losses (2017: €351 million) was largely attributable in 2018 to an expense of €150 million resulting from the transfer of losses from DVB Bank.

In 2017, the expense in respect of the transfer of losses had been mainly due to an expense of €300 million resulting from the transfer of losses from DVB Bank and an expense of €39 million resulting from the transfer of losses from VR-LEASING AG.

In 2018, the extraordinary result amounted to an expense of €71 million (2017: expense of €402 million) and included an expense of €79 million from the addition to the provisions for restructuring as part of the 'Verbund First 4.0' strategic program.

In 2017, the extraordinary result had also included an expense of €500 million arising from an income subsidy paid by DZ BANK to DVB Bank and income of €107 million for DZ BANK resulting from winding up the business activities of WGZ Finance plc (formerly DZ BANK IRELAND plc).

In 2018, other net income and expense included income of €425 million (2017: €250 million) resulting from a withdrawal from the fund for general banking risks pursuant to section 340g HGB.

Profit before taxes amounted to €310 million (2017: €320 million).

The net **tax income** for 2018 of €12 million (2017: income of €250 million) includes income from group tax levies of €386 million (2017: €229 million), deferred tax income of €22 million (2017: €170 million), and a tax expense of €396 million (2017: €194 million).

Net income for the year came to €322 million (2017: €570 million).

As a result of the net income for the year of €322 million, DZ BANK will propose a dividend of €0.18 per share to the Annual General Meeting. This would equate to a total distribution of €322 million.

3.3 Number of branches

As at December 31, 2018, as had been the case a year earlier, DZ BANK had 7 German branches in Berlin, Düsseldorf, Hannover, Koblenz, Munich, Münster, and Stuttgart as well as 4 international branches situated in London, New York, Hong Kong, and Singapore.

The Hannover and Munich branches oversee two sub-offices in Hamburg and Nuremberg.

4 Net assets

As at December 31, 2018, DZ BANK's **total assets** had risen by €6.5 billion to €258.5 billion (December 31, 2017: €252.0 billion), an increase of 2.6 percent.

DZ BANK's international branches accounted for €22.9 billion or around 8.8 percent of the total assets of DZ BANK as at December 31, 2018. New York (€11.0 billion) and London (€5.6 billion) together accounted for around 72.5 percent of the €22.9 billion. The remaining €6.3 billion was attributable to the branches in Singapore (€3.6 billion) and Hong Kong (€2.7 billion).

The **return on assets**, which was calculated by dividing the net income for the year by the total assets at December 31, 2018, was 0.1 percent (2017: 0.2 percent).

As at December 31, 2018, the **volume of business** amounted to €287.4 billion (December 31, 2017: €280.7 billion). This figure comprises not only total equity and liabilities but also the contingent liabilities of €7.9 billion (December 31, 2017: €7.0 billion) and DZ BANK's other obligations of €21.0 billion (December 31, 2017: €21.7 billion).

FIG. 2 – TOTAL ASSETS

The derivatives recognized at fair value of €1,174.9 billion (December 31, 2017: €1,020.7 billion) and **the derivatives not recognized at fair value** of €62.7 billion (December 31, 2017: €64.9 billion) came to a notional amount of €1,237.6 billion as at December 31, 2018 (December 31, 2017: €1,085.6 billion). Of this total amount, €17.3 billion was accounted for by positive fair values (December 31, 2017: €19.0 billion).

Loans and advances to banks had risen by €9.0 billion to €145.1 billion as at December 31, 2018, compared with €136.1 billion as at December 31, 2017. Loans and advances to affiliated banks had increased by €2.1 billion or 2.9 percent to €73.3 billion. Loans and advances to other banks had risen by €6.9 billion or 10.6 percent to €71.8 billion.

Loans and advances to customers had gone up by €1.7 billion to €34.7 billion as at December 31, 2018 (December 31, 2017: €33.0 billion). Within this amount, loans and current account debit balances had grown by €0.8 billion and €0.5 billion respectively, while fixed-term deposits had increased by €0.3 billion.

As at December 31, 2018, the value of **bonds, shares, and other securities** had fallen by €7.1 billion to €28.3 billion (December 31, 2017: €35.4 billion). This change was attributable almost exclusively to holdings of bonds, the value of which amounted to €28.2 billion as at December 31, 2018 (December 31, 2017: €35.3 billion). The value of shares and other variable-yield securities was unchanged year on year at €0.1 billion (December 31, 2017: €0.1 billion).

The **trading assets** line item was €32.4 billion as at December 31, 2018, a rise of €2.6 billion compared with December 31, 2017 (€29.8 billion). This was mainly the result of an increase of €2.3 billion for bonds and €2.2 billion for repurchase agreements (repos), whereas there were decreases of €1.3 billion for derivatives and €0.4 billion for equities and investment certificates.

Deposits from banks had advanced by €5.0 billion to €132.6 billion as at December 31, 2018 (December 31, 2017: €127.6 billion). Deposits from affiliated banks had climbed by €1.0 billion to €53.1 billion, while deposits from other banks had gone up by €4.0 billion to €79.5 billion.

Deposits from customers as at December 31, 2018 had risen by €4.1 billion to €35.6 billion (December 31, 2017: €31.5 billion). This change was predominantly attributable to an increase in current account credit balances (up by €3.2 billion), fixed-term deposits (up by €0.6 billion), and overnight deposits (up by €0.4 billion).

Debt certificates issued including bonds stood at €34.2 billion. This equates to a fall of €2.3 billion compared with the figure at December 31, 2017 of €36.5 billion. The reasons for this were a €3.8 billion decline in the portfolio of commercial paper and a €1.5 billion increase in the portfolio of bonds (excluding German commercial paper).

The **trading liabilities** line item had increased by €1.2 billion to €34.4 billion (December 31, 2017: €33.2 billion). Within this amount, investment certificates issued were up by €1.0 billion and bearer bonds by €0.8 billion, whereas repurchase agreements were down by €1.5 billion.

The **fund for general banking risks** in accordance with section 340g HGB stood at €3,812 million, which was €460 million lower than the figure of €4,272 million as at December 31, 2017.

The **equity** of €10,504 million reported on the balance sheet as at December 31, 2018 was unchanged on the equivalent figure as at December 31, 2017.

DZ BANK's capital and solvency situation is described in this management report in chapter VI (Combined opportunity and risk report), section 7.3.3 (DZ BANK banking group).

5 Financial position

Liquidity management for the entities in the Bank sector is carried out by the Group Treasury division at DZ BANK and on a decentralized basis by the individual subsidiaries. The individual entities are provided with funding by DZ BANK (group funding) or the entities exchange cash among themselves via DZ BANK (group clearing). Liquidity is managed within DZ BANK centrally by head office treasury in Frankfurt and by the associated treasury units in its international branches, although Frankfurt has primary responsibility.

In the context of liquidity management, DZ BANK distinguishes between operational liquidity (liquidity in the maturity band of up to one year) and structural liquidity (liquidity in the maturity band of more than one year). Dedicated steering committees have been established for both types of liquidity.

DZ BANK has a highly diversified funding base for **operational liquidity**. A considerable portion is accounted for by money market activities resulting from the cash-pooling function with the local cooperative banks. This enables local cooperative banks with available liquidity to invest it with DZ BANK, while primary banks requiring liquidity can obtain it from DZ BANK. Traditionally, this results in a liquidity surplus, which provides the main basis for short-term funding in the unsecured money markets. Corporate customers and institutional clients are another important source of funding for operational liquidity requirements. DZ BANK therefore has a comfortable level of liquidity at its disposal. Funding on the interbank market is not strategically important to DZ BANK.

DZ BANK issues money market products based on debt certificates through its branches in Frankfurt, New York, Hong Kong, and London. DZ BANK has initiated a standardized groupwide multi-issuer euro commercial paper program, which DZ BANK and other entities can draw on.

Money market funding also includes collateralized money market activities, which DZ BANK has centralized in Group Treasury and which form the basis for broadly diversified funding on money markets. To this end, key repo and securities lending activities, together with the collateral management process, are managed centrally in DZ BANK's Group Treasury division. Group Treasury also has at its disposal a portfolio of investment-grade liquid securities. These securities can be used as collateral in monetary policy funding transactions with central banks, in bilateral repos, or in the tri-party repo market.

Structural liquidity activities are used to manage and satisfy the long-term funding requirements (more than 1 year) of DZ BANK.

Structural liquidity is measured daily on the basis of total liquidity flows.

DZ BANK secures its long-term funding for structural liquidity by using structured and non-structured capital market products that are mainly utilized for the local cooperative banks' own-account and customer-account securities business and marketed to institutional clients. DZ BANK also has the option of obtaining liquidity through covered issues known as DZ BANK BRIEFE. These are primarily marketed to institutional investors.

Long-term funding requirements in foreign currencies are covered through the basis swap market, ensuring matching maturities.

The Group Treasury division at DZ BANK carries out groupwide **liquidity planning** annually. This involves determining the funding requirements of the DZ BANK Group, including DZ BANK, for the next financial year on the basis of the coordinated business

plans of the individual companies. Liquidity planning is updated throughout the year.

Monthly **structural analyses** of the various resources available on the liabilities side of DZ BANK's balance sheet are also conducted. The purpose of these analyses is to provide senior management with information that can then be used as the basis for actively managing the liability profile.

To complement the description of the funding structure, further information on **liquidity risk** can be found in this management report in chapter VI (Combined opportunity and risk report), section 6.2 (Economic liquidity adequacy).

III Events after the balance sheet date

There were no events of particular importance after the end of the financial year.

IV Human resources report and sustainability

1 Human resources report

1.1 HR activities

The DZ BANK Group has updated its strategy as the leading financial services provider for the cooperative financial network under its forward-looking 'Verbund First 4.0' initiative. The initiative focuses on nine action areas aimed at refining DZ BANK's role as the central institution and corporate bank on the one hand and as the holding company on the other. The HR-related activities are assigned to the 'employees and culture' action area. Harmonization of the remuneration systems was a key aspect of HR work in 2018, as was the updating of the reconciliation of interests and social compensation plan. These two HR tools needed to be amended due to new cost items and targets.

1.2 Review of professional development in 2018

A new topic area – innovation, digitalization, and agility – was successfully launched in 2018 and attracted around 300 participants. The activities offered in this area ranged from an initial briefing on the topics, through the provision of more in-depth information, to application and the development of specific aspects in training. A total of 35 activities were carried out in this topic area. It will be expanded in 2019, playing its part in the forward-looking 'Verbund First 4.0' initiative.

The learning platform introduced in 2017, 'Meine Trainings' (my training courses), has become well established. Incorporating a variety of functions, the platform integrates all seminar-related processes. As well as providing an overview of the courses on offer, it has features for registration and cancellation. Employees can thus check at any time what training they have booked and find out which courses are available and when. Around 4,800 participants took part in the general training program in total during 2018. There was again strong demand for specialist training on topics such as banking regulation and for short-format events in the Knowledge Forum series. The 17 events held were attended by approximately 1,000 people in total. In another event, DZ BANK's trend scouting team provided an insight into banking in the future. On average, each Knowledge Forum event was attended by 60 employees.

Executive management development activities focused on digitalization, innovation, and agility, and on communications measures at management level as part of the forward-looking 'Verbund First 4.0' initiative. These measures included leadership dialogs between the Board of Managing Directors and 163 other executive managers.

The 'Startklar' (for new managers), 'Spurwechsel' (for managers switching to a new role), and 'Cockpit' programs notched up 115 participants between them. The total of almost 100 applications and the feedback provided on individual topics, such as digital leadership, demonstrate that the courses on offer are in line with demand

The proportion of participants in the bank's training and development program who said they would recommend it to others was again over 90 percent in 2018.

To meet demand for a wider variety of learning methods, the range of e-learning will be expanded in 2019. Employees now have access to around 50 e-learning courses (including speed reading and blended learning), giving them the flexibility to study whenever and wherever they want. In 2019, there were 25 mandatory e-learning courses for employees in Germany. A mandatory e-learning course on security awareness was introduced in the foreign branches. Another one on data protection will be added in 2019.

1.3 Training and development of young talent

A total of 49 new trainees (19 women and 30 men) began their professional career by joining various training programs after completing their studies at school or university. Training and developing the next generation is regarded as a shared responsibility within the bank. The HR division establishes the necessary structures and monitors the trainees and the departmental coordinators, but the training itself is carried out within the individual departments. In view of future requirements, the emphasis is increasingly shifting from traditional banking-oriented training programs to training and bachelor-degree programs focusing on IT, business informatics, and digitalization. The new Trainee Program 4.0, which centers on innovation and digitalization, got under way in the second quarter of 2018 with five trainees. A total of 14 university graduates began their careers in the

individual departments. DZ BANK encourages individual responsibility among its trainees in order to prepare them as fully as possible for taking on suitable roles in the bank. Besides equipping trainees with specialist knowledge, the development programs therefore focus on expanding their methodological, social, and personal skills. The trainee initiatives, which have been a firm fixture in the training program for three years now, give trainees the chance to make their own contribution by passing on their knowledge and, at the same time, expanding their own capabilities. For example, they can act as trend scouts or workplace pilots, enabling them to build on their innovation and digitalization skills and to put them into practice for the benefit of the bank. Reverse mentoring was launched in 2017, with 16 heads of department pairing up with a trainee. In view of the highly positive feedback, the initiative was continued in 2018 with another 16 pairings. In contrast to a classic mentoring program, the young employees are the mentors in reverse mentoring and share their experience in using social media and technology with the older managers so that they can strengthen their digital skills. A total of six trainee initiatives are currently running. The topics covered range from social media editing to energy scouts and digital scouts.

1.4 Health management

Services aimed at promoting the health of employees were offered in the year under review. These included a range of sporting activities and anti-stress programs as well as various lectures and workshops.

1.5 Work-life balance

One of the core objectives of HR policy is to create a working environment that takes account of changing family and age structures. With this in mind, DZ BANK adopted a policy for flexible and family-friendly organization of working hours back in 2015. The policy sets out binding rules and expectations regarding flexible working hours, which are based on the principle of give and take. DZ BANK supports parents and carers by offering flexible working hours, teleworking, and parent-and-child offices.

As part of the auditberufundfamilie® process, employees were able to attend information events and lectures during a long-term care focus week in 2018 that was introduced to complement the existing ways in which the bank helps employees to balance work and long-term care.

The bank has contracted external service providers that operate throughout Germany to arrange or provide childcare for employees and to arrange or provide support for family members requiring care. For example, regular daycare places are available in kindergartens or with au pairs or carers. The arrangement service is free of charge for bank employees. A daycare center for bank employees' children opened in mid-2016 in the new building that was constructed as part of the expansion of the Frankfurt site.
The Hertie Foundation recognizes companies with family-friendly and life-stage-oriented HR policies by awarding the *auditberufundfamilie*® certificate, which has to be renewed every three years. DZ BANK has held the certificate since 2007.

1.6 TeamUp trainee program

This trainee program for the local cooperative banks has become well established, celebrating its seventh anniversary in 2018. Since the launch of the program in October 2011, 60 young people have signed up to start their careers via TeamUp.

The innovation and digitalization topic, which was introduced in mid-2017, was a response by DZ BANK to the local cooperative banks' need for well-trained university graduates who can work on aspects of innovation and digitalization in different divisions. This new focal point of training was very popular with applicants. Four trainees were hired when the program started in 2017, and they were joined by another three in 2018. The first group's project, 'Supporting employees' transition from the analog to the digital world', received very positive feedback and has already been adopted by a number of cooperative banks.
The quality of the TeamUp trainee program is derived from the variety of placements and job-shadowing opportunities provided by the different entities in the cooperative financial network. The program delivers key benefits for successful personal career development, including familiarity with multiple levels of the cooperative financial network, a combination of practical training and academic qualifications, broadly based professional expertise, and the associated opportunity to build up a personal network of professional contacts from an early stage.

1.7 'Verbund First' career development program

In 2018, the fourth cohort of participants since the program was launched in 2014 started the 'Verbund First' career development program. The 15 participants – managers and employees from the cooperative banks – examined various issues relating to digitalization both within and outside the cooperative financial network. According to the participants, the networking opportunities and the chance to gain a new perspective on matters affecting the cooperative financial network are the main reasons for the program's success. The learning journey format was particularly helpful in enabling participants to pick up new ideas. This format is very popular with the cooperative banks because the individual participants ultimately decide which ideas they wish to take away and implement in their own banks.

1.8 Corporate Campus for Management & Strategy

The Corporate Campus for Management & Strategy was set up in 2010 as a think tank and as an information-sharing and strategy platform for senior managers in the DZ BANK Group. It has become successfully established and is now in its eighth year. In 2018, 355 participants attended a total of nine different events. All the feedback from the participants was very positive without exception. Participants included members of boards of managing directors, heads of division, and, in some cases if relevant to the topic under discussion, employees below head-of-division level. The Corporate Campus Creative Lab extends the established offering with new creative formats focused on digitalization. This will be further expanded to bolster the innovative strength of the DZ BANK Group. The 'Digital driver's license – my role as digital leader' sessions are now well established and will be continued.

1.9 DZ BANK Group's employer branding campaign

The objective of the campaign is to establish the DZ BANK Group as an attractive employer in the marketplace and thereby attract suitable candidates and retain existing employees over the long term with the aim of safeguarding the future viability of the DZ BANK Group.
The campaign was initiated back in 2014 with the launch of an intragroup communications and information-sharing platform. In 2016, the activities were expanded to include a joint external careers website. Further public relations activities followed, supporting the launch of the employer brand in the external job market across Germany. In 2017, these activities included a nationwide bike-sharing campaign that was promoted on relevant social media. Considerable use was made of internal communications channels, for example with articles about individual employees in a feature entitled 'A day in the life of...'. In the year under review, employer branding responsibilities were transferred from the entities to the relevant line functions. Employer branding is now a firmly established element of the entities' HR policy and has a dedicated new website.

1.10 Employer awards

DZ BANK received the following awards in the first half of 2018: Top German Employer (Top Employers Institute, since 2008), Candidate Experience Award (since 2015), Career-enhancing & Fair Trainee Program (Absolventa, since 2012), Trendence Student Survey/Germany's 100 Top Employers (ranked since 2008), Universum Student Survey/Germany's Most Attractive Employers for Students (ranked since 2008), Focus Best Employer (since 2013), and Fair Company Initiative (since 2004).

1.11 Declaration on corporate governance

Equal participation of women and men in managerial positions

The German Act on the Equal Participation of Women and Men in Managerial Positions in the Private and Public Sectors (FührposGleichberG) requires companies with more than 500 employees that are subject to codetermination under German industrial relations legislation to set binding targets for the supervisory board, the board of managing directors, and the first and second levels of management (heads of division and heads of department).

The Board of Managing Directors of DZ BANK examined in detail how to implement FührposGleichberG at DZ BANK and has set the following targets for the proportion of women at the two management levels for the period up to December 31, 2021:
Target for first-level management: 10 percent
Target for second-level management: 20 percent.

In line with the diversity policy adopted, the Supervisory Board of DZ BANK set the following targets on November 29, 2018 for the proportion of

women on the Board of Managing Directors and on the Supervisory Board for the period up to October 31, 2023:
Target for the Supervisory Board: 25 percent
Target for the Board of Managing Directors: 12.5 percent.

Irrespective of the statutory requirements, the aim is to further increase the proportion of women in managerial positions.

FIG. 3 – EMPLOYEE DATA

Employees (average for the year, excluding trainees)	**2018**	**2017**
Total	**5,335**	**5,482**
Employees (as at December 31, including trainees)		
Total	**5,474**	**5,542**
Employees	5,315	5,385
Trainees	159	157
Proportion of trainees (%)	2.9	2.8
Germany	5,234	5,298
ROW	240	244
Male	3,157	3,214
Female	2,317	2,328
Total proportion of women (%)	42.3	42.0
Total number of managers	658	660
Proportion of female managers (%)	18.2	19.1
Full-time	4,373	4,479
Part-time	1,101	1,063
Proportion of part-time (%)	20.1	19.2
Period of service (years)	15.2	15.1
Staff turnover (%)	6.2	7.0
Resignations (%)	2.4	2.1
Professional development days per employee	2.7	2.9

2 Sustainability

The non-financial group statement of DZ BANK AG in accordance with section 340i in conjunction with section 315b of the German Commercial Code (HGB) is combined with the non-financial statement of the parent entity in accordance with section 340a in conjunction with section 289b HGB.

The separate combined non-financial statement is contained in the 'Non-financial statement' section of the DZ BANK Group's 2018 Annual Report and is available in German at www.berichte2018.dzbank.de and in English at www.reports2018.dzbank.com

V Outlook

1 Economic conditions

1.1 Global economic trends

Despite numerous political risks and escalating trade disputes, the global economy remains robust. However, signs are emerging of a diminishing pace of growth as the economic cycle matures. At present, global economic growth is primarily being driven by the US economy, where tax relief had provided noticeable stimulus for companies and consumers alike in 2017. By contrast, the eurozone and China have seen an economic slowdown.

Germany and many other countries in the eurozone are likely to see a further tailing off of economic growth. The simmering trade dispute with the United States and the ongoing deadlock in the Brexit negotiations between the EU and United Kingdom have dampened appetite for investing activity in the countries that are affected. The Chinese government may potentially fend off a further slowdown by introducing tax relief and a state spending program. Another uncertainty factor for China is the continued threat that punitive tariffs may be imposed by the US President. Although the provisional agreement reached between Washington and Beijing in the trade dispute can be viewed positively, there remains substantial uncertainty about whether the talks will lead to a lasting détente in trade relations between the two countries.

Going forward, global economic output is expected to weaken in 2019, because the effect of government stimulus will gradually diminish and China will switch to a slower growth trajectory. The expansion of the global economy in 2018 is therefore likely to be confirmed at approximately 3.6 percent and will probably slow to around 3.5 percent in 2019.

Monetary policy remains expansionary worldwide. While the ECB has announced the end of its net purchases of bonds, it is continuing with its policy of negative interest rates. The Federal Reserve System, the US central bank, is responding to the late stage of the economic recovery and higher inflation rates in the United States with a steady but gradual departure from expansionary measures. With benchmark rates rising in the United States, there is a widening gap between interest rates in the eurozone and those on the other side of the Atlantic.

In early October 2018, the price of crude oil climbed to a high of US$ 86 per barrel. Since then, various positive news items on the supply side have combined to help oil prices fall again. The recent drop in oil prices indicates that energy prices will make a smaller contribution to inflation in the long term. However, diminishing capacity reserves could have a countervailing effect.

Looking ahead, inflationary pressure is likely to be limited worldwide on the whole. The global inflation rate will probably decrease slightly from around 3.9 percent in 2018 to approximately 3.6 percent in 2019.

1.2 Trends in the USA

Following the buoyant growth of the US economy in 2018, the current employment situation and the positive economic climate provide an encouraging outlook for 2019. Sentiment indicators are at a high level, suggesting that employment will continue to increase in the year ahead. However, jobs are likely to be added at a slightly slower rate due to the growing shortage of skilled workers. Consumer spending will therefore lose a little of its momentum but will nevertheless remain a key economic driver in 2019.

Losing the majority in the House of Representatives has made it harder for the US President to govern. The associated domestic political risks are illustrated by the drastic government shutdown. It can be assumed that the hardened political fronts will unsettle consumers and business.

In these conditions, the US economic growth rate is forecast to fall from approximately 2.9 percent in 2018 to around 2.5 percent in 2019. At the same time, the unemployment rate will continue to go down, from roughly 3.9 percent in 2018 to around 3.7 percent in 2019.

Following the sharp drop in energy prices in November 2018, the United States is expected to see a generally flatter inflation trajectory. Currently, an average inflation rate in the region of 2.2 percent is projected for 2019.

1.3 Trends in the eurozone

The economic climate in the eurozone deteriorated further at the end of 2018. The survey of European purchasing managers in December again pointed to a decline in economic activity in the eurozone. The index covering the industrial and service sectors fell to

its lowest level in more than four years. In France, the 'yellow vest' protests caused sentiment indicators to plummet. The escalating protests across France have put a big question mark over the French President's plans for further reform. But Germany too faces a gloomier economic climate, although this should not come as too much of a surprise. The UK parliament has failed to approve the agreement on the United Kingdom's departure from the EU, so the risk of a disorderly Brexit has risen sharply.

Nonetheless, the European job markets are still relatively robust. The number of people in work went up by 0.2 percent in the third quarter, although this was a slightly smaller increase than in previous periods. The eurozone's total economic output in the period July to September was generated by a working population of 158.3 million people in the eurozone. This is the highest number ever recorded for the eurozone.

Overall, the risks to future growth in the eurozone are still regarded as largely in balance. However, a shift toward downside risks is observable due to the continued uncertainty stemming from geopolitical factors, the threat of protectionism, vulnerabilities in emerging markets, and volatility in financial markets.

Against this backdrop, economic growth is forecast to fall to around 1.2 percent in 2019, compared with 1.8 percent in 2018. A slower improvement in the prospects for the labor market now looks likely due to the softening of the economy. The unemployment rate is predicted to decrease to 7.7 percent this year. There are still marked differences between the members of the eurozone. Unemployment rates will remain the highest in large countries such as Spain and Italy. Only smaller reductions are likely to be seen in Germany and the Netherlands, where the job markets are very tight.

Domestic inflationary pressure will remain moderate in the eurozone. Current forecasts for 2019 are predicting an inflation rate in the vicinity of 1.7 percent.

1.4 Trends in Germany

The German economy has passed its peak, with growth weakening markedly over the course of 2018 to reach 1.5 percent. In fact, macroeconomic activity contracted in the third quarter of 2018. Trade restrictions and punitive tariffs continue to be a major risk factor. The uncertainty surrounding Brexit and the problems besetting the Macron government in France are putting a particular strain on the economic climate. Consequently, industrial companies' expectations regarding business prospects have slipped back into negative territory for the first time since spring 2016. However, the situation in other sectors still looks a lot rosier. The construction industry is especially benefiting from the boom in the real-estate market.

Economic growth is likely to diminish further over 2019 as a whole. Germany's economic output is expected to rise by around 1.1 percent in 2019.

In 2018, the number of unemployed people fell by 190,000, which was the sharpest drop since 2011. However, the rate of decrease tailed off over the course of the year. Given the continuing rise in employment and economic output, albeit at a slower rate, the positive trend seen in the labor market in recent years is set to continue in 2019. However, the supply-side shortages in the labor market and the diminishing rate of growth in economic output mean that it will be less pronounced. Germany's unemployment rate for 2019 is predicted to fall further, reaching around 4.9 percent.

The rate of inflation has recently been relatively high at 2.3 percent, due in no small part to the rise in prices for heating oil and petroleum. Since its high at the beginning of October 2018, the oil price has already fallen by around 20 percent. Consequently, the average inflation rate for 2019 is expected to be in the region of 1.9 percent.

1.5 Trends in the financial sector

For some years, the financial sector has faced considerable pressure in terms of both adjustment and costs caused by the need to comply with regulatory reforms and implement structural change to adapt to competitive conditions.

The regulatory measures introduced since the financial crisis have had a range of objectives, including restructuring of the supervisory architecture and improved capital and liquidity adequacy in order to make the financial sector more resilient in the event of a crisis. A further objective is to ensure that the risks arising from the business activities in the financial industry are not borne by the public sector and thus the taxpayer.

However, there is always a possibility that European banks could be more heavily impacted by supervisory measures as a result of differences in the way that the rules are applied at international level.

Further information on the regulatory environment can be found in section 5.1.2 of the opportunity and risk report.

In response to these regulatory requirements, banks have reduced their leverage over the last few years and substantially bolstered their risk-bearing capacity by improving capital and liquidity adequacy.

However, in addition to the regulatory environment described above, new competitors with approaches based on the use of data and technology are presenting the financial sector with the challenge of scrutinizing its existing business models, adapting them as required, and substantially improving its efficiency by digitalizing business and IT processes. The corresponding capital investment is initially likely to push up costs in the industry before the anticipated profitability gains can be realized.

Efforts to address the challenges described above will be made more difficult in 2019 by what is expected to still be a comparatively low level of nominal interest rates. This will be accompanied by a relatively flat yield curve and will prevent any significant increase in margins in interest-related business.

This statement is based on the current assessment of the monetary policy pursued by the ECB, which did stop its bond buying program in January 2019 but may continue to reinvest maturing paper. The emergence of a slow tightening and thus normalization of monetary policy would potentially be supported by a cautious raising of the ECB's deposit rate. However, if banks – particularly those in countries on the eurozone's periphery – were to continue to have access to long-term refinancing operations, there would be a countervailing expansionary effect.

In 2018, by contrast, the US Federal Reserve ended the policy of quantitative easing that it had introduced in the wake of the financial crisis and has gradually been raising interest rates with the objective of keeping the US economy on a growth trajectory while ensuring price stability. Implementation of further interest-rate hikes is currently predicted for 2019.

The growth that continues to be expected in large swathes of the global economy should also provide a boost for the financial position and financial performance of the European financial sector.

However, the potential impact of uncertain political and economic trends for the economic position of banks and insurance companies should not be ignored. Further information on macroeconomic risk factors can be found in section 5.1.3 of the opportunity and risk report.

2 Changes in financial position and financial performance

2.1 Financial performance

Economic conditions at international level are expected to deteriorate in 2019. DZ BANK's earnings growth may thus be held back too, particularly in connection with unresolved trade disputes and a renewed flare-up of uncertainty in the eurozone.

Moreover, interest rates are predicted to remain low and there is likely to be less potential for reversing impairment losses.

Pressure to innovate by further digitalizing products and processes is set to rise, especially as tech companies are increasingly emerging as competitors in every part of the value chain.

In view of this worsening of market conditions and the challenges presented by the growing use of digital technologies, DZ BANK AG launched the 'Verbund First 4.0' strategic program in 2018 with the aim of improving long-term profitability.

In 2019, **profit before taxes** is expected to be significantly higher than in 2018. The figure for 2018 was affected by both positive and negative one-off items. In particular, these included write-downs on carrying amounts of long-term investments and the transfer of losses from long-term equity investments, although they were partly offset by the reversal of reserves pursuant to section 340g HGB. Other one-off items with a positive impact on profit before taxes in 2018 were the disposal of securities in the liquidity pool and a high level of net reversals of loss allowances.

However, variations in economic performance within the eurozone, combined with rising populism and protectionist economic policies that restrict growth, could lead to strong volatility in the global capital and financial markets in 2019. This would be detrimental to the expected level of earnings.

It continues to be difficult to assess the economic effects of US economic and monetary policy and of Brexit, and these may also have an influence on the earnings situation.

Net interest income (excluding income from long-term equity investments) in 2019 is predicted to be below the 2018 level. Planned growth in the lending business – to be achieved by stepping up corporate banking activities – combined with implementation of measures to increase joint lending business will have a positive impact on net interest income.

A portfolio-related decrease in interest income from securities in the banking book, however, will squeeze net interest income. Exchange-rate effects relating to internal funding provided a particular boost for net interest income in the reporting year. These effects are not expected to be repeated in 2019.

Income from long-term equity investments will probably go up in 2019 because of the favorable assessment of profitable growth in the most important management units.

Net fee and commission income is expected to be slightly lower in 2019 than it was in 2018. The steady volume-related growth of transaction banking is having a positive impact on net fee and commission income. The use of new technologies and changing customer requirements are the main influences on the market, and they offer particular growth opportunities for payments systems and the depositary business.

However, this positive effect is expected to be counteracted by a fall in fees and commissions from brokerage business with retail customers. This reflects the market trend that is seeing ever more retail investors making their investment decisions independently with the help of online tools.

Net trading income is likely to rise substantially in 2019. The forecasts for income in the customer business and for expansion of cross-selling with capital markets products are positive for 2019.

In 2019, DZ BANK aims to achieve this improvement in capital markets business by continuing to pursue the strategic objectives set for this business line. Both the institutional customer business and the retail customer business are believed to still offer opportunities for growth in spite of the tough market conditions.

Fixed-income business with institutional customers is to be expanded by forging new customer relationships and increasing market share among existing customers. To this end, DZ BANK plans to adapt the product range to better meet customers' differing requirements and to significantly increase the volume of sales in 2019. Success in this regard hinges on customers' fundamental perception that DZ BANK is a long-standing and trustworthy partner for capital markets products.

In capital markets business with retail customers, DZ BANK will boost its income in 2019 by collaborating more closely with the cooperative banks in the customer business. As part of this, the entire cooperative financial network is to improve its ability to compete in the digital sphere and to expand its digital sales channels.

The stepping up of the cross-selling approach, focusing on products for interest-rate, currency, and liquidity management, should enable further earnings potential to be harnessed, including in corporate customer business. DZ BANK also aims to further strengthen its position in primary market bonds business.

Under the digitalization strategy, there are plans to further expand e-trading platforms as an enhanced digital sales channel that will offer improved services to customers and increase process efficiency in the capital markets business.

A deterioration in macroeconomic conditions, particularly in the eurozone, that leads to destabilization of the capital markets could adversely affect net trading income.

The figure reported under **other net operating income/expense**, which is again expected to be negative, is likely to deteriorate substantially in 2019 owing to higher expenses for pensions resulting from the anticipated decrease in the discount rate and other factors. Moreover, the figure for 2018 was bolstered by positive one-off items in the form of above-average income from the reversal of provisions.

In all probability, **administrative expenses** will hold steady in 2019. Costs are predicted to fall as a result of the implementation of the synergies decided upon in connection with the merger and the lowering of project costs by reducing external consultancy services. Additional costs may be incurred due to digitalization

projects and measures to boost income under the 'Verbund First 4.0' strategic program.

Strategic cost targets have been defined as part of the 'Verbund First 4.0' strategic program in order to achieve a sustained reduction in administrative expenses over the coming years. Achievement of these targets will be tracked on a regular basis. Active cost management thus continues to be a strategic focus in view of the additional regulatory requirements and increased capital expenditure on digitalization.

The **cost/income ratio** is likely to improve significantly in 2019 owing to the absence of the one-off income and expense items recognized in 2018.

Taking account of the deteriorating economic situation, expenses for **loss allowances for loans and advances** are predicted to rise to a more normal level in 2019. The forecast for specific loan loss allowances is in line with the predicted change in the expected loss. In 2018, there was a significant one-off positive impact on loss allowances as a result of reversals and transition effects resulting from the parameters used to determine loss allowances. Potential reversals in 2019 are not included in the planning.

A possible downturn in the economy combined with uncertainties in the financial markets and protectionist leanings could have an adverse effect on loss allowances.

Net income/expense from other business is predicted to improve markedly in 2019. The negative impact on the 2018 figure from write-downs on carrying amounts of long-term investments and the transfer of losses from long-term equity investments is not expected to be repeated in 2019.

2.2 Liquidity

Based on the position in the year under review and the funding measures planned for 2019, the DZ BANK Group predicts that it will be able to continue satisfying the economic and regulatory **liquidity adequacy** requirements in 2019.

Further information on liquidity adequacy can be found in section 6.2 of the opportunity and risk report.

As matters currently stand, the DZ BANK Group's **capital adequacy** will continue to be assured for 2019 from both economic and regulatory perspectives; that is to say, it will continue to have at its disposal the available internal capital necessary to cover the risks associated with the finance business and other risks arising from the group's business operations.

Further information on capital adequacy can be found in section 7.2 of the opportunity and risk report.

Over the last few years, the DZ BANK Group has strengthened its capital base from its own resources – by retaining profits and reducing risk – and by implementing a capital increase in 2015. In 2019, a high priority will once again be given to strengthening capital.

VI Combined opportunity and risk report

1 Disclosure principles

In its capacity as the parent company in the DZ BANK Group, DZ BANK is publishing this opportunity and risk report in order to meet the transparency requirements for opportunities and risks applicable to the DZ BANK Group as specified in **sections 114 and 117 of the German Securities Trading Act (WpHG)** and **section 315 of the German Commercial Code (HGB)** in conjunction with **German accounting standard GAS 20**. Furthermore, the opportunity and risk report meets the transparency requirements regarding opportunities and risks applicable to DZ BANK as a separate entity that are specified in **section 289 HGB** in accordance with GAS 20.

This report also implements the applicable international risk reporting requirements, specifically those set out in the following legal standards:

- International Accounting Standard **(IAS) 1.134–136** (capital)
- International Financial Reporting Standard **(IFRS) 7.31–42** (nature and extent of risks arising from financial instruments) – with the exception of those in **IFRS 7.35–36**, the disclosures for which are included in the notes to the consolidated financial statements (note 83)
- **IFRS 4.38–39A** (nature and extent of risks arising from insurance contracts).

The maturity analysis in respect of financial assets and financial liabilities under **IFRS 7.39(a) and (b)** is disclosed in the notes to the consolidated financial statements (note 84).

The requirements set out in IFRS 7 are generally limited to financial instruments, shifting the focus of reporting to credit risk, equity investment risk, market risk, and liquidity risk. In contrast, the DZ BANK Group takes a holistic view of all these risks when using risk management tools and when assessing the risk position. As a consequence, the groupwide risk management system not only covers risks that arise specifically in connection with financial instruments, but also all other relevant types of risk. This integrated approach is reflected in this opportunity and risk report.

The opportunity and risk report also satisfies those **regulatory transparency requirements** in Part 8 of the Capital Requirements Regulation (CRR) that specify disclosures based directly on the risk management system. The disclosures concerned are as follows:

- Declaration by the Board of Managing Directors on the appropriateness of the risk management system in relation to the risk profile and business strategy (section 2.1.1)
- Risk statement by the Board of Managing Directors (section 2.1.2)
- Basic principles of risk management (section 3.1)
- Risk management objectives and strategies (sections 3.3 and 3.4)
- Structure and organization of risk management (section 3.5), including the nature and scope of the risk reporting systems (section 3.5.5) and the provision of risk information to the Supervisory Board (section 3.5.5)
- Risk management procedures, including the nature and scope of risk measurement systems (section 3.6.2)
- Guidelines for mitigating and hedging risk as well as strategies and procedures for monitoring the ongoing effectiveness of the measures taken to mitigate and hedge risk (sections 3.6.5, 6.2.4, 8.4.8, 10.4.4, 14.4.4, 16.4, 17.2.2, 18.2.2, and 19.2).

This opportunity and risk report also includes information in compliance with those recommended risk-related disclosures that have been issued by the **Financial Stability Board** (FSB), the **European Banking Authority** (EBA), and the **European Securities and Markets Authority** (ESMA) that extend beyond the statutory requirements and that are intended to improve the usefulness of the disclosures in the decision-making process.

In accordance with the statutory requirements, the quantitative disclosures in this opportunity and risk report are based on information that is presented to the Board of Managing Directors and used for internal management purposes (known as the **management approach**). This is designed to ensure the usefulness of disclosures in the decision-making process, as required by law.

The opportunity and risk report of the DZ BANK Group includes disclosures relating to DZ BANK. It is therefore a **combined opportunity and risk report** in accordance with section 315 (5) HGB in conjunction with GAS 20.22. A separate opportunity and risk report is not prepared for DZ BANK. Unless stated otherwise, the disclosures relating to the DZ BANK Group and the Bank sector also apply to DZ BANK.

DZ BANK Group

2 Summary

2.1 Statements from the Board of Managing Directors

The Board of Managing Directors has confirmed the accuracy of the following declarations by signing the 'Responsibility statement', which is included in this annual financial report.

2.1.1 Adequacy declaration

The Board of Managing Directors of DZ BANK considers that the **risk management system** in place is **adequate** with regard to the risk profile and risk strategy of the DZ BANK Group. DZ BANK continuously develops the risk management system and ensures that any identified need for improvement is addressed systematically without delay.

2.1.2 Risk declaration

The DZ BANK Group's **business model** and the associated business models used by the management units (see section I.1 of the (group) management report) shape the risk profile of the group. The main risks associated with the business models in the management units are presented in Fig. 5 and Fig. 6 in section 2.3.2 of the opportunity and risk report. The businesses operated by the DZ BANK Group and the management units that have a significant impact on the risk profile are described under 'Definition and business background' and 'Risk strategy' within the sections of the opportunity and risk report covering the different risk types.

In the other direction, the main risks and the risk profile, together with a number of other factors, influence the business models used in the DZ BANK Group. This occurs firstly in strategic planning, where the risk profile is taken into account by restricting – in conjunction with the imposition of risk limits – the risk assumed in connection with new business. Secondly, in all activities, the DZ BANK Group only takes on risk if it has an adequate understanding of the risk involved and the expertise necessary to measure and manage it.

The extent to which the liquidity risks and the risks backed by capital (**risk profile**) assumed by the DZ BANK Group are in accordance with its risk limits is expressed in the values for the group's **risk-related key performance indicators (KPIs)** shown in Fig. 4. The values for these KPIs are compared against the (internal) minimum targets specified by the Board of Managing Directors of DZ BANK with due regard to the business and risk strategies– also referred to below as **risk appetite** – and against the (external) minimum targets laid down by the supervisory authorities. The DZ BANK Group met the internal and external minimum targets at all times in the year under review. Further details on risk appetite can be found in section 3.4.

The interaction between the risk profile and risk appetite is explained in section 6 in connection with liquidity adequacy, and in section 7 in connection with capital adequacy.

2.2 Opportunity and risk management system

2.2.1 Fundamental features

DZ BANK and the DZ BANK Group define **opportunities** as unexpected positive variances from the forecast financial performance.

Risks result from adverse developments affecting financial position or financial performance, and essentially comprise the risk of an unexpected future liquidity shortfall or unexpected future losses. A distinction is made between liquidity and capital. Risks that materialize can affect both of these resources.

The **management of opportunities** at DZ BANK and in the DZ BANK Group is integrated into the annual strategic planning process. Strategic planning enables the group to identify and analyze market discontinuities based on different macroeconomic scenarios, trends, and changes in the markets, and forms the basis for evaluating opportunities. Attractive opportunities are taken into account in the business strategies.

FIG. 4 – RISK-RELATED KPIS

	Measured figure		Internal minimum target[1]		External minimum target	
	Dec. 31, 2018	Dec. 31, 2017	2018	2017	2018	2017
LIQUIDITY ADEQUACY						
DZ BANK Group						
Economic liquidity adequacy (€ billion)[2]	12.0	16.1	4.0	4.0	0.0	0.0
DZ BANK banking group						
Liquidity coverage ratio (%)[6]	141.4	161.7	110.0	90.0	100.0	80.0
CAPITAL ADEQUACY						
DZ BANK Group						
Economic capital adequacy (%)[3]	167.8	169.8	120.0	120.0	100.0	100.0
DZ BANK financial conglomerate						
Coverage ratio for the financial conglomerate (%)[4 5]	175.7	182.9	120.0		100.0	100.0
DZ BANK banking group						
Common equity Tier 1 capital ratio (%)[5 6 7]	13.7	13.7	11.0	11.0	8.8	7.9
Tier 1 capital ratio (%)[5 6 7]	14.3	14.3	12.5	12.5	10.3	9.4
Total capital ratio (%)[5 6 7]	16.8	17.2	14.5	14.5	12.3	11.4
Leverage ratio (%)[5]	4.3	4.4	3.5	3.5		

1 As specified by the Board of Managing Directors.
2 Economic liquidity adequacy is expressed through the minimum liquidity surplus KPI. The measured value relates to the stress scenario with the lowest minimum liquidity surplus. The internal minimum target relates to the observation threshold.
3 The internal minimum target is the amber threshold in the traffic light system for managing and monitoring economic capital adequacy. The value originally measured as at December 31, 2017 was 170.5 percent and has been adjusted due to the scheduled recalculation of the overall solvency requirement for the Insurance sector.
4 Figure measured as at December 31, 2018: Preliminary coverage ratio. Figure measured as at December 31, 2017: Final coverage ratio.
5 Measured values based on full application of the CRR.
6 The external minimum targets are the binding regulatory minimum capital requirements. Details on the minimum capital requirements can be found in section 7.3.3.
7 The figures as at December 31, 2017 differ from the corresponding figures disclosed in the opportunity and risk report for the first half of 2018 and in the opportunity and risk report for 2017 due to the transition to disclosure based on full application of the CRR and due to regulatory requirements.

Not available (grey cells)

Reports on future business development opportunities are based on the business strategies. As part of the general communication of the business strategies, employees are kept up to date about potential opportunities that have been identified.

DZ BANK and the DZ BANK Group have a comprehensive **risk management system** that meets their own business management needs and the statutory requirements. Furthermore, the management of opportunities and risks forms an integral part of the groupwide strategic planning process. The risk management system is based on the risk appetite statement – the fundamental document for determining risk appetite in the DZ BANK Group – and the specific details of this appetite embodied in **risk strategies** that are consistent with the business strategies and have been approved by the Board of Managing Directors. The **risk appetite statement** contains risk policy guidelines and risk strategy requirements applicable throughout the group. It also sets out quantitative guidelines in the form of minimum targets reflecting the risk appetite specified by the Board of Managing Directors.

Efficient management and control tools are used in all areas of risk. These tools are subject to continual further development and refinement. The methods used for measuring risk are integrated into the risk management system. Risk model calculations are used to manage the DZ BANK Group, DZ BANK, and the other management units.

DZ BANK and its subsidiaries have organizational arrangements, methods, and IT systems in place that enable them to identify material opportunities and risks at an early stage and initiate appropriate control measures, both at group level and at the level of the individual management units. This applies in particular to the **early detection and management of risks that could affect the group's survival as a going concern**.

The tools used for the purposes of risk management also enable the DZ BANK Group to respond appropriately to **significant market movements**. Possible changes in risk factors, such as a deterioration in credit ratings or the widening of credit spreads on securities, are reflected in adjusted risk parameters in the mark-to-model measurement of credit risk and market risk. Conservative crisis scenarios for short-

term and medium-term liquidity are intended to ensure that liquidity risk management also takes adequate account of market crises. A risk limit system based on risk-bearing capacity, stress testing encompassing all material risk types, and a flexible internal reporting system ensure that management is in a position to initiate targeted corrective action if required.

The risk management system is more detailed than the system for the **management of opportunities** because risk management is subject to comprehensive statutory requirements and is also of critical importance to the continued existence of DZ BANK and the DZ BANK Group as going concerns. The management of opportunities and risks is an integral part of the strategic planning process.

2.2.2 KPIs

Risks affecting liquidity and capital resources are managed on the basis of groupwide liquidity risk management and groupwide risk capital management. The purpose of **liquidity risk management** is to ensure adequate levels of liquidity reserves are in place in respect of risks arising from future payment obligations (liquidity adequacy). The aim of **risk capital management** is to ensure the availability of capital resources that are commensurate with the risks assumed (capital adequacy).

The **minimum liquidity surplus**, which reflects economic liquidity adequacy, and **economic capital adequacy** are the key risk management figures used in the DZ BANK Group. Disclosures on the method used to calculate these key figures can be found in sections 6.2.4 and 7.2.1. Disclosures on the relationship between these figures and the balance sheet can be found in sections 6.2.6 and 7.2.1.

The minimum liquidity surplus and economic capital adequacy cannot be reconciled directly to individual line items in the consolidated financial statements because they are forward-looking considerations. Although these key figures are based on the consolidated financial statements, a number of other factors are used in their calculation. The use of these figures in the opportunity and risk report complies with the financial reporting standards to be applied in external risk reporting.

2.2.3 Management units

All DZ BANK Group entities are integrated into the groupwide opportunity and risk management system. DZ BANK and its main subsidiaries – also referred to as management units – form the core of the financial services group.

The insurance business operated at R+V differs in key respects from the other businesses operated in the DZ BANK Group. For example, actuarial risk is subject to factors that are different from those affecting risks typically assumed in banking business. Furthermore, policyholders have a share in any gains or losses from investments in connection with life insurance, as specified in statutory requirements, and this must be appropriately taken into account in the measurement of risk. Not least, the supervisory authorities also treat banking business and insurance business differently and this is reflected in differing regulatory regimes for banks and insurance companies.

Because of these circumstances, two sectors – Bank sector and Insurance sector – have been created within the DZ BANK Group for the purposes of risk management. The management units are assigned to these sectors as follows:

Bank sector:
- DZ BANK
- BSH
- DZ HYP
- DVB
- DZ PRIVATBANK
- TeamBank
- UMH
- VR LEASING

Insurance sector:
- R+V

DZ HYP has applied the **waiver** pursuant to section 2a (1), (2), and (5) of the German Banking Act (KWG) in conjunction with article 7 (1) CRR, under which – provided certain conditions are met – the regulatory supervision at individual bank level may be replaced by supervision of the entire banking group.

The management units represent the operating segments of the DZ BANK Group. They are deemed to be material in terms of their contribution to the DZ BANK Group's aggregate risk and are therefore directly incorporated into the group's risk management system. The other subsidiaries and investee entities are included in the system indirectly as part of equity investment risk.

The management units ensure that their respective subsidiaries and investees are also included in the DZ BANK Group's risk management system – indirectly via the majority-owned entities – and meet the minimum standards applicable throughout the group.

2.2.4 Material changes

Merger of DG HYP and WL BANK to become DZ HYP

The merger of the former DG HYP and the former WL BANK to become **DZ HYP** did not result in material changes to the opportunity and risk management system or to the DZ BANK Group's key risk indicators in the year under review.

EU General Data Protection Regulation

The entities in the DZ BANK Group initiated appropriate steps to implement the EU General Data Protection Regulation (GDPR), which came into force on May 25, 2018. These steps were completed in the reporting year. The updating of IT systems to meet further requirements is ongoing and depends on a number of factors, notably the upgrades planned by software companies.

IFRS 9

As a result of the changes to the external financial reporting of financial instruments that have been in force since January 1, 2018 under IFRS 9, internal economic credit risk management is indirectly connected to the procedures to be used for the recognition of loss allowances. In particular, the parameters used to calculate the expected loss have been adjusted in order to fully comply with the impairment rules of IFRS 9. The process is as follows:

- The multiple-year default probabilities calculated for economic management are based on long-term average migration behavior. They are modified for the purposes of external financial reporting, in particular so as to take account of the latest available macroeconomic forecasts.

- The recovery rates calculated in the context of internal management in order to estimate the expected loss on lending transactions in the event of default (loss given default) and the ratios for proceeds from the recovery of collateral are adjusted in order to meet the IFRS 9 requirements regarding the parameter-based calculation of loss allowances.

The consequence of this is that, from 2018, loss allowances will no longer be disclosed in the opportunity and risk report within the group management report of the DZ BANK Group, the management report of DZ BANK, or the interim group management report of the DZ BANK Group. The same applies to the lending volume that has to be disclosed in connection with loss allowances according to IFRS 9 and must be based on carrying amounts reported on the balance sheet. This information will now be reported in the annual and interim consolidated financial statements. However, the management-relevant lending volume will still be disclosed in the opportunity and risk report.

Reputational risk in the Insurance sector

Following the risk inventory carried out in 2018, reputational risk in the Insurance sector was identified as a material type of risk for the DZ BANK Group. Disclosures relating to reputational risk at R+V can be found in section 20.

2.3 Risk factors, risks, and opportunities

2.3.1 Risk factors

The DZ BANK Group and DZ BANK are exposed to **risk factors related to both the market and sector**. These risk factors may be reflected in liquidity adequacy and capital adequacy. For example, the **regulatory framework** for the banking industry remains characterized by ever tighter regulatory capital and liquidity standards and increasingly stringent process and reporting requirements. These developments particularly have an impact on business risk. There are also significant **macroeconomic risk factors** in the shape of economic divergences in the eurozone, the UK's exit from the EU planned for March 29, 2019, the ongoing phase of low interest rates, the persistently tough market conditions faced by the offshore finance business and by some of the shipping finance business, and the threat of a global trade war. Potentially, the macroeconomic risk factors could particularly have a negative impact on credit risk, equity investment risk, market risk, business risk, and reputational risk in the Bank sector and on market risk, counterparty default risk, and reputational risk in the Insurance sector.

The protracted period of low interest rates will reduce profits. These risk factors are described and analyzed in detail in section 5.1.

Moreover, the DZ BANK Group and DZ BANK are exposed to **business-specific risk factors of an overarching nature** that affect a number of risk types. These factors may include potential shortcomings in the risk management system, the possible downgrading of the credit rating for DZ BANK or its subsidiaries, or ineffective hedges. These risks are generally taken into account in risk management. Section 5.2 contains a detailed description and analysis of these risk factors.

Risk factors specific to each type of risk also determine the extent of risk exposure in the DZ BANK Group and at DZ BANK. Detailed disclosures in this regard are provided in sections 6.2.5 and 8 to 19, in each case under the header 'Specific risk factors'.

2.3.2 Risks and opportunities

The main **features of the directly managed risks** and their significance for the operating segments in the Bank and Insurance sectors are shown in Fig. 5 and Fig. 6.

To ensure that the presentation of the disclosures remains clear, the risk management system disclosures included in the opportunity and risk report are limited to the main material entities in the group (indicated in Fig. 5 by a dot on a dark gray background). This selection is based on a materiality assessment, which takes into account the contribution of each management unit to the DZ BANK Group's overall risk for each type of risk. However, the figures presented in the opportunity and risk report cover all the management units included in the internal reporting system (indicated additionally in Fig. 5 by a dot on a light gray background).

The subcategories shown under credit risk and market risk in Fig. 5 are those with material significance for the Bank sector. The risk management system also includes other subcategories of credit risk and market risk but these additional subcategories are not described in this opportunity and risk report because they are of minor significance in the overall risk management picture, although they are included in the figures disclosed in the report.

The **solvency** of the DZ BANK Group was never in jeopardy at any point during the reporting period. By holding ample liquidity reserves, the group ensures that it is able to protect its liquidity against any potential crisis-related threats. It also complied with regulatory requirements for liquidity adequacy at all times.

The DZ BANK Group remained within its economic **risk-bearing capacity** in 2018 and also complied with regulatory requirements for capital adequacy at all times. There are no indications that the **continued existence** of the DZ BANK Group or individual management units, including DZ BANK, as going concerns might be at risk.

The **opportunities** presented by the forecast developments are reasonable in relation to the risks that will be incurred.

3 Fundamental principles of managing opportunities and risks

3.1 Regulatory framework for risk management

The **conglomerate-wide risk management system** complies with the statutory requirements specified in section 25 (1) of the German Supervision of Financial Conglomerates Act (FKAG) in conjunction with section 25a KWG and the German Minimum Requirements for Risk Management for Banks and Financial Services Institutions (MaRisk BA). In respect of risk management for the relevant management units, the DZ BANK Group also observes the requirements specified in sections 26 and 27 of the German Act on the Supervision of Insurance Undertakings (VAG) and section 28 of the German Capital Investment Code (KAGB) in conjunction with the German Minimum Requirements for Risk Management for Investment Management Companies (KAMaRisk).

When DZ BANK designed the risk management system of the DZ BANK Group and DZ BANK, it followed the guidance provided by the EBA and the European Insurance and Occupational Pensions Authority (EIOPA) as well as the pronouncements of the Basel Committee on Banking Supervision (BCBS) and the FSB on risk management issues.

In the year under review, DZ BANK updated its **recovery plan** in accordance with the requirements specified by banking supervisors. The recovery plan is based on the requirements specified in the German Bank Recovery and Resolution Act (SAG) and in other legal sources, especially Commission Delegated Regulation (EU) No. 2016/1075 and the Minimum Requirements for the Design of Recovery Plans (MaSan). A fully updated recovery plan was prepared during the reporting year and submitted to the ECB.

FIG. 5 – RISKS AND OPERATING SEGMENTS IN THE BANK SECTOR[1]

	Risk		
	Risk type	**Definition**	**Specific risk factors**
	RISK NOT COVERED BY CAPITAL		
	Liquidity risk	Risk that cash and cash equivalents will not be available in sufficient amounts to ensure that payment obligations can be met (insolvency risk)	Mismatch in the timing and amount of cash inflows and outflows, caused by – Withdrawal of funding – Greater collateral requirements – Changes in the fair value of financial instruments – Exercise of drawing rights – Exercise of termination rights – Conclusion of new business – Repurchase of products – Intraday payments – Currency swap restrictions
	RISK COVERED BY CAPITAL		
Financial-sector risks	**Credit risk** – Traditional credit risk – Issuer risk – Replacement risk	Risk of losses arising from the default of counterparties (borrowers, issuers, other counterparties) and from the migration of the credit ratings of these counterparties	– Increase in the lending volume as a result of new business and increase in the fair value of existing business – Increase in the concentration of volume by counterparty, industry, country, or maturity – Deterioration in the lending portfolio's credit rating structure
Financial-sector risks	**Equity investment risk**	Risk of losses arising from negative changes in the fair value of that portion of the long-term equity investments portfolio for which the risks are not included in other types of risk	Increased requirement for the recognition of impairment losses on the carrying amounts of investments – as a result of impaired carrying amounts – as a result of a lack of information in the case of non-controlling interests
Financial-sector risks	**Market risk** – Interest-rate risk – Spread risk and migration risk – Equity risk – Fund price risk – Currency risk – Asset-management risk – Market liquidity risk	– Risk of losses on financial instruments or other assets arising from changes in market prices or in the parameters that influence prices (market risk in the narrow sense of the term) – Risk of losses arising from adverse changes in market liquidity (market liquidity risk)	– Widening of credit spreads on European government bonds – Shortages of market liquidity
Business-performance risk	**Technical risk of a home savings and loan company**[2] – New business risk – Collective risk	– Risk of a negative impact from possible variances compared with the planned new business volume (new business risk) – Risk of a negative impact that could arise from variances between the actual and forecast performance of the collective building society operations caused by significant long-term changes in customer behavior unrelated to changes in interest rates (collective risk)	– Decline in new business – Changed customer behavior (unrelated to changes in interest rates)
Business-performance risk	**Business risk**	Risk of losses arising from earnings volatility which, for a given business strategy, is caused by changes in external conditions or parameters	– Costs of regulation – Competition based on pricing and terms – Greater competition in capital markets business – Digitalization and new competitors in transaction banking
Business-performance risk	**Reputational risk**[3]	Risk of losses from events that damage confidence, mainly among customers (including the local cooperative banks), shareholders, employees, the labor market, the general public, and the supervisory authorities, in the entities in the Bank sector or in the products and services that they offer	– Decrease in new and existing business – Backing of stakeholders is no longer guaranteed
Business-performance risk	**Operational risk**	Risk of losses from human behavior, technological failure, weaknesses in process or project management, or external events	HR risk: – Strikes and other business interruption – Insufficient availability of employees IT risk: – Malfunctions or breakdowns in data processing systems Outsourcing risk: – Disruptions to outsourced processes and services Risks in connection with the (consolidated) financial reporting process: – Inaccurate external financial reporting Legal risk: – Changes in the legal framework – Changes in the official interpretation of relevant regulations – Government intervention – Court or arbitration proceedings – Changes in the business environment Tax risk: – Changes in the tax framework – Changes in the interpretation by tax authorities of the existing tax framework – Changes in the business environment Compliance risk: – Violations of legal provisions

1 Apart from migration risk on traditional loans, which are covered by the capital buffer.
2 Including business risk and reputational risk of BSH.
3 The Bank sector's reputational risk is contained in the risk capital requirement for business risk. BSH's reputational risk, which is covered mainly by the technical risk of a home savings and loan company, is not included here.

Risks		Operating segments (management units)							
Risk management KPIs disclosed		DZ BANK	BSH	DVB	DZ HYP	DZ PRIVATBANK	TeamBank	UMH	VR LEASING
– Liquid securities – Unsecured short-term and medium-term funding – Minimum liquidity surplus – LCR	Section 6.2.6 Section 6.2.6 Section 6.2.7 Section 6.3.3	•	•	•	•	•	•		•
– Lending volume – Risk capital requirement	Sections 8.6, 8.7, and 8.8 Section 8.10	•	•	•	•	•	•		•
– Investment volume – Risk capital requirement	Section 9.5	•	•	•			•	•	•
– Risk capital requirement – Value-at-risk	Section 10.7.1 Section 10.7.2	•	•	•	•	•	•	•	•
Risk capital requirement	Section 11.5		•						
Risk capital requirement	Section 12.4	•	•	•	•	•	•	•	•
		•	•	•	•	•	•	•	•
– Loss events and losses – Risk capital requirement	Section 14.6 Section 14.7	•	•	•	•	•	•	•	•

Management unit disclosures in the opportunity and risk report:

• Quantitative and qualitative disclosures (dark grey) • Quantitative disclosures (light grey) Not relevant (white)

FIG. 6 – RISKS IN THE INSURANCE OPERATING SEGMENT AND SECTOR

	Risk type	Definition	Specific risk factors	Risk management KPIs disclosed	
	RISK COVERED BY CAPITAL PURSUANT TO SOLVENCY II				
Core financial sector risks	**Actuarial risk** – Life actuarial risk[1] – Health actuarial risk – Non-life actuarial risk	– Life actuarial risk: Risk arising from the assumption of life insurance obligations in relation to the risks covered and the processes used in the conduct of this business – Health actuarial risk: Risk arising from the assumption of health and casualty insurance obligations in relation to the risks covered and the processes used in the conduct of this business – Non-life actuarial risk: Risk arising from the assumption of non-life insurance obligations in relation to the risks covered and the processes used in the conduct of this business	– Life actuarial risk: In the case of products with long-term guarantees, the long duration of the contracts means that what happens over the term of the contracts may vary from the calculation assumptions made at the time the contracts were signed – Health actuarial risk: The level of claims resulting from policyholders' and service providers' behavior may cause a larger rise in claims expenses than the one in the calculation assumptions – Non-life actuarial risk: The actual impact of losses, particularly from catastrophe risk, may exceed the forecast impact	– Claims rate trend in non-life insurance – Overall solvency requirement	Section 16.6 Section 16.7
Core financial sector risks	**Market risk** – Interest-rate risk – Spread risk – Equity risk – Currency risk – Real-estate risk	Risk arising from fluctuation in the level or volatility of market prices of financial instruments that have an impact on the value of the assets and liabilities of the entity	– An increase in interest rates or widening of credit spreads on government bonds or other bonds could lead to a fall in fair values, resulting in a temporary or permanent adverse impact on operating profit – A possible worsening of the financial circumstances of issuers and/or debtors could result in partial or complete default on receivables or credit-risk-related impairment losses	– Lending volume – Overall solvency requirement	Sections 17.4 and 17.5 Section 17.5
Core financial sector risks	**Counterparty default risk**	Risk of possible losses due to unexpected default or deterioration in the credit standing of counterparties or debtors of insurance or reinsurance companies over the subsequent 12 months	Unexpected default or deterioration in the credit standing of mortgage loan borrowers, counterparties of derivatives, reinsurance counterparties or policyholders, or insurance brokers	– Lending volume – Overall solvency requirement	Sections 17.4 and 17.5 Section 18.4
Business-performance risk	**Operational risk**	Risk of loss arising from inadequate or failed internal processes, personnel, or systems, or from external events (including legal risk)	HR risk: – Insufficient availability of employees IT risk: – Malfunctions or breakdowns in data processing systems – Business interruptions Legal risk: – Changes in the legal framework – Changes in the official interpretation of relevant regulations – Government intervention – Court or arbitration proceedings – Changes in the business environment Tax risk: – Changes in the tax framework – Changes in the interpretation by tax authorities of the existing tax framework – Changes in the business environment	Overall solvency requirement	Section 19.4
Business-performance risk	**Reputational risk**[2]	Risk of losses that could arise from possible damage to the reputation of R+V or of the entire industry as a result of a negative perception among the general public	– Decrease in new and existing business – Backing of stakeholders is no longer guaranteed		
	RISK COVERED BY CAPITAL PURSUANT TO SOLVENCY I				
	Risks from entities in other financial sectors	The entities in other financial sectors mainly consist of pension funds and occupational pension schemes	Generally corresponding to the risk factors for risks backed by capital pursuant to Solvency II	Overall solvency requirement	Section 21

1 Including reputational risk.
2 The Insurance sector's reputational risk is included in the overall solvency requirement for life actuarial risk (lapse risk).

In accordance with article 7 (2) of Regulation (EU) No. 806/2014, the Single Resolution Board (SRB) is the European regulator responsible under the Single Resolution Mechanism (SRM) for the preparation of resolution plans and for all decisions in connection with the resolution of all institutions under the direct supervision of the ECB. A group resolution plan is drawn up for institutions that are subject to supervision at consolidated level. The SRB works closely with the national resolution authorities (in 2018 in Germany, this was the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) [German Federal Financial Supervisory Authority]). The **resolution plan** is aimed at ensuring the resolvability of the banking group. In accordance with section 42 (1) SAG, the resolution authority (BaFin) can demand that the institution provide it with comprehensive assistance in connection with drawing up and updating the resolution plan. For this reason, as in prior years, DZ BANK again dedicated a great deal of time and effort in 2018 to helping with the ongoing preparation of the resolution plan for the DZ BANK Group. It supplied the resolution authority with numerous analyses related to DZ BANK and completed standardized questionnaires.

3.2 Risk culture

The risk culture at DZ BANK is shaped by the high degree of responsibility assumed by the cooperative financial network for its members and for society. At DZ BANK, activities involving risk are based on the values of drive, integrity, and trust. The priority is on compliance with strategic and associated operating requirements when dealing with risk. The risk culture is reflected in the existing risk management processes and methods and in the conduct of employees.

The following principles apply in respect of employee conduct:

- Leadership culture: The management must set out clear expectations regarding the handling of risk and lead by example.
- Risk appetite: Employees must understand their roles and their part in the risk management system; they must assume responsibility for their decisions.
- Communications: Internal communications must be open and consensus-based. Alternative opinions must be respected and employees encouraged to analyze risk transparently.
- Employees and expertise: Employees must bear responsibility for conscious handling of risk. They must use the available expertise and undertake continuing professional development in a changing environment.
- Change management: Employees must learn from past experience and ensure the business model is sustainable by managing change proactively.

The key features of the risk culture are documented in a framework, which is available to all employees of DZ BANK.

3.3 Risk strategies

The exploitation of business opportunities and the systematic, controlled assumption of risk in relation to target returns form an integral part of corporate control in the DZ BANK Group and at DZ BANK. The activities resulting from the business model require the ability to identify, measure, assess, manage, monitor, and communicate opportunities and risks. The need to hold appropriate reserves of cash and to cover risks with adequate capital is also recognized as an essential prerequisite for the operation of the business and is of fundamental importance.

In all their activities, the DZ BANK Group and DZ BANK therefore observe a risk culture in which they only take on risk to the extent necessary to achieve their business objectives – taking account of the guiding principle of a 'network-oriented central institution and financial services group' – and to the extent that the management units have an adequate understanding of, and expertise in, measuring and managing the risk. At the same time, the entities in the DZ BANK Group consider all material risks from the perspectives of capital/income and liquidity and avoid assuming risk in an aggressive manner.

In order to implement this principle, the Board of Managing Directors of DZ BANK has drawn up risk strategies for each of the material risks using the business strategies as a basis. The risk strategies each encompass the main risk-bearing business activities, the objectives of risk management (including the requirements for accepting or preventing risk), and the action to be taken to attain the objectives. The planning horizon is one year.

The annual updating of the risk strategies is integrated with the strategic planning process and is carried out by the Group Risk Controlling, Credit, Credit Special, Group Finance, and Strategy & Group Development divisions in close consultation with other relevant divisions at DZ BANK and the subsidiaries concerned.

The risk strategies are described in the following sections covering the individual risk types.

3.4 Risk appetite

The entities in the DZ BANK Group define risk appetite as the nature and extent of the risks that will be accepted at group level or by the management units when implementing their business models. Risk appetite equates to the term 'risk tolerance' used by banking supervisors in a disclosure context.

The risk appetite statement formulates risk policy principles on risk tolerance in the DZ BANK Group. The principles are overarching statements that are consistent with the business model and the risk strategies. The qualitative principles are supplemented by quantitative key figures, for which minimum targets are set internally. These key figures constitute the DZ BANK Group's risk-oriented key performance indicators. The values for the KPIs and the internal minimum targets are shown in Fig. 4.

Disclosures relating to the business model and business strategies can be found in the (group) management report in section I.1 (Business model)

and section I.2 (Strategic focus of the DZ BANK Group as a network-oriented central institution and financial services group).

3.5 Opportunity and risk-oriented corporate governance

3.5.1 Governance structure

The DZ BANK Group's **risk management system** builds on the risk strategies adopted by the Board of Managing Directors of DZ BANK. It is based on three lines of defense that are interlinked and well established in the monitoring and control environment. The DZ BANK Group and DZ BANK thereby have a governance structure that complies overall with MaRisk requirements and that sets out the operational framework for risk management. Fig. 7 shows the governance structure for risk management.

The **three-lines-of-defense model** clarifies the understanding of risk management within the DZ BANK Group and defines clearly formulated and distinct roles and responsibilities.

The interaction between the three functional areas, or lines of defense, provides the basis for effective groupwide risk management. The tasks of the individual lines of defense are as follows:

- **First line of defense**: Day-to-day assumption and management of risk; related reporting to the Board of Managing Directors
- **Second line of defense**: Establishment and enhancement of a framework for risk management; monitoring of compliance with the framework in the first pillar; related reporting to the Supervisory Board and Board of Managing Directors
- **Third line of defense**: Process-independent examination and assessment of risk management and control processes in the first and second pillars; reporting to the Board of Managing Directors, Supervisory Board, and Audit Committee; communication with external control functions.

The Supervisory Board monitors corporate management and evaluates the adequacy of the risk management system and internal control system on an ongoing basis.

Independent auditors and the banking and insurance supervisory authorities form the **external control environment**, whereby the supervisory authorities may specify the focus of the audit to the auditors and the auditors report to the supervisory authorities on the findings of their audits of financial statements and special audits.

The role of the opportunity and risk management **committees** in the corporate governance structure is explained in section I.3.2.3 (Corporate management committees), which can be found in the 'DZ BANK Group fundamentals' chapter of the (group) management report.

The **business opportunities** are discussed during the course of the strategic planning process at the level of the individual management units and within special closed sessions held by the Board of Managing Directors.

3.5.2 Risk management

Risk management refers to the operational implementation of the risk strategies in the risk-bearing business units based on standards applicable throughout the group.

The management units make conscious decisions on whether to assume or avoid risks. They must observe guidelines and risk limits specified by the head office.

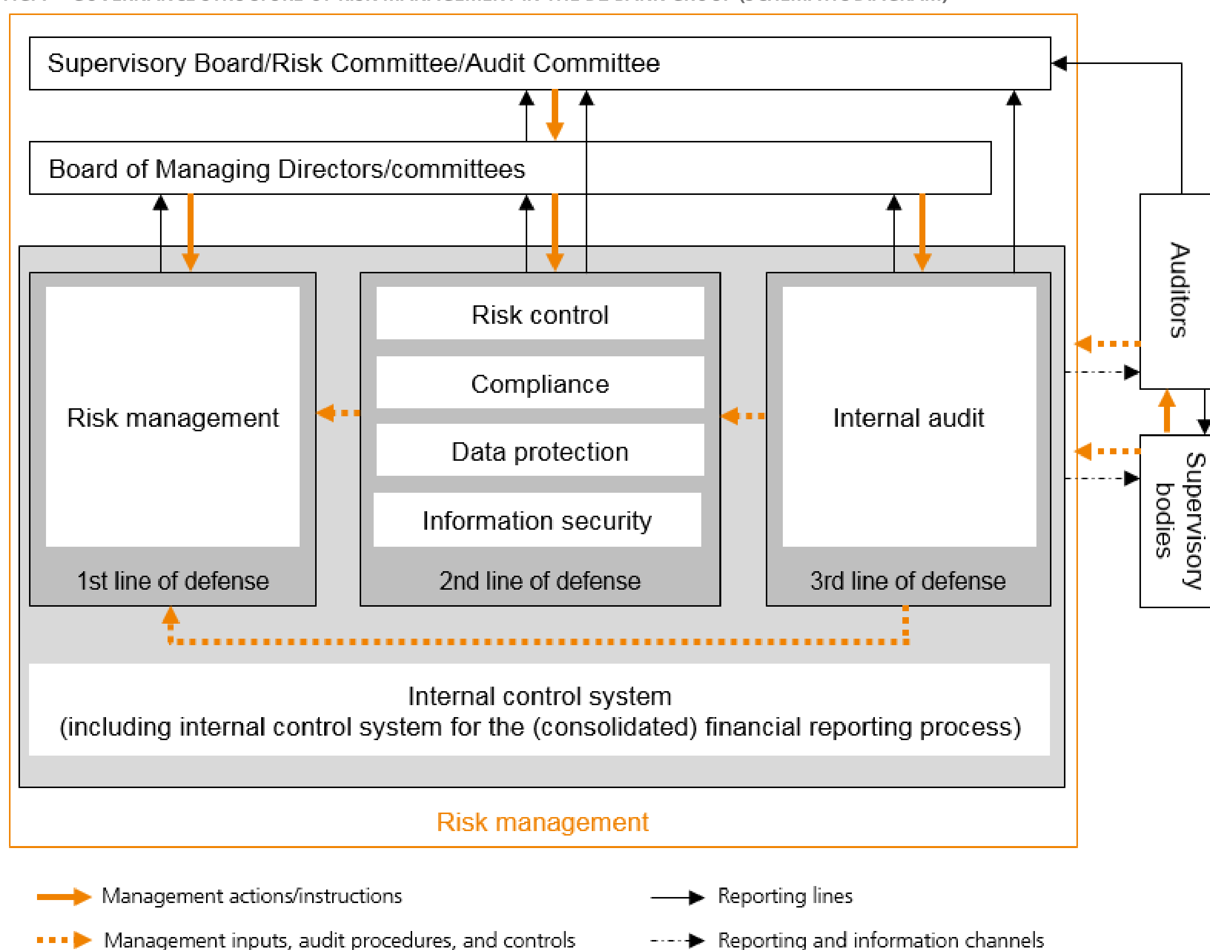
The divisions responsible for risk management are separated in terms of both organization and function from downstream divisions.

3.5.3 Risk control

Central Risk Controlling at DZ BANK is responsible for identifying, measuring, and assessing risk in the DZ BANK Group. This is accompanied by the planning of upper loss limits. It includes early detection, full recording of data (to the extent that this is possible), and internal monitoring for all material risks. Risk Controlling also reports risks to the Supervisory Board, the Board of Managing Directors, and the management units.

Risk Controlling at DZ BANK lays down the fundamental requirements for the risk measurement methods to be used throughout the group and coordinates implementation with the risk control units in the other management units. The aim of this structure is to ensure that the management of risk capital is consistent throughout the group.

FIG. 7 – GOVERNANCE STRUCTURE OF RISK MANAGEMENT IN THE DZ BANK GROUP (SCHEMATIC DIAGRAM)



In cooperation with the other management units, Risk Controlling at DZ BANK establishes a groupwide risk reporting system covering all material types of risk based on specified minimum standards using methods agreed between the management units.

Both at DZ BANK and in the other management units, Risk Controlling is responsible for the transparency of risks assumed and aims to ensure that all risk measurement methods used are up to date. The risk control units in the management units also monitor compliance with the entity-related limits that have been set based on the risk capital allocated by DZ BANK. Risk Controlling at DZ BANK is also responsible for risk reporting at group level. In addition to this, the management units are responsible for their own risk reporting.

3.5.4 Compliance, data protection, and information security

Compliance

The Board of Managing Directors of DZ BANK and the Boards of Managing Directors of the other management units are responsible for compliance with legal provisions and requirements and for the principles and measures implemented for this purpose. To fulfill these duties, the Boards of Managing Directors generally appoint an independent compliance function.

The main tasks of the compliance function are to identify, manage, and mitigate compliance risk in order to protect customers, DZ BANK, the other entities in the DZ BANK Group, and their employees against breaches of legal provisions and requirements. The compliance function is also responsible for monitoring compliance with the legal provisions and requirements. Other tasks of the compliance function are to keep senior management up to date with new regulatory

requirements and to advise the departments on implementing new provisions and requirements.

In accordance with the requirements of the Supervisory Review and Evaluation Process for Basel Pillar 2 (SREP), there is a single compliance framework for the main entities in the DZ BANK Group that lays down rules on cooperation between the individual compliance functions and sets out their authority and responsibilities.

The DZ BANK Group's compliance framework comprises the compliance policy. The policy includes requirements for establishing and organizing the compliance functions and details of their duties. It is supplemented by compliance standards, which specify how to implement these requirements at an operational level.

If individual requirements in the compliance standards cannot be fulfilled by a management unit, for example because they conflict with local rules or special legal requirements, the affected management unit must provide an explanation.

The DZ BANK Group's compliance framework is reviewed annually to check that it is up to date.

Data protection

The entities in the DZ BANK Group have introduced suitable precautions to ensure that they comply with data protection provisions relating to customers, business partners, and employees. This has involved, in particular, creating the function of data protection officer and issuing standard data protection principles. In addition, employees regularly receive updates on the currently applicable data protection provisions.

In the management units, independent data protection officers report to the relevant Board of Managing Directors. At the invitation of DZ BANK's data protection officer, the data protection officers in the management units meet at least once a year to share information on current data protection issues and discuss potential joint data protection activities.

Information security

The DZ BANK Group understands information security to be the operational security of processes, IT applications, and IT infrastructures.

DZ BANK has implemented an information security management system (ISMS). The rules that it contains, along with the methodological framework that it provides, are based on the ISO/IEC 27001:2013 standard. The ISMS is designed to ensure the confidentiality, integrity, availability, and authenticity of data and the media on which data is stored (IT applications, IT systems, and infrastructure components). The governance model implemented defines the methods, processes, roles, responsibilities, authority, and reporting channels that are necessary to achieve the strategic objectives and carry out the tasks of information security at operational level. It also provides an operational framework for the consistent quantitative and qualitative evaluation and management of information security risk, which forms part of operational risk.

3.5.5 Control functions

Internal audit

The **internal audit** departments of DZ BANK and all the main subsidiaries are responsible for non-process-specific control and monitoring tasks. They carry out systematic, regular risk-based audits focusing on compliance with statutory and regulatory requirements. The internal audit departments also review and assess risk management and the internal control system to ensure that they are fully operational and effective, and that processing is properly carried out. In addition, they monitor the action taken in response to audit findings to ensure that identified problems have been rectified.

The internal audit departments at DZ BANK and the other management units report to the chief executive officer or other senior managers of the unit concerned. DZ BANK and all subsidiaries involved follow the special requirements for the structure of the internal audit function specified in MaRisk.

DZ BANK's internal audit department is responsible for internal audit tasks at group level. These tasks include, in particular, the coordination of audits involving multiple entities, the implementation of which lies within the remit of the individual internal audit departments in the management units concerned, and the evaluation of individual management unit audit reports of relevance to the group as a whole. Cooperation between internal audit departments in the DZ BANK Group is governed by a separate set of rules and arrangements.

Supervisory Board

The Board of Managing Directors provides the Supervisory Board of DZ BANK with regular and timely reports about the risk situation, the risk strategies, and the status and further development of the risk management system of the DZ BANK Group and DZ BANK. Furthermore, the Board of Managing Directors provides the Supervisory Board with regular reports about significant loan and investment exposures and the associated risks. The Supervisory Board discusses these issues with the Board of Managing Directors, advises it, and monitors its management activities. The Supervisory Board is always involved in decisions of fundamental importance.

The Supervisory Board has set up a Risk Committee that pays close attention to risk-related corporate management. The chairman of the Risk Committee provides the full Supervisory Board with regular and timely reports on the material findings of the committee's work. The Risk Committee held 5 meetings in the year under review.

The Board of Managing Directors provides the members of the Risk Committee and the other members of the Supervisory Board with a regular (quarterly) overall risk report for the DZ BANK Group. Each quarter, the Risk Committee also receives a report on recovery indicators ('risk dashboard') for the DZ BANK Group, a credit risk report for the DZ BANK Group, and a report on adverse stress tests in the DZ BANK Group. These reports are supplemented by an annual report on reverse stress tests in the DZ BANK Group. The chairman of the Risk Committee informs the full Supervisory Board about the main content of these reports no later than at its next meeting.

External control functions

During the audit of the annual financial statements, independent **auditors** carry out an assessment pursuant to section 29 (1) sentence 2 no. 2a KWG in conjunction with section 25a (1) sentence 3 KWG to establish whether the risk management processes, including the internal control functions, of the entities in the Bank sector are appropriate and effective. For the Insurance sector, verification of the Solvency II balance sheet is carried out pursuant to section 35 (2) VAG and an assessment of the suitability of the early-warning system for risk, including the internal monitoring system of R+V, is carried out during the audit of the annual financial statements pursuant to section 35 (3) VAG in conjunction with section 317 (4) HGB and section 91 (2) of the German Stock Corporation Act (AktG).

The **banking and insurance supervisory authorities** also conduct audits focusing on risk.

3.5.6 General internal control system

DZ BANK uses the internal control system to implement the relevant regulatory requirements specified in MaRisk. The objective of DZ BANK's internal control system and the corresponding control systems in other management units is to ensure the effectiveness and efficiency of the risk management activities within the DZ BANK Group and at DZ BANK by means of suitable basic principles, action plans, and procedures.

Organizational structures and controls built into work processes serve to ensure that the monitoring of risk management activity is integrated into processes. IT systems are systematically protected by authority-dependent management of authorizations and by technical security measures, the aim of which is to prevent unauthorized access both within and outside management units.

3.5.7 Internal control system for the (consolidated) financial reporting process

Objective and responsibilities

DZ BANK is subject to a requirement to prepare consolidated financial statements and a group management report as well as separate financial statements and a management report. The primary objective of external (consolidated) financial reporting in the DZ BANK Group and at DZ BANK is to provide decision-useful information for the users of the reports. This includes all activities to ensure that (consolidated) financial reporting is properly prepared and that material violations of accounting standards – which could result in the provision of inaccurate information to users or in mismanagement of the group – are avoided with a sufficient degree of certainty.

In order to limit operational risk in this area of activity, DZ BANK and its subsidiaries have set up internal control systems for the (consolidated) financial reporting process as an integral component of the control systems put in place for the general risk management process. In this context, the activities of employees, the implemented controls, the technologies

used, and the design of work processes are structured to ensure that the objectives associated with (consolidated) financial reporting are achieved.

Overall responsibility for (consolidated) financial reporting lies in the first instance with Group Finance and Group Risk Controlling at DZ BANK, with all the consolidated entities in the DZ BANK Group responsible for preparing and monitoring the quantitative and qualitative information required for the consolidated financial statements.

Instructions and rules

The methods to be applied within the DZ BANK Group in the preparation of the consolidated financial statements are set out in writing in a group manual. The methods to be applied within DZ BANK in the preparation of the separate financial statements are documented in a written set of procedural rules. Both of these internal documents are updated on an ongoing basis. The basis for external risk reporting is the disclosure policy approved by the Board of Managing Directors. This policy sets out the principles and fundamental decisions for the methods, organizational structure, and IT systems to be used in risk disclosure in the DZ BANK Group and at DZ BANK. The instructions and rules are audited regularly to assess whether they remain appropriate and are amended in line with changes to internal and external requirements.

Resources and methods

The processes set up at DZ BANK and its subsidiaries (using suitable IT systems) permit efficient risk management in respect of financial reporting, based on the guidelines set by the Finance working group and taking into account the rules in the risk manual and the policy on risk disclosure.

The group's financial reporting process is decentralized, with the organizational units of the DZ BANK Group taking responsibility for preparing and checking the quantitative and qualitative information required for the consolidated financial statements. The Group Finance and Group Risk Controlling divisions at DZ BANK implement the relevant controls and checks in respect of data quality and compliance with the DZ BANK Group rules. Guidelines for the management units' risk control departments on data quality management and the internal control system set out the standards for ensuring the quality of data in the process for managing economic capital adequacy.

The organizational units post the accounting entries for individual transactions. The consolidation processes are carried out by DZ BANK's Group Finance division and by the accounting departments of each entity in the DZ BANK Group. The purpose of this structure is to ensure that all accounting entries and consolidation processes are properly documented and checked.

Financial reporting, including consolidated financial reporting, is chiefly the responsibility of employees of DZ BANK and the other organizational units in the DZ BANK Group. If required, external experts are brought in for certain accounting-related calculations as part of the financial reporting process, such as determining the defined benefit obligation and valuing collateral.

Consolidated financial reporting is based on mandatory workflow plans agreed between DZ BANK's Group Finance division and the individual accounting departments of the organizational units within the DZ BANK Group. These plans set out the procedures for collating and generating the quantitative and qualitative information required for the preparation of statutory company reports and which are necessary for the internal management of the operating units within the DZ BANK Group.

Generally accepted valuation methods are used in the preparation of the consolidated financial statements and group management report, and the separate financial statements and the management report. These methods are regularly reviewed to ensure they remain appropriate.

In order to ensure the efficiency of the (consolidated) financial reporting system, the processing of the underlying data is extensively automated using suitable IT systems. Comprehensive control mechanisms are in place with the aim of ensuring the quality of processing and are one of the elements used to limit operational risk. (Consolidated) accounting input and output data undergoes a number of automated and manual checks.

Suitable business continuity plans have also been put in place. These plans are intended to ensure the availability of HR and technical resources required for the (consolidated) accounting and financial reporting processes. The business continuity plans are continually fine-tuned and regularly checked using appropriate tests.

Information technology (IT)

The IT systems used for (consolidated) financial reporting have to satisfy the applicable security requirements in terms of confidentiality, integrity, availability, and authenticity. Automated controls are used to ensure that the processed (consolidated) accounting data is handled properly and securely in accordance with the relevant requirements. The controls in IT-supported (consolidated) accounting processes include, in particular, validation procedures to ensure consistent issue of authorizations, verification of master data modifications, logical access controls, and change management validation procedures in connection with developing, implementing, or modifying IT applications.

The IT infrastructure required for the use of electronic (consolidated) accounting systems is subject to the security controls implemented on the basis of the general security principles for data processing at DZ BANK and in the other entities of the DZ BANK Group.

The information technology used for consolidated accounting purposes is equipped with the functionality to enable it to handle the journal entries in individual organizational units as well as the consolidation transactions carried out by DZ BANK's group accounting department and by the accounting departments in the subgroups.

IT-supported (consolidated) accounting processes are audited as an integral part of the internal audit work carried out at DZ BANK and the other entities in the DZ BANK Group.

Ensuring and improving effectiveness

The processes used are regularly reviewed to ensure they remain appropriate and fit for purpose; they are adapted in line with new products, situations, or changes in statutory requirements. To guarantee and increase the quality of (consolidated) accounting at DZ BANK and the other entities in the DZ BANK Group, the employees charged with responsibility for financial reporting receive needs-based training in the legal requirements and the IT systems used. When statutory changes are implemented, external advisors and auditors are brought in at an early stage to provide quality assurance for financial reporting. At regular intervals, the internal audit department audits the internal control system related to the process for (consolidated) financial reporting.

3.6 Risk management tools

3.6.1 Accounting basis

Accounting basis for risk measurement

The transaction data that is used to prepare the DZ BANK consolidated financial statements forms the basis for the measurement of risk throughout the group. The same applies to the separate financial statements of DZ BANK. A wide range of other factors are also taken into account in the calculation of risk. These factors are explained in more detail during the course of this opportunity and risk report.

The line items in the consolidated financial statements significant to risk measurement are shown in Fig. 8. The information presented is also applicable to the measurement of risk for the separate financial statements of DZ BANK and the measurement of its risk, which does not include the technical risk of a home savings and loan company or the risks incurred by the Insurance sector.

The sections below provide a further explanation of the link between individual types of risk and the consolidated financial statements.

A further breakdown of the line items in the consolidated financial statements used to determine **credit risk** is given in section 8.6.1.

The investments used for the purposes of measuring **equity investment risk** are the following items reported in note 54 of the notes to the consolidated financial statements: shares and other shareholdings, investments in subsidiaries, investments in associates, and investments in joint ventures.

In the **Bank sector**, the measurement of financial instruments both for the purposes of determining market risk and for financial reporting purposes is based on financial market data provided centrally. Discrepancies in carrying amounts arise from the differing treatment of impairment amounts in the market risk calculation and in the accounting figures. Differences also arise because the market risk calculation measures bonds on the basis of credit spreads using available market data whereas the accounting treatment uses liquid bond prices. If no liquid prices are available for bonds, credit spreads are also used to measure bonds for accounting purposes.

FIG. 8 – RISK-BEARING EXPOSURES IN THE CONSOLIDATED FINANCIAL STATEMENTS[1]

		BANK SECTOR													INSURANCE SECTOR								
		Credit risk				Market risk						Portfolio assignment[2]			Actuarial risk			Market risk					
	Consolidated financial statements	Traditional credit risk	Issuer risk	Replacement risk	**Equity investment risk**	Interest-rate risk	Spread risk and migration risk	Equity risk	Currency risk	Fund price risk	Asset management risk	Trading portfolios	Non-trading portfolios	**Technical risk of a home savings and loan company**	Life	Health	Non-life	Interest-rate risk	Spread risk	Equity risk	Currency risk	Real-estate risk	**Counterparty default risk**
Risk-bearing assets	Loans and advances to banks	•		•		•	•		•			•	•	•									
	Loans and advances to customers	•				•	•		•			•	•	•									
	Derivatives used for hedging (positive fair values)			•		•	•	•	•	•		•	•										
	Financial assets held for trading		•	•		•	•	•	•	•		•											
	Investments		•	•	•	•	•	•	•	•			•										
	Investments held by insurance companies																	•	•	•	•	•	•
	Other assets														•	•	•						•
	Financial guarantee contracts and loan commitments	•				•			•				•										
Risk-bearing liabilities	Deposits from banks					•	•		•			•	•	•									
	Deposits from customers					•	•		•			•	•	•									
	Debt certificates issued including bonds					•	•	•	•	•		•	•										
	Derivatives used for hedging (negative fair values)			•		•	•	•	•	•	•	•	•										
	Financial liabilities held for trading			•		•	•	•	•	•		•											
	Insurance liabilities														•	•	•	•					

1 As liquidity risk is determined on the basis of all exposures in the consolidated financial statements, the details for liquidity risk are not provided here for reasons of clarity.
2 Disclosures for the banking business.

With the exception of these differences, the disclosures relating to **market risk** reflect the fair values of the assets and liabilities concerned.

The measurement for the **technical risk of a home savings and loan company** is based on the loans and advances to banks and customers (home savings loans) and also the home savings deposits (deposits from banks and customers) described in notes 62 and 63 of the notes to the consolidated financial statements.

Insurance liabilities, as reported in the financial statements, are a key value for determining all types of **actuarial risk**. The line item Investments held by insurance companies is also used to determine all types of **market risk** and **counterparty default risk**. The line item Other assets is included in the computation of actuarial risk and counterparty default risk.

Operational risk, **business risk**, and **reputational risk** are measured independently of the balance sheet items reported in the consolidated financial statements.

The calculation of **liquidity risk** is derived from future cash flows, which in general terms are determined from all of the balance sheet items in the consolidated financial statements.

Accounting basis for risk coverage

The link between available liquidity reserves, which are used to determine economic liquidity adequacy, and the consolidated balance sheet is described in section 6.2.6.

The link between available internal capital, which is used to determine economic capital adequacy, and the consolidated balance sheet is covered in section 7.2.1.

3.6.2 Measurement of risk and risk concentrations

Framework

Risk management in the DZ BANK Group is based on a **resource-oriented perspective of liquidity and capital**. It thus reflects the regulatory requirements defined by the SREP regarding the Internal Liquidity Adequacy Assessment Process (ILAAP) and the Internal Capital Adequacy Assessment Process (ICAAP). A distinction is also made between **economic and regulatory liquidity adequacy and between economic and regulatory capital adequacy**. The impact of each risk type on both economic capital and economic liquidity is taken into consideration. The effect and materiality of the various types of risk may vary, depending on the resource in question.

Economic liquidity adequacy

To ascertain the DZ BANK Group's economic liquidity adequacy, the minimum surplus cash that would be available if various scenarios were to materialize within the following year is determined as part of the **measurement of liquidity risk**.

Concentrations of liquidity risk can occur primarily due to the accumulation of outgoing payments at particular times of the day or on particular days (concentrations of maturities), the distribution of funding across particular currencies, markets, products, and liquidity providers (concentrations of funding sources), and the distribution of liquidity reserves across particular currencies, ratings, and issuers (concentrations of reserves). There is no capital requirement in connection with liquidity risk.

Liquidity risk in the **Insurance sector** is not material at DZ BANK Group level. Firstly, this is because liquidity is typically tied up in liabilities and assets over the long term in insurance business. Secondly, R+V is only exposed to a low level of liquidity risk because of its wide range of products and customers and the high quality and liquidity of its investments. Consequently, R+V is not taken into account in the liquidity risk management of the DZ BANK Group.

Economic capital adequacy

In the **Bank sector**, **economic capital** (risk capital requirement) is calculated for credit risk, equity investment risk, market risk, the technical risk of a home savings and loan company, operational risk, and business risk in order to ascertain economic capital adequacy. This risk capital requirement is generally calculated as value-at-risk with a holding period of 1 year and a unilateral confidence level of 99.90 percent.

The capital requirement for the individual risk types is aggregated into the total risk capital requirement for the Bank sector taking into account various diversification effects. The diversified risk capital requirement reflects the interdependency of individual types of risk. The risks relating to the Bank and Insurance sectors are aggregated, disregarding diversification effects between the sectors.

In the **Insurance sector**, risk measurement is based on the method specified in Solvency II with the aim of determining value-at-risk, which is the measure of **economic capital**. The value-at-risk for the change in economic own funds is determined with a confidence level of 99.50 percent over a period of one year.

The DZ BANK Group holds a **capital buffer** as a component of aggregate risk to allow for a possible lack of precision in the measurement of the risks backed by capital.

Based on an analysis of portfolios, the management of **risk concentrations** aims to identify potential downside risks that may arise from the accumulation of individual risks and, if necessary, to take corrective action. A distinction is made between risk concentrations that occur within a risk type (intra-risk concentrations) and concentrations that arise as a result of the interaction between different types of risk (inter-risk concentrations). Inter-risk concentrations are implicitly taken into account when determining correlation matrices for the purposes of inter-risk aggregation. They are mainly managed by using quantitative stress test approaches and qualitative analyses to provide a holistic view across all types of risk. The analysis of intra-risk concentrations is described for each type of risk in the sections below.

Risk covered by capital in the Bank sector

Expected and unexpected losses are calculated during credit-portfolio analysis for transactions containing credit risk that are conducted by entities in the Bank sector. The capital requirement for **credit risk** is determined as the unexpected loss equivalent to the difference between the value-at-risk and the expected loss. This calculation is based on one-year default probabilities derived from historical default data, taking into account additional transaction-specific features and reflecting the current rating of the borrower. The rating reflects an assessment of the

borrower's future economic strength. Other factors taken into account in the calculation of exposures subject to default risk include measurable collateral, netting agreements, and expected recovery rates based on past experience.

In order to highlight concentrations of credit risk, the exposure at portfolio level is categorized by, among other things, industry sector, country group, term to maturity, size category, and rating. In addition, risks resulting from large exposures to individual single borrower units are closely monitored and managed. The key factor to be considered when determining concentrations of credit risk is the possibility of a simultaneous default by a number of borrowers who share the same characteristics. This is why determining the correlated exposure to loss as a part of the calculation of the risk capital required for credit risk is essential for managing risk concentrations.

Equity investment risk is determined using Monte Carlo simulation, in which portfolio concentrations in industries and individual exposures are examined by simulating industry-wide and investment-specific risk factors.

The capital requirement for **market risk** is calculated as the value-at-risk over a 1-year time horizon based on simulations. The results of stress tests are included in this calculation. In addition to calculating economic capital, and for purposes of operational management, a value-at-risk for a holding period of one trading day and a unilateral confidence level of 99.00 percent is calculated for market risk with the internal model.

Concentrations in the portfolio affected by market risk are identified by classifying the exposure in accordance with the risk factors associated with interest rates, spreads, migration, equities, currencies, and commodities. This incorporates the effects of correlation between these different risk factors, particularly in stress phases. Stress tests are carried out for market liquidity risk.

A special collective simulation, which includes the effects of a (negative) change in customer behavior and a drop in new business, is used to measure the **technical risk of a home savings and loan company**. Concentrations of this risk are most likely to arise from new business risks.

Business risk is determined using a risk model based on an earnings-at-risk approach. Risk concentrations may arise if business activities are focused on a small number of areas. Concentrations of business risk are limited by using qualitative criteria in strategic management. For the Bank sector, **strategic risk** is classified as non-material and examined in the context of business risk.

Reputational risk in the Bank sector is generally taken into account within business risk and is therefore implicitly included in the measurement of risk and assessment of capital adequacy. BSH's reputational risk, which is covered mainly by the technical risk of a home savings and loan company, is not included here.
The economic capital requirement for **operational risk** is determined using a portfolio model. In addition, risk concentrations and risk drivers are identified by using separate model-based analyses, taking into account event categories and areas of business specified by regulatory requirements. Such concentrations can occur, for example, if IT systems are supplied by just a few companies or if business processes are outsourced to a limited number of service providers.
From the perspective of economic capital adequacy, **funding risk** is not material.

Risks in the Insurance sector

To determine **actuarial risk**, negative scenarios are examined that have been taken from Solvency II and, in some cases, supplemented by the group's own parameterization or internal risk assessment.

For parts of the premium and reserve risk and non-life catastrophe risk, modeling and risk quantification is also carried out on the basis of historical claims data. This data is taken from the group's own portfolio and, in the case of natural catastrophes, from third-party providers.

The analysis, monitoring, and management of concentrations of actuarial risk are carried out as an integral part of the risk management process. Potential risk concentrations arise when different types of risk are combined with the concentration dimension in question (e.g. individual exposure, sector, country group). The same risk concentrations are analyzed at DZ BANK level.

When measuring **market risk**, shock scenarios are examined that have been taken from Solvency II and, in some cases, supplemented by the group's own parameterization.

The capital requirements for **counterparty default risk** are determined on the basis of the relevant exposure and the expected losses per counterparty.

The risk capital requirement for **operational risk** in the Insurance sector is calculated as a factor of the volume measures of premiums and provisions and, in the case of unit-linked business, as a factor of costs. In addition, operational risk is identified and quantified using a scenario-based risk self-assessment. The outcome of the factor approach is validated against the risk self-assessment using DZ BANK's portfolio model. R+V uses suitable quality standards and communications strategies to limit its reputational risk.

The risk capital requirement for **non-controlling interests in insurance companies** is included on a pro-rata basis in accordance with Solvency II. There were no non-controlling interests in insurance companies included in the risk measurement as at the reporting date because the previously included long-term equity investment in a Spanish insurance company was sold during 2018.

Risk for **entities in other financial sectors** is quantified in accordance with the requirements currently specified by the insurance regulator. This means applying the capital requirements in Solvency I, which are essentially calculated as a factor of the volume measures of benefit reserves and capital at risk.

Strategic risk is classified as non-material for the Insurance sector. R+V analyzes and forecasts national and global developments with an influence on business-related parameters on an ongoing basis. The findings are evaluated, for example in terms of customer needs, and are incorporated into the development of new insurance products.

3.6.3 Stress tests

In addition to the risk measurements, the effects of extreme but plausible events are also analyzed. Stress tests of this kind are used to establish whether the DZ BANK Group can sustain its business models, even under extreme economic conditions. Stress tests are carried out in respect of liquidity, economic risk-bearing capacity, and regulatory capital ratios.

3.6.4 Limitation principles

The DZ BANK Group has implemented a system of limits to ensure that it retains an adequate level of liquidity and maintains its risk-bearing capacity.

A system of limits and pre-set threshold values ensures that the **liquidity surplus** at the level of the DZ BANK Group does not become a shortfall and therefore that an adequate level of liquidity is guaranteed.

In the case of **risks backed by capital**, the limits take the form of risk limits or volume limits, depending on the type of business and type of risk. Whereas risk limits in all types of risk restrict exposure measured with an economic model, volume limits are applied additionally in transactions involving counterparties. Risk management is also supported by limits for relevant key performance indicators. Specific amendments to risk positions based on an adjustment of the volume and risk structure in the underlying transactions are intended to ensure that the measured exposure does not exceed the approved volume and risk limits. Risks that are incurred are compared with the limits allocated to them (upper loss limits) and monitored using a traffic-light system. The limit system is used to check whether economic capital adequacy is assured both at DZ BANK Group level and at the level of the management units.

3.6.5 Hedging objectives and hedging transactions

Hedging activities can be undertaken where appropriate in order to transfer liquidity risk, credit risk, market risk (Bank sector), market risk (Insurance sector), actuarial risk, and operational risk to the greatest possible extent to third parties outside the DZ BANK Group. All hedging activities are conducted within the strategic rules specified in writing and applicable throughout the group. Derivatives and other instruments are used to hedge credit risk and market risk.

If the hedging of risk in connection with financial instruments gives rise to **accounting mismatches** between the hedged item and the derivative hedging instrument used, the DZ BANK Group designates the hedging transaction as a hedge in accordance with the hedge accounting requirements of IFRS 9 in order to eliminate or reduce such mismatches. The DZ BANK Group continues to account for portfolio hedges in application of the rules under IAS 39. Hedge accounting in the DZ BANK Group encompasses the hedging of interest-rate risk and currency risk. It therefore affects market risk in both the Bank and Insurance sectors. Hedging information is disclosed in note 82 of the notes to the consolidated financial statements.

DZ BANK has exercised the option provided for in section 254 HGB and has generally not recognized hedges on the balance sheet, although economic hedges do exist. One hedge used to hedge a currency risk was discontinued in December 2018 without effect on profit or loss (see also note 38 of the notes to DZ BANK's separate financial statements).

3.6.6 Risk reporting and risk manual

The quarterly **overall risk report** includes the risks throughout the group identified by DZ BANK. Together with the **adverse stress tests report**, which is also compiled on a quarterly basis, the **report on recovery indicators** (risk dashboard), which is prepared on a monthly and quarterly basis, and the **reverse stress tests report**, which is produced annually, the overall risk report is the main channel by which risks incurred by the DZ BANK Group and the management units are communicated to the Supervisory Board, the Board of Managing Directors, and the Group Risk and Finance Committee. In addition, the Board of Managing Directors receives portfolio and exposure-related management information in the quarterly **credit risk report for the DZ BANK Group**. The Board of Managing Directors also receives monthly information on **liquidity risk** in the DZ BANK Group and in the management units.

DZ BANK and the main subsidiaries have further reporting systems for all relevant types of risk. Depending on the degree of materiality in the risk exposures concerned, the purpose of these systems is to ensure that decision-makers and supervisory bodies at all times receive transparent information on the risk profile of the management units for which they are responsible.

The **risk manual**, which is available to all employees of the management units, sets out the general parameters for identifying, measuring, assessing, managing, monitoring, and communicating risks. These general parameters are intended to ensure that risk management is properly carried out in the DZ BANK Group. The manual forms the basis for a shared understanding of the minimum standards for risk management throughout the group.

The main subsidiaries also have their own risk manuals covering special aspects of risk related specifically to these management units. R+V's risk manual was replaced by the Solvency II guidance with effect from January 1, 2016.

3.6.7 Risk inventory and appropriateness test

Every year, DZ BANK draws up a **risk inventory**, the objective of which is to identify the types of risk that are relevant for the DZ BANK Group and assess the materiality of these risk types. According to need, a risk inventory check may also be carried out at other times in order to identify any material changes in the risk profile during the course of the year. A materiality analysis is carried out for those types of risk that could arise in connection with the operating activities of the entities in the DZ BANK Group. The next step is to assess the extent to which there are concentrations of risk types classified as material in the Bank sector, the Insurance sector, and across sectors. The risk inventory check revealed that the main risks in 2018 were the same as in 2017. Likewise, there was no change in significant risk concentrations compared with the prior year.

DZ BANK also conducts an annual **appropriateness test** at DZ BANK Group level. The appropriateness test may also be carried out at other times in response to specific events. The objective is to review the latest groupwide specifications for the analysis of risk-bearing capacity. In addition, the appropriateness test includes a number of other tests to assess whether the risk measurement methods used for all types of risk classified as material are in fact fit for purpose. The appropriateness test found that risk measurement in the DZ BANK Group is generally appropriate, although potential improvements to some aspects of risk measurement were identified. Suitable measures are being defined and carried out in order to make these improvements.

The risk inventory check and appropriateness test are coordinated in terms of content and timing. All management units in the DZ BANK Group are included in both processes. The findings of the risk inventory and the appropriateness test are incorporated into the risk management process.

Risk inventory checks and appropriateness tests are generally conducted in a similar way for the main subsidiaries.

4 Opportunities

4.1 Management of opportunities

The management of opportunities in the DZ BANK Group and at DZ BANK is integrated into the annual **strategic planning process**. Strategic planning enables

the group to identify and analyze market discontinuities based on different macroeconomic scenarios, trends, and changes in the markets, and forms the basis for evaluating opportunities. Identified opportunities are taken into account in the business strategies.

Details about the strategic planning process are presented in section I.2.4 of the (group) management report.

Reports on future business development opportunities are based on the outcome of the business strategies. As part of the general communication of the business strategies, employees are kept up to date about potential opportunities that have been identified.

4.2 Potential opportunities

4.2.1 Corporate strategy

DZ BANK's core functions as a central institution, corporate bank, and holding company mean that it focuses closely on the local cooperative banks, which are its customers and owners.

DZ BANK's **focus on the cooperative banks** is vital in view of the need to manage scarce resources and to meet new regulatory requirements. By focusing more closely on the Volksbanken Raiffeisenbanken cooperative financial network, DZ BANK's aim is to exploit the potential of its core activities more fully, particularly with regard to retail banking and SME business.

The principle of a '**network-oriented central institution/financial services group**' also means that business activities are concentrated on the business areas covered by the cooperative banks and on further enhancing the satisfaction levels of customers of the local cooperative banks. To this end, the DZ BANK Group, in its role as financial services provider, supplies decentralized products, platforms, and services.

In 2018, DZ BANK launched '**Verbund First 4.0**', a strategic program designed to ensure the organization's resilience for the future. The associated potential opportunities are presented in section I.1.1 of the (group) management report.

The core activities referred to above are supplemented by **complementary activities** using existing products, platforms, and services, for which DZ BANK acts as a corporate bank vis-à-vis third parties. These activities do not compete directly with those of the cooperative banks and they enable further economies of scale to be created for the entire cooperative financial network.

The **Outlook** in chapter V of the (group) management report describes expected developments in the market and business environment together with the business strategies and their implications for the financial performance forecast for 2019. The expected developments in the market and business environment are crucial factors in the **strategic positioning** and the resulting opportunities for increasing earnings and cutting costs.

4.2.2 Digitalization and new competitors

Digitalization refers to developments that tap into the prevalence of mobile devices and internet-based services and that are supported by the consumerization of technologies, i.e. the availability of high-tech end devices to consumers. These developments are encouraging the intermediation of **new competitors** at the interface between customers and banking services.

As a consequence of advancing digitalization across all areas of life, opportunities are opening up in relation to day-to-day banking business, especially payments processing. This trend is also being reinforced by changes in customer behavior. For example, increased use of mobile devices in payments processing means that particularly Germany – where paying in cash has generally continued to be more common than in other countries – is now seeing cash transactions being substituted with electronic payments processing. Payments through online cash register functions are climbing steadily, making it more important to have payment processes that are suitable for omnichannel use. Overall, the greater use of financial management applications means that business processes and payment processes are becoming increasingly merged.

The entities in the DZ BANK Group responded to these developments a while ago by increasing the innovative services that they offer. Examples include the launch of paydirekt, a cross-bank e-commerce payment system, the implementation of contactless credit card payments using a smartphone at point of sale, and the introduction of stronger and more user-friendly authentication procedures. The expansion of applications aimed at simplifying liquidity management and billing, together with greater use of a range of special benefits, taps into the increased integration of banking business into customer value chains.

Based on this range of initiatives, the DZ BANK Group is forging ahead with the replacement of cash and increasingly tying in additional payment-related services with accounts. DZ BANK is thus sharing in the accelerating trend toward electronic payment transactions with the objective of increasing its earnings. Furthermore, the Transaction Banking business line is working with universities and technology companies to test technologies and developments that may be of interest in the future – such as blockchains in payments processing and the securities business – and assess whether they are viable for use.

To underpin these measures, the DZ BANK Group has introduced an innovation management system, which includes a committee known as the Innovation Roundtable. The committee coordinates intragroup innovation activities, monitors market trends, and initiates targeted innovation projects.

4.2.3 Credit ratings

DZ BANK is awarded credit ratings by the three largest rating agencies, Standard & Poor's, Moody's, and Fitch. Individual subsidiaries of DZ BANK are also given their own ratings. In view of the high degree of cohesion within the cooperative financial network, Fitch and Standard & Poor's issue a network rating, for the purposes of which the cooperative financial institutions are analyzed on a consolidated basis. The criteria used by the agencies include factors such as strategy, risk assessment, transparency, and solidarity within the cooperative financial network in addition to business performance and collaboration.

The ratings are critical in determining the funding opportunities available on money and capital markets. They open up additional business options and potential opportunities for the entities in the DZ BANK Group.

During the year under review, the rating agencies reviewed the credit ratings issued for DZ BANK. In August 2018, Moody's lowered the long-term rating for unsecured, 'non-preferred' bonds by one notch to A1 following adoption of Directive 2014/59/EU (Bank Recovery and Resolution Directive, BRRD) into German law. The rating was changed because Moody's believes government support for unsecured, 'non-preferred' bonds is no longer possible under the amended legislation. At the same time, Moody's raised the issuer rating to the level of the long-term rating for unsecured, 'preferred' bonds (Aa1). Rating agencies Fitch and Standard & Poor's confirmed DZ BANK's existing credit ratings.

Fig. 9 provides an overview of DZ BANK's credit ratings.

As at December 31, 2018, the long-term credit rating for the cooperative financial network issued by Fitch and Standard & Poor's remained unchanged at AA-.

5 General risk factors

5.1 Market and sector risk factors

The DZ BANK Group and DZ BANK are subject to a range of risk factors that apply generally to the German and European banking industry as a whole. These market and sector risk factors have an impact on liquidity adequacy and capital adequacy. For the most part, the factors can be classified under business risk but are addressed separately here because of their key importance.

FIG. 9 – DZ BANK RATINGS

	Standard & Poor's		Moody's		Fitch	
	Dec. 31, 2018	Dec. 31, 2017	**Dec. 31, 2018**	Dec. 31, 2017	**Dec. 31, 2018**	Dec. 31, 2017
Issuer rating	**AA-**	AA-	**Aa1**	Aa3	**AA-**	AA-
Covered bonds (DZ BANK BRIEFE)	**AA+**	AA+	**Aaa**	Aaa	–	–
Long-term rating for deposits	–	–	**Aa1**	Aa1	**AA-**	AA-
Long-term counterparty risk assessment/ derivative counterparty rating	–	–	**Aa1**	Aa1	**AA-**	AA-
Long-term rating for unsecured, 'preferred' bonds	**AA-**	AA-	**Aa1**	Aa1	**AA-**	AA-
Long-term rating for unsecured, 'non-preferred' bonds	**A+**	A+	**A1**	Aa3	**AA-**	AA-
Short-term rating	**A-1+**	A-1+	**P-1**	P-1	**F1+**	F1+

5.1.1 Commercial-law environment

The financial position and financial performance of the DZ BANK Group and DZ BANK are presented in accordance with IFRS. Changes to IFRSs and the associated interpretations may lead to a discrepancy between the results and financial position that are reported in the future and the current forecasts, or changes to (consolidated) financial reporting standards that are introduced retrospectively may lead to differences between results shown for prior-year periods and the results that were previously published. Such changes may also have an impact on regulatory capital and the financial key performance indicators.

The entities in the DZ BANK Group observe potential changes to (consolidated) financial reporting and examine their possible effects.

There is no longer a risk factor from the implementation of the provisions in IFRS 9 Financial Instruments because these provisions came into force at the beginning of the reporting year.

5.1.2 Regulatory environment

Basel IV

In December 2017, the BCBS published its finalization document containing a comprehensive range of new provisions covering certain aspects of the calculation of risk for regulatory purposes. An initial draft of a revised CRR (referred to as CRR II) at European level is already available. The new rules currently planned, most of which do not have to be applied until 2 years after the effective date, are expected to increase the risk-weighted assets for the DZ BANK banking group and DZ BANK.

Leverage ratio

The leverage ratio shows the ratio of a bank's Tier 1 capital to its total exposure. In contrast to credit-risk-related capital requirements for which the assumptions are derived from models, the individual line items in the calculation of the leverage ratio are not given their own risk weighting but are generally included in the total exposure without any weighting at all.

A mandatory minimum value for the leverage ratio has not been specified at European level for now. However, the current drafts for CRR II provide for the introduction of a minimum ratio of 3 percent, to apply 2 years after the effective date of CRR II (expected to be mid-2021). The calculation method used for total exposure will also be adjusted.

If the mandatory minimum leverage ratio turns out to be higher than currently expected, this could lead to an additional capital requirement for the DZ BANK banking group and/or DZ BANK based on the current volume of business. A negative impact on the business model and competitive position cannot be ruled out either.

Standardized definition of borrower default

The EBA has published details on harmonizing the definition of 'default of an obligor' pursuant to article 178 CRR. Implementation is mandatory for all institutions that have received approval to use the Standardized Approach to credit risk and the internal ratings-based (IRB) approaches. This requires extensive changes to data management, credit rating models, credit procedures, and internal control processes. The aim is to harmonize the definition of default for the purposes of the Standardized Approach and the IRB approaches and thus to standardize the capital requirements for credit risk.

DZ BANK has analyzed the planned new requirements and their impact. The application package on behalf of the entire DZ BANK banking group related to the new default definition was submitted to the supervisory authorities in December 2018 using the two-step approach. Changes to the default history and associated effects on the credit rating systems – including the possible need for recalibration – cannot be ruled out. This could lead to higher regulatory capital requirements and an increase in the credit value-at-risk.

Capital requirements for market risk

In January 2019, the BCBS published the finalized rules to fundamentally revise the capital requirements for market risk in the trading book. Significant new features include a revision of the boundary between the trading book and banking book, the introduction of a new Standardized Approach, a complete revision of the risk measurement approach for the internal market risk model, and more stringent criteria for the approval of internal market risk models, even down to the level of individual trading desks based on the regulator's definition. The new rules are also aimed at greater integration between the Standardized Approach and internal model-based approaches.

As the requirements cover internal model banks, DZ BANK must also introduce the new Standardized Approach and is thus obliged to calculate the capital requirement for market risk in the trading book in

parallel to the internal model. Implementation of the new rules entails extensive and time-consuming changes to the calculation of the capital requirement for market risk in the trading book.

Banks are likely to have to apply the new Basel capital requirements from 2022 once they have been implemented in national law. Application is expected to mean that the DZ BANK banking group and DZ BANK will be subject to an additional capital requirement. Moreover, the possibility of a negative impact on cost structures or implications for organizational structures, the risk management system, the business model, or competitive position cannot be ruled out.

Risk data management

In January 2013, the BCBS published principles for effective risk data aggregation and risk reporting. The principles aim to increase aggregation capability for all risk data used for internal risk management and to improve the risk management and decision-making processes (including internal risk reporting) at banks. BaFin incorporated some of the BCBS regulations on risk data management into the national rules with the 5th amendment of MaRisk BA, which came into force on October 27, 2017.

Domestic systemically important banks must implement these requirements within 3 years of being classified as an other systemically important institution (O-SII). DZ BANK has been classified by BaFin as an O-SII and has therefore put in place an appropriate implementation plan. The DZ BANK Group plans to implement the risk data management rules by the end of 2019.

The implementation of the new requirements, but also the possibly inadequate implementation, could have a negative effect on the competitive position of the DZ BANK Group and/or DZ BANK, or lead to the need for additional capital.

Changeover in reference interest rates

Currently, the German banking industry is making progress on replacing the existing reference interest rates determined by banks with (virtually) risk-free benchmark interest rates in implementation of Regulation (EU) No. 2016/1011 (Benchmark Regulation). The new benchmark rates are determined by central banks or by administrators supervised by the competent supervisory authority. The benchmark rates are used to measure financial instruments in domestic and international interbank and customer transactions.

DZ BANK is currently determining the impact on the DZ BANK Group in a task force in which all the subsidiaries involved are represented. The task force is also designing implementation measures and addressing the potential risks. In these activities, DZ BANK is following recommendations made by international working groups.

The switch in the benchmark rates is subject to a lack of clarity in a number of areas, notably in relation to the transition path and the way in which these interest rates are to be established in the markets. If the changeover is not completed on time, there is a risk that the ability of the entities in the DZ BANK Group to handle the transactions concerned may be constrained. This could give rise to legal risk and reputational risk for the DZ BANK Group and DZ BANK.

Instant payments

The Euro Retail Payments Board, the ECB, and the European Commission have been pushing ahead with SEPA Instant Payments, a new system of payments processing, since late 2014. The scheme was launched on November 21, 2017. In the DZ BANK Group, instant payments particularly affect DZ BANK. DZ BANK has been participating in the scheme as a recipient bank since November 2018. The ongoing instant payments implementation project has scheduled the full participation of the bank in the instant payments system by the autumn of 2019. Delayed or inadequate implementation of the requirements could lead to DZ BANK suffering reputational damage.

Other regulatory risk factors

In addition to the regulatory requirements described above, the reform of the deposit guarantee schemes could give rise to risks for the DZ BANK Group and DZ BANK.

The EBA is also making decisions regarding the interpretation of the CRR, as a result of which there could be new capital requirement rules for certain products. This could lead to a significant fall in the capital ratios for the DZ BANK banking group, depending on how the supervisory authorities apply the interpretation decisions.

Regulatory risk factors that are no longer relevant

The minimum requirement for own funds and eligible liabilities (**MREL**) is no longer a regulatory risk factor because DZ BANK has been subject to a formal MREL since June of the reporting year, eliminating any uncertainty about the level of the MREL.
The **SREP** no longer has any significance as a risk factor either. This is because the annual SREP has now been carried out several times and is factored into risk management in the DZ BANK Group.

5.1.3 Macroeconomic risk factors

Economic divergence in the eurozone

The economies of Portugal, Spain, Italy, and Greece continue to be characterized by **government debt levels that are high** in relation to gross domestic product and are still proving difficult to bring down. Consequently, these countries remain vulnerable to fluctuation in investors' risk assessments.

However, **Portugal** and **Spain** have managed to sustain economic growth and make progress in terms of fiscal consolidation. Their respective ratios of government debt to gross domestic product (GDP) are also falling gradually, although they were still at a high level in 2018 at 122 percent for Portugal and 97 percent for Spain.

There is some cause for concern as regards **Italy**, which has been governed since June of the reporting year by a coalition between the populist right-wing Lega and the likewise populist, but left wing, Five Star Movement. Both of the governing parties are aiming to bring about a radical political and economic policy shift, which has put them on a collision course with the EU. Notably, the Italian government does not accept the EU's fiscal policy rules. Weak growth and the easing of budgetary discipline mean that it will not be possible to achieve a sustained reduction in Italian government debt, which is thus likely to persist at around 130 percent of GDP over the next few years. Overall, the lack of budgetary discipline and the addition of new debt will weaken public finances and lead to doubts about whether the country can support this level of national debt and refinance it. In view of the resulting loss of confidence among international politicians and among investors, this is likely to seriously prejudice the ability of the country to obtain funding in international capital markets. To add to Italy's problems, the ECB's bond-buying program, which had provided steady demand and stability in the market, was discontinued at the end of 2018. If Italy were no longer able to fund itself on affordable terms, this would, in all probability, become a significant test of the EU's resilience.

Greece is one of the most indebted countries in the world with government debt equating to 179 percent of GDP. Following its successful exit in August 2018 from the third economic adjustment program funded under the European Stability Mechanism, Greece must now once again obtain funding from the capital markets. For Greece to remain solvent and part of the eurozone, it will be crucial that the funding terms for the Greek economy prove to be sustainable. If Greece were to leave the eurozone, this could lead to turbulence in international financial markets, which would potentially have a negative impact on the countries of the eurozone.

In the last few years, the ECB's expansionary monetary policy and particularly its bond-buying program largely prevented the structural problems in some EMU member countries from being appropriately reflected in the capital markets. There is a risk that this situation could change following the **end of the asset purchase program**. Highly indebted countries could find it considerably more difficult to arrange funding through capital markets.

UK exit from the EU

The possible negative impact of **Brexit** , planned to take place on March 29, 2019, presents a risk to future economic growth, both at EU level and, in particular, for the UK. The Standard & Poor's and Moody's credit ratings for the UK are currently AA and Aa2 respectively; the outlook from Standard & Poor's is negative whereas from Moody's it is stable. The credit ratings from the two rating agencies therefore still correspond to the internal VR rating class 1A used by the DZ BANK Group.

In a coordinating working group with the involvement of the subsidiaries affected, DZ BANK is examining on an ongoing basis the implications that could arise for the DZ BANK Group from the UK's exit from the EU. Suitable countermeasures are being put in place to avoid or reduce legal or other uncertainties for the DZ BANK Group caused by the UK's departure from the EU. As a result, it is not anticipated that Brexit will have any material negative impact on the financial position or financial performance of the DZ BANK Group or DZ BANK.

Further details on the risks associated with Brexit are included in section 6.2.5 (Economic liquidity adequacy), section 8.7.2 (Credit portfolios with increased risk content), section 8.10 (Credit risk), section 10.6 (Market risk), section 16.7 (Actuarial risk), and section 17.4.2 (Lending volume).

Low interest rates

With interest rates at a historically low level, interest receivable on loans is low and the interest margin is relatively narrow, restricting the opportunities for earning income in **traditional banking business**. A risk scenario involving a very long period of low interest rates, possibly combined with a deflationary trend, would therefore also have a considerable negative impact on the performance of the DZ BANK Group and DZ BANK.

If there is a long period of low interest rates, the DZ BANK Group could face the risk of lower earnings, including lower earnings from BSH's extensive **building society operations**. When interest rates are very low, home savings loans lose their appeal for customers, while high-interest home savings deposits become more attractive. Consequently, interest income on home savings loans would fall and the interest cost for home savings deposits would rise. Furthermore, available liquidity could only be invested at low rates of return, an additional factor depressing earnings.

The entire **insurance industry** is affected by the low interest rates in the capital markets. These low interest rates are having a particular effect on the business model of personal insurance providers.

Given the long period of low interest rates, the challenge faced by the DZ BANK Group's extensive **asset management activities**, brought together under UMH, is to ensure that the guarantee commitments given to customers in respect of individual products can actually be met from the investment instruments in those products. This particularly affects the pension products and the guarantee fund product group. The pension products mainly consist of UniProfiRente, a retirement pension solution certified and subsidized by the German government. The amounts paid in during the contributory phase and the contributions received from the government are guaranteed to be available to the investor at the pension start date. The pension is then paid out under a payment plan with a subsequent life annuity. Guarantee funds are products for which UMH guarantees that a minimum percentage of capital is preserved, depending on the precise product specification. If UMH is unable to draw some of the management fees so that it can meet its guarantee commitments, this could have a substantial detrimental impact on the financial performance of the DZ BANK Group.

A rapid **rise in interest rates** on capital markets could also involve some risks. The pricing losses on fixed-income securities and necessary remeasurement of low-interest long-term lending business that could result from such an upturn could have an adverse impact on the earnings of the DZ BANK Group.

A long period of low interest rates also increases the risk of **incorrect valuations in financial and real estate markets**.

Shipping finance and offshore finance

In the shipping finance business, an oversupply of tonnage continues to have a detrimental impact on asset values and customer credit quality in some cases. To add to the problems, the low price of oil is adversely affecting global offshore oil production, leading to significantly lower demand for supply ships and other floating offshore equipment. This trend is accompanied by a rising number of laid-up offshore vessels.

Latent macroeconomic risk factors

As a result of the economic developments in Italy, the funding of **Italian banks** via the capital markets is becoming increasingly difficult. Moreover, the financial performance of these banks is hampered by continued high additions to loan provisions and by losses relating to the elimination of non-performing loans.

High levels of uncertainty are taking their toll on the current political and economic situation in **Turkey**. The increasing political risk factors, growing current account deficit, and high rate of inflation have progressively eaten away at the international capital markets' confidence in Turkey. Coupled with the interest-rate rises in the United States, these have put substantial downward pressure on the Turkish lira. Increases in the cost of funding denominated in foreign currencies have already been detrimental to the corporate and banking sectors' operating capabilities. Obtaining funding in the international capital markets has also become more expensive for Turkey. A sustained depreciation of the currency would have

further significant negative macroeconomic effects. Investors' confidence in the Turkish economy could decrease further, and the country could see an outflow of short-term foreign capital. If the United States were to further ramp up its protectionist action and Europe and China were to respond with retaliatory measures, the consequence could be escalation of the **trade disputes** that would have a huge negative impact on global trade as a whole. This would adversely affect the global economy and hit the heavily export-dependent German economy particularly hard.

The forces striving for **Catalonia's independence** from Spain saw their influence fade during 2018, so the latent risk for Spain's overall economic performance has receded again.

Risk impact

Negative macroeconomic trends have an impact on various risks to which the DZ BANK Group and DZ BANK are exposed. In the **Bank sector**, this affects credit risk (deterioration in the credit quality of public-sector bonds, and in the case of shipping finance, asset values and customer creditworthiness, increase in the loss allowances for loans and advances), equity investment risk (increased requirement for the recognition of impairment losses on the carrying amounts of investments), market risk (increase in credit spreads, reduced market liquidity), business risk (contraction in the demand for financial services), and liquidity risk (a combination of the effects mentioned above).

In the **Insurance sector**, market risk is the type of risk most affected by macroeconomic trends. An increase in interest rates or a widening of credit spreads on government bonds or other market investments would lead to a drop in fair values. Fair value losses of this nature could have a temporary or permanent adverse impact on capital.

5.1.4 Climate risks

Risks arising from climate change could act as a trigger in the Bank sector, especially in respect of credit risk and operational risk. Operational risk may materialize, for example, if weather or environmental events cause buildings or IT systems to become unavailable. In the **Insurance sector**, non-life actuarial risk (premium and reserve risk, catastrophe risk) is the main type of risk that potentially could be significantly affected by climate risk. If climate risks are relevant on the basis of the business model, they are backed with capital within the risk types referred to above.

5.2 Overarching bank-related risk factors

The DZ BANK Group is exposed to the bank-specific risk factors described below. These factors have an impact on a number of risk types relevant to liquidity adequacy and capital adequacy and are taken into account in the management of risk.

5.2.1 Shortcomings in the risk management system

Regardless of the fundamental suitability of the **risk measurement procedures** used in the DZ BANK Group and at DZ BANK, it is conceivable that there may be circumstances in which risks cannot be identified in good time or in which a comprehensive, appropriate response to risks is not possible. Despite careful development of models and regular reviews, situations may arise in which actual losses or liquidity requirements are higher than those calculated in the risk models and stress scenarios.

For any given confidence level, the value-at-risk used for determining the **risk capital requirement** can be significantly influenced by extreme events for which the probability of occurrence is low. However, estimates for such rare events are generally subject to a great deal of uncertainty (referred to as model risk). Moreover, there are no comprehensive historical observations in most cases for extreme losses of this nature, which makes it more difficult to validate any models. Key input parameters for measurement models are also subject to uncertainty, because they are already estimates themselves.

The **measurement of liquidity risk** is subject to similar model risk related to the design of models and parameters and their validation. In addition, risks arising from scenarios that extend beyond the risk appetite for serious crises set by the Board of Managing Directors are accepted and therefore not taken into account for risk management purposes.

Despite continuously reviewing **crisis scenarios**, it is simply not possible to set down a definitive record of all economic conditions that could potentially have a negative impact. Therefore, an analysis of crisis scenarios in stress tests cannot guarantee that there will not be other crisis situations that could lead to greater losses or liquidity needs.

5.2.2 Rating downgrades

If DZ BANK's credit rating or the network rating for the cooperative financial network were to be downgraded, this would have a negative impact on the

costs of raising equity and of borrowing. As a result, new liabilities could arise, or liabilities dependent on the maintenance of a specific credit rating could become due for immediate payment.

DZ BANK's credit rating is an important element in any comparison with competitor banks. It also has a significant impact on the ratings for DZ BANK's main subsidiaries. A downgrade or even just the possibility of a downgrade in the rating for DZ BANK or one of its subsidiaries could have a detrimental effect on the relationship with customers and on the sale of products and services.

Furthermore, if a rating downgrade were to occur, the DZ BANK Group or DZ BANK could face a situation in which it had to furnish additional collateral in connection with rating-linked collateral agreements for derivatives (regulated by the Credit Support Annex or Collateralization Annex to the German Master Agreement for Financial Futures) or in which it was no longer considered a suitable counterparty for derivative transactions at all. If the credit rating for DZ BANK or one of its subsidiaries were to fall out of the range covered by the top four rating categories (investment-grade ratings, disregarding rating subcategories), the operating business of DZ BANK or the subsidiary concerned, and therefore also the funding costs for all the other management units in the group, could suffer an adverse impact.

5.2.3 Hedge ineffectiveness

The DZ BANK Group and DZ BANK are exposed to the risk that a counterparty in a hedge could become insolvent and therefore no longer be in a position to meet its obligations. Consequently, the hedge could prove to be ineffective and the DZ BANK Group or DZ BANK would then be exposed to risks that it believed it had hedged.

Unforeseen market trends could undermine the effectiveness of action taken to hedge market risk. One example is the risk in connection with economic divergence in the eurozone. In this case, the DZ BANK Group or DZ BANK would only be able to minimize some of this risk with great difficulty; it may not be possible to hedge some of the risk at all. One of the particular factors to take into account is that some of the quantitative measurement methods and key risk indicators in the risk management system are based on estimates made by experts. Furthermore, the quantitative risk management system does not encompass all risks and makes assumptions about the market environment that are not based on specific events. It is conceivable there could be market scenarios in which the measurement methods and key risk indicators used do not forecast certain potential losses correctly, resulting in miscalculations.

In the management of market risk, use is made of credit derivatives, comprising credit-linked notes, credit default swaps, and total return swaps, in order to reduce the issuer risk attaching to bonds and derivatives. Macro hedges are used dynamically to mitigate spread risk and migration risk as well as risks attaching to underlying assets. In isolated cases, transactions are conducted on a back-to-back basis. If these instruments and measures turn out to be ineffective or only partially effective, it is possible that the DZ BANK Group and/or DZ BANK could incur losses against which the instruments or measures ought to have provided protection. Moreover, hedging activities give rise to costs and may result in additional risks. Gains and losses arising from ineffective risk hedges can increase the volatility of the earnings generated.

6 Liquidity adequacy

6.1 Principles

The management of liquidity adequacy is an integral component of business management in the DZ BANK Group and at DZ BANK. Liquidity adequacy is defined as the holding of sufficient liquidity reserves in relation to the risks arising from future payment obligations. It is considered from both an economic and a regulatory perspective. Whereas the economic perspective implements the requirements of MaRisk BA, the regulatory perspective applies the requirements from the CRR and the German national requirements for the implementation of Capital Requirements Directive IV (KWG and Solvency Regulation, SolvV).

Economic liquidity adequacy is managed on the basis of the internal liquidity risk model, which takes account of the impact on liquidity of other risks when measuring liquidity risk. The DZ BANK Group fulfills the regulatory liquidity adequacy requirements by managing economic liquidity adequacy.

6.2 Economic liquidity adequacy

Owing to the close ties between management of economic liquidity adequacy at DZ BANK and that of the DZ BANK Group, the information below on

economic liquidity adequacy also applies to DZ BANK. Liquidity risk is a key aspect of economic liquidity adequacy.

6.2.1 Risk definition

Liquidity risk is the risk that cash and cash equivalents will not be available in sufficient amounts to ensure that payment obligations can be met. Liquidity risk thus has the character of insolvency risk.

The activities of DZ BANK and the management units BSH, DVB, DZ HYP, DZ PRIVATBANK, TeamBank, and VR LEASING are relevant to the level of liquidity risk in the DZ BANK Group. R+V is less important for liquidity risk in the DZ BANK Group for the reasons set out in section 3.6.2. Likewise, UMH is not significant for liquidity risk in the DZ BANK Group because the level of risk hedging substantially exceeds the existing risks. These two management units are therefore not included in groupwide liquidity management.

6.2.2 Risk strategy

A key component of the liquidity risk strategy is the process of specifying and monitoring the risk appetite for liquidity risk. The liquidity risk strategy establishes a binding basis for implementing these requirements at operational level.

The entities in the DZ BANK Group operate on the principle that the assumption of liquidity risk is only permitted if it is considered together with the associated opportunities and complies with the **risk appetite** specified by the Board of Managing Directors. Solvency must be ensured, even in times of serious crisis. Risk appetite is expressed in the form of crisis scenarios, and stress tests must demonstrate that there is adequate cover for these scenarios. The crisis scenarios also take into account the specific MaRisk BA requirements for the structure of stress scenarios at capital-market-oriented banks.

However, further **extreme scenarios** are not covered by the risk appetite. The risks arising in this regard are accepted and therefore not taken into account in the management of risk. Examples of such scenarios are a run on the bank, i.e. an extensive withdrawal of customer deposits as a result of damage to the reputation of the banking system, or a situation in which all non-collateralized funding sources on money markets completely dry up over the long term, also encompassing transactions with those corporate customers, institutional customers, and customer banks that have close ties to the entities in the DZ BANK Group. On the other hand, the risk of a short-term and complete loss, or the risk of a medium-term and substantial loss, of unsecured funding from institutional investors is not accepted and this risk is the subject of relevant stress scenarios.

Liquidity reserves in the form of liquid securities are held by the entities so that they can remain solvent, even in the event of a crisis. Potential sources of funding in the secured and unsecured money markets are safeguarded by maintaining a broadly diversified national and international customer base. The local cooperative banks also provide a significant and stable source of funding.

The liquidity risk strategy is consistently aligned with the overall **business strategies** and to this end is reviewed at least once a year and adjusted as necessary.

6.2.3 Organization, responsibility, and risk reporting

Organization and responsibility

The strategic guidelines for the management of liquidity risk by the entities in the DZ BANK Group are established by the **Group Risk and Finance Committee**. At the level of DZ BANK, this is the responsibility of the Treasury and Capital Committee.

Liquidity risk control in the DZ BANK Group is coordinated by the Group Risk Management working group and carried out in Risk Controlling at DZ BANK independently of the units that are responsible for liquidity risk management. The risk data calculated by the subsidiaries on the basis of intra-group guidelines is aggregated to provide a group perspective.

Risk reporting

Liquidity up to 1 year and structural liquidity of 1 year or more are reported on a daily basis to the **members of the Board of Managing Directors** of DZ BANK responsible for Group Treasury and Group Risk Controlling. The **Board of Managing Directors** receives a monthly report on liquidity risk.

The DZ BANK **Group Treasury** division and the units in the subsidiaries responsible for the management of liquidity risk also receive detailed daily information showing the contribution from each individual position to the aggregate position.

The DZ BANK **Group Treasury** division also has read-only access to the IT system used for measuring liquidity risk on a day-to-day basis and has set up its own analysis functionality within the system.
The **Group Risk and Finance Committee** receives a quarterly report on the liquidity risk of the DZ BANK Group and the individual management units.

The **entities in the DZ BANK Group** have their own corresponding reporting procedures that help to manage and monitor liquidity risk at individual entity level.

Group Treasury is informed on a daily basis of the largest providers of liquidity to DZ BANK in the unsecured money markets. This is reported to the **Treasury and Capital Committee** and the **Board of Managing Directors** on a monthly basis. The reports make a distinction between customers and banks and relate to DZ BANK in Frankfurt and to each foreign branch. These reports ensure that any possible concentration risk as regards sources of liquidity can be clearly identified at an early stage.

6.2.4 Risk management

Measurement of liquidity risk

DZ BANK uses an **internal risk model** to determine liquidity risk over a time horizon of 1 year. The same model is used to determine liquidity risk at the level of the DZ BANK Group. All entities in the DZ BANK Group with a significant impact on liquidity risk are integrated into the model, which is used to simulate one risk scenario and four stress scenarios a day.

A **minimum liquidity surplus** figure is calculated for each scenario. This figure quantifies the minimum surplus cash that would be available if the scenario were to materialize suddenly within the next 12 months. To carry out this calculation, cumulative cash flow (forward cash exposure) is compared against available liquidity reserves (counterbalancing capacity) on a day-by-day basis. The minimum liquidity surplus expresses economic liquidity adequacy. **Forward cash exposure** includes both expected and unexpected payments.

The **counterbalancing capacity** includes balances on nostro accounts, liquid securities, and unsecured funding capacity with customers, banks, and institutional investors. By including the counterbalancing capacity, the calculation of the minimum liquidity surplus already takes into account the effect on liquidity of the measures that could be implemented to generate liquidity in each scenario. These measures include collateralized funding of securities in the repo market.

Stress tests are conducted for the forward cash exposure and for the counterbalancing capacity using the following four scenarios with defined limits: ‘downgrading’, ‘corporate crisis’, ‘market crisis’, and ‘combination crisis’. The stress scenarios look at sources of crises in both the market and the institution itself. A combination of market-specific and institution-specific sources is also taken into consideration. In crisis scenarios with institution-specific causes, such as a deterioration in the institution’s reputation, it is assumed for example that it will be very difficult to obtain unsecured funding from customers, banks, and institutional investors in the 1-year forecast period. The simulated event in each stress scenario represents a serious deterioration in conditions.

The stress scenario with the lowest minimum liquidity surplus is deemed to be the squeeze scenario. Economic liquidity adequacy is determined as the amount of the minimum liquidity surplus in the squeeze scenario.

In addition to the existing stress scenarios with defined limits, **foreign currency stress tests** simulate what would happen if the currency swap market also defaulted. The currencies in the major locations are examined (US dollar, pound sterling, Swiss franc, Hong Kong dollar, Singapore dollar). The currency limits relate only to the critical first month.

Further stress scenarios in addition to the scenarios with defined limits are analyzed, and a **reverse stress test** is carried out and reported on a monthly basis. The reverse stress test shows which stress events (changes in risk factors) could still occur without liquidity falling below the limit in a subsequent liquidity risk measurement and triggering the need for a business model adjustment.

The internal liquidity risk model is constantly revised using an **appropriateness test** and adjusted in line with changes in the market, products, and processes. The appropriateness test is conducted for each entity in the DZ BANK Group and aggregated at group level.

Management of limits for liquidity risk

Liquidity risk is monitored and managed with the aim of ensuring economic liquidity adequacy at all times. This is based on the minimum liquidity surplus

calculated for the four stress scenarios with defined limits. The Board of Managing Directors of DZ BANK has set, at the level of the **DZ BANK Group**, a **limit** (€1.0 billion) for liquidity risk and an **observation threshold** (€4.0 billion) that is higher than the limit. The observation threshold equates to the minimum target for economic liquidity adequacy specified in the risk appetite statement. The observation threshold and limit were unchanged compared with December 31, 2017. The Board of Managing Directors of DZ BANK has also specified a limit for **each management unit**. The observation threshold and the limits are monitored by the liquidity risk control function at DZ BANK both at group level and also for the management units.

The limit system ensures that the DZ BANK Group remains solvent even in serious stress scenarios. **Emergency liquidity plans** are in place so that the group is able to respond to crisis events rapidly and in a coordinated manner. The emergency plans are revised annually.

Liquidity risk mitigation

Within liquidity management activities, measures to reduce liquidity risk are initiated by the treasuries of the management units. Active liquidity risk management is made possible by holding a large number of instruments in the form of cash and liquid securities, and by managing the maturity profile of money market and capital market transactions.

Liquidity transfer pricing system

The DZ BANK Group aims to use liquidity – which is both a resource and a success factor – in line with opportunities and risks. Liquidity costs, benefits, and risks are allocated among the entities in the DZ BANK Group based on the liquidity transfer pricing system using internal prices charged by the units generating liquidity and paid by those consuming liquidity. Care is taken to ensure that the transfer prices are consistent with risk measurement and risk management.

Transfer prices are set at DZ BANK for the liquidity costs of all the main products. The transfer pricing system takes into account the maturity period and market liquidity of the products and has a significant impact on risk/return management.

6.2.5 Specific risk factors

Liquidity risk arises from a mismatch in the timing and amount of cash inflows and outflows. The extent of these mismatches is to a large degree influenced by the following risk factors:

- Funding is withdrawn but cash nevertheless still flows out when legally due.
- Contracts result in greater collateral requirements that involve cash outflows.
- Changes in the fair value of financial instruments mean that less liquidity can be generated.
- Cash is paid out earlier than expected because drawing rights are exercised.
- Cash outflows are earlier than expected or cash inflows later than expected because termination rights are exercised.
- New business is entered into to safeguard the reputation of the DZ BANK Group, resulting in cash outflows.
- Products are repurchased to safeguard the reputation of the DZ BANK Group, resulting in cash outflows.
- The liquidity requirement to ensure intraday payment obligations can be satisfied is greater than expected.
- There has been a negative impact on opportunities for generating currency-related liquidity through currency swaps.

The UK's expected exit from the EU does not affect the solvency of the DZ BANK Group or DZ BANK because the scope of the stress scenarios already covered exceeds the anticipated impact of **Brexit** on the risk factors relevant to liquidity risk.

6.2.6 Quantitative variables

The available liquid securities and the unsecured short-term and medium-term funding are the main factors determining the minimum liquidity surplus. These factors are presented below.

Liquid securities

Liquid securities form part of the available liquidity reserves, which are referred to as **counterbalancing capacity**. Liquid securities are largely held in the portfolios of the treasury units at the entities in the DZ BANK Group or in the portfolios held by DZ BANK's Capital Markets Trading division. Only bearer bonds are eligible as liquid securities. Liquid securities comprise highly liquid securities that are suitable for collateralizing funding in private markets, securities eligible as collateral for central bank loans, and other securities that can be liquidated in the 1-year forecast period that is relevant for liquidity risk.

Securities are only eligible provided they are not pledged as collateral, e.g. for secured funding. Securities that have been borrowed or taken as collateral for derivatives business or in connection with secured funding only become eligible when they are freely transferable. Eligibility is recognized on a daily basis and also takes into account factors such as restrictions on the period in which the securities are freely available.

Fig. 10 shows the liquidity value of the liquid securities that would result from secured funding or if the securities were sold.

As at December 31, 2018, the total liquidity value at the level of the **DZ BANK Group** was €41.8 billion (December 31, 2017: €45.9 billion). The total liquidity value attributable to **DZ BANK** as at December 31, 2018 was €30.2 billion (December 31, 2017: €33.2 billion). The year-on-year decline in the volume of liquid securities as at December 31, 2018 was attributable to the sale of securities, mainly at DZ BANK.

Consequently, liquid securities represent the largest proportion of the counterbalancing capacity for both the DZ BANK Group and DZ BANK, and make a major contribution to ensuring that they remain solvent in the stress scenarios with defined limits at all times during the relevant forecast period. In the first month, which is a particularly critical period in a crisis, liquid securities are almost exclusively responsible for maintaining solvency in the stress scenarios with defined limits.

FIG. 10 – LIQUID SECURITIES

€ billion	Dec. 31, 2018	Dec. 31, 2017
Liquid securities eligible for GC Pooling (ECB Basket)[1]	23.4	28.1
Securities in own portfolio	22.7	28.1
Securities received as collateral	9.7	10.6
Securities provided as collateral	-9.0	-10.6
Liquid securities eligible as collateral for central bank loans	12.3	12.2
Securities in own portfolio	13.4	12.1
Securities received as collateral	4.9	2.6
Securities provided as collateral	-6.0	-2.5
Other liquid securities	6.0	5.6
Securities in own portfolio	5.4	5.5
Securities received as collateral	0.9	0.1
Securities provided as collateral	-0.2	-
Total	41.8	45.9
Securities in own portfolio	41.5	45.7
Securities received as collateral	15.5	13.3
Securities provided as collateral	-15.3	-13.2

1 GC = general collateral, ECB Basket = eligible collateral for ECB funding.

Funding and liquidity maturities

The short-term and medium-term funding structure is a determining factor in the level of liquidity risk in the DZ BANK Group and at DZ BANK. The main sources of funding on the unsecured money markets are shown in Fig. 11. The change in the composition of the main sources of funding compared with December 31, 2017 was attributable to a change in the behavior of customers and investors resulting from money market policy implemented by the ECB.

Further details on funding are provided in the business report (section II.5 (Financial position) of the (group) management report).

The maturity analysis of contractual cash inflows and cash outflows is set out in note 84 of the notes to the consolidated financial statements. The cash flows in these disclosures are not the same as the expected and unexpected cash flows used for internal management purposes in the DZ BANK Group.

6.2.7 Risk position

Economic liquidity adequacy is assured if none of the four stress scenarios with defined limits exhibit a negative value for the internal key risk indicator 'minimum liquidity surplus'. Fig. 12 shows the results of measuring liquidity risk in the four stress scenarios with defined limits. The results are based on a daily calculation and comparison of forward cash exposure and counterbalancing capacity. The values reported are the values that occur on the day on which the liquidity surplus calculated over the forecast period of 1 year is at its lowest point.

FIG. 11 – UNSECURED SHORT-TERM AND MEDIUM-TERM FUNDING

	DZ BANK banking group		DZ BANK	
%	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Local cooperative banks	55	54	59	58
Other banks, central banks	14	12	14	11
Corporate customers, institutional customers	15	13	14	13
Commercial paper (institutional investors)	16	21	13	18

FIG. 12 – LIQUIDITY UP TO 1 YEAR IN THE STRESS SCENARIOS WITH DEFINED LIMITS: MINIMUM LIQUIDITY SURPLUSES

	Forward cash exposure		Counterbalancing capacity		Minimum liquidity surplus	
€ billion	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Downgrading	-39.3	-44.7	61.8	77.2	22.5	32.5
Corporate crisis	-37.1	-47.2	50.1	63.3	13.0	16.1
Market crisis	-42.5	-51.5	58.2	76.3	15.7	24.8
Combination crisis	-42.1	-23.4	54.1	42.6	12.0	19.2

The liquidity risk value measured for the **DZ BANK Group** as at December 31, 2018 for the stress scenario with defined limits with the lowest minimum liquidity surplus (squeeze scenario) was €12.0 billion (December 31, 2017: €16.1 billion). The decline in the minimum liquidity surplus as at December 31, 2018 compared with the figure as at the prior-year reporting date was largely due to a modification of the stress scenarios. During the year under review, liquidity at the level of the DZ BANK Group did not, in any of the stress scenarios with defined limits, fall below the observation threshold of €4.0 billion set by the Board of Managing Directors as the internal minimum target for 2018. Furthermore, it did not fall below the limit of €1.0 billion or the external minimum target of €0.0 billion at any time in the reporting period. The observation threshold and limit were unchanged compared with December 31, 2017.

The corresponding liquidity risk value attributable to **DZ BANK** as at December 31, 2018 was €2.1 billion (December 31, 2017: €5.7 billion). The value is derived from the stress scenario with defined limits that has the lowest minimum liquidity surplus (squeeze scenario). The minimum liquidity surplus measured as at the reporting date decreased year on year in this case too. The decline was mainly attributable to the extension in 2018 of the forecast period used for the limitation from 1 month to 1 year. The minimum liquidity surplus did not fall below the limit at any time in the year under review.

The results demonstrate that economic liquidity adequacy was maintained at all times in the reporting year. The minimum liquidity surplus as at December 31, 2018 was positive in the stress scenarios with defined limits that were determined on the basis of risk appetite. This is due to the fact that the counterbalancing capacity was above the cumulative cash outflows on each day of the defined forecast period for each scenario, which indicates that the cash outflows assumed to take place in a crisis could be comfortably covered.

6.2.8 Possible impact from crystallized liquidity risk

One of the main operating activities of the management units is to make long-term liquidity available to their customers for different maturity periods and in different currencies, for example in the form of loans. The units generally organize their funding to match these transactions that tie up liquidity. Any funding needs that are not covered by the local cooperative banks are met by obtaining additional funding in the money and capital markets, with the deposit base from money market funding reducing the need for long-term funding. When funding matures, it is therefore possible that the replacement funding required to fund transactions with longer maturities has to be obtained at **unfavorable terms and conditions**.

The entities in the DZ BANK Group are also exposed to the risk that the minimum liquidity surplus will fall below the limit. If the minimum liquidity surplus were to fall below the limit for an extended period, the possibility of **reputational damage and a ratings downgrade** could not be ruled out.

Crystallization of liquidity risk causes an unexpected **reduction in the liquidity surplus**, with potential negative consequences for DZ BANK's financial position and enterprise value. If a crisis were to occur in which the circumstances were more serious or the combination of factors were significantly different from those assumed in the stress scenarios, there would be a risk of **insolvency**.

6.3 Regulatory liquidity adequacy

6.3.1 Regulatory framework

Internal liquidity risk management is supplemented by the liquidity coverage ratio (LCR) specified in the Basel III framework, which was transposed into law

with the CRR and Commission Delegated Regulation (EU) No. 2015/61, and by the net stable funding ratio (NSFR), which is based on the Basel III framework (BCBS 295).

The **liquidity coverage ratio** has a short-term focus and is intended to ensure that institutions can withstand a liquidity stress scenario lasting 30 days. This KPI is defined as the ratio of available liquid assets (liquidity buffer) to total net cash outflows in defined stress conditions over the next 30 days. Since January 1, 2018, banks have had to maintain an LCR of at least 100 percent (2017: 80 percent). DZ BANK reports its own LCR and that of the DZ BANK banking group, calculated in accordance with the CRR in conjunction with Commission Delegated Regulation (EU) No. 2015/61, to the supervisory authority on a monthly basis.

The **net stable funding ratio** has a long-term focus and is intended to ensure that institutions restrict mismatches between the maturity structures of their assets-side and liabilities-side business. This ratio is the amount of available stable funding (equity and liabilities) relative to the amount of required stable funding (assets-side business). The funding sources are weighted according to their degree of stability and assets are weighted according to their degree of liquidity based on factors defined by the supervisory authority. Unlike the liquidity coverage ratio, compliance with the NSFR will only become mandatory from the 2021 financial year with the application of CRR II. From this point, it is planned to manage the NSFR within the groupwide liquidity risk management system.

6.3.2 Organization, responsibility, and reporting

The liquidity ratios reported for supervisory purposes resulting from the CRR, the Basel III framework, and Commission Delegated Regulation (EU) No. 2015/61 are calculated for DZ BANK by the **Group Finance** division and aggregated at the level of the DZ BANK banking group with the corresponding values for the management units.

Both the **Treasury and Capital Committee** and the **Board of Managing Directors** are notified of the LCR and the NSFR each month.

6.3.3 Liquidity coverage ratio

The LCRs for the **DZ BANK banking group** and **DZ BANK** calculated in accordance with Commission Delegated Regulation (EU) No. 2015/61 are shown in Fig. 13.

FIG. 13 – LIQUIDITY COVERAGE RATIOS AND THEIR DETERMINING FACTORS

	DZ BANK banking group		DZ BANK	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Total liquidity buffer (€ billion)	78.7	77.5	58.0	55.7
Total net liquidity outflows (€ billion)	55.6	47.9	45.8	40.0
Liquidity coverage ratio (%)	141.4	161.7	126.7	139.1

The decrease in the LCR measured for the DZ BANK banking group from 161.7 percent as at December 31, 2017 to 141.4 percent as at December 31, 2018 was largely attributable to lower excess cover at DZ BANK and DZ HYP. Excess cover in relation to the LCR is the difference between the liquidity buffer and the net liquidity outflows. The fall in the LCR for DZ BANK was primarily due to an increase in short-term deposits. Short-term deposits both offset the decrease in long-term liabilities and fund new business. Therefore, the overall effect was that the increase in net liquidity outflows was greater than the increase in the liquidity buffer at the level of DZ BANK. The decline in the liquidity buffer at DZ HYP arose because of an increase in the repo transactions necessary to fund its new business. At banking group level, these offsetting effects caused just a small rise in the liquidity buffer of €1.2 billion.

In the reporting year, the regulatory minimum requirement for the LCR of 100 percent (2017: 80 percent) was significantly exceeded on every reporting date at the level of both the DZ BANK banking group and DZ BANK.

6.4 Outlook

ECB ILAAP guidance

In 2019, it is planned to implement the requirements from the ILAAP guidance published by the ECB in November 2018 as part of the Single Supervisory Mechanism (SSM). The objective of the ILAAP is to ensure that banks have an appropriate liquidity and funding position. The ILAAP now combines an economic and a normative internal perspective.

In the DZ BANK Group, the **economic perspective** of the ILAAP will be closely based on the existing analysis of economic liquidity adequacy, but will include useful integration between the ILAAP and the ICAAP.

The **normative perspective** will be based on the liquidity ratios in Pillar 1. Its objective is to assess the DZ BANK banking group's ability to comply with regulatory minimum requirements (plus an internally specified management buffer). The assessment will comprise an analysis of the current position as well as forward-looking scenarios. It will include the assumptions used in the economic perspective.

These changes in the requirements are not expected to have any impact on either economic or regulatory liquidity adequacy.

NSFR

The new NSFR will continue to be integrated into liquidity risk management in the coming financial year.

7 Capital adequacy

7.1 Strategy, organization, and responsibility

The management of capital adequacy is an integral component of business management in the DZ BANK Group and at DZ BANK. Capital adequacy is defined as the holding of sufficient capital to cover the risks assumed by the business. It is considered from both an economic and a regulatory perspective. Whereas the economic perspective takes into account the requirements of MaRisk BA, the regulatory perspective applies the requirements from the CRR and the German national requirements for the implementation of Capital Requirements Directive IV (KWG and SolvV).

DZ BANK and all other management units are included in the groupwide management of capital adequacy. Management of economic capital adequacy on the basis of both internal risk measurement methods and regulatory capital adequacy requirements aims to ensure that the assumption of risk is always consistent with the DZ BANK Group's capital resources.

Regulatory solvency requirements for the DZ BANK financial conglomerate, the DZ BANK banking group, and the R+V Versicherung AG insurance group are observed in economic capital management.

The **Board of Managing Directors of DZ BANK** defines the corporate objectives and the capital requirement in the DZ BANK Group and at DZ BANK in terms of both risks and returns. In managing the risk profile, the Board of Managing Directors strives for an appropriate ratio between risk and available internal capital. DZ BANK is responsible for risk and capital management, and for compliance with capital adequacy at group level.

The management of economic and regulatory capital adequacy is based on internal target values. To avoid any unexpected adverse impact on **target values and capital ratios** and ensure that any changes in risk are consistent with corporate strategy, groupwide economic upper loss limits and risk-weighted assets are planned as limits for the risk capital requirement on an annual basis as part of the **strategic planning process**. This process results in a requirements budget for the economic and regulatory capital needed by the group. The implementation of any corresponding measures to raise capital is approved by the Treasury and Capital Committee and then coordinated by **Group Treasury** at DZ BANK. The integration of economic risk capital requirements planning into the strategic planning process aims to ensure that the risk strategy for types of risk covered by capital is closely linked with the business strategies.

At DZ BANK, the **Group Finance** division is responsible for monitoring regulatory capital adequacy. Regular monitoring is designed to ensure that the applicable minimum regulatory requirements for solvency are met at all times. Monitoring takes place monthly for the DZ BANK banking group and DZ BANK, and at least quarterly for the DZ BANK financial conglomerate and the R+V Versicherung AG insurance group. The Board of Managing Directors and the supervisory authority are notified of the results within the monthly reports on capital management.

7.2 Economic capital adequacy

Owing to the close ties between the management of economic capital adequacy at DZ BANK and that of the DZ BANK Group, the information below also applies to DZ BANK.

7.2.1 Measurement methods

Economic capital management is based on internal risk measurement methods that take into account all types of risk that are material from a capital adequacy perspective. The risk capital requirement is determined by aggregating the relevant risk types of all management units. The methods selected serve to meet the statutory requirements for a groupwide integrated risk capital management system.

In the **risk-bearing-capacity analysis**, the risk capital requirement (including capital buffer) is compared with the available internal capital in order to determine the economic capital adequacy. The Board of Managing Directors determines the upper loss limits for a particular year on the basis of the available internal capital. These limits then restrict the risk capital requirement (including capital buffer). If necessary, the upper loss limits can be adjusted during the year, e.g. if economic conditions change.

Available internal capital comprises equity and hidden reserves. It is reviewed on a quarterly basis. The available internal capital is determined as follows:

- The available internal capital from the **Bank sector** is calculated on the basis of the IFRS data in accordance with regulatory financial reporting. In this process, R+V is not fully consolidated but taken into account using the equity method.

- The available internal capital from the **Insurance sector** is based on the own funds of the R+V Versicherung AG insurance group in accordance with Solvency II.

The available internal capital from the two sectors is combined to produce the available internal capital of the DZ BANK Group. During this process, the effects of consolidation between the Bank and Insurance sectors are taken into account, resulting in a reduction in the available internal capital at group level.

The purpose of the **capital buffer** (also referred to below as the capital buffer requirement) is to cover the lack of precision in some areas of risk measurement. This applies to migration risk on traditional loans, for example. The individual components of the capital buffer are quantified using a method based on scenarios and models with input from experts. A distinction is made between centralized and decentralized capital buffer requirements. Decentralized capital buffer requirements are managed within the upper loss limits for the individual risk types, whereas the centralized capital buffer is managed on the basis of an upper loss limit covering all sectors and risk types.

7.2.2 Traffic light system

Economic capital adequacy is monitored and managed using a traffic light system based on the ratio of available internal capital to aggregate risk (expressed as a percentage).

The switch from green to amber in the traffic light system (**amber threshold**) is set at the minimum target for economic capital adequacy specified in the risk appetite statement, which in 2018 was unchanged compared with the previous year at 120 percent. The amber threshold serves as an early warning indicator. The **red threshold**, i.e. the borderline between amber and red in the traffic light system, was set at 110 percent in the year under review, again unchanged compared with 2017.

The threshold values for economic capital adequacy are reviewed annually and adjusted if necessary.

7.2.3 Risk-bearing capacity

Available internal capital

The DZ BANK Group's **available internal capital** as at December 31, 2018 was measured at €28,562 million. The comparable figure as at December 31, 2017 was measured at €27,831 million. The figure originally measured as at December 31, 2017 and disclosed in the 2017 opportunity and risk report came to €28,049 million. The increase in available internal capital arose mainly because of the positive financial performance and the rise in eligible own funds in the Insurance sector.

The upper loss limit derived from the available internal capital amounted to €24,276 million as at December 31, 2018 (December 31, 2017: €23,575 million). The rise in the upper loss limit was largely due to the growth derived from business performance.

As at the reporting date, **aggregate risk** was calculated at €17,025 million. The comparable figure as at December 31, 2017 was €16,392 million. The increase in risk, which was mainly attributable to the Insurance sector, was due to portfolio growth and the level of interest rates.

Economic capital adequacy

As at December 31, 2018, the economic capital adequacy ratio for the **DZ BANK Group** was calculated at 167.8 percent. The comparable figure as at December 31, 2017 was 169.8 percent. The figure originally measured as at December 31, 2017 and disclosed in the 2017 opportunity and risk report was 170.5 percent. During the reporting year, the economic capital adequacy ratio was higher than the internal minimum target of 120 percent and the external minimum target of 100 percent at all times.

Fig. 14 provides an overview of the DZ BANK Group's economic capital adequacy.

The upper loss limits and risk capital requirements including the capital buffer requirements for the **Bank sector**, broken down by risk type, are shown in Fig. 15.

Fig. 16 sets out the upper loss limits and overall solvency requirements for the **Insurance sector**, broken down by risk type, and includes policyholder participation. The definition of the upper loss limits and determination of overall solvency requirements take into account the ability to offset deferred taxes against losses (which arises where deferred tax liabilities can be eliminated in the loss scenario). Diversification effects between the risk types are also taken into consideration. Owing to these effects of correlation, the overall solvency requirement and upper loss limits for each risk type are not cumulative. The rise in the overall solvency requirement compared with the prior year resulted first and foremost from the trend in interest rates and business growth.

In addition to the figures shown in Fig. 15 and Fig. 16, the aggregate risk includes **a centralized capital buffer requirement across all types of risk**, which was calculated at €301 million as at December 31, 2018 (December 31, 2017: €332 million). The corresponding upper loss limit was €340 million (December 31, 2017: €350 million).

It was necessary to **recalculate the overall solvency requirement** as at December 31, 2017 owing to scheduled changes to the parameters for the risk measurement procedures and the updating of actuarial assumptions carried out in the second quarter of 2018 for the Insurance sector on the basis of R+V's 2017 consolidated financial statements. The recalculation reflects updated measurements of insurance liabilities based on annual actuarial analyses and updates to parameters in the risk capital calculation. Because of the complexity and the amount of time involved, the parameters are not completely updated in the in-year calculation and an appropriate projection is made.

The recalculation led to changes in the available internal capital, the key risk indicators at the level of the DZ BANK Group, and economic capital adequacy. The figures as at December 31, 2017 given in this opportunity and risk report have been restated accordingly and are not directly comparable with the figures in the 2017 opportunity and risk report.

FIG. 14 – ECONOMIC CAPITAL ADEQUACY OF THE DZ BANK GROUP

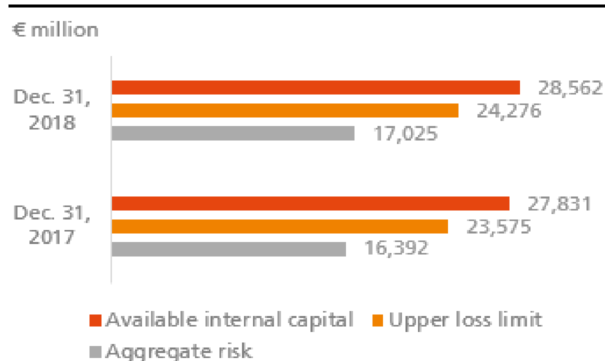


FIG. 15 – UPPER LOSS LIMITS AND RISK CAPITAL REQUIREMENT INCLUDING CAPITAL BUFFER IN THE BANK SECTOR

	Upper loss limit		Risk capital requirement[4]	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Credit risk	8,238	7,628	5,541	5,772
Equity investment risk	1,341	1,422	1,091	1,093
Market risk[1]	6,768	6,863	4,030	4,097
Technical risk of a home savings and loan company[2]	667	558	553	558
Business risk[3]	1,118	1,040	857	781
Operational risk	1,030	1,147	804	821
Total (after diversification)	**18,236**	**17,805**	**11,600**	**11,861**

1 Market risk contains spread risk and migration risk.
2 Including business risk and reputational risk of BSH.
3 Apart from that of BSH, reputational risk is contained in the risk capital requirement for business risk.
4 Including decentralized capital buffer requirement.

FIG. 16 – UPPER LOSS LIMITS AND OVERALL SOLVENCY REQUIREMENT IN THE INSURANCE SECTOR

	Upper loss limit		Overall solvency requirement	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Life actuarial risk	1,100	1,200	884	868
Health actuarial risk	350	370	312	219
Non-life actuarial risk	3,650	3,580	3,247	3,001
Market risk	4,350	3,800	4,343	3,240
Counterparty default risk	100	130	79	57
Operational risk	640	650	558	528
Non-controlling interests in insurance companies and entities in other financial sectors	145	140	104	127
Total (after diversification)	**5,700**	**5,420**	**5,125**	**4,199**

7.2.4 Possible impact from crystallized risk covered by capital

If risk covered by capital actually materializes, this has a negative impact on both financial performance and financial position as well as on the enterprise value of the DZ BANK Group and DZ BANK. In the income

statement in this situation, the recognized expenses are higher and/or the recognized income is lower than originally expected. This is accompanied by a decrease in the net assets on the balance sheet because assets are unexpectedly lower and/or liabilities are unexpectedly higher. A widening of spreads on fungible financial instruments may also lead to a deterioration in the financial position, which is reflected in other comprehensive income.

If there is a deterioration in financial performance, there is the risk of long-term **negative risk-adjusted profitability** where the cost of capital cannot then be covered, and economic value added (EVA) becomes negative. If this situation arose, there would no longer be any point in continuing business operations from a business management perspective.

Viewed in isolation and assuming there are no other influencing factors, this chain of events would apply particularly in a scenario where the equity holder is simply seeking to maximize profits. In the case of DZ BANK, however, there is another significant factor in that the intention of the equity holders (who in many cases are also customers of DZ BANK and its subsidiaries) in committing equity to DZ BANK is not only to achieve, as far as possible, market-level returns commensurate with the risk involved, but also to utilize the decentralized services that DZ BANK provides as the central institution in the cooperative financial network. The return on capital that forms part of any purely monetary analysis therefore needs to be adjusted in the case of DZ BANK to add the effects of the extra benefits. Given this background, EVA is only of limited use for assessing the advantages of the investment in DZ BANK. Thus, a negative EVA is not necessarily associated with the discontinuation of business activities undertaken by DZ BANK or its subsidiaries.

If risk were to materialize and associated losses be incurred, there would be a risk that the DZ BANK Group would **miss its economic capital adequacy target**. However, this situation could also occur with an increase in risk arising from heightened market volatility or as a consequence of changes in the business structure. In addition, a decrease in available internal capital, for example because its components have expired or are no longer eligible, could mean t hat the risk capital requirement exceeds the available internal capital. Additional or more stringent regulatory requirements could also have a negative impact on the economic capital adequacy of the DZ BANK Group.

In a situation in which the economic capital adequacy of the DZ BANK Group could not be guaranteed, there would be insufficient capital available to meet the group's own standards with regard to the coverage of risk. This could lead to a **deterioration in the credit ratings** for DZ BANK and its subsidiaries. If there is also insufficient capital to meet the level of protection demanded by the supervisory authority, this authority could initiate action, which in extreme cases could lead to the **resolution** of DZ BANK or its subsidiaries.

7.3 Regulatory capital adequacy

7.3.1 Principles

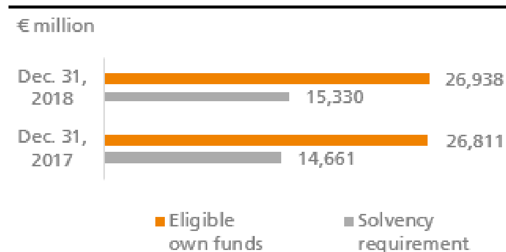
The regulatory ratios presented below are used as part of the internal management of the DZ BANK financial conglomerate, the DZ BANK banking group, and DZ BANK. The procedures used to determine these ratios are predominantly those that will be required by the full application of the CRR going forward. Some of the regulatory ratios contained in the opportunity and risk report therefore differ from the ratios reported to the supervisory authorities under the CRR transitional guidance and disclosed in the regulatory risk report.

7.3.2 DZ BANK financial conglomerate

The FKAG forms the main legal basis for the supervision of the DZ BANK financial conglomerate. The calculation methodology for the coverage ratio is taken from Commission Delegated Regulation (EU) No. 342/2014 in conjunction with article 49 (1) CRR.

The financial conglomerate coverage ratio is the ratio between the total of eligible own funds in the financial conglomerate and the total of solvency requirements for the conglomerate. The resulting ratio must be at least 100 percent. The changes in the **eligible own funds** and the **solvency requirements** are shown in Fig. 17.

FIG. 17 – REGULATORY CAPITAL ADEQUACY OF THE DZ BANK FINANCIAL CONGLOMERATE[1]



1 December 31, 2018: Preliminary figures; December 31, 2017: Final figures.

This gives a preliminary **coverage ratio** of 175.7 percent as at December 31, 2018 (final figure as at December 31, 2017: 182.9 percent), which is significantly in excess of the regulatory minimum requirement (100 percent) and the internal minimum target (120 percent).

7.3.3 DZ BANK banking group

Regulatory framework

The DZ BANK banking group uses the following methods to calculate the regulatory risk-weighted assets in accordance with the CRR:

- Credit risk: Primarily the foundation IRB approach and the IRB approach for the retail business (the regulatory credit risk measurement methods used by DVB are based on the advanced IRB approach)
- Market risk: Predominantly the group's own internal models and, to a minor extent, the Standardized Approaches
- Operational risk: Standardized Approach.

Regulatory minimum capital requirements

The minimum capital requirements that the DZ BANK banking group had to comply with in 2018 comprised those components of Pillar 1 laid down as mandatory by law and those individually specified by the banking supervisor. Institution-specific requirements under the additional capital requirements in Pillar 2, determined in the outcome of the SREP conducted for the DZ BANK banking group in 2017, also had to be satisfied. In this process, the supervisor specified a mandatory add-on (Pillar 2 requirement) that is factored into the basis of calculation used to determine the threshold for the maximum distributable amount (MDA). Distributions are restricted if capital falls below the MDA threshold. The mandatory add-on is determined from the outcome of the SREP.

In addition to this mandatory component, there is a recommended own funds amount under Pillar 2 (Pillar 2 guidance), which likewise is determined from the SREP, but unlike the mandatory component relates only to common equity Tier 1 capital. Failure to comply with the own funds guidance under Pillar 2 does not constitute a breach of regulatory capital requirements. Nevertheless, this figure is relevant as an early warning indicator for capital planning.
The mandatory minimum capital requirements and their components applicable to 2018 and 2017 are shown in Fig. 18.

FIG. 18 – REGULATORY MINIMUM CAPITAL REQUIREMENTS[1]

%	2018	2019
Minimum requirement for common equity Tier 1 capital	4.50	4.50
Additional Pillar 2 capital requirement	1.75	1.75
Capital conservation buffer	1.88	2.50
Countercyclical capital buffer[1]	0.05	
O-SII capital buffer	0.66	1.00
Mandatory minimum requirement for common equity Tier 1 capital	**8.84**	**9.75**
Minimum requirement for additional Tier 1 capital[2]	1.50	1.50
Mandatory minimum requirement for Tier 1 capital	**10.34**	**11.25**
Minimum requirement for Tier 2 capital[3]	2.00	2.00
Mandatory minimum requirement for total capital	**12.34**	**13.25**

1 The value for the countercyclical capital buffer is recalculated at each reporting date. Unlike the other reported values, which apply to the entire financial year, the countercyclical capital buffer relates solely to the reporting date of December 31, 2018.
2 The minimum requirement can also be satisfied with common equity Tier 1 capital.
3 The minimum requirement can also be satisfied with common equity Tier 1 or additional Tier 1 capital.

The countercyclical capital buffer for 2019 is not yet known because its level depends on the risk-weighted assets reported as at the reporting date and on the relevant country-specific capital buffer rates.

The mandatory and the recommended minimum capital requirements were complied with in the year under review on the basis of full application of the CRR. According to current projections, the requirements will also be satisfied in 2019.

The internal minimum targets at the level of the DZ BANK banking group for the common equity Tier 1 capital ratio, the Tier 1 capital ratio, and the total capital ratio were satisfied at all times during the reporting period. The internal minimum targets are shown in Fig. 4.

BaFin classified DZ BANK as an other systemically important institution (O-SII) in 2018. The DZ BANK banking group has to comply with an **O-SII capital buffer** (comprising common equity Tier 1 capital) as defined in section 10g (1) KWG at a level of 1.0 percent in 2019.

Regulatory capital ratios

The regulatory **own funds** of the **DZ BANK banking group** as at December 31, 2018 determined in accordance with full application of the CRR amounted to a total of €22,210 million (December 31, 2017: €22,702 million).

This equates to a year-on-year decline in own funds of €492 million, comprising an increase in **Tier 1 capital**

of €68 million and a decrease in **Tier 2 capital** of €560 million.

In the case of **common equity Tier 1 capital**, net profits eligible for retention and the fall in the goodwill deduction had a positive impact. On the other hand, there was a negative impact on common equity Tier 1 capital from the decrease in accumulated other comprehensive income and from the deduction of securitization exposures applied for the first time as at December 31, 2018.

Tier 2 capital declined from €3,904 million as at December 31, 2017 to €3,344 million as at December 31, 2018, a year-on-year decrease of €560 million. This change was mainly attributable to the reduced level of eligibility under CRR rules for own funds instruments in this capital category in the last 5 years before their maturity date and to the fall in the write-down surplus.
Regulatory **risk-weighted assets** in the DZ BANK banking group went up from €131,700 million as at December 31, 2017 to €132,152 million as at December 31, 2018, a rise of €452 million. This increase was primarily due to greater levels of market risk and credit risk. The election to make use of the option regarding the treatment of securitization exposures had a countervailing effect. Since 2018, securitization exposures have been deducted from own funds in the amount of their basis of measurement rather than with a risk weight of 1,250 percent.

As at December 31, 2018, the DZ BANK banking group's **common equity Tier 1 capital ratio** was 13.7 percent. This was the same as the figure at the end of 2017. The **Tier 1 capital ratio** of 14.3 percent calculated as at the reporting date was also unchanged compared with the figure at December 31, 2017. By contrast, the **total capital ratio** declined from 17.2 percent as at December 31, 2017 to 16.8 percent as at the balance sheet date.

Fig. 19 provides an overview of the DZ BANK banking group's regulatory capital ratios.

The **common equity Tier 1 capital ratio** for **DZ BANK** was calculated at 15.4 percent as at December 31, 2018, which was lower than the equivalent figure of 16.5 percent as at December 31, 2017.

FIG. 19 – REGULATORY CAPITAL RATIOS WITH FULL APPLICATION OF THE CRR[1]

	Dec. 31, 2018	Dec. 31, 2017
Capital		
Common equity Tier 1 capital (€ million)	18,158	18,092
Additional Tier 1 capital (€ million)	708	706
Tier 1 capital	18,866	18,798
Total Tier 2 capital (€ million)	3,344	3,904
Total capital	22,210	22,702
Risk-weighted assets		
Credit risk including long-term equity investments (€ million)	112,425	113,876
Market risk (€ million)	9,104	6,778
Operational risk (€ million)	10,623	11,046
Total	132,152	131,700
Capital ratios		
Common equity Tier 1 capital ratio (%)	13.7	13.7
Tier 1 capital ratio (%)	14.3	14.3
Total capital ratio (%)	16.8	17.2

1 The figures as at December 31, 2017 differ from the corresponding figures disclosed in the opportunity and risk report for the first half of 2018 and in the opportunity and risk report for 2017 due to the transition to disclosure based on full application of the CRR and due to regulatory requirements.

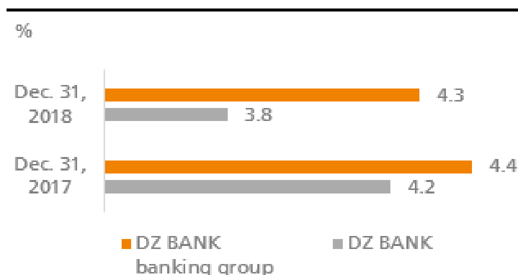
The **Tier 1 capital ratio** was also down, from 17.3 percent as at December 31, 2017 to 16.3 percent as at December 31, 2018. In addition, the **total capital ratio** declined from 21.4 percent as at December 31, 2017 to 19.7 percent as at the reporting date. The fall in the capital ratios was due both to the increased risk-weighted assets and to the lower level of own funds.

The ratios at DZ BANK banking group level and at DZ BANK level were well above the regulatory minimum capital ratios at all times during 2018.

Leverage ratio

The leverage ratios for the DZ BANK banking group and DZ BANK are shown in Fig. 20.

FIG. 20 – LEVERAGE RATIOS WITH FULL APPLICATION OF THE CRR



The year-on-year decrease in the leverage ratio for the **DZ BANK banking group** as at December 31, 2018 calculated in accordance with the rules under the full application of the CRR mainly arose because of an increase of €9.7 billion in the total exposure, which in turn was attributable to growth of on-balance-sheet business at DZ BANK.

The internal minimum target of 3.5 percent for the leverage ratio of the DZ BANK banking group was met at all times in 2018.

The leverage ratio also went down at **DZ BANK** level, accounted for principally by a decrease of €826 million in Tier 1 capital with a simultaneous increase of €10.9 billion in the total exposure. The rise in the total exposure was primarily caused by growth in on-balance-sheet business and an increase in off-balance-sheet exposures and securities financing transactions.

Minimum requirement for own funds and eligible liabilities

The BRRD, Regulation (EU) No. 806/2014 establishing a Single Resolution Mechanism, and the transposition of the BRRD into German law in the form of the SAG have created the legal basis at European and national level for a single resolution mechanism for banks and the MREL regulatory ratio.

The MREL is intended to ensure that banks hold a sufficiently large volume of own funds and liabilities that can be 'bailed-in' to make it possible at all times to carry out an orderly resolution. 'Bail-in-able' liabilities are those that provide for creditors to take an interest in losses incurred and recapitalization if a bank gets into financial difficulties, enabling resolution to take place on the basis of the bail-in and other instruments without recourse to government help and without jeopardizing the stability of the financial system.

The MREL ratio is the ratio of the total of own funds and eligible bail-in-able liabilities to the total liabilities and own funds of the DZ BANK banking group.

In June 2018, BaFin notified DZ BANK that the Single Resolution Board had set an MREL ratio of 8.19 percent for the DZ BANK banking group. This minimum requirement was met at all times in the year under review.

7.3.4 R+V Versicherung AG insurance group

The regulatory solvency requirements for insurance companies and insurance groups provide a means of evaluating the overall risk position in the R+V Versicherung AG insurance group.

The group's risk-bearing capacity for regulatory purposes is defined as the eligible own funds at group level in relation to the risks arising from operating activities. The changes in the regulatory risk-bearing capacity of the R+V Versicherung AG insurance group as a whole and each of its constituent entities are analyzed at least once a quarter.

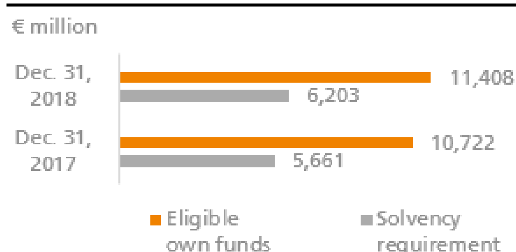
Fig. 21 shows how the solvency requirements are covered by eligible own funds.

As at December 31, 2018, the preliminary figure for the regulatory risk-bearing capacity of the R+V Versicherung AG insurance group was 183.9 percent (final figure as at December 31, 2017: 189.4 percent).

The recalculation of the overall solvency requirement described in section 7.2.3 also affected the regulatory risk-bearing capacity of the R+V Versicherung AG insurance group and led to retrospective changes in the solvency requirements as at the end of 2017. The figures as at December 31, 2017 given in this opportunity and risk report have been restated accordingly and are not directly comparable with the figures in the 2017 opportunity and risk report.

Analysis of the capital market scenarios applied in the internal planning shows that the regulatory risk-bearing capacity of the R+V Versicherung AG insurance group under Solvency II will exceed the minimum statutory requirement as at December 31, 2019. In view of the ongoing challenging situation in the financial markets, forecasts about changes in the solvency capital requirement and own funds are subject to significant uncertainty. However, R+V will take suitable measures to ensure it maintains its risk-bearing capacity.

FIG. 21 – REGULATORY CAPITAL ADEQUACY OF THE R+V VERSICHERUNG AG INSURANCE GROUP[1]



1 December 31, 2018: Preliminary figures; December 31, 2017: Final figures.

R+V carries out the stress tests specified by EIOPA and BaFin, and uses them to review whether it is in a position to meet its obligations to policyholders, even in the event of a sustained crisis situation on the capital markets.

7.4 Stress tests for types of risk covered by capital

7.4.1 Adverse stress tests

Adverse stress tests are used to examine the impact on capital and risk from potential **crisis scenarios** that are exceptional, but plausible, and particularly relevant to the DZ BANK Group's value and risk drivers. The **KPIs** relating to economic and regulatory capital adequacy are analyzed in this context. However, the stress tests also reflect events that go beyond the methods established for calculating capital adequacy. The term 'adverse stress tests' encompasses those stress scenarios that represent negative macroeconomic trends or events from the perspective of the DZ BANK Group. In this context, 'adverse' indicates that the scenarios may be particularly disadvantageous or even harmful.

Adverse stress tests can provide information on whether the level of capital resources – especially the buffer held to cover crisis situations – is also sufficient to cover various types of moderate to serious crisis scenario. The stress test results also facilitate an assessment of the extent to which the analyzed value and risk drivers are material for the DZ BANK Group.

The adverse stress tests consist of a number of **multiple-risk scenarios** and **specific stress tests** for the individual risk types backed by capital in the DZ BANK Group. The stress tests are generally designed for a 1-year scenario horizon as a minimum. They take into account both macroeconomic scenarios and historical situations that are particularly relevant for the DZ BANK Group's business model and portfolios. The risk-type-specific stress tests are hypothetical scenarios reflecting a degree of stress for a crisis that can occur every 10 years.

The adverse scenarios are based on macroeconomic factors from both the real economy and financial markets or they consist of specific events that are particularly relevant for the DZ BANK Group but not of a macroeconomic nature; some scenarios combine both macroeconomic and specific events.

The methods used are designed so that the specific features of R+V's business model and its risk and capital management systems are taken into account comprehensively and in an appropriate manner when determining the results of stress testing in the DZ BANK Group.

For the adverse stress tests, DZ BANK has put in place a system of threshold values as an **early-warning mechanism**. The threshold values for the scenarios across all risk types are monitored in the ongoing reporting system. These early-warning signals trigger various risk management processes so that there can be an early response to the potential risks highlighted by the stress tests. Control measures potentially available for the crisis scenario in question are also taken into account so that there is a comprehensive, critical evaluation of the stress test results.

The adverse stress tests are carried out quarterly. The results are noted by the **Board of Managing Directors** and by the DZ BANK Supervisory Board's **Risk Committee**.

7.4.2 Reverse stress tests

Reverse stress tests complement the adverse stress tests and are used to investigate which of the hypothetical scenarios could conceivably be sufficiently plausible and relevant to jeopardize the ability of the DZ BANK Group to **continue as a going concern**.

'Reverse' indicates that the tests are in the opposite direction and distinguishes them from the adverse stress tests. In adverse stress tests, scenarios are defined and the corresponding KPIs determined in order to assess whether there is a sufficient level of capital resources available to cover moderate or serious crisis scenarios. Reverse stress tests, on the other hand, examine which scenarios would have to occur to jeopardize the survival of the bank as a going concern.

In reverse stress tests, the risk to economic and regulatory KPIs is simulated with scenarios in which it would no longer be feasible to **continue the business model** or in which the business model would prove to be no longer sustainable. In the case of reverse stress tests, the priorities are therefore as follows: firstly, to identify relevant scenario approaches that could have the potential to jeopardize the bank's survival as a going concern, and secondly, to estimate the probability and plausibility of a specific, sufficiently serious scenario of this nature.

The **scenarios** analyzed in the reverse stress tests are based on available adverse scenarios (crisis situations) that are then extended to include further scenario elements, such as events (reverse elements). Scenario elements are determined taking into account key risk drivers and events. The relevant scenarios are adjusted such that the minimum requirements for the economic and regulatory KPIs can no longer be achieved even after all the measures available to maintain the business model have been applied.

The reverse stress tests are carried out annually. The results are noted by the **Board of Managing Directors** and by the DZ BANK Supervisory Board's **Risk Committee**.

7.5 Outlook

7.5.1 Risk data management

The DZ BANK Group has given a high priority to implementing the principles for effective risk data aggregation and risk reporting published by the BCBS. An as-is analysis was carried out in 2015 and an action plan drawn up. Since then, the entities in the DZ BANK Group have kept further expansion of their risk data aggregation and reporting capacity high on the agenda with the aim of satisfying the main requirements. The requirements are being implemented in groupwide projects.

7.5.2 ECB ICAAP guidance

In 2019, it is planned to implement the requirements from the ICAAP guidance published by the ECB in November 2018 as part of the SSM. The aim of the ICAAP is to ensure the availability of capital resources that are commensurate with the risks assumed. Going forward, there will be a distinction between two interlinked perspectives: a normative and an economic perspective.

The **economic perspective** is purely an internal perspective. The objective is to ensure that all significant risks are backed by capital in full. In the DZ BANK Group, the economic perspective of the ICAAP will be closely based on the existing analysis of economic capital adequacy, but will take into account that subordinated liabilities are now no longer eligible as available internal capital. This change in methodology will probably lead to a significant fall in economic capital adequacy.

The **normative perspective** is based on the capital ratios in Pillar 1. Its objective is to ensure that the DZ BANK financial conglomerate and the DZ BANK banking group comply with regulatory minimum capital requirements (plus an internally specified management buffer), both in the current circumstances and in forward-looking scenarios. The key elements of the new normative perspective in the DZ BANK Group will be the ongoing monitoring of regulatory KPIs, capital planning, and adverse stress tests.

Bank sector

8 Credit risk

8.1 Definition and business background

8.1.1 Definition

Credit risk is defined as the risk of losses arising from the default of counterparties (borrowers, issuers, other counterparties) and from the migration of the credit ratings of these counterparties.

Credit risk may arise in traditional lending business and also in trading activities. **Traditional lending business** is for the most part commercial lending, including financial guarantee contracts and loan commitments. In the context of credit risk management, **trading activities** refers to capital market products such as securities (in both the banking book and the trading book), promissory notes, derivatives, secured money market business (such as repo transactions), and unsecured money market business.

In **traditional lending business**, credit risk arises in the form of default risk. In this context, default risk refers to the risk that a customer may be unable to settle receivables arising from loans or advances made to the customer (including lease receivables) or make overdue payments, or that losses may arise from contingent liabilities or from lines of credit committed to third parties.

Credit risk in connection with **trading activities** arises in the form of default risk, which can be subdivided into issuer risk, replacement risk, and settlement risk, depending on the type of transaction involved.

Issuer risk is the risk of incurring losses from the default of issuers of tradable debt or equity

instruments (such as bonds, shares, profit-participation certificates), losses from a default in connection with the underlying instrument in derivatives (for example, credit or equity derivatives), or losses from a default in connection with fund components.

Replacement risk on derivatives is the risk of a counterparty defaulting during the term of a trading transaction where entities in the Bank sector can only enter into an equivalent transaction with another counterparty by incurring an additional expense in the amount of the positive fair value at the time of default.

Recovery risk forms part of credit risk and increases the risk capital requirement for traditional credit risk, issuer risk, and replacement risk. Recovery risk arises from uncertainty relating to the recovery rates for collateral received. It also reflects the uncertainty regarding the recovery rate for unsecured receivables and the cure rate following counterparty default.

Settlement risk arises when there are two mutually conditional payments and there is no guarantee that when the outgoing payment is made the incoming payment will be received. Settlement risk is the risk of a loss if counterparties do not meet their obligations, counter-performance already having taken place.

Country risk is also included within credit risk. Country risk in the narrower sense of the term refers to conversion, transfer, payment prohibition, or moratorium risk. It is the risk that a foreign government may impose restrictions preventing a debtor in the country concerned from transferring funds to a foreign creditor. In the broader sense of the term, country risk forms part of credit risk. In this case, it refers to the risk arising from exposure to the government itself (sovereign risk) and the risk that the quality of the overall exposure in a country may be impaired as a result of country-specific events.

8.1.2 Business background

Default risk from traditional lending business arises primarily at DZ BANK, BSH, DVB, DZ HYP, and TeamBank. The risk results from the specific transactions in each management unit and therefore has varying characteristics in terms of diversification and size in relation to the volume of business.

Default risk relating to trading transactions arises from issuer risk, particularly in connection with the trading activities and investment business of DZ BANK, BSH, and DZ HYP. Replacement risk arises for the most part at DZ BANK, DZ PRIVATBANK, and DVB.

8.2 Risk strategy

The entities in the Bank sector pursue a strictly decentralized business policy aimed at promoting the cooperative banks and are bound by the core strategic guiding principle of a ‘network-oriented central institution and financial services group’. The business and risk policy for the credit-risk-bearing core businesses in the group is formulated on the basis of risk-bearing capacity. The credit risk strategy therefore forms the basis for credit risk management and reporting across the whole group and ensures that there is a standard approach to credit risk within the group.

Lending throughout the group is predominantly based on the ‘VR rating’ system, a rating procedure developed by DZ BANK in collaboration with the BVR.

Both DZ BANK and the subsidiaries with a material credit risk seek to maintain a good rating and risk structure in their credit portfolios at all times. In the future, the portfolios will continue to be characterized by a high degree of diversification.

Where required, the Board of Managing Directors of DZ BANK makes decisions during the course of the year to ensure that the rules for the medium-term and long-term credit risk strategy are adjusted in line with changing circumstances and current developments.

The credit risk strategy specifies that the entities in the Bank sector must treat their partners fairly and, as part of the sustainability strategy, not enter into any lending arrangement that could prejudice the reputation of the DZ BANK Group. A sustainable lending policy developed on the basis of this strategy is applied in the majority of the management units involved in lending.

The latitude permitted by the credit risk policy for infrastructure projects was broadened slightly in 2018. However, the entities in the Bank sector are no longer involved in providing finance for the construction of new coal-fired power plants.

8.3 Organization, responsibility, and risk reporting

Responsibilities in the lending process have been laid down and are documented in a written set of procedural rules. These responsibilities cover loan

applications, approvals, and processing, including periodic credit control with regular analysis of ratings. Decision-making authority levels are specified by the relevant **rules** based on the risk content of lending transactions.

Established **reporting and monitoring processes** help to provide decision-makers with information about changes in the risk structure of credit portfolios and form the basis for managing credit risk.

The **credit risk report** keeps the Group Risk and Finance Committee informed of the economic capital required to cover credit risk. In addition to providing management with recommendations for action, internal reporting also includes an in-depth analysis of the portfolio structure in regard to risk concentrations based on key risk characteristics such as country, industry, credit rating class, and the lending volume to single borrowers. In addition, the reports include details on specific exposures and specific loan loss allowances. The credit value-at-risk in the context of the risk mitigation provided by the upper loss limit is also part of the credit risk report.

8.4 Risk management

8.4.1 Rating systems

Use and characteristics of the rating systems

The generation of internal credit ratings for the counterparties of entities in the Bank sector helps to provide a solid basis for lending decisions in the management of transactions, in that the expected losses from defaults in the lending business are then factored into pricing. In addition, internal ratings are used to incorporate the credit quality of the counterparties when calculating unexpected losses in the credit portfolio.

The **VR rating system** used as standard throughout the cooperative financial network ensures that all the entities in the network apply a sophisticated uniform methodology producing ratings that are comparable.

DZ BANK primarily uses VR rating systems in its credit risk management system to assess large and medium-sized companies, major corporate customers, banks, and countries, as well as project finance, asset finance, acquisition financing, and investment funds. The internal assessment approach is also used to evaluate the liquidity lines and credit enhancements made available by DZ BANK to programs for the issuance of asset-backed commercial paper (ABCP). These rating systems have been approved by BaFin for the purposes of calculating regulatory capital using the **foundation IRB approach**.

For **internal management purposes**, DZ BANK uses further rating systems to assess SMEs (German Mittelstand), agricultural businesses, public-sector entities, not-for-profit organizations, foreign SMEs, and insurance companies. Although these rating systems satisfy the requirements for the foundation IRB approach in the opinion of DZ BANK, they are deemed to be of less significance and have not yet been reviewed by the supervisory authority. In addition, the rating systems for open-ended real estate funds and for commercial real estate used by the former WGZ BANK Group are used for internal management purposes.

Most of the other entities in the Bank sector use the DZ BANK rating systems for banks, countries, and major corporate customers. Rating systems for specific business segments are also used by individual subsidiaries.

Development and expansion of rating systems

All internal **rating systems** approved by the banking supervisor for solvency reporting were **validated** in 2018. The revision of the rating system for **project finance** used by DZ BANK for internal management purposes has been completed. The same also applies to the development of the supervisory **slotting approach for project finance**, which is scheduled to be used from 2020 onward to calculate the regulatory capital requirement. The regulatory review of the slotting approach is planned for the first half of 2019. In addition, the supervisory authority carried out an IRB review of the enhanced **rating system for banks** in the reporting year. The outcome of the review is expected in the first quarter of 2019.

The rating systems used for the IRB approach will be reviewed in 2019 in accordance with the EBA's 'Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures' (EBA/GL/2017/16).

DZ BANK credit rating master scale

The credit rating master scale serves as a groupwide rating benchmark with which to standardize the different rating systems used by the entities in the Bank sector as a result of differences in their business

priorities. It thereby provides all management units with a uniform view of counterparties' credit ratings.

Fig. 22 shows DZ BANK's credit rating master scale, in which internal credit ratings are matched to the ratings used by Moody's, Standard & Poor's, and Fitch. It should be noted that some internal ratings cannot be matched with a particular external rating because of the greater degree of refinement in the credit rating master scale. The ratings for securitization exposures are matched to various different external ratings depending on the asset class and region. In DZ BANK's master scale, the default bands remain unchanged to ensure comparability over the course of time, whereas some fluctuation in default rates can be seen in external ratings. Therefore, it is not possible to map the internal ratings directly to the ratings used by the rating agencies. Consequently, the scale can only be used as a starting point for comparison between internal and external credit ratings.

DZ BANK rating desk

The VR rating systems for banks and countries are also available to DZ BANK subsidiaries and the cooperative banks. Users can enter into a master agreement to access the ratings via an IT application (Rating Desk), which is available throughout the cooperative financial network, in return for the payment of a fee. Any accessed ratings are first validated by the entities in the Bank sector or the cooperative banks before they are included in the user's credit procedures.

8.4.2 Lending business pricing

The management units in the Bank sector use the risk-adjusted pricing of the financing as a criterion in lending decisions. Adequate standard risk costs and risk-adjusted capital costs are taken into account. The methods used by the management units to manage transactions reflect the particular features of the product or business concerned.

FIG. 22 – BANK SECTOR: DZ BANK'S VR CREDIT RATING MASTER SCALE AND EXTERNAL CREDIT RATINGS

Internal rating class	Average default probability	External rating classes: Moody's	Standard & Poor's	Fitch	Rating category
1A	0.01%	Aaa to Aa2	AAA to AA	AAA to AA	Investment grade
1B	0.02%	Aa3	AA-	AA-	
1C	0.03%				
1D	0.04%	A1	A+	A+	
1E	0.05%				
2A	0.07%	A2	A	A	
2B	0.10%	A3	A-	A-	
2C	0.15%	Baa1	BBB+	BBB+	
2D	0.23%	Baa2	BBB	BBB	
2E	0.35%				
3A	0.50%	Baa3	BBB-	BBB-	
3B	0.75%	Ba1	BB+	BB+	Non-investment grade
3C	1.10%	Ba2	BB	BB	
3D	1.70%				
3E	2.60%	Ba3	BB-	BB-	
4A	4.00%	B1	B+	B+	
4B	6.00%	B2	B	B	
4C	9.00%	B3	B-	B-	
4D	13.50%				
4E	30.00%	Caa1 or lower	CCC+ or lower	CCC+ or lower	
5A	Past due > 90 days				Default
5B	Specific loan loss allowance				
5C	Exemption from interest/debt restructuring				
5D	Insolvency				
5E	Compulsory winding-up/ derecognition				
NR	No rating necessary or not rated				

To ensure that lending business remains profitable, **standard risk costs** are determined in the management of individual transactions in many parts of the **Bank sector**. The purpose of these costs is to cover average expected losses from borrower defaults. The aim is to ensure that the net loss allowances recognized in the financial statements are covered on average over the long term in an actuarial-type approach by the standard risk costs included in the pricing.

In addition to standard risk costs, **an imputed cost of capital** based on the capital requirement is integrated into **DZ BANK's** contribution margin costing. This enables DZ BANK to obtain a return on the capital tied up that is in line with the risk involved and that covers any unexpected losses arising from the lending business. Pricing also includes an appropriate amount to cover the costs of risk concentration.

8.4.3 Credit-portfolio management

Credit portfolio models are used together with value-at-risk methods to quantify unexpected losses that may arise from the credit portfolio. Credit value-at-risk reduced by the expected loss describes the risk of unexpected losses arising should a default or migration event occur in the credit portfolio. The measurement includes default risk from both lending and trading businesses. When determining credit value-at-risk, recovery risk is also taken into account as the amount by which the actual loss deviates from the expected recovery rate or – in the case of transactions already in default – from the specific loan loss allowances. Risk is determined at the level of the Bank sector and also in the management units, including DZ BANK.

The credit portfolio is managed by limiting the credit value-at-risk to the upper loss limit set for credit risk. A traffic light system is used to monitor Bank sector management units' compliance with the upper loss limits specified for credit risk.

8.4.4 Sustainability review in the lending process

In the lending evaluation process, **DZ BANK** systematically reviews loan applications from relevant sustainability perspectives in order to limit any detrimental impact from its financing activities. All factors relevant to the financing arrangement in question are assessed in relation to environmental and social risks using a sustainability checklist based on the 10 principles of the **UN Global Compact** and the **Equator Principles**, the latter forming a global project finance standard for evaluating environmental and social risks. Loans to cooperative banks and to entities in the DZ BANK Group are exempt from the checks, as are exposures that are being restructured. Further exemptions apply to certain product types in the joint credit business with the cooperative banks, to loans under blanket approval agreements, and to exposures that are below the rating threshold.

At DZ BANK, industry-related principles are used in addition to the sustainability checklist when reviewing loan applications from sensitive industries (forestry, commodities mining/extraction, dam construction, fishing, and maritime industries). These principles specify the details to be reviewed with reference to international industry-specific conventions, recognized standards, certification, and optimum production processes.

8.4.5 Management of exposure in traditional lending business

Measuring exposure in traditional lending business

Individual lending exposures are managed on the basis of an analysis of gross lending exposure. The period taken into account in this case is equivalent to the monitoring cycle of 1 year. Together with risk-related credit-portfolio management, volume-oriented credit risk management is one of the components in the management of risk concentrations in the lending business.

In traditional lending business, the credit exposure or lending volume is generally the same as the nominal value of the total loan book and reflects the maximum volume at risk of default. The credit exposure is a gross value because risk-bearing financial instruments are measured before the application of any credit risk mitigation and before the recognition of any loss allowances.

In the leasing business, minimum lease payments are used as a basis for measuring the gross lending volume, while principal amounts are used for this purpose in building society operations. In addition, loans and advances to customers in building society operations are reduced by the associated deposits. The maximum credit exposure comprises the total lines of credit committed to third parties, or in the case of limit overruns, the higher amounts already drawn.

Limit system for managing exposures in traditional lending business

Limits are set in the relevant entities in the Bank sector for individual borrowers and groups of connected clients. Counterparties are also managed centrally at the level of the Bank sector, depending on the limit level and credit rating.

As a prerequisite for prompt monitoring of limits, suitable **early-warning processes** have been established in the management units that are of material significance for the Bank sector's credit risk. In this context, financial covenants are often incorporated into loan agreements to act as early-warning indicators for changes in credit standing and as a tool for the proactive risk management of lending exposures.

In addition, processes have been set up in the Bank sector to handle instances in which limits are **exceeded**. Such excess exposures must be approved by the relevant level of authority in the management units concerned and in accordance with applicable internal requirements, and must be reduced if necessary.

Country exposure in the traditional lending business is managed by setting **country limits** for industrialized countries and emerging markets at the Bank sector level.

8.4.6 Management of credit exposure in trading transactions

Measuring credit exposure in trading transactions

Issuer risk, replacement risk, and settlement risk are exposure-based measurements of the potential loss in trading transactions. These are determined without taking into account the likelihood of a default. In order to determine the credit exposure, securities in the banking book and trading book are predominantly measured at fair value (nominal amounts are used in building society operations), while derivatives are measured at fair value and, in respect of settlement risk, at the cash-flow-based accepted value.

The fair value of a securities exposure is used to determine the **issuer risk**. Risks relating to the underlying instruments in derivative transactions are also included in issuer risk.

At the level of the **Bank sector**, **replacement risk** is generally determined on the basis of fair value, taking into account appropriate add-ons. At **DZ BANK**, which is of particular significance as far as replacement risk is concerned, the risk is determined primarily according to each individual transaction as part of a portfolio simulation. The portfolio simulation models future exposures, taking into account a large number of risk factors. Replacement risk resulting from remaining over-the-counter (OTC) derivatives is calculated on the basis of fair value and the add-ons for individual transactions. The add-ons take into account specific risk factors and residual maturities.

With regard to exchange-traded derivatives, the replacement risk vis-à-vis the customer in customer brokerage business consists of the actual collateral exchanged (the variation margin for the daily settlement of profits and losses, and the initial margin as the collateral to be provided in advance to cover the loss risk), the fair value, and additional collateral requirements. To calculate the replacement risk vis-à-vis stock exchanges, additional potential for changes in value or add-ons for individual transactions are also taken into consideration. Where legally enforceable, netting agreements and collateral agreements are used at counterparty level for all derivatives in order to reduce exposure. In the case of repos and securities lending transactions, haircuts are applied instead of add-ons. Unsecured money market transactions are measured at fair value.

As regards **settlement risk**, the risk amount is the expected payment due. Settlement risk is recognized for the specified settlement period. It takes into account the amount and timing of outstanding cash flows for the purposes of managing the risk associated with mutual settlement at some point in the future. These future cash flows are already factored into the replacement risk through the fair value measurement and are therefore included in the risk capital requirement. As a result, settlement risk does not need to be covered with risk capital in addition to that for the other types of credit risk related to trading activities.

Limit system for managing trading exposure

DZ BANK has established an exposure-oriented **limit system** related to credit ratings to limit the default risk arising from trading business. Replacement risk is managed via a structure of limits broken down into maturity bands. Unsecured money market transactions are subject to separate limits. A daily limit is set in order to manage settlement risk. A specific limit for each issuer or, in certain circumstances, a general limit

is determined as the basis for managing issuer risk. Covered bonds are subject to separate limits. The main subsidiaries have their own comparable limit systems.

The issuer risk in treasury's investment book is restricted by means of portfolio limits in addition to the individual issuer limits.

Exposure in connection with DZ BANK's trading business is measured and monitored using a standard method and a central, IT-supported limit management system to which all relevant trading systems are connected. Furthermore, the trading exposure in the Bank sector is managed on a decentralized basis at management unit level.

As in the traditional lending business, appropriate processes have also been established for the trading business to provide **early warnings and notification of limit overruns**. The member of the Board of Managing Directors responsible for risk monitoring is sent a daily list of significant exceeded trading limits. A monthly report is prepared covering the utilization of replacement and issuer risk in connection with trading activities.

Country exposure in the trading business is managed in the same way as in the traditional lending business by setting **limits for countries** at the Bank sector level.

8.4.7 Management of risk concentrations and correlation risks

Risk concentrations in credit and collateral portfolios

In managing the traditional lending business and its trading business, DZ BANK takes into account the correlation between collateral and the borrower pledging the collateral or between the collateral and the counterparty whose replacement risk the collateral is intended to mitigate. If there is a significant positive correlation between the collateral and the borrower or the counterparty pledging the collateral, the collateral is disregarded or accorded a reduced value as collateral. This situation arises, for example, where a guarantor, garnishee, or issuer forms a group of connected clients or a similar economic entity with the borrower or counterparty.

Wrong-way risk

General wrong-way risk can arise as a result of DZ BANK's trading activities. This is defined as the risk of a positive correlation between the default probability of a counterparty and the replacement value (replacement risk exposure) of a (hedging) transaction entered into with this counterparty because of a change in the macroeconomic market factors of the traded underlying instrument (e.g. price changes for exchange rates).

Specific wrong-way risk can also occur. This is the risk of a positive correlation between the default probability of a counterparty and the replacement value (replacement risk exposure) of a (hedging) transaction entered into with this counterparty because of an increase in the default probability of the issuer of the traded underlying instrument. This type of risk largely arises in connection with OTC equity and credit derivatives in which the underlying instrument is a (reference) security or (reference) issuer.

The measures described below are used to appropriately monitor these risks and significantly reduce them. As a result, wrong-way risk, in particular, is not material at DZ BANK.

Measures to prevent concentration risk and wrong-way risk

In order to prevent unwanted risks that may arise from the concentration or correlation of collateral in the trading business or from general wrong-way risk, DZ BANK has brought into force a collateral policy and its own internal 'minimum requirements for bilateral reverse repo transactions and securities lending transactions'.

These requirements are based on the Credit Support Annex (ISDA Master Agreement) and the Collateralization Annex (German Master Agreement for Financial Futures) and stipulate that, in accordance with the collateral policy, only collateral in the form of cash (mainly in euros or US dollars), investment-grade government bonds, and/or Pfandbriefe can be used for mitigating risks arising from **OTC derivatives**. Exceptions to this rule are permitted, mainly for local cooperative banks, although a very good credit rating (at least 2B on DZ BANK's credit rating master scale) is still required for the relevant securities collateral. The collateral must also be eligible for use as collateral at the ECB.

High-grade collateral is also required for **repo and securities lending transactions** in compliance with DZ BANK's own internal minimum requirements and the generally accepted master agreements, although the range of collateral is somewhat broader here than in the case of OTC derivatives. Furthermore, the

'minimum requirements for bilateral reverse repos and securities lending transactions' exclude prohibited correlations and specify collateral quality depending on the credit rating of the counterparties. The relevant rules are monitored on a daily basis and any infringements of the requirements are reported each month to the Risk Committee.

If material specific wrong-way risk arises in connection with a bilateral OTC trading transaction, it is taken into account when the exposure is calculated.

The Risk Committee receives quarterly reports on relevant wrong-way risk and concentration risk arising in connection with derivatives and securities financing, including any necessary exposure adjustments.

8.4.8 Mitigating credit risk

Collateral strategy and secured transactions

In accordance with the credit risk strategy, **customer credit quality** forms the main basis for any lending decision; collateral has no bearing on the borrower's credit rating. However, depending on the structure of the transaction, collateral may be of material significance in the assessment of risk in a transaction.

Collateral in line with the level of risk in medium-term or long-term financing arrangements is generally sought. In particular, recoverable collateral equivalent to 50 percent of the finance volume is required for new business with SME customers in rating category 3D or below on the credit rating master scale.

Collateral is used as an appropriate tool for the management of risk in export finance or structured trade finance transactions. In the case of project finance, the financed project itself or the assignment of the rights in the underlying agreements typically serve as collateral.

Secured transactions in traditional lending business encompass commercial lending including financial guarantee contracts and loan commitments. In order to protect transactions against default risk, traditional collateral is obtained, the decision being made on a case-by-case basis.

Types of collateral

The entities in the Bank sector use all forms of **traditional loan collateral**. Specifically, these include mortgages on residential and commercial real estate, registered ship and aircraft mortgages, guarantees (including sureties, credit insurance, and letters of comfort), financial security (certain fixed-income securities, shares, and investment fund units), assigned receivables (blanket and individual assignments of trade receivables), and physical collateral.

Privileged mortgages, registered ship and aircraft mortgages, guarantees, and financial collateral are the main sources of collateral recognized for regulatory purposes under the CRR.
In accordance with DZ BANK's collateral policy, only cash, investment-grade government bonds, and/or Pfandbriefe are normally accepted as **collateral for trading transactions** required by the collateral agreements used to mitigate the risk attaching to OTC derivatives. DZ BANK also enters into netting agreements to reduce the credit risk arising in connection with OTC derivatives. The prompt evaluation of collateral within the agreed margining period also helps to limit risk.

In order to reduce the issuer risk attaching to bonds and derivatives, use is made of credit derivatives, comprising credit-linked notes, credit default swaps, and total return swaps. Macro hedges are used dynamically to mitigate spread risk and migration risk as well as risks attaching to underlying assets. In isolated cases, transactions are conducted on a back-to-back basis. For risk management purposes, the protection provided by credit derivatives is set against the reference entity risk, thereby mitigating it. The main protection providers/counterparties in credit derivatives are financial institutions, mostly investment-grade banks in the VR rating classes 1A to 2C.

Management of traditional loan collateral

Collateral management is the responsibility mainly of **specialist units**, generally outside the front-office divisions. The core tasks of these units include providing, inspecting, measuring, recording, and managing collateral and providing advice to all divisions in related matters.

To a large extent, standardized contracts are used for the provision of collateral and the associated declarations. Specialist departments are consulted in cases where customized collateral agreements are required. Collateral is managed in separate IT systems.

Collateral **is measured** in accordance with internal guidelines and is usually the responsibility of back-office units. As a minimum, carrying amounts are normally reviewed annually or on the agreed

submission date for documents relevant to measurement of the collateral. Shorter monitoring intervals may be specified for critical lending exposures. Regardless of the specified intervals, collateral is tested for impairment without delay if any indications of impairment become evident.
The workout units are responsible for **recovering collateral**. In the case of non-performing loans, it is possible to depart from the general measurement guidelines and measure collateral on the basis of its likely recoverable value and time of recovery. Contrary to the general collateralization criteria, collateral involved in restructuring exposures can be measured using market values or the estimated liquidation proceeds.

Collateral management

In addition to **netting agreements** (ISDA Master Agreement and German Master Agreement for Financial Futures), **collateral agreements** (Credit Support Annex to the ISDA Master Agreement and Collateralization Annex to the German Master Agreement for Financial Futures) are entered into as instruments to reduce credit exposure in OTC transactions.

DZ BANK's **collateral policy** regulates the content of collateral agreements and the responsibilities and authorities for implementing the rights and obligations they confer within the bank. This policy specifies contractual parameters, such as the quality of collateral, frequency of transfer, minimum transfer amounts, and thresholds. DZ BANK regularly uses bilateral collateral agreements. Exceptions apply to cover assets and special-purpose entities, as the special legal status of the counterparties means that only unilateral collateral agreements can be usefully enforced, and to supranational or government entities. Any decision not to use a bilateral collateral agreement for counterparties not subject to the European Market Infrastructure Regulation (EMIR) rules must be approved by a person with the relevant authority.

Netting and collateralization generally result in a significant reduction in the exposure from trading business. IT systems are used to measure exposures and collateral. **Margining** is carried out on a daily basis for the vast majority of collateral agreements in accordance with the collateral policy.

Collateral agreements entered into before March 1, 2017 generally include **thresholds** and minimum transfer amounts that are independent of the credit rating. There are also some agreements with triggers based on the credit rating. In these agreements, for example, the unsecured part of an exposure is reduced in the event of a ratings downgrade or the borrower is required to make additional payments (for example, payments known as 'independent amounts'). Since the EMIR collateral agreement obligation came into force, the supervisory authorities have specified these contractual provisions as standard.

EMIR requires the exchange of an initial margin in bilateral OTC derivatives transactions in addition to the variation margin. This **initial margin exchange** is expected to be mandatory for the entities in the Bank sector no earlier than September 2019. The entities in the DZ BANK Group have initiated action plans enabling them to meet this regulatory requirement from September 2019.

Central counterparties

EMIR has permanently changed the environment in which banks, insurance companies, and investment funds conduct OTC derivative transactions. Under this regulation, market players must report all exchange-traded and OTC derivatives to central trade repositories and use predefined steps to settle certain standardized OTC derivatives via central counterparties (known as clearing houses). Furthermore, risk mitigation methods have to be used for OTC derivatives that are not settled centrally through a clearing house. This is intended to minimize counterparty risk.

Any market players not exempted from this new clearing obligation must be connected to a central counterparty. The market player concerned may be a direct member of a clearing house or may process its derivative contracts using a bank that is a member of a central counterparty.

DZ BANK is a direct member of the London Clearing House, which is Europe's largest clearing house for interest-rate derivatives, and of Eurex Clearing AG. The bank therefore has direct access to central counterparties for derivatives for the purposes of clearing derivative transactions. In the case of credit derivatives, it also has indirect access to the Intercontinental Exchange clearing house via clearing broker Deutsche Bank.

8.4.9 Management of non-performing lending exposures

Managing and monitoring non-performing exposures

Identified non-performing loans are transferred to the **workout units** at an early stage. By providing intensified loan management for critical exposures and applying tried-and-tested solutions, these special units lay the basis for securing and optimizing non-performing risk positions.

In its traditional lending business, DZ BANK has a comprehensive range of tools at its disposal for the early identification, close support, and high-quality monitoring of non-performing exposures. The sub-portfolio of non-performing loans is reviewed, updated, and reported on a quarterly basis. The process is also carried out at shorter intervals if required. This process is comprehensively supported by IT systems. Meaningful, prompt internal reporting focused on target groups is a key component of this approach. If necessary, the intensified loan management put in place for individual borrowers is transferred to task forces specially set up for this purpose. The risks in sub-portfolios are monitored and analyzed by means of regular reports.

Where required, similar procedures have been implemented in the main subsidiaries, which adapt them to the characteristics of the risks faced in their particular business.

Policies and procedures for the recognition of loss allowances

The description required by GAS 20 A1.7(c) of the methods used for recognizing loss allowances is included in note 5 of the notes to the consolidated financial statements.

Non-performing loans

The entities in the Bank sector classify a loan as non-performing if it has been rated between 5A and 5E on the VR master scale. This corresponds to the definition of default specified by the CRR. Non-performing loans are also referred to by the abbreviation NPLs.

The following key figures are used to manage non-performing loans:

- Loss allowance ratio (balance of loss allowances as a proportion of total lending volume)
- Risk cover ratio (balance of loss allowances as a proportion of the volume of non-performing loans)
- NPL ratio (volume of non-performing loans as a proportion of total lending volume).

The management of non-performing loans at DZ BANK is currently being updated in line with the requirements specified in the NPL guidance issued by the ECB.

8.5 Specific risk factors

Key values used in determining the credit risk include the lending volume, concentrations in terms of counterparties, sectors, countries, and maturities, and the credit quality structure of the credit portfolio.

For the purposes of internal credit risk management in the Bank sector, the lending volume is broken down by credit-risk-bearing instrument – traditional lending, securities business, and derivatives and money market business. This breakdown corresponds to the risk classes required for the external reporting of risks arising from financial instruments. The credit-risk-bearing instruments are classified by sector, country group, credit rating, and term to maturity so that volume concentrations can be identified.

Particularly in the case of an accumulation of exposures that have longer terms to maturity and a non-investment-grade rating, there is a danger that the credit risk will materialize, causing losses with a negative impact on the financial performance and financial position of the DZ BANK Group or DZ BANK.

8.6 Lending volume

8.6.1 Reconciliation of lending volume to the consolidated financial statements

Fig. 23 shows a reconciliation of the gross lending volume on which the risk management is based to individual balance sheet items in order to provide a transparent illustration of the link between the consolidated financial statements and risk management. There are discrepancies between the internal management and external consolidated financial reporting measurements for some products owing to the focus on the risk content of the items. The other main reasons for the discrepancies between the internal management figures and those in the external consolidated financial statements are

differences in the scope of consolidation and differences in recognition and measurement methods.

Differences in the **scope of consolidation** result from the fact that, in internal credit risk management, only the entities in the Bank sector that contribute significantly to the overall risk of the sector are included.

The discrepancy in the **securities business** is mainly due to the variations in carrying amounts that arise because credit derivatives are offset against the issuer risk attaching to the underlying transaction in the internal management accounts, whereas such derivatives are recognized at their fair value as financial assets or financial liabilities held for trading in the consolidated financial statements.

Measurement differences in **derivatives business** and **money market business** are mainly because countervailing positions are offset for the purposes of risk management, whereas positions must not be netted in this way in the consolidated financial statements. In addition, add-ons are attached to the current fair values of derivative positions in the internal management accounts to take account of potential future changes in their fair value. By contrast, the external (consolidated) financial statements focus exclusively on the fair values determined on the valuation date, and, unlike in the internal accounts, collateral must not be recognized for risk mitigation purposes.

In money market business, further discrepancies arise between the consolidated financial statements and internal credit risk reports due to the method in which repo transactions are recognized. In contrast to the consolidated financial statements, securities provided or received as collateral are offset against the corresponding assets or liabilities for the purposes of the internal management accounts.

8.6.2 Change in lending volume

The **total lending volume** of the **Bank sector** increased by 1 percent overall in the year under review, from €375.2 billion as at December 31, 2017 to €378.9 billion as at December 31, 2018. This was mainly because of a rise of 3 percent in the lending volume in the **traditional lending business**, from €279.8 billion as at December 31, 2017 to €289.3 billion as at December 31, 2018. This rise primarily related to the volume of lending disbursed by DZ BANK to local cooperative banks. The lending volume in the **derivatives and money market business** was also up, by 17 percent, from €14.2 billion as at December 31, 2017 to €16.6 billion as at December 31, 2018. This increase was also largely attributable to DZ BANK. By contrast, the volume in the **securities business** contracted by 10 percent, from €81.1 billion as at December 31, 2017 to €73.0 billion as at December 31, 2018. This was mainly due to the reduction in the volume of public-sector bonds held by DZ BANK.

At **DZ BANK**, the **total lending volume** rose by 1 percent, from €197.2 billion as at December 31, 2017 to €198.3 billion as at December 31, 2018. This was mainly due to an increase in volume in the traditional lending business, which went up from €141.1 billion as at the prior-year reporting date to €146.7 billion as at December 31, 2018. **Derivatives and money market business** at DZ BANK also grew, rising from €13.1 billion as at December 31, 2017 to €14.9 billion as at December 31, 2018. On the other hand, the **securities business** contracted from €43.0 billion as at December 31, 2017 to €36.8 billion as at December 31, 2018, largely because of a fall in public-sector bond exposure.

8.6.3 Sector structure of the credit portfolio

Fig. 24 shows the breakdown of the credit portfolio by sector, in which the lending volume is classified according to the industry codes used by Deutsche Bundesbank. This also applies to the other sector breakdowns related to credit risk in this opportunity and risk report.

As at December 31, 2018, a significant proportion (36 percent) of the lending volume in the **Bank sector** continued to be concentrated in the financial sector (December 31, 2017: 35 percent). In addition to the local cooperative banks, the borrowers in this customer segment comprised banks from other parts of the banking industry and other financial institutions.

As at December 31, 2018, a significant proportion (60 percent) of **DZ BANK's** lending volume was also concentrated in the financial sector (December 31, 2017: 59 percent). The composition of this customer segment is the same both at DZ BANK and in the Bank sector. Loans and advances to public-sector borrowers declined by €4.9 billion year on year, with a particularly large decrease in Germany.

FIG. 23 – BANK SECTOR: RECONCILIATION OF THE LENDING VOLUME

€ billion			Reconciliation							
Lending volume for internal management accounts			Scope of consolidation		Carrying amount and measurement					
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018		Dec. 31, 2017	
Traditional lending business	289.3	279.8	2.4	1.9	20.3	10.2	312.0	79.2	291.8	80.6
								79.2		80.6
								-		-
								170.3		170.8
								172.6		173.6
								-2.2		-2.8
								62.4		40.5
Securities business	73.0	81.1	0.3	-	-16.6	-17.2	56.6	56.6	64.0	64.0
								10.8		8.9
								0.7		0.8
								45.1		54.3
Derivatives business	13.7	12.7	0.1	-	-15.9	-14.4	-2.1	-2.1	-1.6	-1.6
								0.9		1.1
								15.6		17.1
								-2.5		-3.0
								-16.1		-16.8
Money market business	3.0	1.5	-	-	21.6	50.1	24.6	24.6	51.6	51.6
								12.4		39.9
								1.9		0.8
								0.2		0.2
								9.6		10.3
								0.5		0.4
Total	378.9	375.2	2.8	2.0	9.4	28.8	391.1		405.9	
					Balance as at Dec. 31, 2018				12.2	3.2%
					Balance as at Dec. 31, 2017				30.7	8.2%

Not relevant

In its role as central institution for the Volksbanken Raiffeisenbanken cooperative financial network, DZ BANK provides funding for the entities in the Bank sector and for the cooperative banks. For this reason, the cooperative banks account for one of the largest receivables items in the DZ BANK Group's credit portfolio. DZ BANK also supports the cooperative banks in the provision of larger-scale funding to corporate customers.

The resulting syndicated business, DZ BANK, DZ HYP and DVB's direct business with corporate customers in Germany and abroad, BSH and DZ HYP's retail real-estate business, and TeamBank's consumer finance business determine the sectoral breakdown of the remainder of the portfolio.

8.6.4 Geographical structure of the credit portfolio

Fig. 25 shows the geographical distribution of the credit portfolio by country group. The lending volume is assigned to the individual country groups using the International Monetary Fund's breakdown, which is updated annually. This also applies to the other country-group breakdowns related to credit risk in this opportunity and risk report.

As at December 31, 2018, 96 percent of the lending in the **Bank sector** (unchanged year on year) and 95 percent of the total lending by **DZ BANK** (December 31, 2017: 96 percent) was concentrated in Germany and other industrialized countries.

Lending volume for the consolidated financial statements	Note
Loans and advances to banks	
of which: loans and advances to banks excluding money market placements	50
of which: loss allowances for loans and advances to banks	59
Loans and advances to customers	
Loans and advances to customers excluding money market placements	51
of which: loss allowances for loans and advances to customers	59
Financial guarantee contracts and loan commitments	87
Bonds and other securities	
of which: financial assets held for trading/bonds excluding money market placements	53
of which: financial assets held for trading/promissory notes, registered bonds, and loans and advances	53
of which: investments/bonds excluding money market placements	54
Derivatives	
of which: derivatives used for hedging (positive fair values)	52
of which: financial assets held for trading/derivatives (positive fair values)	53
of which: derivatives used for hedging (negative fair values)	65
of which: financial liabilities held for trading/derivatives (negative fair values)	66
Money market placements	
of which: loans and advances to banks/money market placements	50
of which: loans and advances to customers/money market placements	51
of which: financial assets held for trading/money market instruments	53
of which: financial assets held for trading/money market placements	53
of which: investments/money market instruments	54

FIG. 24 – BANK SECTOR: LENDING VOLUME, BY SECTOR

	Traditional lending business		Securities business		Derivatives and money market business		Total	
€ billion	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Financial sector	98.3	94.5	25.7	26.1	12.8	10.9	136.8	131.6
Public sector	10.4	10.4	35.9	43.2	0.4	0.5	46.7	54.2
Corporates	114.9	104.5	7.6	7.7	3.0	2.3	125.5	114.4
Retail	57.2	62.9	2.4	2.4	-	-	59.6	65.3
Industry conglomerates	7.8	7.0	1.5	1.6	0.4	0.5	9.7	9.2
Other	0.7	0.5	-	-	-	-	0.7	0.5
Total	289.3	279.8	73.0	81.1	16.6	14.2	378.9	375.2

FIG. 25 – BANK SECTOR: LENDING VOLUME, BY COUNTRY GROUP

	Traditional lending business		Securities business		Derivatives and money market business		Total	
€ billion	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Germany	254.3	243.6	43.1	50.6	10.1	8.9	307.4	303.1
Other industrialized countries	23.5	25.2	26.1	27.2	5.5	4.7	55.2	57.2
Advanced economies	2.5	2.9	0.8	0.6	0.1	0.1	3.4	3.6
Emerging markets	9.0	8.1	0.9	0.9	0.2	0.2	10.1	9.1
Supranational institutions	-	-	2.1	1.9	0.6	0.3	2.8	2.2
Total	289.3	279.8	73.0	81.1	16.6	14.2	378.9	375.2

8.6.5 Residual maturity structure of the credit portfolio

The breakdown of the **Bank sector** credit portfolio by residual maturity as at December 31, 2018 presented in Fig. 26 shows that the lending volume had increased by €5.6 billion in the short-term maturity band compared with December 31, 2017. This was mainly attributable to DZ BANK. The decrease in the medium-term maturity band amounted to €3.0 billion and was also mainly accounted for by DZ BANK. By contrast, the lending volume in the longer-term maturity band went up by a total of €1.2 billion, primarily attributable to BSH.

8.6.6 Rating structure of the credit portfolio

Fig. 27 shows the Bank sector's consolidated lending volume by rating class according to the VR credit rating master scale.

In the **Bank sector**, the proportion of the total lending volume accounted for by rating classes 1A to 3A (investment grade) as at December 31, 2018 was unchanged year on year at 78 percent. Rating classes 3B to 4E (non-investment grade) represented 20 percent of the total lending volume as at the reporting date, which was also unchanged compared with the end of 2017. Defaults, represented by rating classes 5A to 5E, accounted for 1 percent of the total lending volume in the Bank sector as at December 31, 2018 (December 31, 2017: 2 percent).

Rating classes 1A to 3A (investment grade) also dominated lending at **DZ BANK**, where they accounted for 88 percent of the total lending volume, again unchanged compared with the prior-year reporting date. Rating classes 3B to 4E (non-investment grade) represented 10 percent of the total lending volume as at the reporting date, which was also unchanged compared with the figure as at December 31, 2017. Defaults (rating classes 5A to 5E) accounted for 1 percent of the total lending volume as at December 31, 2018, which was again largely unchanged year on year.

As at December 31, 2018, the 10 counterparties associated with the largest lending volumes accounted for 7 percent of total lending in the **Bank sector** (December 31, 2017: 8 percent). These borrowers were predominantly in the public sector and had investment-grade ratings. The equivalent proportion for **DZ BANK** was 7 percent (December 31, 2017: 8 percent). In this case, these counterparties largely comprised public-sector and financial-sector borrowers with investment-grade ratings.

FIG. 26 – BANK SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

	Traditional lending business		Securities business		Derivatives and money market business		Total	
€ billion	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
≤ 1 year	53.6	49.4	13.2	13.6	11.6	9.8	78.4	72.8
> 1 year to ≤ 5 years	53.2	53.1	26.3	29.1	1.4	1.8	81.0	84.0
> 5 years	182.4	177.3	33.5	38.4	3.6	2.7	219.5	218.4
Total	289.3	279.8	73.0	81.1	16.6	14.2	378.9	375.2

FIG. 27 – BANK SECTOR: LENDING VOLUME, BY RATING CLASS

		Traditional lending business		Securities business		Derivatives and money market business		Total	
€ billion		Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Investment grade	1A	5.1	6.3	30.8	30.1	1.2	1.0	37.1	37.4
	1B	1.6	2.0	2.8	8.1	2.5	1.6	6.9	11.8
	1C	91.8	87.7	8.2	8.6	3.4	3.6	103.4	99.9
	1D	6.8	5.1	2.0	2.2	0.2	0.2	9.0	7.5
	1E	11.5	7.9	2.0	1.9	1.9	1.8	15.4	11.5
	2A	9.9	12.3	5.8	3.2	1.4	0.9	17.1	16.5
	2B	11.4	11.4	6.1	10.1	2.1	1.7	19.7	23.2
	2C	14.9	14.3	2.5	2.5	1.0	0.6	18.4	17.4
	2D	17.1	15.0	2.9	3.4	0.7	0.5	20.7	19.0
	2E	17.6	18.7	2.5	5.1	0.8	0.9	20.9	24.8
	3A	21.8	20.1	3.8	1.8	0.6	0.6	26.2	22.5
Non-investment grade	3B	22.9	19.9	1.4	1.4	0.3	0.2	24.7	21.5
	3C	16.3	17.8	0.3	0.3	0.1	0.1	16.7	18.2
	3D	15.0	13.9	0.5	0.5	0.1	0.1	15.5	14.5
	3E	5.7	4.5	0.2	0.6	-	-	6.0	5.2
	4A	2.3	2.5	-	-	-	-	2.3	2.6
	4B	5.1	5.3	-	-	-	-	5.1	5.3
	4C	2.6	3.5	0.1	0.1	-	-	2.7	3.5
	4D	0.6	0.7	-	-	-	-	0.6	0.7
	4E	2.2	3.0	-	0.1	-	-	2.2	3.1
Default		4.8	6.0	0.1	0.2	-	-	5.0	6.2
Not rated		2.5	2.0	0.8	0.8	0.3	0.3	3.5	3.1
Total		**289.3**	**279.8**	**73.0**	**81.1**	**16.6**	**14.2**	**378.9**	**375.2**

8.6.7 Collateralized lending volume

Fig. 28 shows the breakdown of the collateralized lending volume at overall portfolio level by type of collateral and by risk-bearing instrument.

In the case of **traditional lending business**, lending volume is generally reported as a gross figure before the application of any offsetting agreements, whereas the gross lending volume in the **derivatives and money market business** is shown on a netted basis. In the derivatives and money market business, collateral values are relatively low and are in the form of personal and financial collateral. In the **securities business**, there is generally no further collateralization to supplement the hedging activities already taken into account. For this reason, securities business is not included in the presentation of the collateralized lending volume.

As at December 31, 2018, the collateralized lending volume in the **Bank sector** had risen to €121.5 billion from €116.1 billion as at December 31, 2017. The increase was mainly attributable to the expansion of the real estate finance business. The collateralization rate was 39.7 percent as at the reporting date (December 31, 2017: 39.5 percent). The prior-year figure is different from the figure of 30.9 percent reported in the 2017 opportunity and risk report because the securities business is now no longer included in the analysis.

In the Bank sector's **traditional lending business**, most of the collateralized lending volume (85 percent as at December 31, 2018, which was unchanged compared with the prior-year reporting date) was accounted for by lending secured by charges over physical assets such as land charges, mortgages, and registered ship and aircraft mortgages. These types of collateral are particularly important for BSH, DZ HYP, and DVB. In contrast, charges over physical assets are of lesser importance at DZ BANK because DZ BANK bases its lending decisions primarily on borrower credit quality.

FIG. 28 – BANK SECTOR: COLLATERALIZED LENDING VOLUME, BY TYPE OF COLLATERAL

	Traditional lending business		Derivatives and money market business		Total	
€ billion	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Guarantees, indemnities, risk subparticipation	6.4	6.7	0.3	0.2	6.7	6.9
Credit insurance	3.7	3.1	-	-	3.7	3.1
Land charges, mortgages, registered ship and aircraft mortgages	103.5	98.7	-	-	103.5	98.8
Pledged loans and advances, assignments, other pledged assets	6.0	5.3	-	-	6.0	5.4
Financial collateral	1.3	1.4	0.1	0.2	1.3	1.6
Other collateral	0.2	0.3	-	-	0.2	0.3
Collateralized lending volume	**121.1**	**115.6**	**0.4**	**0.5**	**121.5**	**116.1**
Gross lending volume	289.3	279.8	16.6	14.2	305.9	294.0
Uncollateralized lending volume	**168.2**	**164.2**	**16.2**	**13.7**	**184.4**	**177.9**
Collateralization rate (%)	**41.9**	**41.3**	**2.4**	**3.4**	**39.7**	**39.5**

At €12.6 billion, **DZ BANK's** collateralized lending volume as at December 31, 2018 was marginally up year on year (December 31, 2017: €12.3 billion). The collateralization rate of 7.8 percent at the reporting date was the same as it had been a year earlier. Because the securities business is now no longer included in the analysis, the prior-year figure is again different in this case from the figure of 6.2 percent reported in the 2017 opportunity and risk report.

8.6.8 Securitizations

The Bank sector's asset-backed securities (ABS) portfolio is predominantly held by DZ BANK and DZ HYP. This portfolio at **Bank sector** level had a fair value of €2,644 million as at the reporting date (December 31, 2017: €2,796 million). The fair value for **DZ BANK** as at December 31, 2018 came to €2,141 million (December 31, 2017: €2,048 million).

These figures included the ABS wind-down portfolio from the period before the financial crisis with a fair value of €1,353 million (December 31, 2017: €1,854 million) at **Bank sector** level and €851 million (December 31, 2017: €1,106 million) in respect of **DZ BANK**. The changes in the wind-down portfolio in 2018 were largely within expectations, both in terms of the contraction of the portfolio as a result of redemptions and in terms of the overall performance of the portfolio.

In addition, **DZ BANK** acts as a sponsor in ABCP programs that are funded by issuing money market-linked ABCP or liquidity lines. The ABCP programs are made available for DZ BANK customers who then securitize their own assets via these companies.

As at December 31, 2018, the fair value of the securitization exposures arising from **DZ BANK's** activities in which it acts as a sponsor amounted to €1,398 million (December 31, 2017: €1,022 million). The increase in the exposures was due new business and to fluctuations in the drawdown of liquidity lines.

8.7 Credit portfolios with increased risk content

The credit portfolios with increased risk content are analyzed separately because of their significance for the risk position. The figures presented here are included in the above analyses of the total lending volume.

8.7.1 Loans and advances to borrowers in eurozone periphery countries

As at December 31, 2018, loans and advances to borrowers in the countries directly affected by the **economic divergence in the eurozone** attributable to the **Bank sector** and to **DZ BANK** amounted to €7,355 million (December 31, 2017: €7,949 million) and €2,165 million (December 31, 2017: €2,302 million) respectively. The decrease was attributable to falls in the fair

value of Spanish and Italian bonds held by DZ HYP.

As loans and advances to counterparties in Greece have been scaled back, the credit exposure for this country is no longer reported separately. Consequently, the total lending volume in respect of the eurozone periphery countries as at December 31, 2017 disclosed in this opportunity and risk report differs from the corresponding amount in the 2017 opportunity and risk report.

Fig. 29 shows the borrower structures of the entities in the Bank sector for the eurozone periphery countries by credit-risk-bearing instrument.

8.7.2 Loans and advances to borrowers in the UK

Loans and advances from entities in the **Bank sector** to borrowers in the UK amounted to €8,069 million as at December 31, 2018 (December 31, 2017: €8,746 million). As at December 31, 2018, the breakdown of the lending volume by credit-risk-bearing instrument was as follows (corresponding figures as at December 31, 2017 in parentheses):

- Traditional lending business: €3,143 million (€4,251 million)
- Securities business: €2,041 million (€2,266 million)
- Derivatives and money market business: €2,884 million (€2,229 million).

DZ BANK's lending volume in the UK as at December 31, 2018 amounted to €4,470 million (December 31, 2017: €4,632 million).

The principal reason for the increased credit risk is that the quality of the lending volume to individual UK counterparties is adversely impacted by country-specific events (**Brexit**) even though the creditworthiness of the individual counterparties themselves is not impaired. A disorderly, hard ('no deal') Brexit would have more negative consequences than an orderly Brexit (exit with a 'deal').

8.7.3 Shipping finance and offshore finance

Business background

Within the DZ BANK Group's **Bank sector**, the shipping finance business is mainly operated by DVB and, to a much lesser degree, by DZ BANK. DVB also has offshore finance business in its credit portfolio. At DVB and DZ BANK, the lending volume associated with shipping finance comprises loans and advances to customers, guarantees and indemnities, irrevocable loan commitments, and derivatives.

FIG. 29 – BANK SECTOR: LOANS AND ADVANCES TO BORROWERS IN EUROZONE PERIPHERY COUNTRIES

	Traditional lending business[1]		Securities business		Derivatives and money market business		Total	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Portugal	62	80	1,026	1,035	-	-	1,089	1,115
of which: public sector	-	-	925	919	-	-	925	919
of which: non-public sector	62	80	101	116	-	-	164	196
of which: financial sector	1	-	-	-	-	-	1	-
Italy	148	158	2,847	3,158	70	19	3,065	3,336
of which: public sector	-	-	2,599	2,809	-	-	2,599	2,809
of which: non-public sector	148	158	248	349	70	19	465	526
of which: financial sector	32	32	59	121	70	19	161	172
Spain	222	232	2,850	3,200	129	67	3,201	3,499
of which: public sector	13	19	1,859	2,094	-	-	1,872	2,113
of which: non-public sector	210	212	991	1,106	129	67	1,330	1,386
of which: financial sector	28	31	364	380	126	65	518	477
Total	432	470	6,723	7,393	199	87	7,355	7,949
of which: public sector	13	19	5,383	5,821	-	-	5,396	5,841
of which: non-public sector	419	450	1,341	1,571	199	87	1,959	2,108
of which: financial sector	61	63	423	502	196	84	680	649

1 Unlike the other presentations of lending volume, traditional lending business in this case includes long-term equity investments.

At **DVB**, the criteria for granting **shipping loans** include the credit standing of the ship owner and operator, the quality and recoverability of the shipping asset itself, the cash flow that the borrower can generate with the ship concerned to repay the debt, and the extent to which the ship involved can be remarketed. DVB generally only enters into shipping finance arrangements for which the financed ship can be used as collateral.

DVB's offshore credit portfolio consists of various financing arrangements with broad links to the shipping sector. The portfolio includes finance for drilling platforms, drill ships, offshore construction ships, and supply ships for oil platforms.

DZ BANK offers shipping finance as part of its joint credit business with the local cooperative banks. Shipping finance in the narrow sense refers to capital investment in mobile assets involving projects that are separately defined, both legally and in substance, in which the borrower is typically a special-purpose entity whose sole business purpose is the construction and operation of ships. In such arrangements, the debt is serviced from the cash flows generated by the ship. The assessment of the credit risk is therefore based not only on the recoverability of the asset, but also in particular on the capability of the ship to generate earnings.

To reduce risk, finance provided by DZ BANK must normally be secured by a first mortgage on the vessel and the assignment of insurance claims and proceeds. A distinction is made between shipping finance in the narrow sense and finance provided for shipyards and shipping companies. The following disclosures for DZ BANK relate solely to shipping finance in the narrow sense.

Crisis management

In the shipping finance business, an oversupply of tonnage continues to have a detrimental impact on asset values and customer credit quality in some cases. To add to the problems, the low price of oil is adversely affecting global offshore oil production, leading to significantly lower demand for supply ships and other floating offshore equipment. This trend is accompanied by a rising number of laid-up offshore vessels. Although there have been some signs of stabilization and improvement, the market situation remains challenging, above all for **DVB**.

DVB has initiated various corrective measures in response to the crisis. For example, the lending policy for **shipping finance** has been considerably tightened. Non-performing shipping loans have also been classified as no longer consistent with the corporate strategy. This non-core-asset (NCA) portfolio has been transferred to an internal workout unit with the aim of scaling back the assets in a way that preserves value on the basis of the NCA strategy adopted by the DVB Board of Managing Directors.

The **offshore finance** market remains difficult and is not expected to bounce back significantly in the short term. All offshore finance has therefore been moved to the NCA portfolio. No further new business has been taken on in the offshore segment since 2017.

DVB is aiming to continue to scale back the NCA shipping portfolio and the offshore finance portfolio (while preserving value as far as possible) during 2019 and subsequent years. The section below therefore analyzes in detail only the NCA portion of DVB's shipping portfolio that is affected by a greater level of risk. The prior-year figures have been restated accordingly and thus cannot be compared with the lending volume for the entire shipping portfolio presented in the 2017 opportunity and risk report.

At **DZ BANK**, shipping finance is deemed to be non-performing if it has been rated between 5A and 5E on the VR master scale. DZ BANK aims to secure and optimize these non-performing exposures within its management system for handling non-performing loans.

Shipping finance lending volume

As at December 31, 2018, the **Bank sector's** shipping finance portfolio had a total value of €8,692 million (December 31, 2017: €10,180 million). The breakdown of the lending volume between the two management units as at December 31, 2018 was as follows (corresponding figures as at December 31, 2017 in parentheses):

- DVB: €8,084 million (€9,523 million), of which €6,922 million (€9,523 million) is core business not classified as non-performing
- DZ BANK: €608 million (€657 million), of which €313 million (€327 million) is business not classified as non-performing.

The lending volume of **DVB** shipping finance exposed to heightened risk (NCA portfolio) consists solely of

traditional lending business. It declined from €2,238 million as at December 31, 2017 to €1,162 million as at December 31, 2018, a year-on-year decrease of 48 percent. This significant decrease was attributable, among other things, to redemptions and (partial) workout of individual large-volume exposures. The breakdown by country group of DVB's NCA shipping finance portfolio as at December 31, 2018 was as follows (corresponding figures as at December 31, 2017 in parentheses):

– Germany: €136 million (€267 million)
– Other industrialized countries: €820 million (€1,414 million)
– Advanced economies: €150 million (€382 million)
– Emerging markets: €56 million (€175 million).

As at December 31, 2018, the NCA shipping finance portfolio included 135 financed vessels (December 31, 2017: 262 vessels). The average exposure as at the reporting date was €25.8 million (December 31, 2017: €28.3 million) and the largest single exposure was €114.6 million (December 31, 2017: €189.2 million).
The largest proportion of the NCA shipping finance portfolio was attributable to the financing of tankers. As at December 31, 2018, this proportion had risen to 40 percent of DVB's total NCA shipping finance volume as a consequence of the disproportionate level of redemptions in other shipping segments. This relative increase related mainly to the crude oil tanker segment and pro rata to all other types of tanker. The portfolio was almost fully collateralized in compliance with DVB strategy.

At **DZ BANK**, shipping loans with a value of €295 million were classified as non-performing as at December 31, 2018 (December 31, 2017: €330 million). This lending consisted almost entirely of traditional lending business. Broken down by type of ship, DZ BANK's non-performing portfolio was focused mainly on multifunctional merchant vessels. In terms of carrying capacity, these ships were almost exclusively small- to medium-sized vessels. As in 2017, DZ BANK's shipping finance portfolio in 2018 was mainly concentrated in Germany but broadly diversified by type of vessel, borrower, charterer, and shipping activity.

Offshore finance lending volume

As at December 31, 2018, the Bank sector's lending volume in the offshore finance business, which is attributable exclusively to **DVB** and is classified as traditional lending business, amounted to €1,335 million (December 31, 2017: €1,766 million).

8.8 Volume of non-performing loans

The fall in the volume of non-performing loans reported for the **Bank sector** from €6.2 billion to €5.0 billion in conjunction with the increase in the total lending volume from €375.2 billion to €378.9 billion caused the NPL ratio to go down year on year to 1.3 percent at the end of 2018 (December 31, 2017: 1.7 percent).

At **DZ BANK**, there was a decline in the volume of non-performing loans, which went down from €2.2 billion as at December 31, 2017 to €1.9 billion as at the 2018 balance sheet date. As this change was accompanied by an increase in the overall lending volume from €197.2 billion to €198.3 billion, the NPL ratio fell slightly to 0.9 percent (December 31, 2017: 1.1 percent).

Fig. 30 shows key figures relating to the volume of non-performing loans.

FIG. 30 – BANK SECTOR: KEY FIGURES FOR THE VOLUME OF NON-PERFORMING LOANS

	Bank sector		DZ BANK	
	Dec. 31, 2018	Dec. 31, 2017	**Dec. 31, 2018**	Dec. 31, 2017
Total lending volume (€ billion)	**378.9**	375.2	**198.3**	197.2
Volume of non-performing loans (€ billion)[1]	**5.0**	6.2	**1.9**	2.2
Balance of loss allowances (€ billion)	**2.7**	3.1	**1.2**	1.3
Loss allowance ratio (%)[2]	**0.7**	0.8	**0.6**	0.6
Coverage ratio (%)[3]	**54.5**	50.1	**65.2**	59.1
NPL ratio (%)[4]	**1.3**	1.7	**0.9**	1.1

1 Volume of non-performing loans excluding collateral.
2 Balance of loss allowances as a proportion of total lending volume.
3 Balance of loss allowances as a proportion of the volume of non-performing loans.
4 Volume of non-performing loans as a proportion of total lending volume.

8.9 Prior-year disclosures in accordance with IFRS 9

The initial application of IFRS 9 in 2018 has led to changes in the presentation of credit-risk-related disclosures in accordance with IFRS 7. Further details can be found in section 2.2.4. The transitional rules for the initial application of IFRS 9 provide that the prior-year comparative disclosures in 2018 are to be presented in accordance with the requirements of the former IFRS 7 for the last time. This applies to the following credit-risk-related disclosures with figures as at December 31, 2017:

– Lending volume neither impaired nor past due in accordance with IFRS 7.36(c): €369.1 billion
– Lending volume past due but not impaired in accordance with IFRS 7.37(a): €785 million.

8.10 Risk position

The risk capital requirement (including capital buffer requirement) for credit risk is based on a number of factors, including the size of single-borrower exposures, individual ratings, and the industry sector of each exposure.

As at December 31, 2018, the credit value-at-risk including capital buffer in the **Bank sector** was €5,541 million (December 31, 2017: €5,772 million) with an upper loss limit of €8,238 million (December 31, 2017: €7,628 million), which was not exceeded at any time during the year under review.

The decline in the credit value-at-risk including capital buffer stemmed mainly from the merged portfolio account at DZ HYP.

As at December 31, 2018, the credit value-at-risk including capital buffer at **DZ BANK** was €2,166 million (December 31, 2017: €2,152 million) with an upper loss limit of €2,674 million (December 31, 2017: €2,700 million).

The credit values-at-risk including capital buffer for the Bank sector and for DZ BANK were within the applicable upper loss limits at all times during the course of 2018.

Fig. 31 shows the credit value-at-risk together with the average probability of default and expected loss. Because of the breakdown by credit-risk-bearing instrument, the risk capital requirement is presented without the capital buffer requirement.

The risk capital required in the **Bank sector** and at **DZ BANK** for credit portfolios exposed to increased credit risk is shown in Fig. 32, again without the capital buffer requirement.

FIG. 31 – BANK SECTOR: FACTORS DETERMINING THE CREDIT VALUE-AT-RISK

	Average probability of default (%)				Expected loss (€ million)				Credit value-at-risk[1] (€ million)			
	Bank sector		DZ BANK		Bank sector		DZ BANK		Bank sector		DZ BANK	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Traditional lending business	0.5	0.6	0.2	0.2	405	426	122	113	2,568	2,282	950	926
Securities business	0.2	0.2	0.2	0.2	49	66	28	37	1,511	1,636	226	345
Derivatives and money market business	0.1	0.1	0.1	0.1	10	10	9	9	453	327	365	245
Total					464	501	159	159	4,532	4,245	1,541	1,515
Average	0.4	0.4	0.2	0.2								

1 Excluding capital buffer requirement.

Not relevant

FIG. 32 – BANK SECTOR: CREDIT VALUE-AT-RISK[1] FOR CREDIT PORTFOLIOS WITH INCREASED RISK CONTENT

	Bank sector		DZ BANK	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Eurozone periphery countries portfolio	1,079	1,089	14	13
United Kingdom portfolio (Brexit)	265	207	130	126
Shipping finance portfolio[2]	66	59	38	48
Offshore finance portfolio	118	99		

1 Excluding capital buffer requirement.
2 DVB: NCA portion.

Not relevant

As the credit exposure for Greece is no longer reported separately, the total credit value-at-risk in respect of the **eurozone periphery countries** as at December 31, 2017 also differs from the corresponding amount in the 2017 opportunity and risk report.

Compared with December 31, 2017, the credit value-at-risk for the Bank sector entities' exposure in the peripheral countries of the eurozone decreased marginally.

As at December 31, 2018, the credit value-at-risk for the Bank sector entities' exposure in the **UK** remained at a moderate level compared with the position as at

the prior-year reporting date because the credit quality of most of the individual exposures did not present any problem.

The total credit value-at-risk reported for the **shipping finance portfolio** as at December 31, 2017 is different from the corresponding figure reported in the 2017 opportunity and risk report because only the NCA portion of DVB's shipping finance portfolio associated with increased risk is now included in the analysis. The credit value-at-risk for the overall shipping finance portfolio in the Bank sector amounted to €194 million as at December 31, 2018 (December 31, 2017: €206 million). These figures consist of the DVB core business and DZ BANK business, in either case not classified as non-performing.

The credit value-at-risk in the Bank sector for shipping finance and offshore finance stemmed primarily from DVB. The year-on-year decline in the credit value-at-risk for the shipping finance portfolio arose mainly because of the fall in the lending volume at DZ BANK.

9 Equity investment risk

9.1 Definition and business background

Equity investment risk is defined as the risk of losses arising from negative changes in the fair value of that portion of the long-term equity investments portfolio for which the risks are not included in other types of risk.

In the Bank sector, equity investment risk arises primarily at DZ BANK, BSH, and DVB.

The long-term equity investments in the banking book are held largely for strategic reasons and normally cover markets, market segments, or parts of the value chain in which the entities of the Bank sector themselves or the cooperative banks are not active. These investments therefore support the sales activities of the cooperative banks or help reduce costs by bundling functions. The investment strategy is continuously aligned with the needs of cooperative financial network policy.

9.2 Risk strategy and responsibility

Risk strategy requirements must be observed in the management of long-term equity investments. Such management is subject to the principle that equity investment risk (measured as risk capital requirement) may be taken on only if this risk is considered together with the associated opportunities and only if the risk remains below the existing upper loss limits.

Decisions on whether to acquire or dispose of **long-term equity investments** are made by the Board of Managing Directors of the entities in the Bank sector in consultation with the relevant committees.

At DZ BANK, the Strategy & Group Development division is responsible for **supporting these investments**, whereas at BSH the task falls within the scope of the Central Services/Policy/International division and the Controlling and Investment Management division. At DVB, the investments are the responsibility of the Accounting and Legal Affairs departments.

Equity investment risk is **measured** and **monitored** at Bank sector level by DZ BANK. Details are reported within the DZ BANK Group's overall risk report.

9.3 Risk management

The carrying amounts of the long-term equity investments are regularly tested for possible impairment in the last quarter of the financial year. If there are any indications during the course of the year of possible impairment, more frequent impairment tests are also carried out. In the impairment tests, the carrying amounts of the long-term equity investments are compared against the amount that could be realized on the market on the same date.

The risk capital requirement for the vast majority of the long-term equity investments in the **Bank sector** including **DZ BANK** is determined using a Monte Carlo simulation. In this method, portfolio concentrations in sectors and individual counterparties are taken into account by simulating industry-wide and individual investment-related risk factors.

The risk capital requirement is influenced, in particular, by the market values of the long-term equity investments, the volatility of the market values, and the correlations between the market values, with market price fluctuations mainly derived from reference prices listed on an exchange.

At **DVB**, the risk capital requirement for long-term equity investments in the transport sector is determined using an earnings-at-risk approach.

The measurement of equity investment risk takes into account both the equity-accounted investments and the fully consolidated investees. As part of acquisition accounting and during the course of preparing the consolidated financial statements, the investment carrying amounts for consolidated subsidiaries are offset against the relevant share of net assets. Consequently, the investment carrying amounts disclosed in the notes to the consolidated financial statements are considerably lower than the carrying amounts used for determining risk.

9.4 Specific risk factors

If a future impairment test determines that the carrying amount of long-term equity investments reported on the balance sheet is significantly impaired, this could have an adverse impact on the financial performance and financial position of the DZ BANK Group and DZ BANK.

In the case of non-controlling interests, there is a risk that key information may not be available or cannot be obtained promptly by virtue of the fact that the investment is a minority stake; this would lead to an increase in the impairment risk.

9.5 Risk position

The **carrying amounts of long-term equity investments** in the **Bank sector** relevant for the measurement of equity investment risk amounted to €2,776 million as at December 31, 2018 (December 31, 2017: €2,714 million). As at December 31, 2018, the carrying amounts of the long-term equity investments of **DZ BANK** totaled €1,697 million (December 31, 2017: €1,588 million).

As at the reporting date, the **risk capital requirement including capital buffer requirement** for equity investment risk in the **Bank sector** was measured at €1,091 million, which was lower than the corresponding figure at the end of 2017 of €1,093 million. The upper loss limit was €1,341 million (December 31, 2017: €1,422 million). The upper loss limit was not exceeded at any time in 2018.

As at December 31, 2018, the **risk capital requirement including capital buffer requirement** for equity investment risk at **DZ BANK** amounted to €685 million (December 31, 2017: €618 million). The upper loss limit at December 31, 2018 was €800 million (December 31, 2017: €650 million). The upper loss limit was exceeded for a short time in the first quarter of 2018 when the enterprise value of one long-term equity investment was updated. The breach of the limit was rectified in the second quarter by reallocating upper loss limits.

10 Market risk

10.1 Definition and business background

Market risk in the Bank sector including DZ BANK comprises market risk in the narrow sense of the term, and market liquidity risk. Market risk arises mainly in connection with BSH, DVB, DZ HYP, and UMH in addition to DZ BANK.

Market risk in the narrow sense of the term – referred to below as market risk – is the risk of losses on financial instruments or other assets arising from changes in market prices or in the parameters that influence prices. Depending on the underlying influences, market risk can be broken down for the most part into interest-rate risk, spread risk and migration risk, equity risk, fund price risk, currency risk, and asset-management risk. Commodity risk is not material for the entities in the Bank sector. This type of market risk is therefore not covered below.

Market risks arise in particular from DZ BANK's customer-account trading activities, DZ BANK's cash-pooling function for the cooperative financial network, and from the lending business, real-estate finance business, building society operations, funds business, capital markets business, investments, and issuing activities of the various management units. Spread risk, including migration risk, is the most significant type of market risk for the Bank sector. Market risk also arises from the assets and liabilities in connection with direct pension commitments.

Market liquidity risk is the risk of loss arising from adverse changes in market liquidity, for example as a result of a reduction in market depth or of market disruption. The consequences are that assets can only be liquidated in markets if they are discounted and that it is only possible to carry out active risk management on a limited basis. Market liquidity risk arises primarily in connection with securities already held in the portfolio as well as funding and money market business.

10.2 Risk strategy

10.2.1 General market risk strategy in the Bank sector

The following principles for managing market risk apply to DZ BANK and its subsidiaries:

- Market risk is only taken on to the extent that it is necessary to facilitate attainment of business policy objectives.
- The assumption of market risk is only permitted within the existing limits and only provided that it is considered together with the associated opportunities.
- Statutory restrictions, provisions in the Articles of Association, or other limitations enshrined in the risk strategy that prohibit the assumption of certain types of market risk for individual management units are observed.
- Market liquidity risk is consciously assumed following an analysis that takes into account the prevailing market liquidity.

10.2.2 Market risk strategy at DZ BANK

For regulatory purposes, DZ BANK is classed as a trading book institution. It conducts trading activities as part of its role as the central institution in the cooperative financial network and – on this basis – as a corporate bank for customers outside the cooperative financial network. As part of a range of services for the cooperative financial network, DZ BANK provides investment and risk management products, platforms, research, and expertise, and acts as an intermediary transforming small deposits into larger-scale lending. DZ BANK also provides facilities ensuring risk transfer from the cooperative financial network and cash pooling within the cooperative financial network. DZ BANK's trading strategy is aimed at generating profits primarily from customer margins and structuring margins.

Unmatched market-risk positions from primary business activities arise principally in connection with customer business and from holding securities portfolios for trading on behalf of customers. The risks predominantly comprise **spread risk and migration risk**. To support its liquidity management function as a central institution and corporate bank, and on behalf of the DZ BANK Group, DZ BANK also maintains liquidity portfolios in which it holds – within the relevant limits – bonds eligible for central bank borrowing. It also holds portfolios of bonds and credit derivatives for the purposes of managing credit risk.

DZ BANK manages market risk arising from its lending business, own issues, and from holding issues from the cooperative banks and subsidiaries.

The risks arising in connection with the assets and liabilities associated with direct **pension commitments** form part of the daily risk management process and are also regularly assessed by a DZ BANK investment committee. Corrective action to eliminate risk is taken where necessary. Changes in legislation, decisions by the courts, or accounting standards may make it necessary to adjust existing provisions for pensions and other post-employment benefits.

10.2.3 Market risk strategy at BSH

For regulatory purposes, BSH is classed as an institution with a banking book and is exposed to market risk primarily in the form of interest-rate risk, spread risk, migration risk, and fund price risk. **Interest-rate risk** arises mainly from its customer business (in particular building society operations). Interest-rate risk comprises traditional interest-rate risk, for example as a result of interest rates in building society operations for which BSH has given a firm commitment, and the risk from customer rights enshrined in home savings contracts, the exercise of which may partly depend on interest rates. Traditional interest-rate risk is managed mainly through the maturities in the investment portfolio. The risk from customer rights is controlled through the design of home savings rates. The objective is to manage the interest-rate risk within the existing limits, which are rising slightly.

Spread risk and migration risk arise at BSH from investing surplus home savings deposits in securities. These risks are consciously assumed within the framework of a conservative investment policy and it is planned to keep them at a similar level, even following further diversification in the range of investments.

10.2.4 Market risk strategy at DVB

For regulatory purposes, DVB is classified as a trading book institution, although the exposures in the trading book are effectively closed and are therefore deemed not significant. DVB is not entering into any new business in its trading book. The main risks in the banking book are interest-rate risk and currency risk. Generally speaking, DVB avoids taking on market risk

exposures as far as possible, provided that this can be justified from an economic perspective.

10.2.5 Market risk strategy at DZ HYP

For regulatory purposes, DZ HYP is also classed as an institution with a banking book. DZ HYP's business model means that the main risks relevant to its management of market risk are spread risk and migration risk.

DZ HYP consciously takes on **spread risk and migration risk**. As DZ HYP is classed as a banking book institution, it does not engage in own-account trading in the sense of exploiting short-term fluctuations in interest rates and prices.

10.2.6 Market risk strategy at UMH

The main market risks faced by UMH are fund price risk and asset-management risk.

Fund price risk arises if UMH or its subsidiaries acquire their own investment funds for investment purposes. UMH and its subsidiaries also acquire units in their own newly launched funds in order to provide initial funding for the funds, but not with the intention of generating short-term trading profits. In addition, pledged employee investments are invested in Union Investment funds in order to cover pension entitlements. Fund price risk is not broken down into other subtypes of market risk for management purposes.

Asset-management risk occurs if UMH enters into obligations to pay additional capital in connection with products offering long-term guarantees. Any shortfall in a contractually agreed minimum capital value on a maturity date triggers a payment obligation on the part of the fund provider, giving rise to these obligations to pay additional capital.

10.3 Organization, responsibility, and risk reporting

10.3.1 Organization and responsibility

As a trading book institution, **DZ BANK** generally manages market risk on a decentralized, portfolio basis. The traders responsible for managing a portfolio bear responsibility for its risk and performance.

Market risk arising at **BSH** is managed at overall bank level and exclusively in the banking book. Market risk arising at **DVB**, **DZ HYP**, and **UMH** is managed centrally by specialist committees at each institution. The committees provide guidance for treasury activities based on market risk reporting. Committee decisions are implemented operationally by the portfolio managers and treasury departments at each entity.

10.3.2 Risk reporting

Key figures for **market risk** are submitted at **sector level** to the Group Risk and Finance Committee within the overall risk report for the DZ BANK Group. DZ BANK is informed of any limit overruns at management unit level by means of an ad-hoc reporting system.

At **DZ BANK**, **BSH**, **DVB**, and **DZ HYP**, Risk Controlling uses the internal reporting system to provide the portfolio managers and the senior managers or relevant committees responsible for risk management and risk control with daily, weekly, or monthly market risk updates. Twice a month, **UMH** calculates the risk attaching to its own-account investing activities and reports this risk to its Board of Managing Directors and the committee responsible for managing own-account investing. The other key figures relating to market risk are reported in UMH's quarterly risk report.

10.4 Management of market risk

10.4.1 Measurement of market risk

Measurement of value-at-risk

DZ BANK, BSH, DVB, DZ HYP, and UMH determine market risk from the short-term (operating) perspective using the **value-at-risk** method.

Value-at-risk is a key performance indicator that describes the maximum expected loss for a given probability (confidence level) and within a specified holding period for the positions under normal market conditions. The model does not reflect the maximum potential loss that could be incurred in extreme market situations, but is based on observed historical market scenarios over periods of 250 trading days (DZ BANK, DVB, and DZ HYP), 1,500 trading days (BSH), and 1 year (own-account investments of UMH).

DZ BANK, **BSH**, DVB, and **DZ HYP** generate market scenarios using a **historical simulation**. Holding periods of 1 day and 10 days are used.

UMH uses **Monte Carlo simulation** to determine the market risk arising from its own-account investing.

This measurement method provides a 'look through' to the individual securities in the funds. The methods used to quantify asset-management risk take into account the special features of the products concerned. Contractually agreed obligations to make additional capital payments may arise in connection with subsidized pension products (Riester products) or guarantee funds. The economic capital requirement is calculated as value-at-risk with an assumed holding period of 1 year and a confidence level of 99.9 percent.

The risk arising from pension products is quantified using Monte-Carlo simulation of any anticipated obligation to provide additional capital in connection with contracts maturing over the next year and in connection with any impending loss from the difference between investment assets and the present value of guarantees.

A distinction is made between two types of guarantee fund: dynamic and static. Dynamic guarantee funds are actively managed using a dynamic capital preservation strategy. This management mechanism is reproduced to a large degree in the Monte Carlo simulation used to quantify risk. In the case of static guarantee funds, the economic capital requirement is calculated using the IRB approach on the basis of the credit risk contained in the funds.

For **DZ BANK**, **BSH**, **DVB**, and **DZ HYP**, calculations are carried out to determine an overall value-at-risk and – where relevant – separate values-at-risk for interest-rate risk, spread risk, equity risk, and currency risk, broken down into trading portfolios and non-trading portfolios. The risk in the banking book is included in the value-at-risk for the non-trading portfolios. Migration risk does not represent a separate type of risk in the short-term perspective. The risk arising from changes in credit ratings is covered by spread risk in this case.

An overall value-at-risk is calculated for the own-account investing activities carried out by **UMH**. To determine risk values at the level of the Bank sector, DZ BANK also uses a central, sector-wide risk model, which quantifies market risk for the Bank sector taking into account the effects of concentration and diversification.

Measurement of the risk capital requirement

To quantify market risk from a longer-term (strategic) perspective of 1 year, the **credit institutions** in the Bank sector regularly calculate the capital requirement for market risk and compare it with the associated upper loss limit. Migration risk is also included in this process.

Refinement of risk measurement

DZ BANK fine-tuned the central, sector-wide market-risk model in the year under review as planned and then put it into operation in February 2018. Following completion of a period up the end of the year under review when systems were operated in parallel, the key figures determined with this model have been used since the beginning of 2019 to manage market risk in the Bank sector and at DZ BANK.

10.4.2 Backtesting and stress tests

The methods used by the entities in the Bank sector to quantify market risk on a continuous basis are subjected to **backtesting**, the purpose of which is to check the predictive quality of these methods. Changes in the value of portfolios on each trading day are usually compared against the value-at-risk calculated using risk modeling.

Risks arising from extreme market situations are primarily recorded using **stress tests**. The crisis scenarios underlying the stress tests include the simulation of significant fluctuations in risk factors and serve to highlight potential losses not generally recognized in the value-at-risk approach. Stress tests are based on extreme market fluctuations that have actually occurred in the past together with crisis scenarios that – regardless of market data history – are considered to be economically relevant. The crisis scenarios used in this case are regularly reviewed to ensure they are appropriate. The following are deemed to be risk factors: interest-rate risk, spread risk, migration risk, equity risk, and currency risk.

10.4.3 Management of limits for market risk

Value-at-risk is managed at **DZ BANK**, **BSH**, **DVB**, and **DZ HYP** using a limit system appropriate to the portfolio structure. This system limits the risks assumed in parts of the group as well as any losses that may arise during the year.

Within the trading divisions of **DZ BANK** and the treasury at **DZ HYP**, the management of risk based on value-at-risk is supported by a limit system structured around sensitivities and scenarios, and by stress test limits. At DZ HYP, the treasury's system of limits is based on value-at-risk and sensitivities.

Market risk incurred by **UMH** is managed and limited directly at the level of its risk capital requirement.

10.4.4 Mitigating market risk

Market risk hedging

As part of the decentralized management of portfolios, market risk at **DZ BANK** is hedged by portfolio managers. At **DVB** and **DZ HYP**, it is hedged by treasury.

Risks are hedged at **DZ BANK** either through internal transactions with the front-office trading unit responsible for the relevant product or through external exchange-based and OTC transactions.

At **BSH**, the asset-liability committee decides whether to hedge market risk via OTC transactions.

DVB and **DZ HYP** exclusively use external exchange-based and OTC transactions to hedge against market risk, although the OTC transactions used for hedging are primarily with counterparties within the Bank sector.

As soon as action is required to reduce the market risk arising from own-account investing at **UMH**, changes are made to the composition of the fund positions in its own-account investments. For this reason, UMH is only exposed to fund price risk.

Hedge effectiveness

The measurement of market risk at **DZ BANK** is based on the inclusion of the individual positions subject to market risk. There is therefore no need to monitor the economic effectiveness of hedges.

At **DVB** and **DZ HYP**, the effectiveness of any hedging is reviewed and reported daily in terms of both risk and performance. The report covers the entire DVB or DZ HYP book. Derivatives in various forms are used to mitigate market risk. These are predominantly plain vanilla products.

10.4.5 Managing the different types of market risk

Management of interest-rate risk

At **DZ BANK**, interest-rate risk arises from trading in interest-rate-sensitive products on behalf of customers, from structuring its own issues for trading on behalf of customers, and from exposures in connection with liquidity management. The risks arising from trading on behalf of customers are dynamically hedged within the set limits and the risks from liquidity management are generally minimized. At DZ BANK, interest-rate risk also arises from the assets and liabilities in connection with direct pension commitments.

BSH is subject to particular interest-rate risks arising from its collective home savings business since it gives customers a binding interest-rate guarantee both for savings and for the loan element that may be drawn down in the future. BSH uses a simulation model based on the behavior of building society customers to measure interest-rate risk. The model forecasts the volume of collective assets held, taking into consideration planned new business and different customer options.

Interest-rate risk at **DVB** is generally eliminated by the use of interest-rate swaps. In this process, fixed-interest asset and liability portfolios are transformed into floating-rate portfolios. There are no plans to change this strategy going forward. It is therefore reasonable to assume that interest-rate risk will remain largely steady. However, the introduction of the multi-yield-curve approach adds further risk factors to the measurement of interest-rate risk. These factors could lead to somewhat greater fluctuations than before, for example in the event of a widening of basis spreads.

Management of spread risk and migration risk

Spread risk and migration risk on all financial instruments subject to credit spread risk are incorporated into risk capital management. An upper loss limit and operational limits together with a process for monitoring them were introduced in order to ensure that the risk capital for these two forms of market risk is managed effectively.

At **DZ BANK**, spread risk and migration risk arise from holding securities portfolios for trading on behalf of customers, from trading in its own issues on behalf of customers, and from the liquidity management function that the bank carries out for the Bank sector. The risks taken on as part of the trading on behalf of customers are proactively managed, although migration risk forms part of the management of the strategic risk capital requirement rather than the management of the short-term, operating value-at-risk. In liquidity management, the risk tends to be limited to that which is absolutely necessary to allow DZ BANK to carry out its responsibilities as a central institution and in connection with the liquidity management function.

Spread risk and migration risk arise at **BSH** from investing surplus home savings deposits in securities.

The resulting risk is managed in accordance with a conservative investment policy.

Spread risk and migration risk arise at **DZ HYP** largely from holding securities. The risks are included in an internal reporting system and are monitored on a daily basis. Migration risk is not covered by this daily monitoring. Following the merger that created DZ HYP, the entity has continued the policy of not taking on new spread risk or migration risk and of only incurring these risks if it is necessary as part of the management of cover assets.

Management of equity risk

Equity risk is only of minor significance at **DZ BANK**. It essentially arises from transactions on behalf of customers involving equities, equity and equity-index derivatives, investment funds and alternative investments, warrants, and investment certificates. It is managed by using equities, exchange-traded futures and options, and OTC derivatives.

At **DVB**, equities exposures arise only to a small degree as part of restructuring. There is no active trading in equities exposures at DVB.

Management of currency risk

Likewise, currency risk is only of minor significance at **DZ BANK**. It mainly arises from funding transactions, issuing activities, the investment book, ABS exposures, the management of Tier 1 and Tier 2 capital, customer business involving currency products and derivatives, securities portfolios in foreign currency, and the underwriting and onward placement of third-party issuances. Currency risk is managed by using derivatives within the allotted limits.

At **DVB**, currency risk arises from the credit portfolio, which consists for the most part of US dollar loans. The treasury manages the open foreign exchange positions and therefore the currency risk.

Management of fund price risk

Fund price risk largely arises at **DZ BANK** in connection with business conducted on behalf of customers. Funds are also used to cover defined benefit obligations. These funds are broken down into their constituent parts for the purposes of calculating risk and are therefore no longer treated as fund exposures. The interest-rate risk, spread risk, and currency risk determined for the constituent parts is managed within existing limits.

Fund price risk arises at **BSH** from the funds used to cover defined benefit obligations. The resulting risk is consciously accepted and limited by means of investment guidelines. In addition, surplus home savings deposits are invested in special funds. These funds are broken down into their constituent parts for risk management purposes and not treated as fund exposures. The determined risk is managed within existing limits in the same way as other types of risk.

UMH is exposed to fund price risk because it invests its own resources in funds and also invests pledged employee investments in order to cover pension entitlements. While market risk arising from the funds it holds is measured by ‘looking through’ to individual-security level, the risk incurred by own-account investing is measured at fund level. For this reason, UMH is only exposed to fund price risk. The management of fund price risk focuses on the liquidity requirements of UMH’s subsidiaries and the need to acquire fund units when providing initial funding for investment funds. The requirements for a conservative investment policy are also observed.

Management of asset-management risk

Asset-management risk arises from minimum payment commitments given by **UMH** and/or its subsidiaries for guarantee products. The risks arising from these guarantee products are managed conservatively.

The launch of new guarantee products is governed by the guidelines for medium-term planning that apply to UMH and takes into account the risk capital required and the available internal capital. Before new products are launched, the risks associated with them are analyzed and assessed. Management mechanisms embedded in the products aim to prevent the value of an individual product from falling below its guaranteed level during its lifetime.

Asset-management risk is reported using a separate internal system and is monitored regularly at individual product level by UMH.

10.5 Management of market liquidity risk

At **Bank sector** level, excluding DZ BANK, market liquidity effects are taken into account centrally when determining the risk capital requirement for spread risk and migration risk. Market liquidity risk is included in this risk management in the form of special stress test scenarios in which it is assumed that it is not possible to liquidate financial instruments in the short term.

BSH takes market liquidity risk into account in its day-to-day calculation of liquidity by means of changes in interest rates and credit spreads. At **DZ HYP**, market liquidity risk is factored into the calculation of the risk capital requirement. It is managed operationally as part of the management of market risk and liquidity. **UMH** could be exposed to market liquidity risk as a result of its own-account investing in funds. Market liquidity risk is measured at individual fund level and by carrying out additional stress tests.

10.6 Specific risk factors

Interest-rate risk, spread risk, migration risk, equity risk, fund price risk, currency risk, and asset-management risk are caused by changes in the yield curve, credit spreads, exchange rates, and share prices. Credit spreads and market liquidity squeezes are the critical risk factors for the overall market risk in the Bank sector, including DZ BANK.

The uncertainty associated with **Brexit** could depress earnings temporarily, or even over the long term. As regards market risk, there is a particular risk that credit spreads on European government and corporate bonds could widen. A widening of credit spreads on government bonds could occur if the UK's exit from the EU led to a fundamental crisis of confidence in the political stability of the EU. The prices of corporate bonds could fall if a disorderly Brexit also led to disruption in the movement of people, goods, or services between the UK and the EU. This could impact equity prices too. Brexit could also be accompanied by heightened volatility in interest-rate and currency markets.

A market-wide liquidity squeeze could be detrimental to the business activities of the entities in the Bank sector and therefore also to the financial position and financial performance of the DZ BANK Group and DZ BANK. **Tighter market liquidity** arises particularly in stressed market conditions.

10.7 Risk position

10.7.1 Risk capital requirement

As at December 31, 2018, the risk capital requirement (including capital buffer requirement) for market risk used to determine the risk-bearing capacity of the **Bank sector** amounted to €4,030 million (December 31, 2017: €4,097 million) with an upper loss limit of €6,768 million (December 31, 2017: €6,863 million). The small decrease in the risk was mainly attributable to lower spread and migration risk arising on bonds from countries affected by the European sovereign debt crisis. In turn, this was mainly due to a sharp fall in market values.

The Bank sector's risk capital requirement (including capital buffer requirement) encompasses the **asset-management risk** of UMH. The asset-management risk for guarantee funds was measured at €33 million as at December 31, 2018 (December 31, 2017: €36 million). The asset-management risk for pension products as at the reporting date amounted to €193 million (December 31, 2017: €34 million). The rise in the asset-management risk for pension products was due to the movement of yields on German government bonds, trends in equity prices, and improvements in the measurement of risk.

As at December 31, 2018, **DZ BANK's** risk capital requirement (including capital buffer requirement) for market risk amounted to €1,150 million (December 31, 2017: €1,059 million) with an upper loss limit of €2,000 million (December 31, 2017: €2,270 million). DZ BANK is not exposed to any asset-management risk.

Throughout the year under review, the risk capital requirement (including capital buffer requirement) remained below the upper loss limit at the levels of both the Bank sector and DZ BANK.

10.7.2 Value-at-risk

Fig. 33 shows the change in the value-at-risk in the trading and non-trading portfolios and the change in the aggregate risk for the Bank sector in the year under review.

In addition, Fig. 34 shows the daily changes in risk and the results of daily backtesting of trading portfolios. As the Bank sector's trading portfolios consist exclusively of the trading portfolios of DZ BANK, the associated figures for the Bank sector are the same as those for DZ BANK.

As at December 31, 2018, the **aggregate market risk** in the **Bank sector** was measured at €88 million (December 31, 2017: €51 million). This increase was largely explained by higher spread risk resulting from the widening of spreads in the market. A notable development took place in May 2018 when political uncertainty surrounding the formation of a government in Italy led to a substantial widening of the spreads on bonds issued by the Republic of Italy and other southern European countries. The aggregate

FIG. 33 – BANK SECTOR: VALUE-AT-RISK FOR MARKET RISK IN THE TRADING AND NON-TRADING PORTFOLIOS[1 2]

	Bank sector		DZ BANK	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Trading portfolios	3	2	3	2
Interest-rate risk	1	2	1	2
Spread risk	3	1	3	1
Equity risk[2]	1	1	1	1
Currency risk	-	-	-	-
Diversification effect[3]	-2	-2	-2	-2
Non-trading portfolios	88	49	22	13
Interest-rate risk	23	22	8	5
Spread risk	75	42	16	12
Equity risk[2]	8	5	2	1
Currency risk	1	4	2	3
Diversification effect[3]	-19	-23	-6	-9
Total[4]	88	51	23	14
Interest-rate risk	23	22	7	6
Spread risk	76	43	19	13
Equity risk[2]	7	5	1	2
Currency risk	1	4	2	3
Diversification effect[3]	-19	-23	-6	-11

1 Value-at-risk with 99.00% confidence level, 1-day holding period, 1-year observation period, based on a central market risk model for the Bank sector.
Concentrations and effects of diversification were taken fully into account when calculating the risks. Constituent parts of fund portfolios are included in interest-rate risk, spread risk, and currency risk.
2 Including funds, if not broken down into constituent parts.
3 Total effects of diversification between the types of market risk for all consolidated management units.
4 Owing to the effects of diversification between trading portfolios and non-trading portfolios, the mathematical total of the risks for these two parts of the overall portfolio are different from the figure for aggregate risk.

risk for **DZ BANK** as at December 31, 2018 was calculated at €23 million (December 31, 2017: €14 million). The year-on-year increase was primarily attributable to greater spread changes within the period relevant to the risk calculation.

The value-at-risk for the **trading portfolios** in the Bank sector as at December 31, 2018 was €3 million (December 31, 2017: €2 million) and therefore remained at the low prior-year level. There were intermittent increases in risk in connection with normal trading activities, mainly caused by new scenarios relevant to the historical simulation.
In the year under review, the hypothetical changes in fair value exceeded the forecast risk value on 6 trading days. The overruns predominantly arose from market movements.

As at December 31, 2018, the value-at-risk for the **Bank sector's non-trading portfolios** was calculated at €88 million (December 31, 2017: €49 million). This rise was largely due to increased spread risk on the back of changed market data.

11 Technical risk of a home savings and loan company

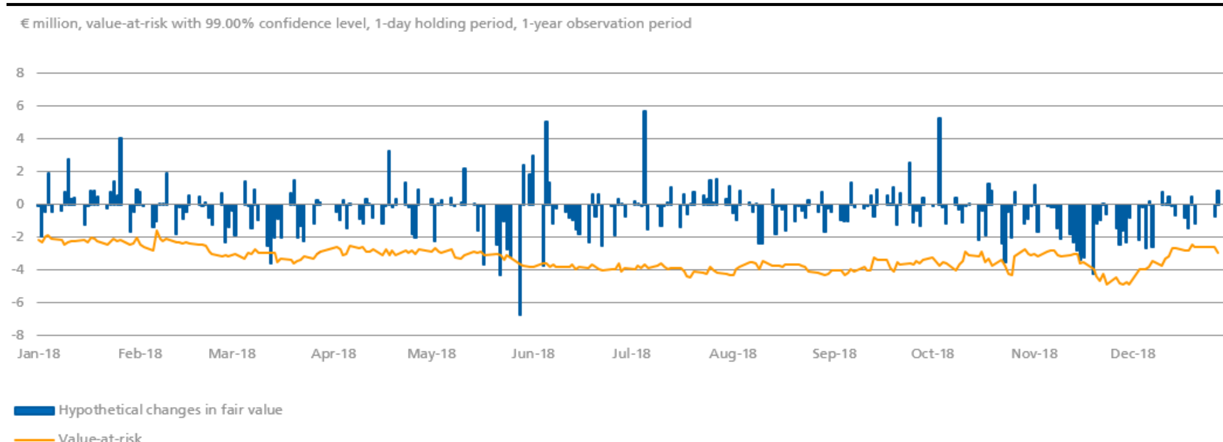
11.1 Definition and business background

Technical risk of a home savings and loan company is subdivided into two components: new business risk and collective risk.

New business risk is the risk of a negative impact from possible variances compared with the planned new business volume.

Collective risk refers to the risk of a negative impact that could arise from variances between the actual and forecast performance of the collective building society operations caused by significant long-term changes in customer behavior unrelated to changes in interest rates. It can be distinguished from interest-rate risk by incorporating a change in customer behavior unrelated

FIG. 34 – BANK SECTOR: VALUE-AT-RISK FOR MARKET RISK AND HYPOTHETICAL CHANGES IN FAIR VALUE IN THE TRADING PORTFOLIOS



to interest rates in the collective simulation. Conversely, only changes in customer behavior induced by changes in interest rates are relevant to interest-rate risk.

Technical risk of a home savings and loan company arises in the Bank sector in connection with the business activities of BSH. This risk represents the entity-specific business risk of BSH. A home savings arrangement is a system in which the customer accumulates savings earmarked for a specific purpose. The customer enters into a home savings contract with fixed credit balance and loan interest rates, so that when the savings phase is completed at a later point and a loan is allocated under the contract, he/she can receive a home savings loan at a favorable interest rate. A home savings agreement is therefore a combined asset/liability product with a very long maturity.

11.2 Risk strategy and responsibility

Technical risk of a home savings and loan company is closely linked with the BSH business model and cannot therefore be avoided. Against this backdrop, the **risk strategy** aims to prevent an uncontrolled increase in risk. The risk is managed in particular through a forward-looking policy for products and scales of rates and charges, and through appropriate marketing activities and sales management.

BSH is **responsible** for managing the technical risk of a home savings and loan company within the Bank sector. This includes measuring the risk and communicating risk information to the risk management committees at BSH and to the Board of Managing Directors and Supervisory Board of BSH. Technical risk of a home savings and loan company forms an integral part of the DZ BANK Group's internal risk reporting system.

11.3 Risk management

A special collective simulation, which includes the integrated effects of a (negative) change in customer behavior and a drop in new business, is used to **measure the technical risk of a home savings and loan company**. The results from the collective simulation for the technical risk of a home savings and loan company are fed into a long-term forecast of earnings. The variance between the actual earnings in the risk scenario and the earnings in a base forecast with the same reference date is used as a risk measure. The variance is discounted to produce a present value. The total present value of the variances represents the technical risk of a home savings and loan company and therefore the risk capital requirement for this type of risk.

In order to determine the technical risk of a home savings and loan company in a **stress scenario**, the stress parameters (customer behavior and new business) are severely impaired. An appropriate collective simulation is then generated on this basis and is analyzed using the same methodology used for the measurement of current risk. Stress tests are carried out quarterly.

For the present value perspective in the liquidation approach within BSH's **overall bank limit system**, the technical risk of a home savings and loan company is backed by risk capital.

11.4 Specific risk factors

A variance between the actual and planned new business volume (**new business risk**) could lead to lower deposits from banks and customers over the short to medium term. Over the medium to long term, the lower level of new business could also lead to a decrease in loans and advances to banks and customers.

Variances between the actual and forecast performance of the collective building society business caused by significant long-term changes in customer behavior unrelated to changes in interest rates (**collective risk**) could also lead to lower loans and advances to banks and customers and to lower deposits from banks and customers.

Over the medium to long term, there is a risk that a lower level of new business and change in customer behavior could cause net interest income to taper off with an adverse impact on the financial position and financial performance of the DZ BANK Group.

11.5 Risk position

As at December 31, 2018, the capital requirement for the technical risk of a home savings and loan company amounted to €553 million (December 31, 2017: €558 million) with an upper loss limit of €667 million (December 31, 2017: €558 million). A capital buffer requirement was not calculated for the technical risk of a home savings and loan company as at the reporting date.

The capital requirement for the year under review in respect of the technical risk of a home savings and loan company was calculated on November 30 of the

previous year and, due to the nature of building society operations, remained constant throughout the reporting year. As a result, it did not fluctuate during the year.

12 Business risk

12.1 Definition and business background

Business risk denotes the risk of losses arising from earnings volatility for a given business strategy and not covered by other types of risk. In particular, this comprises the risk that, as a result of changes in material circumstances (for example, the regulatory environment, economic conditions, product environment, customer behavior, market competitors) corrective action cannot be taken at an operational level to prevent the losses.

DZ BANK's core functions as a central institution, corporate bank, and holding company mean that it focuses closely on the local cooperative banks, which are its customers and owners. In this context, business risk can arise from corporate banking, retail banking, capital markets business, and transaction banking.

The key entities incurring business risk in the Bank sector in addition to DZ BANK are the management units DVB and DZ PRIVATBANK.

12.2 Organization and risk management

The management of business risk is a primary responsibility of the **Board of Managing Directors of DZ BANK** and is carried out in consultation with the senior management of the main subsidiaries and the heads of the DZ BANK divisions involved. Group management is integrated into a committee structure, headed by the **Group Coordination Committee**. The Group Strategy and Controlling division supports the Board of Managing Directors as part of its role in supervising the activities of the subsidiaries.

The **Central Advisory Council** plays a key role in providing ideas and advice for the members of the Group Coordination Committee and the Board of Managing Directors of DZ BANK. The council facilitates in-depth discussion of key strategic issues in the DZ BANK Group. These issues include the fundamental ongoing development of the entities in the DZ BANK Group, strategic planning considerations, and current business performance. The Central Advisory Council also addresses key questions relating to the design of new products and services, and their marketing to cooperative banks and their customers. It commenced its activities in March 2018 and meets twice a year.

The management of business risk is closely linked with the **management of opportunities** and the tools used in the strategic planning process. It is based on setting targets for the subsidiaries involved in active management and for the divisions of DZ BANK. **Risk is quantified** using a risk model based on an earnings-at-risk approach.

To identify strategic regulatory initiatives with an impact on the DZ BANK Group and the individual management units, a centralized **regulation management** office has been set up at DZ BANK. This office establishes direct contact with the relevant units at DZ BANK and in the other management units, organizes regular bank-wide and groupwide dialog on identified and new strategic regulatory initiatives, and uses a 'regulatory map' to report to the responsible steering committees, the Board of Managing Directors, and the Supervisory Board of DZ BANK.

12.3 Specific risk factors

Costs of regulation

Over the next few years, the DZ BANK Group is likely to continue to face **increased costs**, and thus reduced profits, in connection with implementing the requirements resulting from the commercial-law and regulatory initiatives currently being planned by legislators (see sections 5.1.1 and 5.1.2).

Competition based on pricing and terms

One of the features of the German banking sector is the fierce competition, frequently centered on pricing and terms. This can lead to margins that are not attractive from an economic perspective or are inadequate given the risk involved. The earnings situation is under particular pressure in the **retail banking business**. Competitors are giving greater focus to retail banking than to their core businesses – and increasingly with new, digital business models – so this situation could become even tougher in the future.

Corporate banking is also subject to competition that is becoming increasingly international in nature. A number of foreign providers have already expanded their presence in the German market. The intensity of the competition could therefore continue to increase in the future, with the result that it could be difficult to

generate attractive margins, fees and commissions in individual segments or subsegments of the market.

In the event of a renewed economic downturn, this trend could become even worse. For example, a contraction in capital spending by businesses, and an associated drop in demand for bank finance, would add to the competitive pressure. Again, this could give rise to margins that are economically unattractive or that do not adequately cover the risk arising from the corresponding transactions.

Greater competition in capital markets business

DZ BANK's capital markets business is faced with the ongoing challenges presented by **low interest rates**, accompanied by a fall in market liquidity and historically low risk premiums.

Furthermore, the implementation of the revised Markets in Financial Instruments Directive (MiFID II) and Markets in Financial Instruments Regulation (MiFIR) will step up the pressure on **margins in the customer business** because of the enhanced transparency requirements.

In DZ BANK's **own-account investing activities with the local cooperative banks**, it is exposed to rising price sensitivity caused by a contraction in operating profits and increases in the size of the banks resulting from mergers.

In addition, DZ BANK increasingly offers its customers the option of conducting transactions in selected financial instruments using **electronic trading platforms**. Depending also on product demand from market players, European regulation relating to the trading and settlement of financial instruments is expected to lead to a transfer of the trading volume in certain products to electronic trading platforms. It is predicted that this will bring about a change in competitor structure, with competition becoming fiercer in the trading of certain financial instruments for customer account, resulting in the risk of a reduction in margins and revenue going forward.

The trends referred to above could have an adverse impact on future financial performance at both DZ BANK Group and DZ BANK levels.

Digitalization and new competitors in transaction banking

The prevalence of mobile devices and internet-based services (**digitalization**) is encouraging the intermediation of new competitors at the interface between customers and banking services. No more so than in **transaction banking**, where banks are frequently finding themselves up against less regulated global competitors, often from outside the banking sector and offering innovative solutions to meet the changes in customer needs. The situation will become even tougher with the implementation of the requirements under Directive (EU) 2015/2366, the revised Payment Services Directive (PSD2), as a result of which third-party providers will be granted access to account data on behalf of customers. These developments are increasingly changing the role played by banks as product providers and are likely to reduce fee and commission income from transaction banking, thereby diminishing the income prospects for entities in the Bank sector.

The **opportunities** presented by digitalization are described in section 4.2.2.

12.4 Risk position

As at December 31, 2018, the **Bank sector's** risk capital requirement (including capital buffer requirement) for business risk (including reputational risk) amounted to €857 million (December 31, 2017: €781 million). This rise was mainly a reflection of costs at DZ BANK. The upper loss limit was €1,118 million as at the reporting date (December 31, 2017: €1,040 million).

As at December 31, 2018, the economic capital requirement for **DZ BANK** was calculated at €686 million (December 31, 2017: €579 million). The upper loss limit as at December 31, 2018 was €800 million (December 31, 2017: €790 million).

The upper loss limits for the Bank sector and for DZ BANK were not exceeded at any time during 2018.

13 Reputational risk

13.1 Definition and business background

Reputational risk refers to the risk of losses from events that damage confidence, mainly among customers (including the local cooperative banks), shareholders, employees, the labor market, the general public, and the supervisory authority, in the entities in the Bank sector or in the products and services that they offer.

Reputational risk can arise as an independent risk (primary reputational risk) or as an indirect or direct

consequence of other types of risk, such as business risk, liquidity risk, and operational risk (secondary reputational risk).

13.2 Risk strategy and responsibility

Reputational risk is incorporated into the risk strategy by pursuing the following objectives:

- Avoiding loss resulting from reputation-damaging incidents by taking preventive action
- Mitigating reputational risk by taking preventive and responsive action
- Raising awareness of reputational risk within the Bank sector, e.g. by defining the people responsible for risk and establishing a sector-wide reporting system and set of rules for reputational risk.

These objectives are applicable both at the Bank sector level and in the management units. The management units are responsible for complying with the rules and for deciding what suitable preventive and responsive action to take.

The reputational risk strategy is based on the business strategies in each management unit and to this end is reviewed at least once a year and adjusted as necessary.

Each management unit is responsible for managing its reputational risk and must comply with the requirements laid down in the set of rules for reputational risk. The principle of **decentralized** responsibility applies equally within all the management units, including DZ BANK. Based on this approach, responsibility for managing reputational risk lies with each division with the involvement of other functions such as communications, marketing, corporate security, and compliance.

13.3 Risk management

Reputational risk in the Bank sector is generally taken into account within business risk and is therefore implicitly included in the measurement of risk and assessment of capital adequacy. At BSH, reputational risk is measured and the capital requirement determined mainly as part of the technical risk of a home savings and loan company. In addition, the risk that obtaining funding may become more difficult as a consequence of reputational damage is specifically taken into account in liquidity risk management.

Crisis communications aimed at mitigating reputational risk are designed to prevent greater damage to the entities in the Bank sector if a critical event occurs. The management units therefore follow a stakeholder-based approach in which reputational risk is identified and evaluated from a qualitative perspective depending on the stakeholder concerned.

13.4 Specific risk factors

If the Bank sector as a whole or the individual management units acquire a negative reputation, there is a risk that existing or potential customers will be unsettled with the result that existing business relationships might be terminated or it might not be possible to carry out planned transactions. There is also a risk that it will no longer be possible to guarantee the backing of stakeholders, such as shareholders and employees, necessary to conduct business operations.

14 Operational risk

14.1 Definition and business background

DZ BANK defines operational risk – also referred to below as OpRisk – as the risk of loss from human behavior, technological failure, weaknesses in process or project management, or external events. This closely resembles the regulatory definition. Legal risk is included in this definition. It follows then that operational risk could arise in any division of the entities in the Bank sector. The activities of DZ BANK and those of DVB, DZ HYP, DZ PRIVATBANK, and VR LEASING have a particularly significant impact on operational risk for the Bank sector.

14.2 Risk strategy

The Bank sector entities aim to manage operational risk efficiently. They apply the following principles:

- Reinforce risk awareness
- Handle operational risk openly and largely without penalties
- Avoid, reduce, transfer, or accept risk as optional courses of action
- Ensure that the impact of decisions on operational risk is taken into account
- Manage operational risk on a decentralized basis but within the limits set out in the framework for operational risk.

14.3 Organization, responsibility, and risk reporting

Each management unit is responsible for managing its operational risk. The principle of **decentralized** responsibility applies equally within all the management units, including DZ BANK.

One of the purposes of the **framework for operational risk** is to harmonize organizational structures throughout the sector. The sector-wide coordinated approach to operational risk is also managed by a **committee** assigned to the Group Risk Management working group and comprising representatives from DZ BANK and its main subsidiaries.

A **DZ BANK** unit responsible for controlling operational risk located within the Group Risk Controlling division develops the management and control methods based on regulatory requirements and business needs applicable to the Bank sector. The unit ensures that operational risk is monitored independently and it is responsible for central reporting.

Corresponding organizational units are also in place at the other main entities in the **Bank sector**.

In most of the management units in the **Bank sector**, including **DZ BANK**, specialist divisions with central risk management functions manage some operational risk tasks. As part of their overarching responsibility, these specialist divisions in each entity also perform an advisory and guiding function for the matters within their remit, such as IT risk.

Because operational risk can affect all divisions, local operational risk coordinators are located in each division of the main **management units** and they act as interfaces with Central Risk Controlling. This also applies to **DZ BANK**.

Regular **reports** on loss data, risk self-assessments, risk indicators, and risk capital are submitted to the Board of Managing Directors, the Group Risk and Finance Committee, the Risk Committee, and operational management, facilitating effective management of operational risk on a timely basis.

14.4 Central risk management

14.4.1 Measurement of operational risk

The calculation of the risk capital requirement for operational risk in the Bank sector is based on an economic portfolio model, in which losses are monitored on the basis of the expected loss calculated by the model. The results from the model, combined with the tools used to identify risk, enable the efficient, centralized management of operational risk.

In the year under review, the analytical capability of this portfolio model underwent further expansion so that enhanced analyses of risk concentrations and risk drivers can be carried out.

14.4.2 Identifying operational risk

Loss database

The groupwide collation of loss data in a central database allows the Bank sector to identify, analyze, and evaluate loss events, highlighting patterns, trends, and concentrations of operational risk. This data-gathering covers a number of areas but focuses particularly on data for gross losses with a value of €1,000 or more related to risks that have been incurred, for example in connection with the risk factors specified in section 14.5. The assembled data history also forms the basis for the calculation of economic capital using a portfolio model. Net losses are used to determine the risk capital requirement. In addition, gross losses upward from a defined threshold value are managed as part of the corrective action management process.

Risk self-assessment

Senior managers from all management units assess operational risk using a scenario-supported risk self-assessment process in order to identify and evaluate all material operational risks and ensure maximum possible transparency regarding the risk position. The main potential risks for all first-level risk categories as defined by the CRR are calculated and described using risk scenarios. The scenarios also enable risk concentrations to be identified.

Risk indicators

In addition to the loss database and risk self-assessment, risk indicators help the Bank sector to identify risk trends and concentrations at an early stage and detect weaknesses in business processes. A system of warning lights is used to indicate risk situations based on specified threshold values. Risk indicators within the Bank sector are collected systematically and regularly on a wide scale.

14.4.3 Limiting operational risk

The upper loss limit for operational risk is used as the basis for central monitoring of the risk capital requirement at the Bank sector level. The risk capital requirement for the Bank sector is broken down into risk contributions for each management unit using a risk-sensitive allocation procedure so that the management units in the Bank sector can be monitored centrally. These risk contributions are then monitored centrally using upper loss limits for each management unit.

14.4.4 Mitigating and avoiding operational risk

Continuous improvement of business processes is one of the methods used with the aim of **mitigating** operational risk. The transfer of risk by means of insurance or outsourcing as permitted by liability regulations provides further protection.

Operational risk is **avoided**, for example, by rejecting products that can be identified during the new product process as entailing too much risk.

In all relevant management units, a comprehensive **contingency and crisis management system** (with business continuity plans covering critical processes) has been established to ensure the continuation of business in the event of process disruption or system breakdown. These business continuity plans are regularly reviewed and simulated to ensure they are fully functional. The contingency and crisis management system at DZ BANK has been certified in accordance with ISO 22301, which applies worldwide.

14.5 Management of special risks

Risks that affect specific matters or areas are called special risks. Special risks primarily impact operational risk but also affect business risk and reputational risk. This particularly applies to aspects of HR risk, IT risk, outsourcing risk, and tax risk. The scope and level of detail for the risk management system described below varies between the management units because of their different business and risk profiles.

Special risks are mostly, but not always, managed and monitored by the generally eponymous specialist divisions. This applies to the majority of the management units in the Bank sector, including DZ BANK.

14.5.1 HR risk

Risk management

The entities in the Bank sector have developed a mechanism known as a **Human Resources KPI cockpit** with standardized KPIs. The Human Resources KPI cockpit is intended to integrate HR strategies between the management units, increase transparency, and ensure comparability between the HR management systems in the Bank sector as well as help the management units to manage their HR activities. To this end, the cockpit specifies 21 KPIs across the following four categories: value added/finance, employer appeal, organization/efficiency, and innovation/learning.

The entities in the Bank sector pursue the objective of preventing or minimizing HR risk by identifying negative trends and abnormalities, and then initiating suitable corrective action. HR risk is monitored using the following 4 risk factors: exit risk, availability risk, skills and qualifications risk, motivational risk.

Compliance functions and a comprehensive internal control system are used to counter fraud and negligence. Examples include internal rules on the minimum absence for employees with responsibility for trading positions.

Risk Controlling at DZ BANK has specified relevant KPIs for HR management as risk indicators. The key figures are collated on a monthly basis as part of the risk indicator process and include training days per employee, employee workload, resignation rate, total staff turnover rate, and the percentage of vacant positions.

The HR division of DZ BANK is involved in designing the standard scenarios relating to HR risk and validates the scenario assessment of the other entities in the Bank sector, particularly with regard to basis of calculation, frequency of occurrence, and loss level.

Specific risk factors

The majority of employees at the German offices of the entities in the Bank sector fall within the scope of collective pay agreements or other collective arrangements, such as company agreements. The entities in the Bank sector could be hit by strikes called by labor unions.

Other HR measures, such as job cuts in response to a permanent fall in demand or to increase efficiency, could lead to industrial disputes between the workforce (or the employee representatives/labor unions) and the entities in the Bank sector.

In accordance with their contingency and crisis management systems, the entities in the Bank sector have initiated a range of measures to maintain business continuity in the event of **strikes and other business interruptions**. However, the possibility cannot be ruled out that simultaneous industrial action at all sites over several days could cause lasting disruption to processes and workflows. Moreover, sensitive internal and external interfaces could be jeopardized by long-term business interruptions.

The future success of the entities in the Bank sector is dependent upon **capable managers and employees with the necessary skills and qualifications**. Given the current challenges presented by the regulatory environment, this particularly applies in the areas of regulatory reporting, external (consolidated) financial reporting, and risk control. In the labor market, there is fierce competition for managers and employees in these areas of activity driven by high demand and insufficient numbers of suitable individuals.

Unless the necessary number of suitable managers and employees can be attracted to the entities in the Bank sector within the required timeframe, and/or existing managers and employees can be retained by the entities in the sector, there will be a heightened risk that the sector will be unable or insufficiently able to satisfy the statutory requirements regarding regulatory reporting, external (consolidated) financial reporting, and risk control as a result of inadequate expertise in terms of either quality or quantity.

This could lead to sanctions from the banking supervisor and a qualified audit opinion in the consolidated and separate financial statements and group management reports and management reports prepared by the entities in the Bank sector, which would impact negatively on the reputation of the DZ BANK Group overall and of individual entities in the Bank sector.

14.5.2 IT risk

Risk management

The entities in the Bank sector use computers and data processing systems to carry out their operating activities. Practically all business transactions and activities are processed electronically using appropriate IT systems. These systems are networked with each other and are operationally interdependent.

Processes in the IT units of the entities in the Bank sector are designed with risk issues in mind and are monitored using a variety of control activities in order to ensure that IT risk is appropriately managed. The starting point is to determine which risks are unavoidable in certain aspects of IT. Detailed requirements can then be specified. These requirements determine the extent to which checks need to be carried out and are intended to ensure that all activities are conducted in compliance with the previously defined risk appetite.

IT units apply comprehensive physical and logical precautionary measures to guarantee the security of data and applications and to ensure that day-to-day operations are maintained. Measures used by the Bank sector to counter the risk of a partial or complete loss of IT systems include segregated data processing centers in which the data and systems are mirrored, special access security, fire control systems, and an uninterruptible power supply supported by emergency power generators. Regular exercises are carried out to test defined restart procedures to be used in emergency or crisis situations with the aim of checking the efficacy of these procedures. Data is backed up and held within highly secure environments in different buildings.

DZ BANK's risk assessment methodology for IT risk is made available centrally by information security management and applied locally by the managers responsible for the various applications using tool-supported control processes. All variances identified in these processes are assessed from the perspective of the associated risks. All IT risks classified as material are included in regular information security reports to the Board of Managing Directors.

The risks identified in the information security control processes are also taken into account by the IT division, information security management, and the locally based OpRisk coordinators for the purposes of evaluating the risk self-assessment scenarios as part of the management of operational risk. The IT risk groups, comprising IT operating risk, IT outsourcing risk, IT security risk, and IT project risk, are each allocated one or more scenarios in the risk self-assessment. When the risk self-assessment is

completed, the results of the decentralized risk assessment are compared with internal IT estimates and then analyzed. The results of the risk self-assessment process are also used as parameters for assessing IT risk events in the following year.

Specific risk factors

Malfunctions or breakdowns in data processing systems or in the programs used on these systems, including attacks from external sources – such as hackers or malware –, could have an adverse impact on the ability of the entities in the Bank sector to efficiently maintain the processes necessary to carry out operating activities, protect saved data, ensure sufficient control, or continue to develop products and services. Furthermore, such malfunctions or breakdowns could lead to temporary or permanent loss of data, or cause additional costs because the original capability would need to be restored and/or preventive measures introduced to provide protection against similar events in the future.

Events outside the control of the entities of the Bank sector could also disrupt operational procedures. For example, when executing forward, currency, or commodities trades a risk arises that a system breakdown at a clearing agent, exchange, clearing house, or other financial intermediary could prevent the transactions in question from being settled at the agreed time and thus could also prevent the entities of the Bank sector from meeting their obligations. This could, for example, result in the withdrawal of counterparties from agreements entered into with entities in the Bank sector or lead to claims for damages against those entities.

14.5.3 Outsourcing risk

Risk management

The entities in the Bank sector have outsourced activities and processes to third-party service providers to a considerable extent.

The process of assessing the risk and determining the degree to which an outsourcing arrangement is material is mostly carried out as part of the risk analysis for the outsourcing arrangement by the division responsible for the outsourcing with the involvement of a number of corporate and functional units, including internal audit, legal affairs, business continuity management, and compliance, and in consultation with the local coordinators for operational risk.

The Central Outsourcing Management (COM) unit has been set up at DZ BANK to coordinate outsourcing activities. COM acts as a central point of contact for outsourcing matters at DZ BANK and lays down standards for handling outsourcing activities and their operational management. The RSA Archer outsourcing management tool is used within COM as the central application for recording outsourcing projects at DZ BANK and for managing outsourcing partners.

At DZ BANK, outsourcing partners are managed by the department responsible for the outsourcing in accordance with the currently applicable guidelines for insourcing and outsourcing. Service meetings are regularly held with service providers to facilitate communication and coordinate the IT services and other services to be provided by the third parties concerned. Compliance with contractually specified service level agreements is monitored by means of status reports and uptime statistics. The outsourcing partners submit annual audit reports in which they evaluate and confirm the effectiveness of the general controls and procedures.

Specific risk factors

The risk arising in connection with the outsourcing of business activities is limited to the extent required by the supervisory authority. Nevertheless, there is a risk that a service provider could fail or cease to be available as a result of insurmountable technical or financial difficulties. There is also a risk that the services performed by the service provider might not meet the contractually agreed requirements. The consequences could be that only some of the outsourced processes or services can be provided, or even that the outsourced processes or services cannot be provided at all. This could lead to a loss of business and to claims for damages from customers. There are contingency plans, explicit liability provisions in contracts, and exit strategies for this eventuality, including action to reduce this risk.

14.5.4 Risks in connection with the (consolidated) financial reporting process

Risk management

In order to limit operational risk in this area of activity, DZ BANK and the other entities in the Bank sector have set up internal control systems for the (consolidated) financial reporting process as an integral component of the control systems put in place for the

general risk management process. The functionality of these control systems is described in section 3.5.7.

Specific risk factors

An internal control system relating to the (consolidated) financial reporting process needs to provide reasonable assurance that the financial statements are free from misstatements. The main risks in the (consolidated) financial reporting process are that, as a result of unintended misstatements or deliberate action, the consolidated financial statements and group management report of the DZ BANK Group as well as the consolidated financial statements, group management reports, separate financial statements, and management reports of DZ BANK and the other entities in the Bank sector might not provide a true and fair view of financial position and financial performance and/or that publication might be delayed. These risks could then have an adverse impact on investors' confidence in the DZ BANK Group and the individual entities in the Bank sector or on their reputation. Furthermore, sanctions could be imposed, for example by the banking supervisor.

The (consolidated) financial statements do not provide a true and fair view of financial position and financial performance if the disclosures in the statements are materially different from what they should be. Differences are classified as material if, individually or as a whole, they could influence economic decisions made by the users of the financial statements on the basis of the financial statements. The internal control system related to the (consolidated) financial reporting process aims to reduce these risks.

14.5.5 Legal risk

Risk management

Tax risk with legal risk implications is not included in this section; it is described in section 14.5.6 below.

In the entities of the Bank sector, responsibility for managing legal disputes normally lies with their organizational units responsible for dealing with legal issues.

The entities in the Bank sector pursue a strategy of avoiding legal risk. The organizational units responsible for assessing legal issues therefore continuously monitor proposed legislation and regulatory requirements that are legally relevant, as well as developments in decisions by the courts. On this basis, these units identify legal risk and are involved in informing the departments concerned as soon as possible and implementing any necessary changes. The legal affairs units are responsible for reviewing and assessing circumstances from a legal perspective and also for coordinating any legal proceedings. The latter consists of both defending claims pursued against the entities in the Bank sector and enforcing claims by the management units against third parties.

If any legal risk is identified, the management unit concerned assesses the risk parameters in terms of their probability of occurrence and possible impact. In addition, the amounts in dispute in the divisions are calculated quarterly as part of the assessment of risk indicators and, if they exceed certain thresholds, the affected divisions must prepare a report. As part of the annual risk self-assessment in the management and control of operational risk, the legal affairs divisions of the management units help to assess the standard scenarios for legal risk. The results are taken into account when determining the economic capital.

Identified risks are limited and mitigated by organizational measures, either legal or procedural, or are taken into account by recognizing appropriate loss allowances.

The legal affairs divisions in the Bank sector entities also submit reports on risk-related issues to the member(s) of the Board of Managing Directors with relevant responsibility, independently of the established regular reports on cases pending before the courts.

Provisions recognized on the balance sheet

The entities in the Bank sector report potential losses arising from legal risk in accordance with the relevant (consolidated) financial reporting standards, which includes recognizing any provisions that may be required. This also encompasses potential risk in connection with cases pending before the courts. Disclosures covering the provisions recognized for risks arising from ongoing legal disputes are included in note 67 of the notes to the consolidated financial statements.

Any concentrations of risk owing to similarities between individual cases are taken into consideration. Comparable cases are aggregated to form a group.

The entities in the Bank sector have recognized provisions for legal risk arising in connection with capital market and credit products.

Specific risk factors

Legal risk could arise, in particular, from changes in the legal environment, changes in official interpretations of relevant regulations, government interventions, court or arbitration proceedings, and changes in the business environment.

14.5.6 Tax risk

Risk management

The entities in the Bank sector have decentralized systems for managing tax risk. Within the management units, responsibility for managing tax risk normally lies with the organizational units responsible for dealing with tax issues.

The entities in the Bank sector pursue a strategy of avoiding tax risk. The starting point for managing tax risk is the ongoing process of identifying, recording, and monitoring risk. If any tax risk is identified, the risk parameters are assessed in terms of their probability of occurrence and possible impact in quantitative and qualitative terms. Identified risks are limited and mitigated by means of tax organizational measures.

The tax department at DZ BANK reports the groupwide data relevant to risk to the head of the Group Finance division and to the member of the Board of Managing Directors with relevant responsibility. Separately, and depending on materiality thresholds, ad hoc risk reports are also submitted to the above individuals.

Specific risk factors

Tax risk can arise, in particular, from adverse changes in tax circumstances (tax legislation, decisions by the courts), adverse changes in the interpretation by tax authorities of existing tax legislation, and changes in non-tax regulations.

As a result of tax audits, an alternative assessment of the tax risk or, in some cases, other information could give rise to **retrospective tax liabilities** for periods that have already been assessed. As there are still outstanding audits by the tax authorities relating to a number of financial years, there is a risk that retrospective tax payments could be required and these payments would be subject to interest charges.

Business transactions are assessed for tax purposes on the basis of current tax legislation, taking into account the latest decisions by the courts and interpretations by the authorities. The outcome is factored into the measurement of the loss allowances. Further risks could arise as a result of **changes in tax law or in decisions by the courts**, which could also have retroactive implications.

14.5.7 Compliance risk

Risk management

In the context of their operating activities, the entities in the Bank sector must comply with various legal requirements in a large number of countries. These include prohibitions on accepting or granting benefits in connection with efforts to attract business, and prohibitions on other unfair business practices.

The management of risk arising from non-compliance with applicable laws, regulatory requirements, and internal rules and regulations is described in section 3.5.4.

Specific risk factors

The compliance and risk management systems in the Bank sector are generally appropriate. Nevertheless, there is a risk that these systems could be inadequate for completely preventing or uncovering violations of legal provisions, for identifying and assessing all relevant risks for the entities in the Bank sector, or for initiating appropriate corrective measures.

The entities in the Bank sector cannot rule out the possibility of the existing compliance system proving to be inadequate, or of their employees violating domestic or foreign legal provisions regardless of the existing legal requirements, internal compliance guidelines and organizational requirements, and despite appropriate training and reviews, or of such activities remaining undiscovered.

A violation of legal provisions may have legal implications for the entity concerned, for the members of its decision-making bodies, or for its employees. It may give rise, for example, to fines, penalties, retrospective tax payments, or claims for damages by third parties. The reputation of the DZ BANK Group as a whole and of the individual entities in the Bank sector may also suffer as a result.

14.6 Loss events

Losses from operational risk do not follow a consistent pattern. Instead, the overall risk profile can be seen from the total losses incurred over the long term and is shaped by a small number of large losses.

Consequently, comparisons between net losses in a reporting period and those in a prior-year period are not meaningful. Prior-year figures are therefore not disclosed.

Over the course of time, there are regular fluctuations in the pattern of losses as the frequency of relatively large losses in each individual case is very low. Presenting the change in losses meaningfully therefore requires a sufficiently long and unchanging time horizon for reporting purposes. The data is therefore selected from the loss history for the past 4 quarters and on the basis of the date on which the expense results in a cash outflow.

Fig. 35 shows the losses reported in the past 4 quarters, classified by loss event category.

FIG. 35 – BANK SECTOR: NET LOSSES BY EVENT CATEGORY IN 2018[1]

1 In accordance with the CRR, losses caused by operational risks that are associated with risks such as credit risk are also shown.

In the **Bank sector**, the 'Clients, products, and business practices' event category accounted for the majority (71 percent) of net losses. The net loss in this event category was attributable to 21 loss events, broken down as follows: 17 loss events resulted from failures in process implementation or in process design; a further 3 loss events were due to project management weaknesses; 1 loss event was in connection with tax matters.

Accounting for 92 percent of total net losses, the largest event category at **DZ BANK** was 'Execution, delivery, and process management'. The loss amount was attributable to some of the loss events referred to above.

Losses did not reach a critical level relative to the expected loss from operational risk at any point during 2018, either in the Bank sector or at DZ BANK.

14.7 Risk position

Using the internal portfolio model, the **Bank sector's** risk capital requirement (including capital buffer requirement) for operational risk as at December 31, 2018 was calculated at €804 million (December 31, 2017: €821 million) with an upper loss limit of €1,030 million (December 31, 2017: €1,147 million).

As at December 31, 2018, the corresponding requirement at **DZ BANK** was €417 million (December 31, 2017: €390 million). The upper loss limit as at December 31, 2018 was €499 million (December 31, 2017: €565 million). The risk capital requirements (including capital buffer requirements) for the Bank sector and for DZ BANK were within the applicable upper loss limits at all times during 2018.

Insurance sector

15 Basic principles of risk management in the Insurance sector

15.1 Risk strategy

The principles of risk management in the Insurance sector are based on the risk strategy of the DZ BANK Group for the Insurance sector. The risk strategy is derived from the business strategies, taking into account the strategic 4-year plan approved by the R+V Board of Managing Directors.

Life actuarial risk is managed with the objectives of holding a broadly diversified product portfolio and of developing existing products while structuring new, innovative products. Pension, endowment and risk insurance, working life and semi-retirement products, and index-linked products are underwritten in order to diversify the life insurance and pension provision portfolios. The actuarial assumptions are designed so as to build in adequate safety margins and address changes in the latest findings in order to withstand both the current risk situation as well as potential

changes in this situation. Where products have policyholder participation, this represents the main instrument for mitigating risk. Policyholder participation is set appropriately. Underwriting guidelines and risk audits are used to prevent anti-selection. The risk exposure in the case of large individual risks may be limited by taking out appropriate reinsurance.

The objectives of managing **health actuarial risk** are a risk-conscious underwriting policy, rigorous cost/benefit management, the development of existing products, and the structuring of new, innovative products. In this case too, the actuarial assumptions are designed so as to build in adequate safety margins and address changes in the latest findings in order to withstand both the current risk situation as well as potential changes in this situation. The risk exposure in the case of large individual risks may be limited by taking out appropriate reinsurance.

The management of **non-life actuarial risk in direct business** aims to optimize portfolios in terms of risk and reward. R+V focuses on business in Germany, offering a full range of non-life insurance products. The assumption of risk in connection with expanding its market share is accepted subject to the proviso that the business is profitable. Underwriting guidelines and size restrictions ensure targeted risk selection. Depending on its risk-bearing capacity, R+V reviews whether to purchase reinsurance cover to reduce earnings volatility, insure against major and cumulative claims, and protect and boost existing financial strength and earnings power.

In **inward non-life business**, R+V also aims to optimize the portfolio from a risk/reward perspective. Risk selection is based on binding underwriting guidelines and the exclusions of liability defined in those guidelines. The assumption of reinsurance risk is managed by using individual liability and aggregate limits in the sales and underwriting policy.

R+V's investments particularly give rise to interest-rate risk, spread risk, and equity risk. R+V's **market risk strategy** is determined by the regulatory investment principles specified in section 124 VAG and by internal rules.

Insurance companies must invest all assets so as to ensure the security, quality, liquidity, and profitability of the portfolio as a whole; the location of the assets must also ensure that they are available. In addition, well-established collaboration arrangements between R+V's underwriting and investment departments as part of the management of assets and liabilities ensure that insurance contract benefit obligations on the balance sheet are matched with investment opportunities.

The market risk assumed by R+V reflects the investment portfolio structure developed as part of strategic asset allocation taking into account the individual risk-bearing capacity and long-term income requirements of R+V subsidiaries. The risk is managed in compliance with the upper loss limits specified at DZ BANK Group level.

The management of market risk is connected with the following fundamental objectives of risk policy: ensuring competitive returns on investments taking into account individual risk-bearing capacities, achieving defined minimum investment returns in stress scenarios, and securing a hidden asset level sufficient to ensure consistent earnings. The aim is also to guarantee that there is a sufficient proportion of fungible investments. The methods used to limit life insurance risk include policyholder participation set at a responsible and reasonable level, an appropriate discount rate, and recognition of supplementary change-in-discount-rate reserves.

In line with the risk strategy for **counterparty default risk**, R+V aims to maintain a high average credit rating for its portfolios, avoid concentrations of issuers at portfolio level, and comply with the limits that have been set for counterparties and debtors of insurance and reinsurance companies.

The risk strategy for **operational risk** aims to further raise awareness of operational risk.

The objective of the reputational risk strategy is to promote the positive image of the R+V brand with due regard to the need for transparency and credibility.

15.2 Organization, responsibility, and risk reporting

The risk management process, which is implemented across all entities in the R+V subgroup, defines rules for the way in which risks are identified, analyzed, assessed, managed and monitored, and the way in which they are reported and communicated. These rules form the basis for a central **early-warning system**.

Participations are also included in the R+V subgroup's risk management system. Risk-bearing capacity is reviewed and measured at least once a quarter and the process includes a review of binding key performance indicators and threshold values. Corrective action must be initiated if a specified index value is exceeded. Risk-bearing capacity and all material risks are then finally evaluated each quarter by the Risk Committee.

The central **reporting of risk** at R+V is intended to provide transparent reporting. Reports are submitted to the Board of Managing Directors of R+V in the event of material changes in risk. Company information that has a bearing on risk exposure is passed to the relevant supervisory bodies, both regularly and on an ad hoc basis.

16 Actuarial risk

16.1 Definition and business background

16.1.1 Definition

Actuarial risk is the risk that the actual cost of claims and benefits deviates from the expected cost as a result of chance, error or change. It is broken down into the following categories defined by Solvency II:

- Life actuarial risk
- Health actuarial risk
- Non-life actuarial risk

Life actuarial risk

Life actuarial risk refers to the risk arising from the assumption of life insurance obligations, in relation to the risks covered and the processes used in the conduct of this business. Life actuarial risk is calculated as the combination of capital requirements for, as a minimum, the following sub-modules:

- **Mortality risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from changes in the level, trend, or volatility of mortality rates, where an increase in the mortality rate leads to an increase in the value of insurance liabilities.

- **Longevity risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from changes in the level, trend, or volatility of mortality rates, where a decrease in the mortality rate leads to an increase in the value of insurance liabilities.

- **Disability-morbidity risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from changes in the level, trend, or volatility of disability, sickness, or morbidity rates.

- **Life catastrophe risk** describes the risk of loss or adverse change in the value of insurance liabilities, resulting from the significant uncertainty of pricing and assumptions when recognizing provisions related to extreme or unusual events.

- **Lapse risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from changes in the level or volatility of the rates of policy lapses, cancellations, renewals, and surrenders.

- **Life expense risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from changes in the level, trend, or volatility of the expenses incurred in servicing insurance or reinsurance contracts.

Health actuarial risk

Health actuarial risk refers to the risk arising from the assumption of health and casualty insurance obligations, in relation to the risks covered and the processes used in the conduct of this business.

Non-life actuarial risk

Non-life actuarial risk refers to the risk arising from the assumption of non-life insurance obligations, in relation to the risks covered and the processes used in the conduct of this business. It is calculated as the combination of capital requirements for the following submodules:

- **Premium and reserve risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from fluctuations in the timing, frequency, and severity of insured events, and in the timing and amount of claim settlements.

- **Non-life catastrophe risk** describes the risk of loss or an adverse change in the value of insurance liabilities, resulting from the significant uncertainty of pricing and assumptions when recognizing provisions related to extreme or unusual events.

- **Lapse risk** describes uncertainty about the continuation of the direct insurance and reinsurance contracts. It results from the fact that the lapse of

contracts that are profitable for the insurance company will lead to a reduction in own funds.

16.1.2 Business background

In the DZ BANK Group, actuarial risk arises from the business activities of the insurance subsidiary R+V and its subsidiaries. The risk arises from the direct life insurance and health insurance business, the direct non-life insurance business, and the inward reinsurance business.

Actuarial risk arises in the form of variances from the expected level of losses resulting from the random nature of the timing, frequency, and amount of claims. The risk may also arise from unpredictable changes in insured risks, claim distributions, expected values and mean variations due, for example, to changes in climatic and geological conditions or technological, economic or social changes. Incomplete information about the true degree of regularity in the distribution of claims due to incorrect statistical analysis, or incomplete information about the future validity of the degree of regularity in the distribution of claims in the past could be other causes.

The actuarial risk situation in life insurance companies is also characterized to a large extent by fixed premiums and the long-term nature of the guaranteed benefits in the event of a claim.

The actuarial risk situation of a health insurance company is characterized to a large extent by a rise in the cost of claims, caused both by the performance of its portfolio and by the behavior of policyholders and service providers.

16.2 Management of life actuarial risk

16.2.1 Risk measurement

The risk for insurance contracts subject to **mortality risk** is modeled as a 15 percent increase in mortality.

The risk for insurance contracts subject to **longevity risk** is modeled as a 20 percent increase in longevity.

The overall solvency requirement for **disability-morbidity risk** is analyzed on the basis of a permanent 35 percent rise in the disability rates expected for the next 12 months, a permanent 25 percent rise in the disability rates expected for the period after those 12 months, and a permanent 20 percent decrease in all expected likely cases of policyholders being able to return to work.

The risk for insurance contracts affected by **life catastrophe risk** is modeled as an immediate increase of 0.15 percentage points in mortality rates in the next 12 months.

The risk for insurance contracts subject to **lapse risk** is modeled for the following scenarios: for an increase in lapses, a 50 percent rise in the lapse rate; for a decrease in lapses, a 50 percent reduction in the lapse rate; for a mass lapse event, lapse of 40 percent of the contracts.

The overall solvency requirement for **life expense risk** is based on the following stress scenarios: a permanent 10 percent rise in the costs reflected in the measurement of the insurance liabilities; an increase of 1 percentage point in the cost inflation rate.

16.2.2 Risk management in direct life insurance business

Actuarial risk is minimized by carrying out a careful, prudent cost calculation while products are still in development. This applies to the development of existing products as well as the design of innovative new types of insurance and is carried out by incorporating adequate safety margins into actuarial assumptions in compliance with legislation. The assumptions are structured in such a way that they not only withstand the current risk situation, but also accommodate potential changes in the risk position. Actuarial control systems are used on a regular basis to decide whether the cost calculation for future new business needs to be changed. The calculation is also adjusted on an ongoing basis in line with the latest actuarial findings. The appointed actuary carries out reviews as part of product development and during the course of the term of contracts to verify that the actuarial assumptions used are appropriate.

A number of measures are taken to prevent a concentration of risks in the portfolio. Before contracts are signed, extensive risk reviews are carried out to limit **mortality and disability-morbidity risks**. In general, risk is only assumed in compliance with fixed underwriting guidelines. High levels of individual or cumulative risk are limited by an appropriate degree of reinsurance.

In principle, the broad diversification of insured risks within R+V has the effect of mitigating risk. For example, an increase in mortality has an adverse impact on endowment life and risk insurance policies, but at the same time has a positive impact on the longevity risk associated with pension insurance.

Life expense risk is mitigated by cutting costs as far as possible and operating sustainably.

Lapse risk is mitigated by structuring life insurance contracts to provide maximum flexibility should policyholders' circumstances change. A range of different options during the term of an insurance contract enables customers to maintain their contract instead of canceling it. Designing policyholder participation with an attractive final bonus also counteracts lapse risk.

Advance notice of **policyholder participation** in the form of declarations of future bonuses is also an important instrument with which to reduce actuarial risk relating to life insurance.

16.3 Management of health actuarial risk

16.3.1 Risk measurement

Health actuarial risk is calculated by combining the capital requirements for the subcategories 'similar to life techniques, health actuarial risk' (risk on health insurance pursued on a similar technical basis to that of life insurance), 'non-similar to life techniques, health actuarial risk' (risk on health insurance pursued on a similar technical basis to that of non-life insurance), and 'health catastrophe risk'.

The methods described in the sections on life actuarial risk and non-life actuarial risk are used to measure risk in the subcategories.

Health actuarial risk also includes significant parts of the group's casualty insurance business as well as its health and occupational disability insurance business.

16.3.2 Risk management in health and casualty insurance

Risk management in health insurance business

In the health insurance business, actuarial risk is managed by means of a **risk-conscious underwriting policy**, the features of which are binding underwriting guidelines, careful selection of risk, and targeted management of benefits and costs. In many of the health insurance rate scales, deductibles are one of the specific mechanisms used to control the extent of claims. Provisions are recognized to ensure that all benefit obligations under insurance contracts can be met. The appointed actuary carries out monitoring as part of product development and over the course of time to verify that the actuarial assumptions used are appropriate.

In accordance with VAG provisions, R+V carries out an annual comparison of its calculations with the insurance benefits it is required to pay. If this comparison of claims for an observation unit within a particular scale of insurance rates reveals a variance that is other than temporary, the relevant **premiums** are adjusted. An independent trustee is consulted to ensure that the actuarial assumptions are sufficiently sound. A safety margin factored into premiums also ensures that obligations can be met if claims are higher than the level provided for in cost calculations.

In the health insurance business, the **decrement tables** include assumptions regarding mortality and the probability of other relevant withdrawal factors. Under the requirements set out in the German Health Insurance Supervision Regulation (KVAV), these assumptions must be specified and regularly reviewed from the perspective of prudent risk assessment. It is for this reason that a new mortality table is developed annually by the Verband der privaten Krankenversicherung e.V. (PKV) [Association of German private healthcare insurers] in consultation with BaFin. In accordance with statutory provisions, R+V carries out an annual comparison of its calculations with the most recently published mortality tables.

When determining **lapse probabilities** for the purposes of its calculations, R+V uses both its own observations and the latest figures published by BaFin.

Where premiums were adjusted on January 1, 2018, R+V used the new PKV mortality table valid for 2018 to determine both new business premiums and those **premium adjustments** in existing business.

Unisex insurance rate scales are offered in R+V's **new business**. The cost calculation for these rates is not only based on the existing gender breakdown, but also takes into account the expected pattern of switching by existing policyholders to the new rates. The appropriateness of the composition of the portfolio resulting from the calculations is reviewed by actuaries using comparable calculations.

Risk management in casualty insurance business

The risk situation in the casualty insurance division is characterized by the fact that it is fixed-sum insurance and not indemnity insurance. Consequently, the

maximum benefit per insured person is restricted to the sum insured.

A risk-conscious underwriting policy is adopted for casualty insurance. Premiums are reviewed on an ongoing basis to ensure that they remain appropriate. Claims are assessed on a case-by-case basis. Experts and assessors are selected very carefully in order to obtain assessments that are realistic and appropriate.

16.4 Management of non-life actuarial risk

16.4.1 Risk measurement

The capital requirements for **premium and reserve risk** are calculated on the basis of risk factors and volume measures for all branches of insurance in which business is conducted. The volume measures take account of geographical diversification. The risk factors (e.g. the standard deviation as a percentage of the volume measure) describe the degree of threat posed by the risk. The volume measure for the **premium risk** is essentially the net premium income earned in the financial year and in the first and second years after that. The net claims provisions in the form of a best-estimate valuation constitute the volume measure for the **reserve risk**.

The capital requirement for **catastrophe risk** is calculated as an aggregation of four risk modules. These are natural catastrophe risk (broken down into the following natural hazards: hail, storm, flood, earthquake, and subsidence), the catastrophe risk of non-proportional reinsurance in non-life insurance, risk of man-made catastrophe, and other catastrophe risk in non-life insurance. Catastrophe risk is calculated using the volume measures of sums insured and premiums. Risk mitigation through reinsurance is taken into consideration.

To determine the overall solvency requirement as part of internal risk assessment, empirical distributions are generated for the relevant parameters for parts of the **direct insurance portfolio**, such as the claim amount and the number of claims per sector and claim type (e.g. basic claims, major claims, catastrophe claims). The value-at-risk can then be determined with the required confidence level directly from the underwriting result modeled in this way, recorded as a loss function. The parameterization of the distributions taken into account uses historical portfolio data and their planning data and reflects the entity's actual risk position.

The risk modeling for calculating basic claims relating to the natural hazard earthquake and basic claims and minor cumulative events relating to the natural hazards hail, storm, and flood is based on mathematical/statistical methods. The minimum and maximum claim amounts for minor cumulative events are derived from the group's own claims history. Modeling is based on the group's own claims data.

The risk modeling for major cumulative events relating to the natural hazards hail, storm, flood, and earthquake uses probability-based natural hazard models. To this end, catastrophe claims are used that have been modeled by external providers for each natural hazard and take account of the specific risk profile.

In its **inward reinsurance business**, R+V deploys a simulation tool for stochastic risk modeling of catastrophe risk. To model the natural catastrophe risk on an individual contract basis, event catalogs from external providers containing predefined scenarios based on historical observations are used. The event catalogs cover the main countries and natural hazards related to the underwritten risk in the inward reinsurance concerned. In the case of countries and natural hazards for which there is no event catalog, modeling is based on R+V's own claims history. This involves generating scenarios for the current portfolio on the basis of historical major claims.

For inward reinsurance purposes, modeling based on the group's own claims history is also used to determine the overall solvency requirement for the risk of **man-made catastrophe**. This involves generating scenarios for the current portfolio on the basis of the historical major claims.

The overall solvency requirement for **lapse risk** is determined on the basis of a stress scenario involving the lapse of 40 percent of those insurance contracts whose lapse would lead to an increase in the best-estimate valuation for the premium provision.

16.4.2 Risk management in direct non-life insurance business

Premium and reserve risk is managed through targeted risk selection, risk-oriented premiums and products, and profit-oriented underwriting guidelines. In order to maintain a balanced risk profile, R+V ensures it has adequate reinsurance cover for major individual risks. Managers use planning and control tools to ensure they are in a position at an early stage to identify unexpected or adverse portfolio or claim

trends and to initiate appropriate corrective action in response to the changes in the risk situation. To make these risks manageable, pricing is based on a precise calculation with the help of mathematical/statistical modeling.

Market monitoring and ongoing checks on the action taken provide further options for managing the business at an early stage, taking into account the prevailing risk appetite.

The measurement of the overall solvency requirement for **natural catastrophe risk** is supplemented by regular analysis of the policy portfolio. This analysis carried out with the aid of tools such as the ZÜRS Geo information system (zoning system for flooding, backwater flooding, and heavy rainfall) investigates risk concentrations and changes in these concentrations over time. The use of geographical diversification and the deployment of underwriting guidelines form the basis for managing risks arising from natural disasters.

To reduce actuarial risk, R+V purchases facultative and obligatory reinsurance cover, formulates risk exclusions, and designs risk-appropriate deductible models. Risk-bearing capacity is regularly reviewed as part of the reinsurance decision-making process. This is used as the basis for reinsurance structures and liability layers.

In order to prevent or limit losses, R+V provides a network of different subsidiaries that offer specialist services to help customers and sales partners with contract, risk prevention, or restructuring issues.

In compliance with Solvency II requirements, mathematical/statistical methods are used to calculate future payment obligations for the purpose of measuring insurance liabilities. Insurance liabilities are measured separately for premium and claims provisions. R+V's own experience, actuarial statistics, and additional sources of information are used for the calculations. The methods deployed are based on generally accepted principles of actuarial practice.

16.4.3 Risk management in inward non-life business

R+V counters **premium and reserve risk** by continuously monitoring the market as well as the economic and political situation, by managing risk in accordance with its corporate strategy, and by setting insurance rates appropriate to the risk involved. Risk management is conducted via a clearly structured and earnings-driven underwriting policy. The assumption of risk is circumscribed by mandatory underwriting guidelines and limits that restrict potential liability arising from both individual and cumulative claims. R+V takes account of economic capital costs when underwriting risk. Compliance with these requirements is regularly monitored.

The material actuarial risks in the inward reinsurance portfolio are **catastrophe risk**, long tail risk, reserve risk and also far-reaching changes in the trends underlying the main markets. The actual and potential losses arising from the level and frequency of claims under natural disaster insurance are recorded and assessed using industry-standard software and R+V's own additional verification systems. The portfolio is continuously monitored for possible concentrations of natural disaster risk.

The objective in managing natural disaster risk is to ensure that there is a broad balance of risk across all categories and that the risk is diversified geographically around the globe.

Limits are set to support central management and limitation of cumulative risks arising from individual natural hazards. One of the key mechanisms for managing risk is a systematic check on the cumulative authorized limits for natural disaster risks. The monitoring and management of limits may include the reallocation or adjustment of capacities. The modeled exposures remained within the authorized limits.

Action that can be taken to mitigate the risk includes management of deductibles and retrocession taking into account risk-bearing capacity and the effective costs of retrocession. Minimum requirements apply in relation to the credit rating of retrocessionaires. To minimize peak risk in connection with natural disasters in Europe, R+V has entered into a retrocession agreement as part of its inward reinsurance business.

R+V monitors the claims rate trend promptly and continuously, allowing it to initiate preventive measures so that it always has a sufficient level of reserves. The reserves position is monitored in a number of ways, including by means of an expert report, which is prepared once a year.

16.5 Specific risk factors

In the case of products with long-term guarantees, which constitute the bulk of the **direct life insurance business**, there is a risk of negative variances over the

term of the contracts compared with calculation assumptions because of the length of time covered by the contracts. The relevant risk factors include changes in life expectancy, increasing rates of disability-morbidity, and disproportionately sharp cost increases.

In **health insurance**, which accounts for a substantial proportion of health actuarial risk, there is a risk of higher claims caused by the behavior of the policyholders and service providers.

R+V's **direct non-life insurance and inward non-life reinsurance business** involves the provision of cover for a range of disasters. This includes both natural disasters, such as earthquakes, storms, and floods, and man-made disasters. These events cannot be predicted. Generally speaking, there is both the risk of particularly significant individual loss events and also the risk of a large number of loss events that are each not necessarily significant in themselves. In any one year, the actual impact from the size and frequency of losses could therefore substantially exceed the forecast impact. Climate change represents an additional risk factor in connection with the occurrence of natural disasters. It is reasonable to expect that climate change will lead to an increase in weather-related natural disasters over the long term.

16.6 Claims rate trend in non-life insurance

In the **direct non-life insurance business**, earnings in the reporting period were adversely impacted by storms Friederike and Burglind, which gave rise to claims of €90 million. Storms Wilma and Yvonne led to claims of €50 million. Overall, the level of natural peril losses in 2018 was within the anticipated claims budget.

The claims rate in the **inward reinsurance business** fell significantly year on year. Notable natural disaster events included the Camp Fire in California, Typhoons Jebi and Trami in Japan, and Hurricane Michael in Florida, which together gave rise to a total expense of €149 million.

Changes in claims rates and settlements (net of reinsurance) in direct non-life insurance and inward non-life reinsurance business are shown in Fig. 36.

16.7 Risk position

As at December 31, 2018, the **overall solvency requirement** for **life actuarial risk** amounted to €884 million (December 31, 2017: €868 million). The **upper loss limit** was set at €1,100 million as at the balance sheet date (December 31, 2017: €1,200 million) and was not exceeded at any time during 2018.

As at December 31, 2018, the **overall solvency requirement for health actuarial risk** was measured at €312 million (December 31, 2017: €219 million) with an **upper loss limit** of €350 million (December 31, 2017: €370 million). Again, the risk capital requirement was below the upper loss limit at all times during the course of 2018.

As at December 31, 2018, the **overall solvency requirement** for **non-life actuarial risk** amounted to €3,247 million (December 31, 2017: €3,001 million). The **upper loss limit** was set at €3,650 million as at the balance sheet date (December 31, 2017: €3,580 million). It was not exceeded at any time in the year under review.

The overall solvency requirement for the various types of non-life actuarial risk is shown in Fig. 37. The rise in the overall solvency requirement compared with the prior year resulted first and foremost from business growth. This applied particularly to premium and reserve risk.

FIG. 36 – INSURANCE SECTOR: CLAIMS RATE AND SETTLEMENTS (NET OF REINSURANCE)[1]

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Claims rate (net) as percentage of premiums earned										
Including major/natural disaster claims	76.2	76.6	76.1	76.2	75.5	78.2	75.6	77.7	77.3	73.0
Excluding major/natural disaster claims	71.1	72.8	72.3	74.0	73.8	69.1	72.7	71.4	75.0	73.0
Settlements (net) as percentage of provision for incoming claims										
Non-life	1.1	3.1	3.6	1.6	2.1	0.5	0.3	1.9	4.8	4.8

1 Direct non-life insurance business and inward non-life reinsurance.

FIG. 37 – INSURANCE SECTOR: OVERALL SOLVENCY REQUIREMENT FOR NON-LIFE ACTUARIAL RISK

€ million	Dec. 31, 2018	Dec. 31, 2017
Premium and reserve risk	2,059	1,778
Non-life catastrophe risk	2,047	2,013
Lapse risk	98	91
Total (after diversification)	3,247	3,001

The changes in actuarial risk in direct non-life insurance in 2019 will continue to be shaped by the strategy of achieving long-term profitable growth in all segments of R+V.

In its inward reinsurance business, R+V intends to expand its portfolio, which is well diversified in terms of geography and sector, by continuing the earnings-driven underwriting policy it has pursued in previous years.

R+V has examined the implications of Brexit in a working group and in consultation with consultants in the UK. The outcome is that R+V will continue to operate its inward reinsurance business in the current form.

17 Market risk

17.1 Definition and business background

Market risk describes the risk arising from fluctuation in the level or volatility of market prices of assets, liabilities, and financial instruments that have an impact on the value of the assets and liabilities of the entity. It suitably reflects the structural mismatch between assets and liabilities, in particular with respect to their maturities.

Market risk is broken down into the following subcategories:

– **Interest-rate risk** describes the sensitivity of the values of assets, liabilities, and financial instruments to changes in the term structure of interest rates or to the volatility of interest rates.

– **Spread risk** describes the sensitivity of the values of assets, liabilities, and financial instruments to changes in the level or volatility of credit spreads above the risk-free interest rate term structure. Default risk and migration risk are also included in this subcategory. The credit spread is the difference in interest rates between a high-risk and a risk-free fixed-income investment. Changes in the credit risk premiums lead to changes in the market value of the corresponding securities.

– **Equity risk** describes the sensitivity of the values of assets, liabilities, and financial instruments to changes in the level or volatility of the market prices of equities. Equity investment risk is also a part of equity risk. Equity risk arises from existing equity exposures as a result of market volatility.

– **Currency risk** describes the sensitivity of the values of assets, liabilities, and financial instruments to changes in the level or volatility of exchange rates. Currency risk arises as a result of exchange rate volatility either from investments held in a foreign currency or the existence of a currency imbalance between insurance liabilities and investments.

– **Real-estate risk** describes the sensitivity of the values of assets, liabilities, and financial instruments to changes in the level or volatility of the market prices of real estate. Real-estate risk can arise as a result of negative changes in the fair value of real estate held directly or indirectly. This may be the result of a deterioration in the specific characteristics of the real estate or a general change in market prices (for example in connection with a real-estate crash).

– **Concentration risk** represents the additional risk for an insurance or reinsurance company stemming either from lack of diversification in the asset portfolio or from a large exposure to the risk of default by a single issuer of securities or a group of related issuers.

According to the Solvency II definition, the bulk of credit risk within market risk is assigned to spread risk. The other parts of credit risk are measured within counterparty default risk and other risk types.

17.2 Risk management

17.2.1 Market risk measurement

The measurement of market risk involves analyzing shock scenarios specified in **Solvency II** requirements, in some cases supplemented by the group's own parameterization.

The capital requirements for **interest-rate risk** are determined on the basis of shock scenarios calculated for an increase in interest rates and a decrease in

interest rates. R+V uses the shock factors in the standard formula to calculate the overall solvency requirement for interest-rate risk.

The capital requirements for **spread risk** are calculated using a factor approach based on the relevant lending volume. The level of the shock factor is determined by the security's rating and the modified duration of the investment. With loan securitizations, a distinction is made between single, double, and multiple securitization structures. Depending on which is applicable, different rating-dependent shock factors are used. R+V uses its own shock factors, based on a portfolio model and with particular regard to concentration risk, to calculate the overall solvency requirement.

The capital requirements for **equity risk** are determined on the basis of stress scenarios calculated for a decrease in market value. The stress amounts depend on the equity type, e.g. whether it is listed on a regulated market in a member state of the European Economic Area or Organisation for Economic Co-operation and Development (OECD). The capital requirement for equity risk is based on the relevant equity exposure. It is determined using modeling and risk quantification based on observable data. The parameters are increased in order to take account of default risk and concentration risk. Default risk describes the risk of loss resulting from issuer insolvency.

Currency risk is calculated using a scenario approach that reflects the impact of a decrease or increase in the exchange rate for a foreign currency. The shock factor for determining the overall solvency requirement is based on the individual currency portfolio of R+V. Lower factors are applied for currencies that are pegged to the euro than for those that are not pegged to the euro.

The calculation of **real-estate risk** looks at both property held directly (e.g. land and buildings) and real-estate funds. The shock factor for determining the overall solvency requirement for real-estate risk is a stress scenario adapted from the standard formula and reflects the fact that direct holdings consist overwhelmingly of investments in German real estate and fund holdings consist primarily of European real estate.

The overall solvency requirement for **concentration risk** is not calculated separately because this risk is taken into account in the calculations for equity risk, spread risk, and counterparty default risk.

17.2.2 Principles of market risk management

The management of market risk is a significant element in the management of overall risk at R+V. Market risk at R+V is limited in part by the upper loss limits that are set at the level of the DZ BANK Group.

The risk attaching to investments is managed in accordance with the guidelines specified by EIOPA, the stipulations in the VAG, the information provided in regulatory circulars, and internal investment guidelines (for details, see 'Market risk strategy' in section 15.1). Compliance with the internal provisions in the risk management guidelines for investment risk and with other regulatory investment principles and regulations at R+V is ensured by means of highly skilled investment management, appropriate internal control procedures, a forward-looking investment policy, and other organizational measures. The management of risk encompasses both economic and accounting aspects.

R+V continuously expands and refines the range of instruments used to identify, assess, and analyze the risk attaching to new investments and to monitor risk in the investment portfolio, in order to be able to respond to any changes in the capital markets and to detect, limit, or avoid risk at an early stage.
R+V counters investment risk by observing the principle of achieving the greatest possible security and profitability while ensuring liquidity at all times. By maintaining an appropriate mix and diversification of investments, the investment policy of R+V takes particular account of the objective of risk reduction.

R+V monitors changes in all types of market risk through constant measurement and a process of reporting to the relevant bodies. Risk in all subcategories is quantified through specific economic calculations. Stress tests represent an important early-warning system. In addition to natural diversification via maturity dates, issuers, countries, counterparties and asset classes, limits are also applied in order to mitigate risk.

Regular asset/liability management investigations are carried out at R+V. The necessary capital requirement to maintain solvency is reviewed on an ongoing basis with the support of stress tests and scenario analyses. Specifically, a systematic review is carried out to assess

the effects of a long period of low interest rates and volatile capital markets. R+V uses derivatives to manage market risk.

17.2.3 Management of individual market risk categories

In the management of **interest-rate risk**, R+V adheres to the principle of a broad mixture and diversification of investments, combined with balanced risk-taking in selected asset classes and duration management that takes account of the structure of obligations. Furthermore, the use of pre-emptive purchases helps to provide a constant return from investments and to manage changes in interest rates and duration. A portion of the fixed-income investment portfolio has also been protected against a fall in prices.

In the management of **spread risk**, R+V pays particular attention to high credit ratings for investments, with the overwhelming majority of its fixed-income portfolio being held in investment-grade paper (see also Fig. 43 in section 17.5). A significant proportion of the portfolio is also backed by further collateral. The use of third-party credit risk evaluations and internal expert assessments, which are often more rigorous than the credit ratings available in the market, serves to further minimize risk.

Mortgage lending is also subject to strict internal rules that help to limit default risk. Analysis has shown that accounting considerations do not require any loan loss allowances to be recognized at portfolio level.

The management of **equity risk** is based on a core-satellite approach in which the core comprises shares in large, stable companies in indices that can be hedged to which satellite equities are added to improve the risk/return profile. Asymmetric strategies are also used to reduce or increase equity exposure under a rules-based approach. At R+V, equities are used as part of a long-term investment strategy to guarantee that obligations to policyholders can be satisfied; generating profits by exploiting short-term fluctuations to sell shares is not its objective. The risk of having to sell equities at an inopportune moment is mitigated by its broadly diversified portfolio of investments.

Currency risk is controlled by systematic foreign-exchange management. Virtually all reinsurance assets and liabilities are denominated in the same currency.

Real-estate risk is mitigated by diversifying holdings across different locations and types of use. The prudent investment strategy means that these risks are of secondary importance for R+V.

Concentration risk is of minor relevance to R+V and is reduced by maintaining an appropriate mixture and diversification of investments. This is particularly apparent from the granular structure of the issuers in the portfolio.

17.2.4 Distinctive features of managing market risk in personal insurance business

Due to the persistently low level of interest rates, there is a heightened risk that the guaranteed minimum return agreed for certain products when contracts are signed cannot be generated on the capital markets over the long term. This particularly applies to life insurance contracts and casualty insurance contracts with premium refund clauses that guarantee minimum returns. In the case of products with long-term guarantees, there is a risk of negative variances over the term of the contracts compared with calculation assumptions because of the length of time covered by the contracts. The main reasons for variances are the change in the capital market environment and maturity mismatches between investments and insurance contracts. A protracted period of low interest rates increases the market risk arising from investments.

Market risk can be countered by writing new business that takes into account the current capital market situation and by taking the following action to boost the portfolio's risk-bearing capacity. It is crucial to ensure that there is enough free capital that can be made available even in adverse capital market scenarios. The necessary capital requirement to maintain solvency is reviewed on an ongoing basis with the aid of stress tests and scenario analyses as integral components of asset/liability management.

Risk is essentially mitigated by recognizing a supplementary change-in-discount-rate reserve as specified in the Regulation on the Principles Underlying the Calculation of the Premium Reserve (DeckRV) and adding to the discount rate reserves for existing contracts, thereby reducing the average interest liabilities. In 2018, R+V added a total of €305 million to these supplementary reserves in its life insurance business, bringing the overall amount to €3,272 million. The addition to these reserves for casualty insurance with premium refund was €2 million, bringing the total to €34 million. Following the amendment to the

DeckRV toward the end of 2018, there will be a further increase in the supplementary change-in-discount-rate reserve, although this will be in smaller steps over a longer period (using the 'corridor method').

Policyholder participation in the form of future declarations of bonuses is also an important instrument with which to reduce market risk attaching to life insurance.

The breakdown of benefit reserves by discount rate for the main life and casualty insurance portfolios is shown in Fig. 38.

FIG. 38 – INSURANCE SECTOR: BENEFIT RESERVES BY DISCOUNT RATE FOR THE MAIN INSURANCE PORTFOLIOS[1]

Discount rate	Proportion of total benefit reserve in 2018[2]		Proportion of total benefit reserve in 2017[2]	
	(€ million)	(%)	(€ million)	(%)
0.00%	5,713	9.3	5,213	8.9
0.08%	1	-	-	-
0.10%	-	-	-	-
0.25%	853	1.4	729	1.2
0.50%	59	0.1	17	-
0.75%	41	0.1	58	0.1
0.90%	2,720	4.4	1,088	1.9
1.00%	8	-	12	-
1.25%	2,266	3.7	2,119	3.6
1.50%	29	-	41	0.1
1.75%	5,292	8.6	5,067	8.6
1.80%	36	-	15	-
2.00%	445	0.7	352	0.6
2.25%	10,536	17.1	9,837	16.8
2.50%	87	0.1	88	0.1
2.75%	7,876	12.8	7,510	12.8
3.00%	2,798	4.5	3,213	5.5
3.25%	7,000	11.3	6,940	11.8
3.50%	3,857	6.2	4,122	7.0
3.75%	258	0.4	293	0.5
4.00%	7,346	11.9	7,476	12.7

1 The table covers the following insurance products that include a guaranteed rate of return:
– Casualty insurance policies with premium refund
– Casualty insurance policies with premium refund as pension insurance
– Pension insurance policies
– Endowment insurance policies, including capital accumulation, risk and credit insurance policies, pension plans with guaranteed insurance-based benefits
– Capital deposit products.
2 The share of the total benefit reserve attributable to supplementary insurance policies is listed under the relevant basis of calculation for the associated main insurance policy.

A summary of the actuarial assumptions for calculating the benefit reserves for the main life and casualty insurance portfolios is presented in note 11 of the notes to the consolidated financial statements. It forms part of the notes on the accounting policies applicable to the 'Benefit reserve' line item on the balance sheet.

The company actuarial discount rate calculated in accordance with the procedure developed by the Deutsche Aktuarvereinigung e.V. (DAV) [German Actuarial Association] is used in determining the health insurance discount rate. This procedure is based on a fundamental professional principle issued by the DAV for determining an appropriate discount rate. As a result of these calculations, the discount rate was reduced in 2018 for observation units with a premium adjustment effective January 1, 2018. The reason for this action was the persistently low level of interest rates.

17.2.5 Managing risk arising from defined benefit pension obligations

The R+V entities have pension obligations (defined benefit obligations) to their current and former employees. By entering into such direct defined benefit obligations, they assume a number of risks, including risks associated with the measurement of the amounts recognized on the balance sheet, in particular risk arising from a change in the discount rate, risk of longevity, inflation risk, and risk in connection with salary and pension increases. A requirement may arise to adjust the existing provisions for pensions and other post-employment benefits as a result of decisions by the courts, legislation, or changes in the (consolidated) financial reporting. All the plan assets at R+V without exception are assets in reinsured pension schemes and are subject to interest-rate risk. The strategy adopted for the pension assets is predominantly driven by the defined benefit obligations.

17.3 Specific risk factors

Generating the guaranteed return required in its life insurance business may present R+V with additional challenges if interest rates remain low or turn negative and **credit spreads** remain narrow. Compared with actuarial risk, interest-rate risk plays a fairly minor role in non-life insurance business. A rise in interest rates or widening of credit spreads on bonds in the market would lead to a drop in fair values. Falls in fair value of this nature could have a temporary impact on operating profit, or a permanent impact if bonds have to be sold. Given that cash flows in connection with insurance liabilities in the area of life insurance can be readily forecast and the fact that R+V's investments are well diversified, the risk that bonds might have to be sold at a loss before their maturity date is low.

Default risk arises if there is a deterioration in the financial circumstances of issuers or borrowers, resulting in the risk of partial or complete default on

receivables or in ratings-related impairment losses. The credit quality of R+V's investments is generally high with a sound collateralization structure. In the dominant public and financial sectors, they are largely loans and advances in the form of government bonds and German and European Pfandbriefe backed by collateral in accordance with statutory requirements.

17.4 Lending volume

17.4.1 Reconciliation of the lending volume

The amount and structure of the lending volume are key factors for the aspects of credit risk reflected in market risk and counterparty default risk. To identify possible risk concentrations, the volume liable to credit risk is broken down by sector, country group, and rating class.

In the Insurance sector, counterparty default risk is of secondary importance compared with market risk and actuarial risk.

Fig. 39 shows a reconciliation of the lending volume on which the risk management is based to individual balance sheet items in order to provide a transparent illustration of the link between the consolidated financial statements and risk management. There are discrepancies between the internal management and external (consolidated) financial reporting measurements for some portfolios owing to the focus on the risk content of the items. Other main reasons for the discrepancies between the two sets of figures are differences in the scope of consolidation, differences in the definition of lending volume, and various differences in recognition and measurement methods.

17.4.2 Change in lending volume

As at December 31, 2018, the total lending volume of R+V had increased by 2 percent to €86.9 billion (December 31, 2017: €84.8 billion). This increase was attributable to the expansion of the investment portfolios in connection with the growth in the insurance business.

The volume of lending in the home finance business totaled €9.9 billion as at December 31, 2018 (December 31, 2017: €9.5 billion). Of this amount, 90 percent was accounted for by loans for less than 60 percent of the value of the property (December 31, 2017: 91 percent). The volume of home finance was broken down by finance type as at the reporting date as follows (figures as at December 31, 2017 shown in parentheses):

– Consumer home finance: €9.3 billion (€9.1 billion)
– Commercial home finance: €0.1 billion (€0.1 billion)
– Commercial finance: €0.5 billion (€0.3 billion).

FIG. 39 – INSURANCE SECTOR: RECONCILIATION OF THE LENDING VOLUME

€ billion

Lending volume for internal management accounts		Reconciliation: Scope of consolidation		Reconciliation: Definition of the lending volume		Reconciliation: Carrying amount and measurement		Lending volume for the consolidated financial statements		
Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	(note 55 to the consolidated financial statements)
								9.3	9.1	of which: mortgage loans
								7.4	7.8	of which: promissory notes and loans
								9.6	9.1	of which: registered bonds
								-	0.6	of which: other loans
								9.2	9.3	of which: variable-yield securities
								49.0	44.6	of which: fixed-income securities
								0.2	0.3	of which: derivatives (positive fair values)
								0.3	0.2	of which: deposits with ceding insurers
86.9	84.8	-1.9	-0.9	0.2	0.2	-0.3	-3.2	84.9	81.0	Total
						Balance as at Dec. 31, 2018		-2.0	-2.3%	
						Balance as at Dec. 31, 2017		-3.8	-4.5%	

Not relevant (grey cells)

In the home finance business, the entire volume disbursed is usually backed by traditional **loan collateral**.

The financial sector and the public sector, which are the dominant **sectors**, together accounted for 71 percent of the total lending volume as at December 31, 2018 (December 31, 2017: 72 percent). This lending mainly comprised loans and advances in the form of German and European Pfandbriefe backed by collateral in accordance with statutory requirements. Loans and advances to the public sector and consumer home finance (retail) highlight the safety of this investment.

Fig. 40 shows the sectoral breakdown of the lending volume in the Insurance sector.

An analysis of the **geographical breakdown** of the lending volume in Fig. 41 reveals that Germany and other industrialized countries accounted for the lion's share – 90 percent – of the lending volume as at the balance sheet date (December 31, 2017: 91 percent). European countries dominated within the broadly diversified exposure in industrialized countries.

The high proportion of obligations in connection with the life insurance business requires investments with longer maturities. This is also reflected in the breakdown of **residual maturities** shown in Fig. 42.

As at December 31, 2018, 83 percent (December 31, 2017: 81 percent) of the total lending volume had a residual maturity of more than 5 years. The increase in long residual maturities was mainly the result of investments in bonds.

By contrast, just 2 percent of the total lending volume was due to mature within 1 year as at December 31, 2018 (December 31, 2017: 4 percent).

The **rating structure** of the lending volume in the Insurance sector is shown in Fig. 43. Of the total lending volume as at December 31, 2018, 80 percent continued to be attributable to investment-grade borrowers (December 31, 2017: 80 percent). This reflects the regulatory requirements and the safety-oriented risk strategy of R+V. The lending volume that is not rated, which remained unchanged year on year at 17 percent of the total lending volume, essentially comprised low-risk consumer home finance for which external ratings were not available.

FIG. 40 – INSURANCE SECTOR: LENDING VOLUME, BY SECTOR

€ billion	Dec. 31, 2018	Dec. 31, 2017
Financial sector	40.0	39.2
Public sector	21.3	21.9
Corporates	15.6	14.4
Retail	9.3	9.0
Industry conglomerates	0.6	0.4
Total	**86.9**	**84.8**

FIG. 41 – INSURANCE SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Dec. 31, 2018	Dec. 31, 2017
Germany	31.9	32.1
Other industrialized countries	46.6	44.8
Advanced economies	1.1	1.1
Emerging markets	4.2	3.7
Supranational institutions	3.1	3.1
Total	**86.9**	**84.8**

FIG. 42 – INSURANCE SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Dec. 31, 2018	Dec. 31, 2017
≤ 1 year	2.1	3.0
> 1 year to ≤ 5 years	12.9	13.1
> 5 years	71.9	68.7
Total	**86.9**	**84.8**

To rate the creditworthiness of the lending volume, R+V uses external ratings that have received general approval. It also applies its own expert ratings in accordance with the provisions of Credit Rating Agency Regulation III to validate the external credit ratings. R+V has defined the external credit rating as the maximum, even in cases where its own rating is better. The ratings calculated in this way are matched to the DZ BANK credit rating master scale using the methodology shown in Fig. 22 (section 8.4.1).

As at the reporting date, the 10 counterparties associated with the largest lending volumes accounted for 21 percent of R+V's total lending volume (December 31, 2017: 22 percent).

17.4.3 Credit portfolios with increased risk content

The credit portfolios with increased risk content are analyzed separately because of their significance for the risk position. The figures presented here are included in the above analyses of the total lending volume.

R+V continuously reviews its credit portfolio with regard to emerging crises. The risks identified are observed, analyzed, and managed with the aid of a regular reporting system and discussions in the operational decision-making committees at R+V. Adjustments are made to the portfolio if necessary.

In 2018, analysis focused particularly on country risk in **Italy** following the formation of the new government and the restructuring in the Italian banking industry. This analysis was used as the basis for determining the implications for the investment portfolio and R+V's Italian subsidiary before specific management action was then initiated.

Investments in **eurozone periphery countries** totaled €6,158 million as at December 31, 2018 (December 31, 2017: €7,574 million), which constituted a decrease of 18 percent. Fig. 44 shows the country breakdown of the exposure.

R+V has also carried out an analysis of all divisions in view of the anticipated **UK exit from the EU**. No material change in the risk position was identified. The principal reason for the continued increased credit risk is that the quality of the investments with individual UK counterparties is adversely impacted by country-specific events even though the creditworthiness of the individual counterparties themselves is not impaired. A disorderly, hard (i.e. 'no deal') Brexit would have more negative consequences than an orderly Brexit (exit with a 'deal').

R+V's investments in the **UK** totaled €3,721 million as at December 31, 2018 (December 31, 2017: €3,741 million). R+V has taken action to mitigate the risk so that it is prepared even if there is a hard Brexit.

17.5 Risk position

As in prior years, market risks were manageable in 2018 and did not have any detrimental impact on the risk position or financial performance of the DZ BANK Group.

In addition to the indebtedness of certain countries and protectionist trends, the currently anticipated change in ECB monetary policy represents a potential risk. This is being countered, particularly with regard to interest-rate risk, by proactive and rigorous asset/ liability management and by careful management of risks and investments.

As at December 31, 2018, the **overall solvency requirement for market risk** amounted to €4,343 million (December 31, 2017: €3,240 million) with an **upper loss limit** of €4,350 million (December 31, 2017: €3,800 million). This increase in market risk was attributable to the expansion of the investment portfolios in connection with the growth in the insurance business. It was also due to the fall in the potential for risk mitigation arising from the lower future policyholder participation, which in turn was caused by the fall in interest rates in 2018.

FIG. 43 – INSURANCE SECTOR: LENDING VOLUME, BY RATING CLASS

€ billion		Dec. 31, 2018	Dec. 31, 2017
Investment grade	1A	25.1	22.5
	1B	11.9	8.9
	1C	-	-
	1D	7.7	10.1
	1E	-	-
	2A	7.4	5.7
	2B	5.5	5.1
	2C	5.5	5.4
	2D	2.7	8.3
	2E	-	-
	3A	4.1	2.2
Non-investment grade	3B	0.8	0.6
	3C	0.4	0.3
	3D	-	-
	3E	0.4	0.5
	4A	0.1	0.1
	4B	0.1	0.1
	4C	0.2	0.2
	4D	-	-
	4E	-	-
Default		-	-
Not rated		15.0	14.7
Total		86.9	84.8

FIG. 44 – INSURANCE SECTOR: EXPOSURE IN EUROZONE PERIPHERY COUNTRIES

€ million	Dec. 31, 2018	Dec. 31, 2017
Italy	4,081	5,569
of which: public sector	2,983	4,174
of which: non-public sector	1,099	1,395
of which: financial sector	836	896
Spain	2,077	2,005
of which: public sector	1,402	1,322
of which: non-public sector	675	682
of which: financial sector	468	431
Total	6,158	7,574
of which: public sector	4,384	5,496
of which: non-public sector	1,773	2,078
of which: financial sector	1,304	1,327

Fig. 45 shows the overall solvency requirement for the various types of market risk.

FIG. 45 – INSURANCE SECTOR: OVERALL SOLVENCY REQUIREMENT FOR MARKET RISK

€ million	Dec. 31, 2018	Dec. 31, 2017
Interest-rate risk	1,161	1,475
Spread risk	2,146	1,571
Equity risk	2,289	1,447
Currency risk	249	201
Real-estate risk	425	319
Total (after diversification)	**4,343**	**3,240**

In addition to the overall solvency requirement, a **capital buffer requirement** is calculated for R+V's market risk. This capital buffer requirement partly covers the spread and migration risk arising from sub-portfolios of Italian government bonds. Since the recalculation of the overall solvency requirement as at December 31, 2017, it has also taken account of the increase in market risk stemming from a further refinement of the method for measuring interest-rate risk. Working with DZ BANK, R+V is currently examining what further changes need to be made as a result of the review process conducted by EIOPA under Delegated Regulation (EU) No. 2015/35 (Solvency II Regulation). The capital buffer relating to the refinement of the measurement of interest-rate risk will be removed again once the new methodology has been implemented.

As at December 31, 2018, the capital buffer requirement for market risk totaled €278 million (December 31, 2017 after recalculation: €457 million).

18 Counterparty default risk

18.1 Definition and business background

Counterparty default risk reflects possible losses due to unexpected default or deterioration in the credit standing of counterparties and debtors of insurance and reinsurance companies over the following 12 months. It covers risk-mitigating contracts, such as reinsurance arrangements, securitizations and derivatives, and receivables from intermediaries, as well as any other credit risk that is not otherwise covered by risk measurement.

Counterparty default risk takes account of collateral or other security that is held by the insurance or reinsurance company and any associated risks.

At R+V, risks of this nature particularly relate to counterparties in derivatives transactions, reinsurance counterparties, and defaults on receivables from policyholders and insurance brokers.

18.2 Risk management

18.2.1 Measurement of counterparty default risk and management of limits

The capital requirements for counterparty default risk are determined on the basis of the relevant exposure and the expected losses per counterparty.

R+V manages counterparty default risk at individual entity level.

Transactions involving derivatives are subject to explicit internal guidelines, particularly those regarding volume and counterparty limits. A comprehensive, real-time reporting system enables the various risks to be monitored regularly and presented transparently. Only economic hedges are used and they are not reported on a net basis in the consolidated financial statements.

R+V uses the views expressed by the international rating agencies in conjunction with its own credit ratings to help it to assess counterparty and issuer risk. Compliance with the limits for major counterparties is reviewed on an ongoing basis, with regular checks on limit utilization and compliance with investment guidelines.

18.2.2 Mitigating counterparty default risk

Effective default management mitigates the risks arising from defaults on receivables relating to direct insurance operations with policyholders and insurance brokers. The risk of default on receivables is also addressed by recognizing general loan loss allowances that are deemed to be adequate on the basis of past experience. The average ratio of defaults to gross premiums written over the past 3 years came to 0.1 percent (December 31, 2017: 0.1 percent).

The default risk for receivables arising from inward and ceded reinsurance business is limited by constantly monitoring credit ratings and making use of other sources of information in the market. As was the case at the end of 2017, virtually all receivables arising from

ceded reinsurance, which amounted to €23 million as at December 31, 2018 (December 31, 2017: €10 million), were due from entities with a rating of A or higher. In 2018, receivables arising from reinsurance did not represent a material risk due to the excellent credit quality of the reinsurers. There were no material defaults in 2018 or in previous years.

18.3 Specific risk factors

Risk factors in connection with counterparty default risk include unexpected defaults or deterioration in the credit quality of mortgage borrowers, counterparties of derivatives, reinsurance counterparties or policyholders, or insurance brokers.

18.4 Risk position

As at December 31, 2018, the **overall solvency requirement for counterparty default risk** amounted to €79 million (December 31, 2017: €57 million) with an **upper loss limit** of €100 million (December 31, 2017: €130 million). The upper loss limit was not exceeded at any point during 2018.

19 Operational risk

19.1 Definition and business background

Operational risk is defined as the risk of loss arising from inadequate or failed internal processes, personnel, or systems, or from external events; it includes legal risk. Legal risk could arise, in particular, from changes in the legal environment (legislation and decisions by the courts), changes in official interpretations, and changes in the business environment. It follows then that operational risk could arise in any division of R+V.

19.2 Risk management

The **risk capital requirement** for operational risk in the Insurance sector is determined in accordance with the standard formula in Solvency II. The risk calculation uses a factor approach, taking account of premiums, provisions and, in the case of unit-linked business, costs.

R+V uses scenario-based risk self-assessments and risk indicators to manage and control operational risk. In the **risk self-assessments**, operational risk is assessed in terms of the probability of occurrence and the level of loss. Qualitative assessments can be used in exceptional cases.

Risk indicators help the Insurance sector to identify risk trends and concentrations at an early stage and to detect weaknesses in business processes. A system of warning lights is used to indicate risk situations based on specified threshold values. Risk indicators are collected systematically and regularly.

To support the management of operational risk, all R+V's business processes are structured in accordance with the requirements of the **framework guidelines** for employee authority and power of attorney in R+V companies. Divisions not covered by these guidelines are subject to other policy documents, including policies on new business and underwriting.

The **internal control system** is a key instrument used by R+V to **limit operational risk**. Rules and controls in each specialist division and reviews of the use and effectiveness of the internal control system carried out by Group Internal Audit avert the risk of errors and fraud. Payments are largely automated. Powers of attorney and authorizations stored in user profiles, as well as automated submissions for approval based on a random generator, provide additional security. Manual payments are always approved by a second member of staff.

To ensure that it is operational at all times, R+V has a fully integrated **business continuity management system** (BCM system) with a central coordination function. This also includes the contingency and crisis management system and is documented in the business continuity, contingency, and crisis management guidelines. The security and BCM conference with representatives from all divisions provides specialist support and helps to coordinate activities within the R+V subgroup. Reports on significant findings relevant to risk and on any exercises and tests that have been carried out are also submitted to the Risk Committee.

BCM ensures that R+V's operating activities can be maintained in the event of an emergency or crisis. To this end, time-critical business processes are recorded with the necessary resources. Any necessary documentation (such as business continuity planning) is prepared and regularly reviewed. Special organizational structures, such as the R+V crisis management team and the individual business continuity teams in the divisions, have also been set up to deal with emergency and crisis situations. The entire BCM system is subject to ongoing further development in a process of continuous improvement.

For information on the management of significant special operational risks, i.e. HR risk, IT risk, legal risk, and tax risk, please refer to the details on the management of these special risks in the Bank sector, which also apply to the Insurance sector (sections 14.5.1, 14.5.2, 14.5.5, and 14.5.6).

19.3 Specific risk factors

19.3.1 HR risk

The future success of R+V is dependent upon capable managers and employees with the necessary skills and qualifications. There is fierce competition for managerial and administrative staff in the labor market, driven by high demand and insufficient numbers of suitable individuals. Unless the necessary number of suitable managerial and administrative staff can be attracted within the required timeframe, and/or existing managers and employees can be retained, there will be a heightened risk that tasks will not be performed or will not be performed satisfactorily as a result of inadequate expertise in terms of either quality or quantity.

R+V provides long-term professional development and enhanced talent-management activities to ensure that staff members undergo the continuous development and training that will also make it possible to meet future staffing requirements from within the organization. The tools it uses for this purpose include a system for assessing high-potential employees, systematic succession planning, and skills upgrading programs.

In the interest of long-term staff retention, R+V runs programs to establish and enhance its appeal as a place to work, such as corporate health management, support for achieving a work-life balance, and regular staff surveys.

R+V counters operational risk in sales and distribution by providing continuous professional development courses for field sales staff. R+V applies the code of conduct for sales and distribution of the Gesamtverband der Deutschen Versicherungswirtschaft e.V. (GDV) [German Insurance Association]. This code focuses on a relationship between customers, insurance companies, and brokers that is defined by fairness and trust. The requirements set out in the code of conduct are reflected in the principles, policies, and processes of each company.

19.3.2 IT risk

Malfunctions or breakdowns in data processing systems or in the programs used on these systems, including attacks from external sources – such as hackers or malware –, could have an adverse impact on the ability of the Insurance sector to efficiently maintain the processes necessary to carry out operating activities, protect saved data, ensure sufficient control, or continue to develop products and services. Furthermore, such malfunctions or breakdowns could lead to temporary or permanent loss of data, or cause additional costs because the original capability would need to be restored and/or preventive measures introduced to provide protection against similar events in the future.

Quality assurance in IT is based on well-established processes that follow best practice. A meeting is held every working day to discuss current topics and assign people to work on them. In addition, appropriate measures relating to adherence to service level agreements (e.g. system availability) are decided upon at monthly meetings attended by the IT divisional managers.

Comprehensive physical and logical precautionary measures guarantee the security of data and applications and ensure that day-to-day operations are maintained. A particular risk would be a partial or total breakdown in data processing systems.

R+V counters this risk by using two segregated data processing centers in which the data and systems are mirrored, special access security, fire control systems, and an uninterruptible power supply supported by emergency power generators. Regular exercises are carried out to test a defined restart procedure to be used in disaster situations with the aim of checking the efficacy of this procedure. Data is backed up and held within highly secure environments in various buildings. Furthermore, data is mirrored to a tape library at a remote, off-site location. This means that data will still be available, even if all of the data processing centers in Wiesbaden are completely destroyed.

As part of contingency and crisis management systems, R+V has initiated a range of measures to cope with business interruptions. However, the possibility cannot be ruled out that disruption to processes and workflows could be sustained over several days. Moreover, sensitive internal and external interfaces could be jeopardized by long-term business interruptions.

Various IT security management procedures are used to identify, assess, and document cyber risks on an ongoing basis and then to systematically allocate these risks for processing. The processing status and risk treatment are tracked and reported centrally each month.

19.3.3 Legal risk

Legal disputes arising from the processing of insurance claims or benefit payments are covered by insurance liabilities, and therefore do not form part of operational risk. In the year under review, no significant operational risks from non-underwriting legal disputes arose at R+V.

Legal risk could arise, in particular, from changes in the legal environment, changes in official interpretations of relevant regulations, government interventions, court or arbitration proceedings, and changes in the business environment.

R+V monitors and analyzes relevant decisions by the courts with a view to mitigating legal risk by identifying any need for action in good time and implementing specific corrective measures.

19.3.4 Tax risk

Tax risk can arise, in particular, from adverse changes in tax circumstances (tax legislation, decisions by the courts), adverse changes in the interpretation by tax authorities of existing tax legislation, and changes in non-tax regulations.

As a result of tax audits, an alternative assessment of the tax risk or, in some cases, other information could give rise to **retrospective tax liabilities** for periods that have already been assessed. As there are still outstanding audits by the tax authorities relating to a number of financial years, there is a risk that retrospective tax payments could be required and these payments would be subject to interest charges. Business transactions are assessed for tax purposes on the basis of current tax legislation, taking into account the latest decisions by the courts and interpretations by the authorities. The outcome is factored into the measurement of loss allowances. Further risks could arise as a result of **changes in tax law or in decisions by the courts**, which could also have retroactive implications.

19.4 Risk position

As at December 31, 2018, the **overall solvency requirement for operational risk** amounted to €558 million (December 31, 2017: €528 million). The rise in the overall solvency requirement compared with the prior year resulted first and foremost from business growth. The **upper loss limit** applicable at the reporting date was set at €640 million (December 31, 2017: €650 million). The upper loss limit was not exceeded at any time during 2018.

20 Reputational risk

20.1 Definition and business background

Reputational risk is defined as the risk of losses that could arise from possible damage to the reputation of R+V or of the entire industry as a result of a negative perception among the general public (for example, customers, business partners, shareholders, authorities, media).

Reputational risk can arise as an independent risk (primary reputational risk) or as an indirect or direct consequence of other types of risk, such as operational risk (secondary reputational risk).

20.2 Risk management

One of the main objectives of R+V is to ensure that the R+V brand enjoys a positive image in the cooperative financial network and among the public at large. To prevent any damage to this image, R+V ensures that high quality standards are adhered to in product development and in all other parts of the value chain. In addition, R+V's corporate communications are coordinated centrally within the Chief Executive Officer's area of responsibility so that any inaccurate presentation of circumstances can be countered effectively and conclusively. Media reports about the insurance industry in general and R+V in particular are monitored and continuously analyzed across all R+V departments. A continuous improvement process pays close attention to ratings and market comparisons covering service, product quality, and advisory expertise, which are key parameters as far as customer satisfaction is concerned.

For the purposes of managing reputational risk, R+V uses risk indicators that facilitate early identification of risk trends and increase the transparency of risk exposures. A system of warning lights is used to indicate risk situations based on qualitative and quantitative threshold values. Risk indicators are collected systematically and regularly.

R+V's reputational risk is not specifically quantified within the Solvency II framework. However, it is implicitly included in the overall solvency requirement for life actuarial risk (lapse risk).

20.3 Specific risk factors

If R+V acquires a negative reputation, there is a risk that existing or potential customers will be unsettled with the result that existing business relationships might be terminated or it might not be possible to carry out planned transactions. There is also a risk that it will no longer be possible to guarantee the backing of stakeholders, such as network partners and employees, necessary to conduct business operations.

21 Risks from entities in other financial sectors

All entities that form part of the regulatory R+V Versicherung AG insurance group are generally included in the calculation of group solvency. This also applies to non-controlling interests in insurance companies and to entities in other financial sectors.

The **non-controlling interests in insurance companies** mainly relate to reinsurance and insurance companies over which R+V can exercise significant influence but without having complete control. In contrast to the position as at December 31, 2017, there were no non-controlling interests in insurance companies included in the risk measurement as at the reporting date because the previously included long-term equity investment in a Spanish insurance company was sold during 2018.

At R+V, the **entities in other financial sectors** mainly consist of pension funds and occupational pension schemes.

Risk is quantified for the pension funds and occupational pension schemes in accordance with the requirements currently specified by the insurance supervisor. This means applying the capital requirements in Solvency I, which are essentially calculated as a factor of the volume measures of benefit reserves and capital at risk.

R+V Pensionskasse AG is exposed to risks comparable with those faced by the life insurance entities in the R+V subgroup. The main risk management activities applicable in this case are those relating to life actuarial risk (section 16.2.2), market risk (section 17.2), counterparty default risk (section 18.2), and operational risk (section 19.2).

The risk situation in a pension fund is determined to a significant degree by the nature of the pension plans offered. In pension plans offered by R+V involving defined contributions with a minimum benefit, it must be ensured that at least the sum of the contributions paid into the plan (net of any contributions covering biometric risk assumed by R+V) is available on the agreed pension start date.

R+V also offers pension plans that include guaranteed insurance-based occupational incapacity cover as well as pension benefits and benefits for surviving dependants. Market risk and all the risk types covered by actuarial risk are relevant as far as occupational pension provision is concerned. Longevity risk is also important in relation to pensions because of the guaranteed benefits involved. Again, the risk management activities relating to life actuarial risk, market risk, counterparty default risk, and operational risk apply in this case. The ongoing pension plan contributions and the benefit reserve include sufficient amounts to cover the costs of managing pension fund contracts.

In the pension plans involving a benefit commitment without any insurance-based guarantees, R+V does not assume responsibility for any of the pension fund risk or investment risk because the benefits promised by the pension fund are subject to the proviso that the employer will also make up any difference required. This also applies to the period in which pensions are drawn. If the employer fails to make up the difference required, R+V's commitment is reduced to insurance-based guaranteed benefits based on the amount of capital still available.

As at December 31, 2018, the overall solvency requirement for risks in connection with non-controlling interests in insurance companies and entities in other financial sectors stood at €104 million (December 31, 2017: €127 million) with an **upper loss limit** of €145 million (December 31, 2017: €140 million). The upper loss limit was not exceeded at any point during 2018.

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Balance sheet as at December 31, 2018

ASSETS

€ million	(Notes)				Dec. 31, 2018	Dec. 31, 2017
1. Cash and cash equivalents						
a) Cash on hand				287		195
b) Balances with central banks				2,377		1,604
of which: with Deutsche Bundesbank		2,249				(1,416)
					2,664	**1,799**
2. Debt instruments from public-sector entities and bills of exchange eligible for refinancing by central banks						
a) Treasury bills, non-interest-bearing treasury notes and similar debt instruments from public-sector entities				230		269
					230	**269**
3. Loans and advances to banks	(02, 04, 05, 06, 07)					
a) Repayable on demand				41,736		38,290
b) Other loans and advances				103,314		97,859
					145,050	**136,149**
4. Loans and advances to customers	(02, 04, 05, 07)				**34,748**	**33,007**
of which: secured by mortgages		287				(311)
local authority loans		869				(1,095)
5. Bonds and other fixed-income securities	(02, 04, 05, 07, 12, 14)					
a) Money market instruments				180		165
ab) from other issuers			180			165
b) Bonds				27,448		34,888
ba) from public-sector issuers			6,948			11,706
of which: eligible as collateral at Deutsche Bundesbank		6,540				(11,293)
bb) from other issuers			20,500			23,182
of which: eligible as collateral at Deutsche Bundesbank		13,011				(14,510)
c) Own bonds				363		21
Nominal value		360				(20)
					27,991	**35,074**
6. Shares and other variable-yield securities	(02, 07, 12, 14)				**60**	**60**
6a. Trading assets	(02, 07, 13)				**32,434**	**29,813**
7. Long-term equity investments	(02, 12, 14)				**372**	**386**
of which: in banks		223				(223)
8. Shares in affiliated companies	(02, 12, 14)				**10,997**	**11,414**
of which: in banks		6,250				(6,665)
in financial services institutions		210				(211)
9. Trust assets	(08)				**833**	**978**
of which: trust loans		56				(66)
10. Intangible assets	(02, 14)					
b) Purchased concessions, industrial and similar rights and assets, including licenses for such rights and assets				52		48
d) Payments in advance				32		29
					84	**77**
11. Property, plant and equipment	(02, 14)				**428**	**440**
12. Other assets	(15)				**1,424**	**1,206**
13. Prepaid expenses and accrued income	(16)					
a) In connection with issuing and lending business				66		64
b) Other				47		33
					113	**97**
14. Deferred tax assets	(02, 17)				**1,083**	**1,061**
15. Excess of plan assets over pension liabilities	(18)				**37**	**168**
Total assets					**258,548**	**251,998**

EQUITY AND LIABILITIES

€ million	(Notes)				Dec. 31, 2018	Dec. 31, 2017
1. Deposits from banks	(02, 04, 05, 06)					
a) Repayable on demand				46,869		43,894
b) With agreed maturity or notice period				85,693		83,697
					132,562	**127,591**
2. Deposits from customers	(02, 04, 05)					
b) Other deposits				35,553		31,489
ba) Repayable on demand			21,896			17,885
bb) With agreed maturity or notice period			13,657			13,604
					35,553	**31,489**
3. Debt certificates issued including bonds	(02, 04, 05)					
a) Bonds issued				27,715		25,962
b) Other debt certificates issued				6,533		10,569
of which: commercial paper		6,533				(10,569)
					34,248	**36,531**
3a. Trading liabilities	(02, 13)				**34,426**	**33,164**
4. Trust liabilities	(08)				**833**	**978**
of which: trust loans		56				(66)
5. Other liabilities	(03, 19)				**825**	**694**
6. Deferred income and accrued expenses	(16)					
a) In connection with issuing and lending business				76		74
b) Other				10		8
					86	**82**
7. Provisions	(02)					
a) Provisions for pensions and other post-employment benefits				43		34
b) Provisions for taxes				148		91
c) Other provisions				804		918
					995	**1,043**
8. Subordinated liabilities	(02, 05, 20)				**4,636**	**5,358**
9. Profit-sharing rights	(21)				**68**	**292**
of which: maturing within two years		4				(229)
10. Fund for general banking risks	(02)				**3,812**	**4,272**
of which: special item in accordance with section 340e (4) HGB		240				(275)
11. Equity	(22, 23, 24)					
a) Subscribed capital				4,926		4,926
Contingent capital: €53 million (Dec. 31, 2017: €50 million)						
b) Capital reserve				3,784		3,784
c) Revenue reserves				1,470		1,470
ca) Statutory reserve			105			105
cd) Other revenue reserves			1,365			1,365
d) Distributable profit				324		324
					10,504	**10,504**
Total equity and liabilities					**258,548**	**251,998**
1. Contingent liabilities	(35)					
b) Liabilities under guarantees and indemnity agreements[1]				7,859		7,015
					7,859	**7,015**
2. Other obligations	(35)					
c) Irrevocable loan commitments				20,996		21,664
					20,996	**21,664**

1 See also details under 'Other disclosures' in Notes 36 and 37

Income statement for the period January 1 to December 31, 2018

€ million	(Notes)				**2018**	2017
1. Interest income from	(02, 30)					
a) Lending and money market business			1,881			1,881
of which: negative interest rates on financial assets		173				(123)
b) Fixed-income securities and book-entry securities			541			712
of which: negative interest rates on financial assets		0				(0)
				2,422		2,593
2. Interest expense	(02)			1,850		1,990
					572	**603**
of which: positive interest rates on financial liabilities		176				(135)
expenses incurred by the unwinding of discounts on provisions		3				(4)
3. Current income from	(02, 30)					
a) Shares and other variable-yield securities				1		0
b) Long-term equity investments				16		13
c) Shares in affiliated companies				232		400
					249	**413**
4. Income from profit-pooling, profit-transfer and partial profit-transfer agreements					**250**	324
5. Fee and commission income	(30, 31)			768		757
6. Fee and commission expenses				380		381
					388	376
7. Net trading income	(02, 30)				**363**	424
of which: reversal in accordance with section 340e (4) HGB		35				(–)
amounts added in accordance with section 340e (4) HGB		–				(7)
income from the discounting of provisions		–				(0)
expenses incurred by the unwinding of discounts on provisions		0				(0)
8. Other operating income	(02, 30, 32)				**154**	152
of which: income from the discounting of provisions		1				(4)
9. General and administrative expenses						
a) Staff expenses				636		643
aa) Wages and salaries			535			550
ab) Social security, post-employment and other employee benefit expenses			101			93
of which: post-employment benefit expenses		33				(26)
b) Other administrative expenses				770		834
					1,406	**1,477**
10. Amortization and write-downs on intangible assets, and depreciation and write-downs on property, plant and equipment					**46**	52
11. Other operating expenses	(02, 32)				**254**	179
of which: expenses incurred by the unwinding of discounts on provisions		138				(77)
12. Income from the reversal of write-downs on loans and advances and certain securities, and from the reversal of provisions for losses on loans and advances	(02)				**229**	14
13. Write-downs on and allowances for long-term equity investments, shares in affiliated companies, and securities treated as fixed assets	(02)				**384**	–
14. Income from the reversal of write-downs on long-term equity investments, shares in affiliated companies, and securities treated as fixed assets	(02)				**–**	225
15. Income from reversal of the fund for general banking risks	(02)				**425**	250
16. Expenses from the transfer of losses					**159**	351
17. Result from ordinary activities					**381**	**722**

€ million	(Notes)				2018	2017
18. Extraordinary income	(33)				**9**	107
19. Extraordinary expenses	(33)				**80**	509
20. Extraordinary result					**-71**	-402
21. Income taxes				-10		-251
of which: from deferred taxes		-22				(-170)
22. Other taxes not included under 'Other operating expenses'				-2		1
					-12	-250
23. Net income for the year	(34)				**322**	570
24. Profit brought forward from 2017					**2**	4
25. Additions to revenue reserves					**–**	250
d) To other revenue reserves				–		250
26. Distributable profit					**324**	324

Notes

A General disclosures

>> 01 Basis of preparation

DZ BANK AG Deutsche Zentral-Genossenschaftsbank (DZ BANK), headquartered in Frankfurt am Main, is entered in the commercial register at the Frankfurt am Main local court under the number HRB 45651.

The annual financial statements of DZ BANK for the year ended December 31, 2018 have been prepared in accordance with the requirements of the German Commercial Code (HGB) and the Statutory Order on the Accounts of Banks and Financial Services Institutions (RechKredV). At the same time, the annual financial statements comply with the provisions of the German Stock Corporation Act (AktG), the DG BANK Transformation Act, and the Articles of Association of DZ BANK.

DZ BANK has made use of available options to include disclosures in the notes to the financial statements rather than on the balance sheet and income statement. Unless stated otherwise, all amounts are shown in millions of euros (€ million). All figures are rounded to the nearest whole number. This may result in very small discrepancies in the calculation of totals and percentages.

The accounting policies applied in 2018 were essentially the same as those used in 2017, except that loss allowances are now calculated in accordance with IFRS 9 rules. Any changes compared with 2017 are set forth in Note 02 ‘Accounting policies’.

>> 02 Accounting policies

Assets and liabilities are measured in accordance with the general provisions in sections 252 et seq. HGB, taking account of the special provisions in sections 340 et seq. HGB applicable to banks.

Loans and advances to banks and customers

Loans and advances to banks and customers are carried at their principal amounts or at cost. The difference between the principal amount and the amount disbursed is recognized under deferred income and apportioned pro rata over the term of the loan. Promissory notes, registered bonds, and lease receivables acquired from third parties are recognized at cost. Loans and advances, which are classified as current assets, are measured strictly at the lower of cost and market.

Provisions for lending risks comprise valuation allowances and provisions for identifiable credit risk and latent credit risk for all portfolios of loans and advances on the balance sheet and off-balance-sheet transactions. DZ BANK also recognizes allowances for general banking risks as permitted by section 340f HGB.

Since January 1, 2018, the calculation of loss allowances under the HGB has also been based on the IFRS 9 expected loss model, which divides loss allowances into three stages. The probability of default, the loss given default, and the expected loan amount at the time of default are factored into the calculation of the expected credit losses. Stages 1 and 2 (portfolio loan loss allowances) are recognized for deferred credit risks; stage 1

corresponds to the 12-month expected credit loss and stage 2 to the lifetime expected credit loss. Use of the IFRS 9 expected loss model to calculate loss allowances under HGB complies with the general measurement principles of the HGB. By switching to the expected loss model, the intention is to take account of expected losses at an earlier stage, which will produce a better true and fair view of net assets, financial position, and results of operations.

Loss allowances for identifiable credit risk (actual impairment losses) are calculated in stage 3 in the amount of the lifetime expected credit loss. The expected credit loss in stage 3 is calculated on the basis of individual expert appraisals of the achievable cash flows and probability-weighted scenarios.

Transactions for which loss allowances are to be recognized are assigned to stage 1 upon initial recognition. This is not the case for financial assets that are purchased or originated credit-impaired assets (POCI assets). They are initially recognized at their carrying amount adjusted for their lifetime expected credit losses (POCI asset adjustment). At the balance sheet date, the cumulative changes that exceed the lifetime expected credit loss since initial recognition (POCI asset adjustment) are recognized as an additional loss allowance. Reversals of the POCI asset adjustment as a result of reversals of impairment losses are not possible due to the cost restriction under the HGB.

At each balance sheet date, assets are assigned to stage 2 if their credit risk has significantly increased since initial recognition but there is no objective evidence of impairment. The review of whether the credit risk has increased significantly since initial recognition is carried out on an ongoing basis using both quantitative and qualitative criteria.

Up to and including December 31, 2017, loss allowances were calculated using the IAS 39 incurred loss model. As a result of switching to the IFRS 9 loss allowance model, certain revocable loan commitments have been included in the total for the first time because, in practice, the contractually agreed cancellation period does not always limit the credit risk.

As a result of the 3-stage model being used since January 1, 2018, whenever there is a significant increase in credit risk, a transfer to stage 2 now takes place and a loss allowance is recognized in the amount of the lifetime expected credit loss. In previous years, by contrast, portfolio loan loss allowances were calculated on the basis of the 12-month expected credit loss. The change in the loss allowance model for portfolio loan loss allowances has also resulted in adjustment of the risk parameters applied (in particular, the use of individual rates of loss given default instead of general rates of loss given default and the change in the credit conversion factor (CCF) parameters for off-balance-sheet transactions).

This change resulted in income of €88 million (effect of initial application) that is largely attributable to portfolio loan loss allowances (use of individual rates of loss given default and different CCF parameters). Furthermore, a loss allowance of €13 million was recognized in 2018 for the revocable loan commitments that were included for the first time and had a nominal amount of €21 billion.

Bonds and other fixed-income securities, and shares and other variable-yield securities

These line items on the balance sheet comprise long-term securities and securities in the liquidity reserve. Securities in the liquidity reserve are measured strictly in accordance with the principle of lower of cost and market. Long-term securities that are permanently impaired are written down to the lower of cost and market. In 2018, as in the previous year, temporarily impaired long-term securities were optionally measured at the lower of cost and market or their carrying amount was retained in accordance with section 340e (1) HGB. Under the item ‘Bonds and other fixed-income securities’, the carrying amount of marketable securities not measured at the lower of cost and market was €3,648 million. For further information on the impact on net assets, financial position, and results of operations, please refer to Note 14 ‘Statement of changes in fixed assets’.

The fair value of securities is largely determined by reference to current market prices or by using generally accepted valuation methods on the basis of parameters that are broadly observable in the market, such as yield curves, spreads, volatility, or exchange rates. If specific parameters relevant to the measurement cannot be observed or cannot be determined directly from market data, the bank's own internal estimated parameters are used.

DZ BANK individually measures securities that are held either as long-term investments or in the liquidity reserve.

Premiums and discounts on the fixed-income securities in the banking book are recognized in accordance with the effective interest method. This resulted in interest expense of €47 million in 2018 (2017: €76 million).

Dividend income from shares and other variable-yield securities that are held either as long-term investments or in the liquidity reserve is reported as current income from shares and other variable-yield securities.

Trading assets and trading liabilities

Trading assets and trading liabilities comprise bonds and other fixed-income securities, shares and other variable-yield securities, promissory notes, registered bonds, sale and repurchase agreements, and derivatives (interest-rate, currency, credit, and equity derivatives). DZ BANK reports its own structured issues of credit-linked notes and share certificates – because they are held for trading purposes – as trading liabilities in accordance with the criteria specified in accounting guidance statement 2 issued by the banking committee of the Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW) [Institute of Public Auditors in Germany].

Over-the-counter (OTC) derivatives held for trading purposes, for which variation margins have been agreed on the basis of bilateral master agreements in the Collateralization Annex and for which the variation margins have been paid daily, are netted and shown on the balance sheet on a net basis. For each master agreement, the netting covers the fair values of the OTC derivatives and the variation margin. As at December 31, 2018, this netting reduced loans and advances to banks by €2,695 million (December 31, 2017: €3,225 million), loans and advances to customers by €486 million (December 31, 2017: €252 million), the carrying amount of trading assets by €10,758 million (December 31, 2017: €11,157 million), deposits from banks by €1,762 million (December 31, 2017: €1,493 million), deposits from customers by €265 million (December 31, 2017: €297 million), and the carrying amount of trading liabilities by €11,912 million (December 31, 2017: €12,844 million). The amounts are presented on a gross basis in Note 26 'List of derivatives recognized at fair value by product area' and in Note 27 'List of derivatives recognized at fair value by counterparty structure'.

The fair values of OTC interest-rate derivatives that are traded through a central counterparty have also been netted with the carrying amounts of the underlying derivatives positions contained in the trading assets and trading liabilities line items on the balance sheet. As at December 31, 2018, this netting reduced the carrying amount of trading assets by €7,192 million (December 31, 2017: €6,412 million), the carrying amount of other assets by €1,728 million (December 31, 2017: €1,590 million), and the carrying amount of trading liabilities by €8,920 million (December 31, 2017: €8,002 million). The amounts are presented on a net basis in Note 26 'List of derivatives recognized at fair value by product area' and in Note 27 'List of derivatives recognized at fair value by counterparty structure'.

As part of the clearing service for customers of DZ BANK, the fair values of OTC interest-rate derivatives that are traded through a central counterparty are recognized and netted with the carrying amounts of the underlying derivatives positions contained in the trading assets and trading liabilities line items on the balance sheet.

Financial instruments held for trading purposes are measured at their fair value in accordance with section 255 (4) HGB in conjunction with section 340e (3) HGB. To ensure that the income statement only includes unrealized gains from positions that are substantially closed, a risk adjustment is applied to the net gains and

losses. This adjustment comprises a value-at-risk adjustment, a mathematical calculation that describes the maximum potential loss that is considered to be highly probable. An internal model is used to calculate the value-at-risk adjustment based on regulatory requirements. It applies the 10-day value-at-risk adjustment required by the regulator. The calculation of the value-at-risk adjustment was based on an observation period of 250 trading days and a confidence level of 99 percent. The value-at-risk adjustment amounted to €17 million (December 31, 2017: €5 million).

Where markets are inactive, generally accepted discounted cash flow methods are used in the model-based measurement of the fair value of financial instruments without optionalities. Modeling of the yield curves is based on a multi-curve approach with collateral discounting. Simple products on which options exist are measured using customary standard models in which the inputs are quoted in active markets. For structured products on which options exist, a wide range of standard valuation techniques are used. Valuation models are calibrated to available market prices and validated regularly. In order to determine fair value reliably, measurement adjustments are also made for uncertain measurements.

Fair value gains and losses, current interest payments and dividend income from securities held for trading purposes, current payments arising from derivatives and from sale and repurchase agreements and securities lending transactions entered into for trading purposes, promissory notes and other receivables, foreign exchange, and precious metals – including any deferrals carried out – are all recognized as part of the net trading result. In addition, the funding costs attributable to trading assets and trading liabilities in the form of internal fixed-term deposits and imputed overnight rates are also reported as part of the net trading result.

Securities lending

For securities involved in securities lending transactions, the accounting treatment of securities lending is the same as the accounting treatment for genuine sale and repurchase agreements (i.e. agreements in which the buyer is under an obligation to sell back the securities) in accordance with section 340b (2) HGB. The securities remain on the balance sheet. Borrowed securities are not recognized on the balance sheet.

Long-term equity investments and shares in affiliated companies

Long-term equity investments and shares in affiliated companies are measured at amortized cost or, if expected to be permanently impaired, at the lower of cost and fair value. If the reasons for a previous write-down no longer exist, the write-down is reversed so that the asset is measured at fair value. However, the reversal must not result in a carrying amount higher than the original cost.

Property, plant and equipment, and intangible assets

Property, plant and equipment is measured at cost and reduced by depreciation over its estimated useful life. Useful life is based on the depreciation tables published by the German tax authorities.

Low-value assets with an individual net value of up to €250 are written off in full in the year of acquisition and expensed. In the case of assets with an individual net value between €250 and €1,000, the aggregate item that needs to be recognized on an annual basis for tax purposes has been included in the HGB financial statements to simplify matters. In accordance with tax rules, annual aggregate items with overall carrying amounts that are not material are depreciated at a flat rate of 20 percent in the year of recognition and then in each of the 4 subsequent years.

Office furniture and equipment including operating equipment is depreciated on a straight-line basis.

Assets are written down if they are considered to be impaired on a permanent basis. If the reasons for a previous write-down no longer exist, the write-down is reversed.

Intangible fixed assets are measured at cost and amortized on a straight-line basis. A useful life of 3 to 10 years is used as the basis for the amortization.

Deferred taxes

Using the option to recognize deferred tax assets provided for in section 274 (1) sentence 2 HGB, the bank recognized the excess of deferred tax assets after they had been offset against deferred tax liabilities. Deferred taxes are measured using the national and entity-specific tax rates expected to apply at the time of realization. The income tax group was subject to a standard tax rate of 31.19 percent (trade tax of 15.365 percent and corporation tax/solidarity surcharge of 15.825 percent). Deferred taxes at branches outside Germany were measured at the statutory rates applicable in the countries concerned, which range from 19.00 percent to 25.099 percent. The carrying amounts also included the deferred taxes from measurement differences at subsidiaries that form a tax group with the bank. Overall, this resulted in an excess of deferred tax assets recognized on DZ BANK's balance sheet, the bulk of which is attributable to subsidiaries. For its measurement of the excess of deferred tax assets, the bank assumes that the profit-and-loss transfer agreements with its subsidiaries will continue and bases its income planning on a 5-year planning horizon. In accordance with IAS 12.29(a), when calculating the expected future tax benefits from the measurement differences in existence at the balance sheet date, only those measurement differences are recognized that are likely to disappear again in this period and will not be replaced with new measurement differences. The calculation of deferred tax assets takes account of tax loss carryforwards in the amount of the losses expected to be offset within the next 5 years.

Liabilities

Liabilities are carried at the settlement amount. The difference between the notional amount and the amount disbursed is recognized under prepaid expenses and apportioned pro rata over the term of the loan. Capital-related bonds, in which interest payments or repayments of principal are not solely subject to interest-rate risk, are recognized at their nominal amounts, with any related options being recognized and measured separately.

Provisions

Defined benefit obligations are calculated in accordance with actuarial principles. Their computation is based on the projected unit credit method. The discount rate used was forecast on the basis of the interest rate published by Deutsche Bundesbank as at November 30, 2018. It corresponds to the average market interest rate over the past 10 years as at December 31, 2018 (3.21 percent) for a residual maturity of 15 years. In Germany, the biometric tables used in these calculations are the new 2018 G mortality tables published by HEUBECK AG, Cologne. Their application resulted in a moderate increase in the defined benefit obligation of €11 million. Measurement is based on anticipated annual rates of increase of 1.8 percent for salaries and 1.75 percent for pensions. In order to provide cover for its defined benefit obligations, DZ BANK has transferred assets to DZ BANK Pension Trust e.V., Frankfurt am Main, which acts as a trustee on behalf of the pension beneficiaries. The valuation of defined benefit obligations outside Germany is based on the applicable country-specific biometric factors and parameters. Pension plans and the bank's early-retirement obligations gave rise to provisions for pensions and other post-employment benefits of €43 million.

DZ BANK recognizes provisions for current taxes in accordance with German tax law.

It recognizes its other provisions at the amounts needed to settle contingent liabilities and/or anticipated losses as dictated by prudent business practice.

Provisions that are recognized for more than 1 year are discounted at the average market interest rate for the past 7 years that corresponds to their residual maturity. It is calculated and published by Deutsche Bundesbank.

Income from the discounting of provisions for banking business and expenses incurred by the unwinding of discounts on such provisions are reported as interest income and interest expenses respectively. If the provisions are related to trading activities, the income resulting from discounting and expenses incurred by the unwinding of discounts are shown in the net trading result. Income from the discounting of residual provisions and expenses incurred by the unwinding of discounts on such provisions are reported as other operating income and other operating expenses respectively.

Additional regulatory Tier 1 capital instruments

Owing to their structure, the additional Tier 1 instruments (AT1 bonds) that have been issued are classified as debt. They are recognized at their settlement value under the subordinated liabilities line item on the balance sheet. The interest cost is accrued on the basis of the expected interest payments to the bond holders. The accrued interest is also recognized under the subordinated liabilities line item on the balance sheet.

Interest-linked contracts of the banking book

In accordance with the principles of write-downs to anticipate identifiable expected losses, evidence was provided for all on-balance-sheet and off-balance-sheet interest-linked financial instruments of the banking book to show that no losses will be incurred on contracted interest-linked items in the future. This was done using the present value/carrying amount method. In this method, the carrying amounts of the interest-bearing transactions of the banking book are offset against the interest-rate-related present values, taking account of the associated costs of managing the risk and the portfolio. Any remaining shortfall after offsetting would require a corresponding provision to be recognized. As at December 31, 2018, there was no need to recognize a provision for anticipated losses pursuant to section 340a HGB in conjunction with section 249 (1) sentence 1 HGB.

Miscellaneous

Expenses in connection with investments are offset against investment income in accordance with section 33 RechKredV in conjunction with section 340c (2) HGB. Fair value gains and losses on the measurement of loans and advances and the securities in the liquidity reserve are reported as a net figure in accordance with section 32 RechKredV in conjunction with section 340f (3) HGB.

The fund for general banking risks amounted to €3,812 million as at December 31, 2018 (December 31, 2017: €4,272 million). This fund for general banking risks includes a special item in accordance with section 340e (4) HGB, from which an amount of €35 million was reversed in the reporting year in accordance with section 340e (4) sentence 2 no. 4 HGB. The reversal of reserves pursuant to section 340g HGB resulted in income of €425 million.

The methods used to recognize and measure internal transactions are the same as those applied to external transactions. The internal transactions are shown as netted amounts in the respective line items on the balance sheet.

Non-trading credit derivatives in which DZ BANK is the protection buyer and for which hedge accounting is not applied, along with non-trading protection-seller transactions, are measured individually and in accordance with the HGB imparity principle as required by accounting guidance statement 1 issued by the banking committee of IDW. Like guarantees, non-trading protection-seller transactions for individual exposures are

subject to an evaluation of the necessity for loss allowances. The transactions are shown under contingent liabilities or, in the case of loss allowances being recognized, under other provisions.

>> 03 Currency translation

Assets and liabilities denominated in foreign currencies as well as claims and delivery obligations under currency transactions are translated in compliance with section 256a HGB in conjunction with section 340h HGB. This legislation requires that foreign currencies be translated at the middle spot exchange rate on the balance sheet date.

All currency exposures arising in connection with trading assets and trading liabilities are recognized and measured in accordance with the rules governing trading assets and trading liabilities. The corresponding exchange gains and losses on foreign-currency transactions designated as trading assets and trading liabilities are reported as net trading income on the income statement.

Under the strategy for managing currency risk, DZ BANK's foreign currency exposures and foreign-currency transactions are deemed to be specifically covered in the same currency. Assets are deemed to be specifically covered in the same currency if they are matched by liability items, forward transactions, or options. The excess fair value measurement of these derivatives is reported as an offsetting item for currency translation under 'Other liabilities'. The fair value gains and losses on non-trading transactions that are specifically covered in the same currency are shown on a net basis under other operating income. Where DZ BANK has entered into currency swaps in connection with the hedging of interest-bearing balance sheet items, the swap income and expenses are treated as interest income and expense in the financial year, reflecting the nature of the income and expense involved.

Measurement in respect of transactions and exposures that are not specifically covered in the same currency is based on the HGB imparity principle, i.e. unrealized losses are recognized, but any unrealized gains are not recognized. The resulting fair value gains and losses are reported as other operating expenses.

B Balance sheet disclosures

>> 04 Maturity structure

ASSET ITEMS

€ million	Dec. 31, 2018	Dec. 31, 2017
Other loans and advances to banks	**103,314**	**97,859**
up to 3 months	9,672	8,938
between 3 months and 1 year	12,107	11,959
between 1 year and 5 years	35,891	35,533
more than 5 years	45,644	41,429
Loans and advances to customers	**34,748**	**33,007**
up to 3 months	8,175	6,523
between 3 months and 1 year	3,426	3,443
between 1 year and 5 years	12,442	11,956
more than 5 years	7,645	8,421
no fixed maturity	3,060	2,664
Bonds and other fixed-income securities	**27,991**	**35,074**
of which: maturing in subsequent year	4,810	5,787

LIABILITY ITEMS

€ million	Dec. 31, 2018	Dec. 31, 2017
Deposits from banks with agreed maturity or notice period	**85,693**	**83,697**
up to 3 months	14,473	15,079
between 3 months and 1 year	5,967	6,848
between 1 year and 5 years	25,421	24,092
more than 5 years	39,832	37,678
Deposits from customers		
Other deposits from customers with agreed maturity or notice period	**13,657**	**13,604**
up to 3 months	3,209	5,364
between 3 months and 1 year	2,723	1,095
between 1 year and 5 years	2,329	1,673
more than 5 years	5,396	5,472
Debt certificates issued including bonds		
Bonds issued	**27,715**	**25,962**
of which: maturing in subsequent year	6,516	7,089
Other debt certificates issued	**6,533**	**10,569**
up to 3 months	6,329	8,708
between 3 months and 1 year	193	1,842
between 1 year and 5 years	11	19

>> 05 Affiliated companies and other long-term investees and investors

Loans and advances to and deposits from affiliated companies:

€ million	Dec. 31, 2018	Dec. 31, 2017
Loans and advances to banks	29,144	27,838
Loans and advances to customers	4,988	4,777
Bonds and other fixed-income securities	6,337	6,610
Deposits from banks	7,074	7,460
Deposits from customers	2,085	2,677
Debt certificates issued including bonds	1,231	1,231
Subordinated liabilities	1,412	1,450

Loans and advances to and deposits from other long-term investees and investors:

€ million	Dec. 31, 2018	Dec. 31, 2017
Loans and advances to banks	58,838	57,142
Loans and advances to customers	1,022	1,065
Bonds and other fixed-income securities	2,514	3,013
Deposits from banks	42,368	47,275
Deposits from customers	795	656
Debt certificates issued including bonds	18,596	17,777
Subordinated liabilities	1,153	1,185

The list of shareholdings compiled in accordance with section 285 no. 11 HGB is shown in Note 47.

>> 06 Loans and advances to and deposits from affiliated banks

Loans and advances to and deposits from banks include the following amounts:

€ million	Dec. 31, 2018	Dec. 31, 2017
Loans and advances to affiliated banks	73,274	71,253
Deposits from affiliated banks	53,105	52,090

>> 07 Subordinated assets

The following balance sheet items include subordinated assets in the amounts stated:

€ million	Dec. 31, 2018	Dec. 31, 2017
Loans and advances to banks	**1,073**	**1,114**
of which: to affiliated companies	857	897
to investees	–	15
Loans and advances to customers	**114**	**111**
Bonds and other fixed-income securities	**396**	**406**
of which: to affiliated companies	242	230
to investees	5	–
Shares and other variable-yield securities	**2**	**2**
Trading assets	**205**	**121**
of which: to affiliated companies	14	5
to investees	2	–
Total	**1,790**	**1,754**

>> 08 Trust activities

Total trust assets and trust liabilities are broken down as follows:

€ million	Dec. 31, 2018	Dec. 31, 2017
Trust assets		
Loans and advances to banks	56	66
Loans and advances to customers	0	0
Long-term equity investments	777	912
Total	**833**	**978**

€ million	Dec. 31, 2018	Dec. 31, 2017
Trust liabilities		
Deposits from banks	56	66
Deposits from customers	777	912
Total	**833**	**978**

>> 09 Foreign currency

Assets and liabilities denominated in foreign currency are as follows:

€ million	Dec. 31, 2018	Dec. 31, 2017
Assets	16,045	17,987
Liabilities	31,630	32,120

>> 10 Sale and repurchase agreements

The carrying amount of assets subject to sale and repurchase agreements as at December 31, 2018 was €1,200 million (December 31, 2017: €2,100 million).

>> 11 Assets assigned as collateral

The following table lists liabilities for which assets in the amount shown have been pledged as collateral:

€ million	Dec. 31, 2018	Dec. 31, 2017
Deposits from banks	56,448	54,242
Debt certificates issued including bonds	567	547
Trading liabilities	1,200	2,100
Total	**58,215**	**56,889**

The amount pledged as collateral for exchange-traded forward transactions, in connection with collateral agreements as part of OTC trading business, and for securities lending transactions was €12,949 million (December 31, 2017: €11,531 million).

>> 12 Marketable securities

The following asset items include marketable securities in the amounts shown:

€ million	Dec. 31, 2018	Dec. 31, 2017
Bonds and other fixed-income securities	**27,991**	**35,074**
of which: listed on a stock exchange	22,051	28,888
Shares and other variable-yield securities	**2**	**2**
of which: listed on a stock exchange	2	2
Long-term equity investments	**32**	**32**
of which: listed on a stock exchange	–	–
Shares in affiliated companies	**3,469**	**3,669**
of which: listed on a stock exchange	–	–

>> 13 Trading assets and trading liabilities

The table below shows a breakdown of trading assets and trading liabilities:

€ million	Dec. 31, 2018	Dec. 31, 2017
Trading assets		
Derivatives	6,000	7,325
Receivables	13,206	11,181
Bonds and other fixed-income securities	12,552	10,203
Shares and other variable-yield securities	988	1,412
Other (risk adjustments)	-312	-308
Total	**32,434**	**29,813**

€ million	Dec. 31, 2018	Dec. 31, 2017
Trading liabilities		
Derivatives	4,405	4,817
Liabilities	30,021	28,347
Total	**34,426**	**33,164**

Securities amounting to €102 million were reclassified from trading assets to the banking book in 2018, because the very limited ability to trade these securities led to the intention to trade them being abandoned. This reclassification had no impact on net income for the year.

>> 14 Statement of changes in fixed assets

The changes in fixed assets were as follows:

INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT

€ million	Intangible assets	Land and buildings	Office furniture and equipment
Cost as at Jan. 1, 2018	474	459	223
Additions	28	–	14
Disposals	2	–	6
Reclassifications	–	–	–
Cost as at Dec. 31, 2018	**500**	**459**	**231**
Reversals of write-downs	–	–	–
Depreciation, amortization and write-downs as at Jan. 1, 2018	397	94	148
Additions	20	9	17
Disposals/reclassifications	1	–	6
Depreciation, amortization and write-downs as at Dec. 31, 2018	**416**	**103**	**159**
Carrying amount as at Dec. 31, 2018	**84**	**356**	**72**
Carrying amount as at Dec. 31, 2017	**77**	**365**	**75**

The carrying amount of the land and buildings used by DZ BANK for its own operations as at December 31, 2018 was €201 million (December 31, 2017: €206 million).

INVESTMENTS

€ million	Long-term securities	Long-term equity investments	Shares in affiliated companies
Change	-6,474	-14	-417
Carrying amount as at Dec. 31, 2018	**21,939**	**372**	**10,997**
Carrying amount as at Dec. 31, 2017	**28,413**	**386**	**11,414**

The fair value of financial instruments reported under investments for which write-downs have not been recognized in accordance with section 253 (3) sentence 6 HGB was €3,565 million (carrying amount: €3,648 million) for bonds and other fixed-income securities. These securities are tested to ascertain whether they are actually impaired. If they are, the impairment loss is calculated on the basis of parameters. In the case of asset-backed securities (ABSs), DZ BANK carried out detailed cash flow analyses related to the receivables in the securitization pool taking into account the waterfall structure of each ABS tranche. The assessment of impairment was also based on previous experience with the issuers in question and on the relevant economic forecasts.

>> 15 Other assets

The other assets of €1,424 million (December 31, 2017: €1,206 million) largely include initial and variation margin payments arising from derivatives and repos of €582 million (December 31, 2017: €560 million), tax credits of €559 million (December 31, 2017: €515 million), and accruals relating to currency swaps of €104 million (December 31, 2017: €- million).

>> 16 Prepaid expenses/accrued income and deferred income/accrued expenses

€ million	Dec. 31, 2018	Dec. 31, 2017
Prepaid expenses/accrued income		
Discount on deposits	39	27
Premium on loans and advances	27	37
Other prepaid expenses/accrued income	47	33
Total	**113**	**97**

€ million	Dec. 31, 2018	Dec. 31, 2017
Deferred income/accrued expenses		
Discount on loans and advances	14	10
Premium on issues business	62	64
Other deferred income/accrued expenses	10	8
Total	**86**	**82**

>> 17 Deferred tax assets

This line item included deferred tax assets in accordance with section 274 HGB amounting to €1,083 million as at December 31, 2018 (December 31, 2017: €1,061 million). Deferred tax assets were recognized primarily in respect of the fund for home savings risk at Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, in respect of insurance liabilities at R+V Versicherung AG, Wiesbaden, and in respect of other temporary balance sheet differences at DZ BANK and the subsidiaries that form a tax group with it.

>> 18 Netting of assets and liabilities

The table below shows the cost and the fair value of netted assets that are protected from the claims of all other creditors and are used solely to settle liabilities arising from defined benefit obligations; it also shows the amount needed to settle these netted liabilities. It also shows the pertinent netted income and expenses resulting from discounting and from the netted assets.

€ million	Dec. 31, 2018	Dec. 31, 2017
Cost of netted assets	1,217	1,179
Fair value of netted assets	1,203	1,264
Amount needed to settle the netted liabilities	1,167	1,096
Netted expenses	152	86
Netted income	24	17

As a result of the netting of the various pension plans, there were surplus assets resulting from excess pension plan cover of €37 million in Germany as at December 31, 2018 (December 31, 2017: €168 million) and provisions for pensions and other post-employment benefits of €1 million at the foreign branch in New York owing to a shortfall in pension plan cover (December 31, 2017: €- million).

>> 19 Other liabilities

The other liabilities of €825 million (December 31, 2017: €694 million) include, in particular, initial and variation margins received arising from derivatives and repos of €407 million (December 31, 2017: €330 million) and profit-participation certificates of €224 million (December 31, 2017: €- million) that matured at the end of 2018 and are due to be repaid in 2019 (including dividend distribution).

>> 20 Subordinated liabilities

There are no early redemption obligations in respect of the subordinated capital. In the event of insolvency or liquidation, all rights in connection with these liabilities, including rights to interest, are subordinated to the claims of all non-subordinated creditors.

The subordinated liabilities carried an average interest rate of 3.38 percent (2017: 3.66 percent) and had initial maturities of between 5 and 30 years.

Subordinated liabilities are issued in the form of fixed-income and variable-yield securities, promissory notes, registered bonds, and a convertible bond.

The interest expense for the liabilities reported under this item amounted to €156 million in 2018 (2017: €194 million).

Accrued interest not yet due for payment amounting to €45 million (December 31, 2017: €65 million) is included within the subordinated liabilities balance sheet item.

To strengthen its regulatory Tier 1 capital, DZ BANK issued AT1 bonds with a total nominal value of €750 million on November 11, 2015. The AT1 bonds are split into four types depending on their interest-rate arrangements (types A to D, with type A having two tranches and the other types each having one tranche) and establish unsecured subordinated liabilities that meet the requirements in the Capital Requirements Regulation (CRR).

The bearer bonds are bound by the terms and conditions in the information memorandum, which include an indefinite term to maturity and a unilateral right of cancellation for the issuer. As a result, DZ BANK may terminate each tranche of the bond in its entirety, but not parts thereof, as it chooses, either at the first possible maturity date (August 1, 2021 / August 1, 2026) or thereafter at any interest payment date. Furthermore, the issuer may exercise its right of cancellation prematurely if certain regulatory or tax reasons arise. In any case, cancellation requires the consent of the regulator.

In the event of cancellation, AT1 bonds are repaid at their nominal value. In some circumstances, the repayment amount may be lower than the original nominal value if the value had been written down due to a trigger event and the write-down had not subsequently been reversed in full. Such a trigger event occurs if the common equity Tier 1 capital ratio of DZ BANK and the DZ BANK Group falls below 7.00 percent. Under certain conditions, the write-downs on the instruments may be reversed to the full original nominal value in subsequent financial years.

Depending on their type, the AT1 bonds have an annual floating or fixed interest rate from the day of issue until August 1, 2021 / August 1, 2026. In subsequent periods, the interest rate will be reset on the basis of 12-month Euribor / the 5-year euro mid-swap rate plus a margin.

Interest payments are generally at the discretion of the issuer. They may be canceled, either wholly or in part, depending on the items eligible for distribution or by order of the responsible regulator. Interest payments are not cumulative; canceled or reduced payments will not be made up in subsequent periods. Interest of €34 million was paid on August 1, 2018 (August 1, 2017: €34 million).

The accrued (not yet due) interest for the AT1 bonds amounted to €14 million as at December 31, 2018 (December 31, 2017: €14 million).

In respect of the registered bond with a conversion right that was issued in 2014 with a nominal value of €128 million, there will be an option of voluntary conversion by the creditors or mandatory conversion by the issuer after the end of December 3, 2019. The bond has a coupon of 5.0 percent. Early redemption by the issuer is possible at any time if necessary for regulatory reasons. There are no other plans or agreements to convert these liabilities into equity; there are no other early redemption obligations.

>> 21 Profit-sharing rights

Profit-sharing rights also incur a share of losses of up to their full amount. Interest payments are subject to the availability of distributable profit. Claims by holders of profit-sharing rights to the repayment of the capital are subordinated to the claims of other creditors.

DZ BANK has issued registered profit-participation certificates with a volume of €63 million. Total registered profit-participation certificates comprise 6 separate issues with an original maturity of 16 years and a coupon of 7.06 percent each.

The total interest expense in respect of profit-sharing rights in 2018 was €17 million (2017: €17 million).

Accrued interest not yet due for payment amounting to €4 million (December 31, 2017: €17 million) is included under profit-sharing rights on the balance sheet.

>> 22 Changes in equity

The subscribed capital of DZ BANK consists of 1,791,344,757 registered non-par-value shares each with an imputed value of €2.75. All shares in issue are fully paid-up.

The changes in equity were as follows:

€ million	Jan. 1, 2018	Additions/ (-) Withdrawals	Dec. 31, 2018
Subscribed capital	4,926	–	**4,926**
Capital reserve	3,784	–	**3,784**
Revenue reserves	1,470	–	**1,470**
Statutory reserve	105	–	105
Other revenue reserves	1,365	–	1,365
Distributable profit	324	0	**324**
– 2017 appropriation of profits/dividend	324	-322	–
Profit carried forward		-2	
– 2018 distributable profit	–	324	324
Total equity	10,504	0	**10,504**

Authorized capital

The Board of Managing Directors is authorized, subject to the approval of the Supervisory Board, to increase the share capital by May 31, 2021 on one or more occasions by up to a total of €100 million by way of issuing new registered non-par-value shares in return for cash or non-cash contributions. The Board of Managing Directors is authorized, subject to the approval of the Supervisory Board, to exclude the subscription right of shareholders both in the case of capital increases in return for non-cash contributions and in the case of capital increases in return for cash contributions if the capital is increased for the purpose of

a) issuing new shares to employees of the corporation (employee shares),

b) issuing new shares to one or more cooperative banks which, measured in terms of their total assets, directly and indirectly have a below-average stake in the corporation's share capital, i.e. less than 0.5 percent of their total assets (based on the nominal value of €2.75 per DZ BANK share),

c) acquiring companies, equity investments in companies or for granting equity investments in the corporation in order to back strategic partnerships.

The Board of Managing Directors is also authorized, subject to the approval of the Supervisory Board, to exclude fractions from the subscription right of shareholders ('Authorized Capital I').

The Board of Managing Directors is authorized, subject to the approval of the Supervisory Board, to increase the share capital by May 31, 2021 on one or more occasions by up to a total of €300 million by issuing new registered non-par-value shares in return for cash contributions. The Board of Managing Directors is authorized, subject to the approval of the Supervisory Board, to exclude fractions from the subscription right of shareholders ('Authorized Capital II').

The new shares issued on the basis of utilizing Authorized Capital I or Authorized Capital II can also be acquired by credit institutions determined by the Board of Managing Directors if aforesaid credit institutions agree to offer said shares to the shareholders (indirect subscription right).

The Board of Managing Directors did not make use of any of this authorized action in 2018.

Contingent capital

The share capital is to be contingently raised by up to €52,859,413.75 by issuing up to 19,221,605 new, registered non-par-value shares (Contingent Capital). The increase in the Contingent Capital shall serve to grant registered non-par value shares (subscription shares) for the fulfillment of corresponding conversion rights and/or conversion obligations of creditors of convertible bonds or registered bonds, as the case may be, that were issued until June 24, 2015 in return for a cash contribution on the basis of the authorization resolution of the Annual General Meeting of WGZ BANK AG Westdeutsche Genossenschafts-Zentralbank of June 24, 2014. The increase in the Contingent Capital must only be carried out to the extent that the creditors of aforesaid convertible bonds or registered bonds, as the case may be, entitled or obliged to convert make use of their conversion right or fulfill their conversion obligation and that no own shares are used for aforesaid fulfillment. The subscription shares shall at all times be issued at a ratio of one registered bond to 7,435.824 subscription shares.

The subscription shares participate from the beginning of the financial year in which they come into existence in the profits of the current financial year as well as in the profits of previous years if a resolution of the appropriation of said profits has yet to be passed.

The Board of Managing Directors is authorized, subject to the approval of the Supervisory Board, to determine the further details pertaining to the execution of the increase in the Contingent Capital.

>> 23 Disclosures on shareholders

At the end of 2018, 99.4 percent of shares were held by cooperative enterprises (December 31, 2017: 99.3 percent). These cooperative enterprises include the cooperative banks and other legal entities and trading companies economically associated with the cooperative movement or cooperative housing sector.

>> 24 Disclosure pursuant to section 20 AktG

According to a notification pursuant to section 20 (1) AktG, which it submitted in August 2009, DZ Beteiligungs-AG & Co. KG Baden-Württemberg, Stuttgart, now operating under the name DZ Beteiligungs-GmbH & Co. KG Baden-Württemberg, Karlsruhe, holds more than a quarter of the shares in DZ BANK.

In October 2018, WGZ Beteiligungs GmbH & Co. KG, Düsseldorf, reported that it held more than a quarter of the shares in DZ BANK.

>> 25 Amounts not allowed to be distributed as dividends

The table below gives a breakdown of the total amount that is not allowed to be distributed as a dividend pursuant to section 268 (8) and section 253 (6) HGB:

€ million	Dec. 31, 2018	Dec. 31, 2017
Recognition of deferred taxes	1,083	1,061
Recognition of assets at fair value	–	85
Difference arising from using the average market interest rates for the past 10 years and the past 7 years to discount provisions for defined benefit obligations	157	142
Total	**1,240**	**1,288**

The total amounts of €1,240 million that were not allowed to be distributed as dividends were offset by sufficient distributable reserves. Consequently, the distributable profit of €324 million was not prohibited from being paid out as a dividend.

>> 26 List of derivatives recognized at fair value by product area

The table below shows a list of the derivatives recognized at fair value by product area:

	Nominal amount					Fair value			
	Time to maturity			Total amount		Positive		Negative	
€ million	≤ 1 year	> 1–5 years	> 5 years	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
INTEREST-LINKED CONTRACTS	145,408	402,165	516,011	**1,063,584**	915,053	**13,823**	15,080	**12,126**	14,100
OTC products									
Forward rate agreements	11,700	–	–	11,700	4,687	0	0	0	0
Interest-rate swaps (same currency)	116,403	355,344	490,748	962,495	826,034	12,101	13,331	9,618	11,313
Interest-rate options – bought	6,149	22,490	9,920	38,559	35,809	1,331	1,417	110	104
Interest-rate options – written	8,217	24,167	15,343	47,727	45,928	391	332	2,398	2,683
Exchange-traded products									
Interest-rate futures	2,939	164	–	3,103	2,595	–	–	–	–
CURRENCY-LINKED CONTRACTS	29,894	25,757	9,987	**65,638**	63,045	**863**	1,138	**1,302**	1,577
OTC products									
Cross-currency swaps	8,377	22,309	9,865	40,551	43,144	606	821	1,022	1,223
Forward forex transactions	10,089	2,148	69	12,306	11,895	138	177	152	252
Forex options – bought	5,244	319	–	5,563	3,270	18	26	15	16
Forex options – written	5,925	976	17	6,918	4,438	38	70	45	37
Exchange-traded products									
Forex/gold futures	135	0	–	135	100	–	–	–	–
Forex/gold options	124	5	36	165	198	63	44	68	49
SHARE-/INDEX-LINKED CONTRACTS	15,504	11,679	3,143	**30,326**	22,961	**1,275**	1,301	**2,725**	1,786
OTC products									
Share/index options – bought	11	54	2	67	640	3	34	0	0
Share/index options – written	117	185	–	302	416	38	0	42	13
Other share/index contracts	571	3,354	1,745	5,670	4,700	–	55	462	98
Exchange-traded products									
Share/index futures	367	85	13	465	436	–	–	–	–
Share/index options	14,438	8,001	1,383	23,822	16,769	1,234	1,212	2,221	1,675
OTHER CONTRACTS	360	61	19	**440**	496	**82**	121	**93**	129
OTC products									
Precious metal contracts (excl. gold derivatives)	–	–	–	–	5	–	0	–	0
Commodities contracts	34	5	–	39	90	0	0	4	1
Exchange-traded products									
Futures (excl. gold futures)	138	1	–	139	164	0	2	1	0
Options (excl. gold options)	188	55	19	262	237	82	119	88	128
CREDIT DERIVATIVES	1,195	8,509	5,200	**14,904**	19,106	**186**	316	**70**	71
Protection buyer									
Credit default swaps	336	1,992	478	2,806	5,251	6	0	31	70
Protection seller									
Credit default swaps	859	6,517	4,722	12,098	13,855	180	316	39	1
Total	192,361	448,171	534,360	**1,174,892**	1,020,661	**16,229**	17,956	**16,316**	17,663

A substantial proportion of the transactions listed were entered into for the purposes of hedging interest-rate, exchange-rate, market, or credit risk.

>> 27 List of derivatives recognized at fair value by counterparty structure

The table below shows a list of the derivatives recognized at fair value by counterparty structure:

	Fair value			
	Positive		Negative	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
OECD central governments	–	–	3	–
OECD banks	12,988	14,589	13,449	14,882
OECD financial services institutions	79	79	123	148
Other companies, private individuals	3,117	3,279	2,644	2,524
Non-OECD central governments	0	0	–	–
Non-OECD banks	45	9	97	109
Total	16,229	17,956	16,316	17,663

>> 28 List of derivatives not recognized at fair value by product area

The table below shows a list of the derivatives not recognized at fair value by product area:

	Nominal amount					Fair value			
	Time to maturity			Total amount		Positive		Negative	
€ million	≤ 1 year	> 1–5 years	> 5 years	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
INTEREST-LINKED CONTRACTS	1,879	2,306	2,683	6,868	7,527	609	657	353	385
OTC products									
Interest-rate swaps (same currency)	25	1,361	2,283	3,669	4,059	609	656	340	374
Interest-rate options – bought	200	–	–	200	200	0	1	–	–
Interest-rate options – written	25	470	400	895	595	–	–	13	11
Exchange-traded products									
Interest-rate futures	1,629	475	–	2,104	2,673	–	–	–	–
CURRENCY-LINKED CONTRACTS	50,381	3,026	264	53,671	56,726	464	386	428	620
OTC products									
Cross-currency swaps	237	456	162	855	986	40	28	113	101
Forward forex transactions	50,144	2,570	102	52,816	55,740	424	358	315	519
CREDIT DERIVATIVES	523	1,577	86	2,186	685	32	14	4	6
Protection buyer									
Credit default swaps	31	117	–	148	150	0	0	3	6
Protection seller									
Credit default swaps	492	1,460	86	2,038	535	32	14	1	–
Total	52,783	6,909	3,033	62,725	64,938	1,105	1,057	785	1,011

The transactions listed were entered into for the purposes of hedging interest-rate, exchange-rate, market, or credit risk.

The carrying amounts of non-trading derivatives not recognized at fair value included premiums of €6 million (December 31, 2017: €15 million) under other assets, and premiums of €24 million (December 31, 2017: €31 million) under other liabilities.

Prepaid expenses and accrued income include upfront payments of €30 million (December 31, 2017: €0 million). Deferred income and accrued expenses include upfront payments of €3 million (December 31, 2017: €1 million). Accrued income from non-trading derivatives not recognized at fair value is reported in the amount of €35 million (December 31, 2017: €42 million) under loans and advances to banks and in the amount of €8 million (December 31, 2017: €8 million) under loans and advances to customers, while accrued expenses on

non-trading derivatives not recognized at fair value are reported in the amount of €33 million (December 31, 2017: €29 million) under deposits from banks and in the amount of €13 million (December 31, 2017: €16 million) under deposits from customers.

The carrying amounts of non-trading derivatives not recognized at fair value also included a liability of €69 million (December 31, 2017: €243 million) relating to the offsetting item for currency translation. Accruals relating to currency swaps are netted and recognized in an amount of €104 million under other assets.

>> 29 List of derivatives not recognized at fair value by counterparty structure

The table below shows a list of the derivatives not recognized at fair value by counterparty structure:

	Fair value			
	Positive		Negative	
€ million	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
OECD banks	823	887	656	889
OECD financial services institutions	0	1	–	4
Other companies, private individuals	261	168	127	108
Non-OECD banks	21	1	2	10
Total	**1,105**	**1,057**	**785**	**1,011**

C Income statement disclosures

>> 30 Breakdown of income by geographical market

The table below shows the geographical breakdown of total interest income, current income from shares and other variable-yield securities, long-term equity investments and shares in affiliated companies, fee and commission income, net trading income, and other operating income:

€ million	2018	2017
Germany	3,638	3,940
International	318	399
Total	**3,956**	**4,339**

>> 31 Administration and agency services provided for third parties

Administration and agency services provided for third parties relate primarily to custody services, securities brokerage, and the management of trust assets.

>> 32 Other operating income and expenses

Other operating income amounted to €154 million. This amount largely comprised income of €54 million from the reversal of provisions, income of €25 million from options, and rental income of €15 million.

The other operating expenses of €254 million were mainly attributable to net expenses of €128 million in connection with the measurement of occupational pensions, expenses of €26 in connection with currency transactions, expenses of €21 million in connection with options, and operating costs and rental expenses of €16 million in connection with premises not used for banking operations.

>> 33 Extraordinary income and expenses

The extraordinary income of €9 million resulted from winding up WGZ FINANCE PUBLIC LIMITED COMPANY, Dublin, Ireland, and DZ FINANCE Ireland Limited, Dublin, Ireland.

The extraordinary expenses of €80 million included a €79 million addition to a provision for restructuring in connection with the 'Verbund First 4.0' program.

>> 34 Proposed appropriation of profits

It will be proposed to the Annual General Meeting that the distributable profit be appropriated for a dividend payment of €0.18 per non-par-value share. This would equate to a total distribution of €322 million.

D Other disclosures

>> 35 Contingent liabilities and other obligations

DZ BANK only assumes liabilities in the form of guarantees and indemnity agreements after it has carefully assessed the risks involved. Having constantly evaluated the risks attaching to the guarantees and indemnity agreements that it has entered into, the bank is currently of the view that the principal debtors concerned will be able to meet the obligations underlying these guarantees and indemnity agreements. DZ BANK believes that these guarantees and indemnity agreements are unlikely to be utilized.

In order to cover acute risks arising from guarantees, indemnity agreements and irrevocable loan commitments, the bank has recognized provisions of an appropriate amount and has reduced the relevant figures reported by a corresponding amount.

The irrevocable loan commitments include unused liquidity lines in connection with securitizations of €2,338 million (December 31, 2017: €2,818 million).

>> 36 Other financial obligations

As at December 31, 2018, the total amount of other financial obligations for the following year was €353 million (December 31, 2017: €310 million). Most of these obligations related to follow-up obligations under memoranda and articles of association and to obligations under lease agreements, capital expenditure projects, and pending transactions. This amount includes obligations to affiliated companies of €27 million (December 31, 2017: €25 million).

Other financial obligations will amount to €371 million for years from 2020 onward. This amount includes obligations to affiliated companies of €88 million.

There were also irrevocable payment obligations in connection with the bank levy of €28 million. Collateral of the same amount has been pledged. The pledged collateral is included in other assets.

DZ BANK is a participant in the protection scheme operated by the Bundesverband der Deutschen Volksbanken und Raiffeisenbanken e.V. (BVR) [National Association of German Cooperative Banks], Berlin. This facility comprises a guarantee fund and a guarantee network. Under the terms of its statutes, DZ BANK has lodged a guarantee bond of up to €141 million with the BVR in support of the guarantee network in order to cover any eventualities.

>> 37 Letters of comfort

Except in the event of political risk, DZ BANK has undertaken to ensure, in proportion to its shareholding for the consolidated entity DZ PRIVATBANK S.A., Strassen, Luxembourg, and in total for DZ HYP, Hamburg and Münster, that these companies are able to meet their contractual obligations. These entities are identified in the list of DZ BANK's shareholdings (Note 47) as being covered by a letter of comfort. DZ BANK has also issued subordinated letters of comfort in respect of DZ BANK Capital Funding LLC I, DZ BANK Capital Funding LLC II, and DZ BANK Capital Funding LLC III, all based in Wilmington, USA. In addition, DZ BANK has issued 5 subordinated letters of comfort in respect of DZ BANK Perpetual Funding (Jersey) Limited, St. Helier, Jersey, each relating to different classes of preferred shares.

>> 38 Hedge accounting

DZ BANK had recognized a micro-hedge and included it in hedge accounting in accordance with section 254 HGB in order to hedge the currency risk arising from the long-term equity investment in DG Funding LLC, New York, in its banking book. The bank funded the carrying amount of its investment by raising US dollar-denominated fixed-term deposits. These fixed-term deposits were rolled over every 3 months. This perfect hedge ensured that the exchange-rate fluctuations in the hedge over the term of the deposits totally cancelled each other out. DZ BANK proved the effectiveness of its hedge both prospectively and retrospectively by reconciling the measurement-related parameters. In December 2018, this micro-hedge was discontinued without effect on profit or loss.

>> 39 Employees

Average number of employees by employee group:

	2018	2017
Female employees	**2,254**	2,306
Full-time employees	1,334	1,407
Part-time employees	920	899
Male employees	**3,081**	3,176
Full-time employees	2,918	3,024
Part-time employees	163	152
Total employees	**5,335**	5,482

>> 40 Investment fund assets

DZ BANK owned the following holdings of more than 10 percent of the units in investment fund assets within the meaning of section 285 no. 26 HGB as at December 31, 2018:

INVESTMENT FUND ASSETS BY INVESTMENT OBJECTIVE

€ million	Carrying amount	Fair value	Difference between fair value and carrying amount	Distributions paid for 2018
Mixed fund (pension funding)	1,173	1,173	0	14

The investment fund units are used to cover and fund DZ BANK's direct defined benefit obligations in Germany over the long term. They were able to be redeemed on any day without restriction.

>> 41 Auditor fees

The total fees charged for 2018 by the independent auditors of the financial statements, Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft, Stuttgart, are broken down as follows:

€ million	2018	2017
Auditing services	6.4	7.8
Other attestation services	0.7	0.5
Tax consultancy services	–	0.2
Other services	0.6	0.7
Total	**7.7**	**9.2**

The fees for auditing services comprise expenses relating to the audit of the consolidated financial statements and group management report, the audit of the annual financial statements and management report of DZ BANK, and the review by the auditor of the condensed interim consolidated financial statements and interim group management report. The fees for other attestation services comprise the fees charged for the audit in accordance with section 36 of the German Securities Trading Act (WpHG). The fees for other services include fees for project-related audits and consultancy services.

>> 42 Cover statement

The following cover is in place for outstanding covered bonds and derivatives:

€ million	Dec. 31, 2018	Dec. 31, 2017
Total cover assets	**21,908**	**22,982**
Ordinary cover	**21,908**	**22,982**
Loans and advances to banks	12,833	13,404
Loans and advances to customers	895	988
Securities	8,180	8,590
Derivatives held as cover	**0**	**0**
Cover requirement	**10,740**	**10,675**
Outstanding covered		
– bearer bonds	2,809	2,438
– registered bonds	7,931	8,237
Excess cover	**11,168**	**12,307**

>> 43 Trustees of cover assets

The trustees are appointed by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) [Federal Financial Supervisory Authority] and have a duty under law to ensure that the issuance, administration, and collateralization of DZ BANK's covered bonds comply with statutory requirements, the provisions of the Articles of Association, and the terms and conditions of the bonds.

Trustee

Klaus Schmitz
Presiding Judge at the
Frankfurt am Main regional court (retired)

Deputy trustee

Klaus Wiens
Presiding Judge at the
Frankfurt am Main regional court (retired)

>> 44 Related party disclosures

The exercise of DZ BANK's normal business activities involves parties related to DZ BANK. Transactions with related parties within the meaning of section 285 no. 21 HGB are conducted on an arm's-length basis.

>> 45 Decision-making bodies

The total remuneration for the members of the Board of Managing Directors of DZ BANK in 2018 was €10,167 thousand (2017: €12,829 thousand). The total remuneration for the Supervisory Board was €853 thousand (2017: €742 thousand). The total remuneration for the Board of Managing Directors in 2018 and 2017 includes the total bonus awarded to the Board of Managing Directors for the year in question. A sum of 20 percent of the total bonus determined on the basis of targets achieved is paid out in the subsequent year immediately after the annual financial statements have been formally adopted. Payment of the remaining 80 percent of the bonus of €1,487 thousand granted for 2018 (2017: €1,880 thousand) depends on the long-term performance of DZ BANK shares and is spread out over a period of up to 4 years in total.

A total amount of €10,416 thousand (2017: €11,150 thousand) was paid to former members of the Board of Managing Directors or their surviving dependants, for whom defined benefit obligations of €127,337 thousand (2017: €126,473 thousand) were also recognized.

Board of Managing Directors of DZ BANK

Wolfgang Kirsch
(Chief Executive Officer until December 31, 2018)

Uwe Fröhlich
(Co-Chief Executive Officer since January 1, 2019)
Responsibilities: Cooperative Banks/Verbund; Communication, Marketing, CR; Research and Economics; Strategy & Group Development; Structured Finance

Dr. Cornelius Riese
(Co-Chief Executive Officer since January 1, 2019)
Responsibilities: Group Audit; Legal; Strategy & Group Development

Uwe Berghaus
Responsibilities: Corporate Banking Baden-Württemberg; Corporate Banking Bavaria; Corporate Banking North and East; Corporate Banking West/Central; Investment Promotion; Central Corporate Banking

Dr. Christian Brauckmann
Responsibilities: IT; Organisation

Ulrike Brouzi
(Member of the Board of Managing Directors since September 1, 2018)
Responsibilities: Bank Finance; Compliance; Group Finance; Group Financial Services

Wolfgang Köhler
Responsibilities: Capital Markets Trading; Capital Markets Institutional Clients; Capital Markets Retail Clients; Group Treasury

Michael Speth
Responsibilities: Group Risk Controlling; Credit; Credit Special

Thomas Ullrich
Responsibilities: Group Human Resources; Operations; Payments & Accounts; Transaction Management

Stefan Zeidler
(Member of the Board of Managing Directors until March 31, 2018)

General Executive Manager of DZ BANK

Uwe Fröhlich
(until December 31, 2018)

Supervisory Board of DZ BANK

Henning Deneke-Jöhrens
(Chairman of the Supervisory Board since May 30, 2018)
Chief Executive Officer
Volksbank eG Hildesheim-Lehrte-Pattensen

Helmut Gottschalk
(Chairman of the Supervisory Board until May 30, 2018)
Bank director (ret.)

Ulrich Birkenstock
(Deputy Chairman of the Supervisory Board)
Employee
R+V Allgemeine Versicherung AG

Martin Eul
(Deputy Chairman of the Supervisory Board
since May 30, 2018)
Chief Executive Officer
Dortmunder Volksbank eG

Werner Böhnke
(Deputy Chairman of the Supervisory Board
until May 30, 2018)
Bank director (ret.)

Heiner Beckmann
Senior manager
R+V Allgemeine Versicherung AG

Hermann Buerstedde
Employee
Union Asset Management Holding AG

Uwe Goldstein
Spokesman of the Board of Managing Directors
Raiffeisenbank Frechen-Hürth eG

Timm Häberle
(Member of the Supervisory Board since May 30, 2018)
Chief Executive Officer
VR-Bank Neckar-Enz eG

Dr. Peter Hanker
Spokesman of the Board of Managing Directors
Volksbank Mittelhessen eG

Andrea Hartmann
Employee
Bausparkasse Schwäbisch Hall AG

Pilar Herrero Lerma
Employee
DZ BANK AG
Deutsche Zentral-Genossenschaftsbank

Dr. Dierk Hirschel
Head of the Economic Policy Division
ver.di Bundesverwaltung

Marija Kolak
President
Bundesverband der Deutschen Volksbanken
und Raiffeisenbanken e.V. (BVR)

Renate Mack
Employee
DZ BANK AG
Deutsche Zentral-Genossenschaftsbank

Rainer Mangels
Employee
R+V Rechtsschutz-Schadenregulierungs-GmbH

Stephan Schack
Spokesman of the Board of Managing Directors
Volksbank Raiffeisenbank eG, Itzehoe

Gregor Scheller
Chief Executive Officer
Volksbank Forchheim eG

Uwe Spitzbarth
Head of the Financial Services Division
ver.di Bundesverwaltung

Sigrid Stenzel
Regional Group Director
ver.di Bayern

Ingo Stockhausen
(Member of the Supervisory Board since May 30, 2018)
Chief Executive Officer
Volksbank Oberberg eG

Dr. Wolfgang Thomasberger
Chief Executive Officer
VR Bank Rhein-Neckar eG

>> 46 Supervisory mandates held by members of the Board of Managing Directors and employees

As at December 31, 2018, members of the Board of Managing Directors and employees also held mandates on the statutory supervisory bodies of major companies. These and other notable mandates are listed below. Companies included in the consolidation are indicated with an asterisk (*).

Members of the Board of Managing Directors

Wolfgang Kirsch
(Chief Executive Officer until December 31, 2018)

Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall (*)
Chairman of the Supervisory Board (until December 31, 2018)

R+V Versicherung AG, Wiesbaden (*)
Chairman of the Supervisory Board (until December 31, 2018)

Union Asset Management Holding AG, Frankfurt am Main (*)
Chairman of the Supervisory Board (until December 31, 2018)

Uwe Fröhlich
(Co-Chief Executive Officer since January 1, 2019)

DZ HYP AG, Hamburg and Münster (*)
Chairman of the Supervisory Board

DZ PRIVATBANK S.A., Strassen (*)
Chairman of the Supervisory Board

VR-LEASING AG, Eschborn (*)
Chairman of the Supervisory Board

Dr. Cornelius Riese
(Co-Chief Executive Officer since January 1, 2019)

Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall (*)
Member of the Supervisory Board (until December 31, 2018)
Chairman of the Supervisory Board (since January 1, 2019)

R+V Versicherung AG, Wiesbaden (*)
Member of the Supervisory Board (until December 31, 2018)
Chairman of the Supervisory Board (since January 1, 2019)

TeamBank AG Nürnberg, Nuremberg (*)
Member of the Supervisory Board (since January 23, 2019)

Union Asset Management Holding AG, Frankfurt am Main (*)
Member of the Supervisory Board (until December 31, 2018)
Chairman of the Supervisory Board (since January 1, 2019)

VR-LEASING AG, Eschborn (*)
Member of the Supervisory Board

Uwe Berghaus

DZ HYP AG, Hamburg and Münster (*)
Member of the Supervisory Board

EDEKABANK AG, Hamburg
Member of the Supervisory Board

Dr. Christian Brauckmann	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
	DZ PRIVATBANK S.A., Strassen (*) Deputy Chairman of the Supervisory Board
	Fiducia & GAD IT AG, Frankfurt am Main Member of the Supervisory Board
Ulrike Brouzi	Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall (*) Member of the Supervisory Board (since January 1, 2019)
	R+V Allgemeine Versicherung AG, Wiesbaden (*) Member of the Supervisory Board (since January 1, 2019)
	R+V Lebensversicherung AG, Wiesbaden (*) Member of the Supervisory Board (since January 1, 2019)
	Salzgitter AG, Salzgitter Member of the Supervisory Board
Wolfgang Köhler	DVB Bank SE, Frankfurt am Main (*) Chairman of the Supervisory Board
	R+V Lebensversicherung AG, Wiesbaden (*) Member of the Supervisory Board
Michael Speth	BAG Bankaktiengesellschaft, Hamm Member of the Supervisory Board
	DVB Bank SE, Frankfurt am Main (*) Member of the Supervisory Board
	DZ HYP AG, Hamburg and Münster (*) Member of the Supervisory Board
	R+V Allgemeine Versicherung AG, Wiesbaden (*) Member of the Supervisory Board (until December 31, 2018)
	R+V Lebensversicherung AG, Wiesbaden (*) Member of the Supervisory Board (until December 31, 2018)
	R+V Versicherung AG, Wiesbaden (*) Member of the Supervisory Board (since January 3, 2019)
	TeamBank AG Nürnberg, Nuremberg (*) Deputy Chairman of the Supervisory Board (until December 31, 2018)
	VR-LEASING AG, Eschborn (*) Deputy Chairman of the Supervisory Board (since January 1, 2019)

Thomas Ullrich	Deutsche WertpapierService Bank AG, Frankfurt am Main Chairman of the Supervisory Board
	TeamBank AG Nürnberg, Nuremberg (*) Chairman of the Supervisory Board
	VR Payment GmbH, Frankfurt am Main (*) (until January 3, 2019: CardProcess GmbH, Karlsruhe) Chairman of the Supervisory Board

Employees

Rolf Büscher	ReiseBank AG, Frankfurt am Main (*) Member of the Supervisory Board
Dr. Thomas Kettern (until December 31, 2018)	Raiffeisen Waren GmbH, Kassel Member of the Supervisory Board
Winfried Münch	AKA Ausfuhrkredit-Gesellschaft mbH, Frankfurt am Main Member of the Supervisory Board
Dr. Peter Neu	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
Gregor Roth	equensWorldline SE, Utrecht Deputy Chairman of the Supervisory Board
	ReiseBank AG, Frankfurt am Main (*) Chairman of the Supervisory Board
	VR Payment GmbH, Frankfurt am Main (*) (until January 3, 2019: CardProcess GmbH, Karlsruhe) Member of the Supervisory Board
Peter Tenbohlen	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
Dr. Ulrich Walter	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
Dagmar Werner	Banco Cooperativo Español S.A., Madrid Member of the Board of Directors

>> 47 List of shareholdings

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
AER Holding N.V. 1)	Willemstad, Curaçao	100.00		20	0
Agder Ocean Reefer II DIS 1)	Oslo, Norway	0.00		0	0
Agder Ocean Reefer III DIS 1)	Oslo, Norway	0.00		0	0
Agder Ocean Shipping KS 1)	Oslo, Norway	0.00		0	0
AGIMA Aktiengesellschaft für Immobilien-Anlage 5)	Frankfurt am Main	100.00		84,043	0
APZ Auto-Pflege-Zentrum GmbH 1)	Darmstadt	100.00		7,623	2,118
APZ Beteiligungs GmbH 1)	Darmstadt	81.70		n/a	n/a
APZ CarMotion GmbH 1)	Fischamend, Austria	100.00		n/a	n/a
Aquila Aircraft Leasing Ltd. 1)	Dublin, Ireland	0.00		-401	-401
ARATOS GmbH 1)	Eschborn	100.00		87	62
ARATOS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	76	43
ASPASIA GmbH 1)	Eschborn	100.00		56	31
ASPASIA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	742	37
Assimoco S.p.A. 1)	Segrate (Mi), Italy	66.88		179,151	19,095
Assimoco Vita S.p.A. 1)	Segrate (Mi), Italy	82.14		140,523	11,266
attrax S.A. 1)	Luxembourg, Luxembourg	100.00		48,629	19,912
Aufbau und Handelsgesellschaft mbH 1)	Stuttgart	94.90		525	0
AURIGA GmbH 1)	Eschborn	100.00		624	1,572
AXICA Kongress- und Tagungszentrum Pariser Platz 3 GmbH 5)	Berlin	100.00		26	0
Bathgate Trading Opco LLC 1)	Majuro, Marshall Islands	0.00		1	-20
BAUFINEX GmbH 1)	Schwäbisch Hall	70.00		n/a	n/a
Bausparkasse Schwäbisch Hall Aktiengesellschaft - Bausparkasse der Volksbanken und Raiffeisenbanken - 5)	Schwäbisch Hall	96.94		1,812,302	0
Berwick Shipping LLC 1)	Majuro, Marshall Islands	0.00		-102	1,135
Beteiligungsgesellschaft Westend 1 mbH & Co. KG 1)	Frankfurt am Main	94.90		17,885	400
BFL Gesellschaft des Bürofachhandels mbH & Co. KG 1)	Eschborn	73.17	73.38	13,378	14,606
BFL Leasing GmbH 1)	Eschborn	100.00		30,517	15,774
Bischoff GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	21	20
Bluebell Aircraft Leasing Ltd. i.L. 1)	Floriana, Malta	100.00	0.00	753	789
Bonham Aircraft Leasing Ltd. 1)	George Town, Cayman Islands	0.00		128	-420
Braveheart Shipping Holdco LLC 1)	Majuro, Marshall Islands	0.00		0	0
Braveheart Shipping Opco LLC 1)	Majuro, Marshall Islands	0.00		-117	21,017
BWG Baugesellschaft Württembergischer Genossenschaften mbH 1)	Stuttgart	94.78		9,965	0
CALYPSO GmbH 1)	Eschborn	100.00		-733	-82
Canadian Iron Ore Railcar Leasing LP 1)	Hamilton, Canada	0.00		-5,281	-2,516
CANOPOS GmbH 1)	Eschborn	100.00		27	2
CANOPOS GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		3	28
Capital Lease Limited 1)	Hong Kong, Hong Kong	100.00		68	-404
carexpert Kfz-Sachverständigen GmbH 1)	Walluf	60.00		4,158	-448
CATHENA GmbH 1)	Eschborn	100.00		51	26
CHEMIE Pensionsfonds AG 1)	Munich	100.00		26,318	2,000
Chiefs Aircraft Holding (Malta) Limited 1)	Floriana, Malta	0.00		2,534	2,534
CI CONDOR Immobilien GmbH 1)	Hamburg	100.00		20,100	0
CIORL Partner Ltd. 1)	Toronto, Canada	0.00		-5,281	-2,516
compertis Beratungsgesellschaft für betriebliches Vorsorgemanagement mbH 1)	Wiesbaden	100.00		4,315	560
Condor Allgemeine Versicherungs-Aktiengesellschaft 1) 5)	Hamburg	100.00		41,762	0
Condor Dienstleistungs GmbH 1)	Hamburg	100.00		290	52
Condor Lebensversicherungs-Aktiengesellschaft 1)	Hamburg	94.98		51,742	0
Container Investment Fund I LLC 1)	Majuro, Marshall Islands	0.00		-22,820	-22,820
Cruise Ship InvestCo LLC 1)	Majuro, Marshall Islands	0.00		0	0
DCAL Aircraft Malta Ltd. 1)	Floriana, Malta	0.00		2,732	2,732
DEGEAKZENT Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		42	16
DEGEAKZENT Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	0.00	51.00	20	20
DEGEALPHA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		29	1
DEGEALPHA Grundstücksverwaltungsgesellschaft mbH & Co. Objekt Hamm-Heessen KG 1)	Eschborn	90.00	66.67	3	0
DEGEARKADE Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	2
DEGEARKADE Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		3	64
DEGEASPEKT Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		29	2
DEGEASPEKT Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		3	38
DEGEASTURA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		62	37

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
DEGEASTURA Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		-813	99
DEGEAVUS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		32	5
DEGEBALTA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	1
DEGECASTELL GmbH 1)	Eschborn	100.00		26	-1
DEGECEBER Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	0
DEGECEDO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		261	9
DEGECIVO Grundstücksverwaltungsgesellschaft mbH Berlin 1)	Berlin	100.00		28	2
DEGECOMO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		24	0
DEGECULA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		275	249
DEGECULA Grundstücksverwaltungsgesellschaft mbH & Co. Objekt Sindelfingen KG 1)	Eschborn	6.00	75.50	321	330
DEGEDELTA Vermietungsgesellschaft für Betriebsvorrichtungen mbH 1)	Eschborn	100.00		26	0
DEGEDOMUS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		25	-1
DEGEFULVA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		37	11
DEGEIMPULS Grundstücksverwaltungsgesellschaft Objekt Hattingen mbH 1)	Eschborn	100.00		24	-1
DEGEKONZEPT Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		62	14
DEGEMALVA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGEMALVA Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1) 6)	Eschborn	100.00		3	43
DEGEMENAR Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	0
DEGEMINAX Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		48	23
DEGEMOBIL Vermietungsgesellschaft für Betriebsvorrichtungen mbH 1)	Eschborn	100.00		33	7
DEGEMOLTO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		28	3
DEGEMONTES Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		229	203
DEGEMONTES Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	95.00	75.00	245	242
DEGEMOX Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	1
DEGEMOX Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		3	38
DEGENITOR Grundstücksverwaltungsgesellschaft mbH 1) 5)	Eschborn	100.00		26	0
DEGEPRIMUS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		60	34
DEGEPRIMUS Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	5.00	75.50	42	41
DEGEPROJEKT Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		44	-75
DEGEPROLOG Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	0
DEGEPROMO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		34	1
DEGEPROMO Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1) 6)	Eschborn	100.00		-32	-2
DEGERIA Beteiligungsgesellschaft mbH 1)	Eschborn	100.00		26	0
DEGERIPA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		43	17
DEGERIPA Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	76.00	-621	11
DEGESAMOS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGESAMOS Grundstücksverwaltungsgesellschaft mbH & Co. Objekt Neuss KG 1)	Eschborn	90.00	66.67	3	0
DEGESAPOR Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		29	1
DEGESAPOR Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		3	41
DEGESERA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGESERA Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	0.00	51.00	678	84
DEGESERVO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGESERVO Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	100.00		3	188
DEGESIDUX Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	1
DEGESIGNUM Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		58	32
DEGESIGNUM Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	75.50	40	39
DEGESILEX Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		62	36
DEGESILEX Grundstücksverwaltungsgesellschaft mbH & Co. Objekt Karlsfeld KG 1)	Eschborn	5.00	75.50	-615	280
DEGESILVA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	2
DEGESISTO Grundstücksverwaltungsgesellschaft mbH 1) 5)	Eschborn	100.00		114	0
DEGESOLVO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGESOLVO Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG i.L. 1)	Eschborn	1.18	6.66	4	0
DEGESUR Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		26	0
DEGETAMESIS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		53	27
DEGETAMESIS Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	10.00	75.50	1,966	95

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
DEGETANTUS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		25	-1
DEGETERRA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		41	15
DEGETERRA Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	75.50	-413	140
DEGETIBUR Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		54	28
DEGETIBUR Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	67.34	36	34
DEGETRINUM Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		50	25
DEGETRINUM Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	75.50	25	30
DEGEVIA Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	1
DEGEVIA Grundstücksverwaltungsgesellschaft mbH & Co. Objekt Rhede Gronauer Strasse 21 KG 1) 6)	Eschborn	90.00	66.67	3	0
DEGEVITRO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		25	0
DESPINA GmbH 1)	Eschborn	100.00		40	15
Deucalion Capital I (UK) Ltd. 1)	London, UK	0.00		-2,773	-2,773
Deucalion Capital II (MALTA) Limited 1)	Valletta, Malta	0.00		-1,392	-1,225
Deucalion Capital II (UK) Ltd. 1)	London, UK	0.00		2,351	2,351
Deucalion Capital II Limited 1)	George Town, Cayman Islands	0.00		-5,075	-4,990
Deucalion Capital VI Limited 1)	George Town, Cayman Islands	0.00		-667	-667
Deucalion Capital VIII Limited 1)	George Town, Cayman Islands	0.00		12,927	12,604
Deucalion Engine Leasing (Ireland) Ltd. 1)	Dublin, Ireland	0.00		1,016	1,016
Deucalion Ltd. 1)	George Town, Cayman Islands	0.00		19,231	19,231
DEVIF-Fonds Nr. 150 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DEVIF-Fonds Nr. 2 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DEVIF-Fonds Nr. 250 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DEVIF-Fonds Nr. 500 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DEVIF-Fonds Nr. 528 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DEVIF-Fonds Nr. 60 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	0.00		n/a	n/a
DG LEASING GmbH 1)	Eschborn	100.00		26	0
DG Participacoes Ltda. 1)	São Paulo, Brazil	100.00		0	0
Dilax Beteiligungs Verwaltungsgesellschaft mbH 1)	Berlin	100.00		25	0
Dilax Beteiligungsgesellschaft mbH & Co. KG 1)	Berlin	92.39		2,859	-158
Dilax France SAS 1)	Valence, France	100.00		420	168
Dilax Intelcom AG 1)	Ermatingen, Switzerland	100.00		730	412
Dilax Intelcom GmbH 1)	Berlin	72.01		2,181	-915
Dilax Intelcom Iberica S.L.U. 1)	Madrid, Spain	100.00		123	62
Dilax Management Investment Reserve GmbH 1)	Berlin	100.00		232	-3
Dilax Management Investment Verwaltungsgesellschaft mbH 1)	Berlin	100.00		22	-1
Dilax Management Investmentgesellschaft mbH & Co. KG 1)	Berlin	99.50		200	-3
Dilax Systems Inc. 1)	Saint Lambert, Canada	100.00		504	200
Dilax Systems UK Ltd. 1)	London, UK	100.00		-1,478	-406
DILAX Systems US Inc 1)	City of Wilmington, County of New Castle, USA	100.00		n/a	n/a
DOBAS Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		29	4
Drem Shipping LLC 1)	Majuro, Marshall Islands	0.00		-14	141
DRITTE DG Vermietungsgesellschaft für Immobilien mbH 1) 5)	Eschborn	100.00		26	0
DUNAVAGON s.r.o. 1)	Dunajská Streda, Slovakia	100.00	0.00	1,903	1,903
DURO Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		27	2
DV01 Szarazfoldi Jarmukolcsonzo rt 1)	Áporka, Hungary	100.00		-250	-250
DVB Bank America N.V. 1)	Willemstad, Curaçao	100.00		110,992	22,297
DVB Bank SE 5)	Frankfurt am Main	100.00		451,568	0
DVB Capital Markets LLC 1)	New York, USA	100.00		2,925	-308
DVB Group Merchant Bank (Asia) Ltd. 1)	Singapore, Singapore	100.00		345,419	26,899
DVB Holding GmbH 1) 5)	Frankfurt am Main	100.00		13,000	0
DVB Investment Management N.V. 1)	Willemstad, Curaçao	100.00		218	0
DVB Transport Finance Limited 1)	London, UK	100.00		46,292	261
DVG Deutsche Vermögensverwaltungs-Gesellschaft mit beschränkter Haftung 5)	Frankfurt am Main	100.00		82	0
DVL Deutsche Verkehrs-Leasing GmbH i.L. 1)	Eschborn	74.90		2,485	-13
DZ BANK Capital Funding LLC I 2) 4)	Wilmington, USA	100.00		300,895	6,599
DZ BANK Capital Funding LLC II 2) 4)	Wilmington, USA	100.00		500,716	6,467
DZ BANK Capital Funding LLC III 2) 4)	Wilmington, USA	100.00		350,302	4,182
DZ BANK Capital Funding Trust I	Wilmington, USA	0.00	100.00	300,001	6,594
DZ BANK Capital Funding Trust II	Wilmington, USA	0.00	100.00	500,001	6,460
DZ BANK Capital Funding Trust III	Wilmington, USA	0.00	100.00	350,001	4,179
DZ BANK Perpetual Funding (Jersey) Limited 4)	St. Helier, Jersey	0.00	100.00	260,482	1,272
DZ BANK Perpetual Funding Issuer (Jersey) Limited	St. Helier, Jersey	0.00		0	0

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
DZ BANK Sao Paulo Representacao Ltda. 2)	São Paulo, Brazil	100.00		355	102
DZ Beteiligungsgesellschaft mbH Nr. 11 5)	Frankfurt am Main	100.00		6,620	0
DZ Beteiligungsgesellschaft mbH Nr. 14 5)	Frankfurt am Main	100.00		51	0
DZ Beteiligungsgesellschaft mbH Nr. 18 5)	Frankfurt am Main	100.00		64,726	0
DZ Beteiligungsgesellschaft mbH Nr. 21 5)	Frankfurt am Main	100.00		25	0
DZ Beteiligungsgesellschaft mbH Nr. 22	Frankfurt am Main	100.00		21	-1
DZ Beteiligungsgesellschaft mbH Nr. 23 5)	Frankfurt am Main	100.00		25	0
DZ Beteiligungsgesellschaft mbH Nr. 24	Frankfurt am Main	100.00		20	-1
DZ CompliancePartner GmbH (GenoTec GmbH until January 17, 2019)	Neu-Isenburg	100.00		n/a	n/a
DZ FINANCIAL MARKETS LLC	New York, USA	100.00		3,919	63
DZ Gesellschaft für Grundstücke und Beteiligungen mbH 5)	Frankfurt am Main	100.00		1,461	0
DZ HYP AG 3) 5)	Hamburg/Münster	96.39		1,762,331	0
DZ Immobilien + Treuhand GmbH 5)	Münster	94.50		4,055	0
DZ Polska Spólka Akcyjna w likwidacji	Warsaw, Poland	100.00		69,454	705
DZ PRIVATBANK (Schweiz) AG 1)	Zurich, Switzerland	100.00		156,549	641
DZ PRIVATBANK S.A. 3)	Strassen, Luxembourg	91.27		640,561	11,382
DZ Versicherungsvermittlung Gesellschaft mbH 5)	Frankfurt am Main	100.00		51	0
DZ Vierte Beteiligungsgesellschaft mbH 5)	Frankfurt am Main	100.00		265,487	0
e@syCredit Marketing und Vertriebs GmbH 1)	Nuremberg	100.00		25	0
ENDES Grundstücksverwaltungsgesellschaft mbH 1) 5)	Eschborn	100.00		26	0
Englische Strasse 5 GmbH 1)	Wiesbaden	90.00		17,870	610
EPI Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		52	13
Finch Aircraft Leasing Limited 1)	Dublin, Ireland	0.00		-2	-120
FKS-NAVIGIUM GmbH 1)	Eschborn	100.00		-641	-126
FLORIN GmbH 1)	Eschborn	100.00		54	29
FLORIN GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	-28	35
FPAC (Malta) Limited 1)	Floriana, Malta	100.00		0	0
fragWILHELM GmbH 1)	Wiesbaden	100.00		n/a	n/a
Fundamenta-Lakáskassza Lakás-takarékpénztár Zrt. 1)	Budapest, Hungary	51.25		151,185	22,179
Fundamenta-Lakáskassza Pénzügyi Közvetitö Kft. 1)	Budapest, Hungary	100.00		4,373	377
GAF Active Life 1 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	96.55		68,573	0
GAF Active Life 2 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	94.98		65,672	0
GENO Broker GmbH 5)	Frankfurt am Main	100.00		10,000	0
GENO-Beteiligungsgesellschaft mbH	Düsseldorf	100.00		1,148	-2
Genossenschaftlicher Informations Service GIS GmbH	Frankfurt am Main	100.00		4,288	89
Glen Campbell Opco LLC 1)	Majuro, Marshall Islands	0.00		-190	-212
Glencoe Shipping Holdco LLC 1)	Majuro, Marshall Islands	0.00		-14	-12
GMS Management und Service GmbH 1)	Nidderau	100.00		79	29
Goldberg Zweite Grundstücksverwaltungsgesellschaft Sütex mbH & Co. KG 1) 6)	Eschborn	94.50	88.00	1,294	338
Green Eagle Investments N.V. 1)	Willemstad, Curaçao	100.00		-6,270	-6,270
Grundstücksverwaltungsgesellschaft Sütex mbH 1)	Eschborn	100.00		23	0
GWG 1. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		2,000	726
GWG 2. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		3,000	876
GWG 3. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		7,000	869
GWG 4. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		9,000	911
GWG Beteiligungsgesellschaft mbH 1)	Stuttgart	100.00		26	0
GWG Gesellschaft für Wohnungs- und Gewerbebau Baden-Württemberg AG 1)	Stuttgart	91.56		316,386	28,215
GWG Hausbau GmbH 1) 5)	Stuttgart	94.48		2,750	0
GWG ImmoInvest GmbH 1)	Stuttgart	94.90		8,735	2,793
GWG Wohnpark Sendling GmbH 1)	Stuttgart	94.00		3,653	347
GZ-Immobilien-Management GmbH & Co. Objekt KG	Frankfurt am Main	100.00		0	-4
GZ-Trust Consult GmbH i.L.	Stuttgart	100.00		838	359
Havel Nordost Zweite Grossmobilien GmbH 1)	Eschborn	100.00		42	17
Havel Nordost Zweite Grossmobilien GmbH & Co. Vermietungs KG 1)	Zehdenick	0.00	52.00	3,809	1,226
Hawk Aircraft Leasing Limited 1)	Dublin, Ireland	0.00		-46	-46
Hibiscus Aircraft Leasing Limited 1)	Floriana, Malta	0.00		439	439
Highlanders Aircraft Leasing (IRL) Ltd. 1)	Dublin, Ireland	0.00		192	192
Hollandse Scheepshypotheekbank N.V. 1)	Rotterdam, Netherlands	100.00		707	0
Hudson Services LLC 1)	Majuro, Marshall Islands	0.00		-799	-84
HumanProtect Consulting GmbH 1)	Cologne	100.00		216	36
Immobilien-Gesellschaft 'DG Bank-Turm, Frankfurt am Main, Westend' mbH & Co. KG des genossenschaftlichen Verbundes 1)	Frankfurt am Main	95.97		186,392	25,232
Immobilien-Verwaltungsgesellschaft 'DG BANK-Turm, Frankfurt am Main, Westend' mbH	Frankfurt am Main	100.00		55	20
IMPETUS Bietergesellschaft mbH 5)	Düsseldorf	100.00		54,063	0
Intermodal Investment Fund IX LLC 1)	Majuro, Marshall Islands	100.00		21	21

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
IPConcept (Luxemburg) S.A. 1)	Strassen, Luxembourg	100.00		4,580	8,758
IPConcept (Schweiz) AG 1)	Zurich, Switzerland	100.00		6.158	351
Iron Maple Rail Ltd. 1)	Vancouver, Canada	100.00		-10,563	-10,563
ITF International Transport Finance Suisse AG 1)	Zurich, Switzerland	100.00		-43,457	-7,479
Ivanhoe Shipping Opco LLC 1)	Majuro, Marshall Islands	0.00		266	186
IZD-Beteiligung S.à.r.l. 1)	Luxembourg, Luxembourg	99.50		131	20,867
JASPIS GmbH 1)	Eschborn	100.00		41	15
JASPIS GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		10	20
K2 Aircraft Malta Ltd 1)	Floriana, Malta	100.00		4	4
KALAMOS GmbH 1)	Eschborn	100.00		474	449
Kalsubai Shipping and Offshore Private Ltd. 1)	Mumbai, India	0.00		0	14,334
Kälte Eckert GmbH 1)	Markgröningen	70.00		7,026	-374
KBIH Beteiligungsgesellschaft für Industrie und Handel mbH	Frankfurt am Main	100.00		21,103	7,825
KISSELBERG Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		9	0
KISSELBERG Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Eschborn	6.00	66.67	8,011	441
KRAVAG Umweltschutz und Sicherheitstechnik GmbH 1)	Hamburg	100.00		269	30
KRAVAG-ALLGEMEINE Versicherungs-Aktiengesellschaft 1)	Hamburg	100.00		119,361	12,103
KRAVAG-LOGISTIC Versicherungs-Aktiengesellschaft 1)	Hamburg	51.00		205,389	13,717
KTP Beteiligungs GmbH & Co. KG 1)	Frankfurt am Main	100.00		25,769	718
KTP Verwaltungs GmbH 1)	Frankfurt am Main	100.00		22	-2
KV MSN 27602 Aircraft Ltd. 1)	Dublin, Ireland	0.00		-10	127
Lantana Aircraft Leasing Limited 1)	Floriana, Malta	0.00		-24,114	-24,875
Leith Shipping LLC 1)	Majuro, Marshall Islands	0.00		222	312
LEKANIS GmbH 1)	Eschborn	100.00		41	16
LEKANIS GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		21	81
Linton Shipping LLC 1)	Majuro, Marshall Islands	0.00		0	84
LISENE GmbH 1)	Eschborn	100.00		44	19
LISENE GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	24	23
LITOS GmbH 1)	Eschborn	100.00		41	16
LITOS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	21	43
LogPay Financial Services GmbH 1) 5) 6)	Eschborn	100.00		2,000	0
LogPay Mobility Services GmbH 1)	Eschborn	100.00		0	0
Maple Leaf Shipping Holdco LLC 1)	Majuro, Marshall Islands	0.00		4,554	-67
MD Aviation Capital Pte. Ltd. 1)	Singapore, Singapore	100.00		-22,115	-22,115
MDAC 1 Pte Ltd. 1)	Singapore, Singapore	100.00		-4,957	-4,957
MDAC 11 Pte Ltd. 1)	Singapore, Singapore	100.00		-551	-551
MDAC 2 Pte Ltd. 1)	Singapore, Singapore	100.00		-5,574	-5,574
MDAC 3 Pte Ltd. 1)	Singapore, Singapore	100.00		14,188	14,188
MDAC 4 Pte Ltd. 1)	Singapore, Singapore	100.00		-1,760	-1,760
MDAC 5 Pte. Ltd. 1)	Singapore, Singapore	100.00		-6,758	-6,758
MDAC 6 Pte Ltd. 1)	Singapore, Singapore	100.00		3,655	3,655
MDAC 7 (Ireland) Ltd. 1)	Dublin, Ireland	100.00		1,676	1,676
MDAC 8 Pte Ltd. 1)	Singapore, Singapore	100.00		-681	-681
MDAC 9 Pte Ltd. 1)	Singapore, Singapore	100.00		419	419
MDAC Malta Ltd. 1)	Floriana, Malta	0.00		0	0
MI-Fonds 384 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds 388 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds 391 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds 392 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds F 57 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds F 59 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds F45 Metzler Investmtent GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds F46 Metzler Investmtent GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds F47 Metzler Investmtent GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds J01 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MI-Fonds J03 Metzler Investment GmbH 1)	Frankfurt am Main	0.00		n/a	n/a
MINTAKA GmbH 1)	Eschborn	100.00		44	19
MINTAKA GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		-138	8
MODULUS GmbH 1)	Eschborn	100.00		52	27
MODULUS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	34	32
Morgenstern Miet + Leasing GmbH 1)	Eschborn	95.00		26	0
Mount Diamir LLC 1)	Majuro, Marshall Islands	0.00		0	0
Mount Pleasant Shipping Pte. Ltd. 1)	Singapore, Singapore	100.00		536	446
Mount Rinjani Shipping Pte. Ltd. 1)	Singapore, Singapore	100.00		1,738	1,738
Mount Santubong Ltd. 1)	Labuan, Malaysia	100.00		2,499	2,499

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Mount Ulriken LLC 1)	Majuro, Marshall Islands	100.00		495	495
MS 'Mumbai Trader' GmbH & Co. KG 1)	Bremen	0.00		0	0
MSN1164 Freighter Ltd. 1)	Dublin, Ireland	0.00		-734	12,702
MSU Management-, Service- und Unternehmensberatung GmbH 1)	Landau in der Pfalz	74.00		778	145
NELO Dritte GmbH 1)	Eschborn	100.00		48	22
NELO Dritte GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	28	27
NELO Fünfte GmbH 1)	Eschborn	100.00		44	19
NELO Fünfte GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	25	23
NFC Labuan Shipleasing I Ltd. 1)	Labuan, Malaysia	100.00		1,889	5,273
NFC Shipping Fund C LLC 1)	Majuro, Marshall Islands	0.00		6,694	6,672
NOVA Achte GmbH 1)	Eschborn	100.00		42	17
NOVA Neunte GmbH 1)	Eschborn	100.00		41	16
NOVA Siebte GmbH 1)	Eschborn	100.00		42	17
NOVA Siebte GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	22	20
NTK Immobilien GmbH 1)	Hamburg	100.00		26	0
NTK Immobilien GmbH & Co. Management KG 2)	Hamburg	100.00		1,068	-160
Ocean Containerships II DIS 1)	Oslo, Norway	0.00		0	0
Ocean Giant LLC 1)	Majuro, Marshall Islands	0.00		-104	12,609
Pascon GmbH 1)	Wiesbaden	100.00		31	6
PAVONIS GmbH 1)	Eschborn	100.00		100	75
PCAM Issuance II SA Issue RV AVL 001 1)	Luxembourg, Luxembourg	0.00		n/a	n/a
PDZ Personaldienste & Zeitarbeit GmbH 5)	Darmstadt	100.00		60	0
Pension Consult-Beratungsgesellschaft für Altersvorsorge mbH 1)	Munich	100.00		1,511	108
Philip Trading Opco LLC 1)	Majuro, Marshall Islands	0.00		-85	-1,867
Phoenix Beteiligungsgesellschaft mbH 5)	Düsseldorf	100.00		108,349	0
Puffin Aircraft Leasing Ltd. 1)	Dublin, Ireland	0.00		-13	-183
Quoniam Asset Management GmbH 1)	Frankfurt am Main	88.00	100.00	37,189	22,451
Quoniam Funds Selection SICAV - Global Credit Cash Duration EUR hedged I dis 1)	Luxembourg, Luxembourg	0.00		n/a	n/a
R+V Allgemeine Versicherung Aktiengesellschaft 1) 5)	Wiesbaden	95.00		774,177	0
R+V Deutschland Real (RDR) 1)	Hamburg	0.00		n/a	n/a
R+V Dienstleistungs GmbH 1)	Wiesbaden	100.00		623	4
R+V Direktversicherung AG 1) 5)	Wiesbaden	100.00		13,320	0
R+V Erste Anlage GmbH 1)	Wiesbaden	100.00		1,055	-9
R+V INTERNATIONAL BUSINESS SERVICES Ltd., Dublin 1)	Dublin, Ireland	100.00		1,053	-1,986
R+V KOMPOSIT Holding GmbH 1) 5)	Wiesbaden	100.00		1,813,882	0
R+V Krankenversicherung AG 1)	Wiesbaden	100.00		89,485	12,000
R+V Kureck Immobilien GmbH 1)	Wiesbaden	100.00		41	4
R+V Leben Wohn GmbH & Co. KG 1)	Wiesbaden	100.00		71,400	690
R+V Lebensversicherung Aktiengesellschaft 1)	Wiesbaden	100.00		634,981	0
R+V Luxembourg Lebensversicherung S.A. 1)	Strassen, Luxembourg	100.00		330,014	48,561
R+V Mannheim P2 GmbH 1)	Wiesbaden	94.00		57,309	1,821
R+V Pensionsfonds AG 1)	Wiesbaden	100.00		29,353	1,900
R+V Pensionskasse AG 1)	Wiesbaden	100.00		103,133	-3,039
R+V Personen Holding GmbH 1)	Wiesbaden	100.00		1,094,609	117,118
R+V Rechtsschutz-Schadenregulierungs-GmbH 1)	Wiesbaden	100.00		277	130
R+V Service Center GmbH 1) 5)	Wiesbaden	100.00		2,869	0
R+V Service Holding GmbH 1) 5)	Wiesbaden	100.00		177,780	0
R+V Treuhand GmbH 1)	Wiesbaden	100.00		42	1
R+V Versicherung AG 5)	Wiesbaden	92.12		2,149,774	0
RC II S.a.r.l. 1)	Luxembourg, Luxembourg	90.00		9,054	-422
ReiseBank Aktiengesellschaft 1)	Frankfurt am Main	100.00		19,267	9,013
RISALIS GmbH 1)	Eschborn	100.00		45	20
RISALIS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	20	18
RUBINOS GmbH 1)	Eschborn	100.00		137	112
RUV Agenturberatungs GmbH 1)	Wiesbaden	100.00		486	201
RV AIP S.a.r.l 1)	Luxembourg, Luxembourg	100.00		n/a	n/a
RV AIP S.C.S SICAV-SIF - RV TF 2 Infra Debt 1)	Luxembourg, Luxembourg	100.00		n/a	n/a
RV AIP S.C.S. SICAV-SIF 1)	Luxembourg, Luxembourg	99.00		n/a	n/a
S2 Shipping and Offshore Ptd Ltd. 1)	Singapore, Singapore	100.00		-9,691	-9,691
SAREMA GmbH 1)	Eschborn	100.00		51	26
SAREMA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	52.00	34	410
Scheepvaartmaatschappij Ewout B.V 1)	Schiphol, Netherlands	100.00		370	370
Schuster Versicherungsmakler GmbH 1)	Bielefeld	51.00		367	-149
Schuster Versicherungsservice GmbH 1)	Bielefeld	100.00		37	0
Schwäbisch Hall Facility Management GmbH 1)	Schwäbisch Hall	51.00		9,143	1,003

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Schwäbisch Hall Kreditservice GmbH 1) 5)	Schwäbisch Hall	100.00		27,775	0
Schwäbisch Hall Wohnen GmbH Gesellschaft für wohnwirtschaftliche Dienstleistungen 1)	Schwäbisch Hall	100.00		621	3
SECURON Versicherungsmakler GmbH 1)	Hannover	51.00		707	209
Shamrock Trading Opco LLC 1)	Majuro, Marshall Islands	0.00		-19	-167
Shipping and Intermodal Investment Management Fund I LLC 1)	Majuro, Marshall Islands	0.00		53,408	53,380
Shipping and Intermodal Investment Management Fund II LLC 1)	Majuro, Marshall Islands	0.00		40,160	40,421
SHT Schwäbisch Hall Training GmbH 1)	Schwäbisch Hall	100.00		6,055	434
SIIM Marlin Holdings LLC 1)	Majuro, Marshall Islands	72.04		-645	1,468
Sinaloa Aircraft Leasing Ltd 1)	Floriana, Malta	0.00		-44	-22
Sprint Sanierung GmbH 1)	Cologne	100.00		31,611	608
SRF I Ltd. 1)	Floriana, Malta	0.00		-2,677	-2,609
SRF III Ltd. 1)	Floriana, Malta	0.00		-5,074	-5,079
Stani Trading Opco LLC 1)	Majuro, Marshall Islands	0.00		-200	-1.841
Stephenson Capital Limited 1)	George Town, Cayman Islands	0.00		-1,681	-1,681
TeamBank AG Nürnberg 2) 5)	Nuremberg	92.44		539,699	0
TEGANON GmbH 1)	Eschborn	100.00		27	2
TEGANON GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		3	21
Terra Maris I LLC 1)	Majuro, Marshall Islands	100.00		-6,752	-6,752
Tiger Aircraft Leasing (UK) Limited 1)	London, UK	0.00		-2,351	-2,351
TILIAS GmbH 1)	Eschborn	100.00		45	20
TILIAS GmbH & Co. Immobilien KG 1)	Eschborn	50.00	76.00	25	24
TOPAS GmbH 1)	Eschborn	100.00		50	25
TOPAS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	31	30
Twenty Holding Private Limited 1)	Singapore, Singapore	0.00		-489	478
UI Management S.a.r.l. 1)	Luxembourg, Luxembourg	100.00		n/a	n/a
UI Vario: 2 issued by Union Investment Luxembourg S.A. 1)	Luxembourg, Luxembourg	0.00		n/a	n/a
UII European Hospitality Fund 1)	Hamburg	0.00		n/a	n/a
UII Issy 3 Moulins SARL 1)	Paris, France	100.00		8	-1
UII PSD KN ImmoInvest GP GmbH 1)	Hamburg	100.00		54	23
UII SCE Immobilien GmbH & Co. KG 1)	Hamburg	100.00		n/a	n/a
UII SCE Management GP GmbH 1)	Hamburg	100.00		25	0
UII Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		22	1
UIN Union Investment Institutional Fonds Nr. 560 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 578 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 635 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 669 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 715 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 716 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 772 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 817 1)	Frankfurt am Main	0.00		2,222,753	-477
UIN Union Investment Institutional Fonds Nr. 825 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 833 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 834 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 839 1)	Frankfurt am Main	0.00		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 913 1)	Frankfurt am Main	0.00		n/a	n/a
UIR FRANCE 1 S.a.r.l. 1)	Paris, France	100.00		15	-7
UIR FRANCE 2 S.a.r.l. 1)	Paris, France	100.00		20	-7
UIR Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		92	2
UMB Unternehmens-Managementberatungs GmbH 1)	Wiesbaden	100.00		2,901	844
UMBI GmbH 1)	Wiesbaden	100.00		101	27
UniAbsolute Return Globalny FIZ 1)	Warsaw, Poland	0.00		n/a	n/a
UniGotówkowy Aktywa Polskie 1)	Warsaw, Poland	0.00		n/a	n/a
UniInstitutional Global Credit 1)	Luxembourg, Luxembourg	0.00		n/a	n/a
UniObligacje: Globalne Rynki Wschodzace 1)	Warsaw, Poland	0.00		n/a	n/a
Union Asset Management Holding AG 2)	Frankfurt am Main	96.57		940,464	341,275
Union Investment Austria GmbH 1)	Vienna, Austria	100.00		16,309	1,279
Union Investment Financial Services S.A. 1)	Luxembourg, Luxembourg	100.00		20,553	3,182
Union Investment Institutional GmbH 1) 6)	Frankfurt am Main	100.00		83,970	0
Union Investment Institutional Property GmbH 1) 6)	Hamburg	90.00		23,365	6,974
Union Investment Luxembourg S.A. 1)	Luxembourg, Luxembourg	100.00		209,940	45,102
Union Investment Privatfonds GmbH 1) 6)	Frankfurt am Main	100.00		460,942	0
Union Investment Real Estate Asia Pacific Pte. Ltd. 1)	Singapore, Singapore	100.00		1,020	109
Union Investment Real Estate Austria AG 1)	Vienna, Austria	94.50		6,857	700
Union Investment Real Estate France S.A.S. 1)	Paris, France	100.00		3,585	1,354
Union Investment Real Estate GmbH 2) 6)	Hamburg	94.50		150,589	44,148

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Union Investment Service Bank AG 1) 6)	Frankfurt am Main	100.00		63,115	0
Union Investment Towarzystwo Funduszy Inwestycyjnych S. A. 1)	Warsaw, Poland	100.00		32,383	5,973
Union IT-Services GmbH 1) 6)	Frankfurt am Main	100.00		3,032	0
Union Service-Gesellschaft mbH 1) 6)	Frankfurt am Main	100.00		6,833	0
UniRak Nordamerika 1)	Luxembourg, Luxembourg	0.00		n/a	n/a
Unterstützungskasse der Condor Versicherungsgesellschaften GmbH 1)	Hamburg	66.67		26	0
URA Verwaltung GmbH 1)	Vienna, Austria	100.00		34	3
VAUTID (SHANGHAI) Wear Resistant Material Trading Co. Ltd. 1)	Shanghai, China	100.00		1,154	330
VAUTID Austria GmbH 1)	Marchtrenk, Austria	100.00		826	134
VAUTID GmbH 1)	Ostfildern	82.51		5,389	-101
VAUTID INDIA PRIVATE LIMITED 1)	Mumbai, India	100.00		-235	-256
VAUTID LATAM S.A. 1)	Quito, Ecuador	74.00		331	-121
VAUTID MIDDLE EAST F.Z.E 1)	Ajman Free Zone, United Arab Emirates	100.00		85	-47
VB A330 Leasing Ltd 1)	George Town, Cayman Islands	100.00		-487	-487
VisualVest GmbH 1) 6)	Frankfurt am Main	100.00		14,525	325
VMB Vorsorgemanagement für Banken GmbH 1)	Overath	100.00		53	6
VR Consultingpartner GmbH 2)	Frankfurt am Main	100.00		1,494	-478
VR DISKONTBANK GmbH 1) 5)	Eschborn	100.00		200,147	0
VR Equity Gesellschaft für regionale Entwicklung in Bayern mbH 1)	Frankfurt am Main	100.00		2,162	-81
VR Equitypartner Beteiligungskapital GmbH & Co. KG UBG 2)	Frankfurt am Main	100.00		36,021	8,193
VR Equitypartner GmbH 5)	Frankfurt am Main	100.00		69,070	0
VR Equitypartner Management GmbH 1)	Frankfurt am Main	100.00		363	18
VR FACTOREM GmbH 1) 5)	Eschborn	100.00		39,385	0
VR GbR 2)	Frankfurt am Main	100.00		204,144	0
VR HYP GmbH 1)	Hamburg	100.00		24	0
VR Kreditservice GmbH 1) 5)	Hamburg	100.00		25	0
VR Mittelstandskapital Unternehmensbeteiligungs GmbH 2)	Düsseldorf	100.00		935	40
VR Payment GmbH (CardProcess GmbH until January 3, 2019)	Frankfurt am Main	90.00		40,328	15,387
VR Real Estate GmbH 1)	Hamburg	100.00		24	0
VR Smart Guide GmbH 1)	Eschborn	100.00		507	-1,514
VR WERT Gesellschaft für Immobilienbewertung mbH 1) 5)	Hamburg	100.00		100	0
VR Zentralregulierungs GmbH 1)	Eschborn	100.00		10	15
VR-IMMOBILIEN-LEASING GmbH 1) 5)	Eschborn	100.00		14,123	0
VR-LEASING ABYDOS GmbH 1)	Eschborn	100.00		51	26
VR-LEASING ABYDOS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	32	108
VR-LEASING AKANTHUS GmbH 1)	Eschborn	100.00		27	2
VR-LEASING AKANTHUS GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	26
VR-LEASING Aktiengesellschaft 5)	Eschborn	100.00		211,070	0
VR-LEASING ALDEBARA GmbH 1)	Eschborn	100.00		43	17
VR-LEASING ALDEBARA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	-482	1
VR-LEASING AMETRIN GmbH 1)	Eschborn	100.00		27	2
VR-LEASING AMETRIN GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	31
VR-LEASING ARINA GmbH 1)	Eschborn	100.00		227	202
VR-LEASING ARINA GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	242	5,124
VR-LEASING ARKI GmbH 1)	Eschborn	100.00		52	27
VR-LEASING ARKI GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	34	32
VR-LEASING ASINE GmbH 1)	Eschborn	100.00		47	22
VR-LEASING ASINE GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	-96	51
VR-LEASING ASOPOS GmbH 1)	Eschborn	100.00		27	2
VR-LEASING ASOPOS GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	17
VR-LEASING ATRIA GmbH 1)	Eschborn	100.00		41	16
VR-LEASING ATRIA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	55.00	21	20
VR-LEASING AVENTURIN GmbH 1)	Eschborn	100.00		40	15
VR-LEASING AVENTURIN GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	19	18
VR-LEASING BETA GmbH 1)	Eschborn	100.00		27	2
VR-LEASING BETA GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	22
VR-Leasing Beteiligungs GmbH 1)	Eschborn	100.00		105,221	21,856
VR-LEASING DELOS GmbH 1)	Eschborn	100.00		27	2
VR-LEASING DELOS GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	26
VR-LEASING DIVO GmbH 1)	Eschborn	100.00		56	31
VR-LEASING DIVO GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	39	38
VR-LEASING DOBAS GmbH & Co. Immobilien KG 1)	Eschborn	100.00		5	47
VR-LEASING ERIDA GmbH 1)	Eschborn	100.00		41	0
VR-LEASING FABIO GmbH 1)	Eschborn	100.00		37	12
VR-LEASING FABIO GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	15	14

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
VR-LEASING FAGURA GmbH & Co. Erste Immobilien KG 1) 6)	Eschborn	100.00		3	15
VR-LEASING FAGURA GmbH & Co. Sechste Immobilien KG 1)	Eschborn	6.00	76.00	28	21
VR-LEASING FAGURA GmbH & Co. Siebte Immobilien KG 1)	Eschborn	6.00	68.00	22	21
VR-LEASING FARINA GmbH 1)	Eschborn	100.00		39	13
VR-LEASING FARINA GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	17	16
VR-LEASING FERRIT GmbH & Co. Erste Immobilien KG 1)	Eschborn	6.00	76.00	1,012	93
VR-LEASING FERRIT GmbH & Co. Fünfte Immobilien KG 1)	Eschborn	6.00	76.00	21	19
VR-LEASING FLAVUS GmbH 1)	Eschborn	100.00		40	15
VR-LEASING FLAVUS GmbH & Co. Immobilien KG 1)	Eschborn	100.00		-1,589	-11
VR-LEASING FULVIUS GmbH 1)	Eschborn	100.00		221	196
VR-LEASING Hauptverwaltung GmbH & Co. KG 1)	Eschborn	94.80	76.00	5,000	-1
VR-LEASING IKANA GmbH 1)	Eschborn	100.00		192	167
VR-LEASING Immobilien-Holding GmbH & Co. KG 1) 6)	Eschborn	0.00	51.00	200	101
VR-LEASING IRIS GmbH 1)	Eschborn	100.00		24	-1
VR-LEASING ISORA GmbH 1)	Eschborn	100.00		240	215
VR-LEASING KOSMOS GmbH 1) 5)	Eschborn	100.00		89	0
VR-LEASING LEROS GmbH 1)	Eschborn	100.00		237	212
VR-LEASING LIMNOS GmbH 1)	Eschborn	100.00		43	18
VR-LEASING LIMNOS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	23	22
VR-LEASING LOTIS GmbH 1)	Eschborn	100.00		344	319
VR-LEASING LOTIS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	380	799
VR-LEASING LYRA GmbH 1)	Eschborn	100.00		55	30
VR-LEASING LYRA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	37	36
VR-LEASING MAGADIS GmbH 1)	Eschborn	100.00		74	49
VR-LEASING MAGADIS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	51.00	51	61
VR-LEASING MALAKON GmbH 1)	Eschborn	100.00		37	12
VR-LEASING MALAKON GmbH & Co. Immobilien KG 1)	Eschborn	15.00	75.50	15	213
VR-LEASING MANEGA GmbH 1)	Eschborn	100.00		39	13
VR-LEASING MANEGA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	75.50	5	23
VR-LEASING MANIOLA GmbH 1)	Eschborn	100.00		25	-1
VR-LEASING MARKASIT GmbH 1)	Eschborn	100.00		24	-1
VR-LEASING MAROS GmbH 1)	Eschborn	100.00		42	17
VR-LEASING MAROS GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	22	21
VR-LEASING MARTES GmbH 1)	Eschborn	100.00		25	-1
VR-LEASING MENTHA GmbH 1)	Eschborn	100.00		26	1
VR-LEASING MENTUM GmbH 1)	Eschborn	100.00		49	23
VR-LEASING MENTUM GmbH & Co. Immobilien KG 1)	Eschborn	7.80	51.00	5,241	577
VR-LEASING METRO GmbH & Co. Objekte Rhein-Neckar KG 1)	Eschborn	100.00		-207	233
VR-LEASING MILETOS GmbH 1)	Eschborn	100.00		45	20
VR-LEASING MILETOS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	26	25
VR-LEASING MILIUM GmbH 1)	Eschborn	100.00		40	15
VR-LEASING MILIUM GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	20	18
VR-LEASING MUNDA GmbH 1)	Eschborn	100.00		27	2
VR-LEASING MUNDA GmbH & Co. Immobilien KG 1)	Eschborn	100.00		3	58
VR-LEASING MUSCAN GmbH 1)	Eschborn	100.00		25	-1
VR-LEASING MUSTELA GmbH 1)	Eschborn	100.00		53	28
VR-LEASING NALANDA GmbH 1)	Eschborn	100.00		44	19
VR-LEASING NALANDA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	75.50	19	23
VR-LEASING NAPOCA GmbH 1)	Eschborn	100.00		40	14
VR-LEASING NAPOCA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	51.00	57	143
VR-LEASING NATANTIA GmbH 1)	Eschborn	100.00		45	1
VR-LEASING NAVARINO GmbH 1)	Eschborn	100.00		70	45
VR-LEASING NAVARINO GmbH & Co. Immobilien KG 1)	Eschborn	100.00		-195	201
VR-LEASING NESTOR GmbH 1)	Eschborn	100.00		51	25
VR-LEASING NESTOR GmbH & Co. Immobilien KG 1)	Eschborn	6.00	75.50	26	31
VR-LEASING NETTA GmbH 1)	Eschborn	100.00		57	27
VR-LEASING NETTA GmbH & Co. Immobilien KG 1) 6)	Eschborn	94.00	51.00	20	34
VR-LEASING NOVA Fünfte GmbH 1)	Eschborn	100.00		56	31
VR-LEASING ONDATRA GmbH 1)	Eschborn	100.00		72	46
VR-LEASING ONDATRA GmbH & Co. Immobilien KG 1)	Eschborn	0.00	51.00	57	55
VR-LEASING ONYX GmbH 1)	Eschborn	100.00		43	17
VR-LEASING ONYX GmbH & Co. Immobilien KG 1)	Eschborn	100.00		22	94
VR-LEASING OPAVA GmbH 1)	Eschborn	100.00		558	531
VR-LEASING OPAVA GmbH & Co. Immobilien KG 1)	Eschborn	100.00		-1,137	634
VR-LEASING OPHIR GmbH 1)	Eschborn	100.00		31	5

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
VR-LEASING OPHIR GmbH & Co. Immobilien KG 1)	Eschborn	100.00	83.66	-6,077	708
VR-LEASING OPTIMA GmbH 1)	Eschborn	100.00		74	49
VR-LEASING OPTIMA GmbH & Co. Immobilien KG 1)	Eschborn	0.00	51.00	-35	83
VR-LEASING ORDO GmbH 1)	Eschborn	100.00		41	15
VR-LEASING PAROS GmbH 1)	Eschborn	100.00		31	6
VR-LEASING PAROS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	-31	10
VR-LEASING POCO GmbH & Co. Immobilien KG 1)	Eschborn	0.00	52.00	-10	36
VR-LEASING REGELSCHULE GmbH & Co. Immobilien KG 1)	Eschborn	0.00	51.00	19	18
VR-LEASING SALIX GmbH 1)	Eschborn	100.00		79	53
VR-LEASING SALIX GmbH & Co. Immobilien KG 1)	Eschborn	0.00	51.00	65	63
VR-LEASING SALONA GmbH 1)	Eschborn	100.00		35	9
VR-LEASING SALONA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	75.50	12	11
VR-LEASING SAMARA GmbH 1)	Eschborn	100.00		94	68
VR-LEASING SAMARA GmbH & Co. Immobilien KG 1)	Eschborn	100.00		87	87
VR-LEASING SANAGA GmbH 1)	Eschborn	100.00		25	0
VR-LEASING SANIDOS GmbH 1)	Eschborn	100.00		44	19
VR-LEASING SANIDOS GmbH & Co. Immobilien KG 1)	Eschborn	4.00	52.00	27	26
VR-LEASING SARITA GmbH 1)	Eschborn	100.00		42	17
VR-LEASING SARITA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	22	21
VR-LEASING SASKIA GmbH 1)	Eschborn	100.00		43	18
VR-LEASING SASKIA GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	23	21
VR-LEASING SEPIA GmbH 1)	Eschborn	100.00		31	6
VR-LEASING SEPIA GmbH & Co. Immobilien KG 1)	Eschborn	4.00	52.00	809	8
VR-LEASING SIGUNE GmbH 1)	Eschborn	100.00		43	18
VR-LEASING SIGUNE GmbH & Co. Immobilien KG 1)	Eschborn	6.00	68.00	23	22
VR-LEASING SIMA GmbH 1)	Eschborn	100.00		24	-1
VR-LEASING SINABIS GmbH 1)	Eschborn	100.00		35	9
VR-LEASING SINABIS GmbH & Co. Immobilien KG 1)	Eschborn	6.00	75.50	12	11
VR-LEASING SIRIUS GmbH 1)	Eschborn	100.00		27	2
VR-LEASING SIRIUS GmbH & Co. Immobilien KG 1) 6)	Eschborn	100.00		3	31
VR-LEASING SOLIDUS Elfte GmbH 1)	Eschborn	100.00		47	22
VR-LEASING SOLIDUS Elfte GmbH & Co. Immobilien KG 1)	Eschborn	94.00	76.00	27	26
VR-LEASING SOLIDUS Neunte GmbH 1)	Eschborn	100.00		25	0
VR-LEASING SOLIDUS Neunzehnte GmbH 1)	Eschborn	100.00		45	20
VR-LEASING SOLIDUS Neunzehnte GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	26	24
VR-LEASING SOLIDUS Sechzehnte GmbH 1)	Eschborn	100.00		42	17
VR-LEASING SOLIDUS Sechzehnte GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	22	20
VR-LEASING SOLIDUS Vierzehnte GmbH 1)	Eschborn	100.00		41	16
VR-LEASING SOLIDUS Zweite GmbH 1)	Eschborn	100.00		55	30
VR-LEASING SOLIDUS Zweite GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	37	36
VR-LEASING SOLIDUS Zwölfte GmbH 1)	Eschborn	100.00		27	2
VR-LEASING TELLUR GmbH 1)	Eschborn	100.00		47	22
VR-LEASING TELLUR GmbH & Co. Immobilien KG 1)	Eschborn	6.00	76.00	28	27
VR-ZR GmbH & Co. KG 1)	Eschborn	100.00		n/a	n/a
Wadi Funding LLC 1)	Majuro, Marshall Islands	100.00		8,555	8,555
Wadi Woraya I LLC 1)	Majuro, Marshall Islands	100.00		-3,528	-3,525
Wadi Woraya III LLC 1)	Majuro, Marshall Islands	100.00		-1,825	-1,823
Waverley Shipping Opco LLC 1)	Majuro, Marshall Islands	0.00		260	334
WBS Wohnwirtschaftliche Baubetreuungs- und Servicegesellschaft mbH 1)	Stuttgart	94.90		19,247	47
Weinmann GmbH & Co. Objekt Eichwald KG 1) 6)	Eschborn	100.00		3	48
WGZ FINANCE PUBLIC LIMITED COMPANY	Dublin, Ireland	100.00		6,747	397
WGZ Immobilien + Management GmbH 1) 5)	Münster	100.00		35	0
WGZ ImmobilienKontor GmbH 1)	Münster	100.00		67	3
WGZ ImmobilienKontor GmbH & Co. KG 1)	Münster	100.00		841	1,104
WGZ ImmobilienKontor GmbH & Co. KG 1)	Münster	100.00		841	1,104

JOINT VENTURES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
38321 & 38329 Aircraft Leasing (Cayman) Ltd. 1)	Grand Cayman, Cayman Islands	50.00	0.00	10,121	2,436
AerCap Partners I Ltd. 1)	Shannon, Ireland	0.00		n/a	n/a
AerCap Partners II Ltd. 1)	Shannon, Ireland	0.00		n/a	n/a
BAU + HAUS Management GmbH 1)	Wiesbaden	50.00		10,006	847
BEA Union Investment Management Limited 1)	Hong Kong, Hong Kong	49.00		60,315	12,764
Cella Intermodal Investment Fund LLC 1)	Majuro, Marshall Islands	50.00		n/a	n/a
Ceskomoravska stavebni sporitelna a.s. 1)	Prague, Czech Republic	45.00		323,805	34,524
D8 Product Tankers I LLC 1)	Majuro, Marshall Islands	50.00		n/a	n/a
D8 Product Tankers Investments LLC 1)	Majuro, Marshall Islands	50.00		n/a	n/a
Deutsche WertpapierService Bank AG	Frankfurt am Main	50.00		193,702	22,115
DUO PLAST Holding GmbH 1)	Lauterbach	47.43		20,132	3,209
DZ BANK Galerie im Städel Kunstverwaltungsgesellschaft mbH	Frankfurt am Main	50.00		15	-2
Genossenschafts-Kraftfutterwerk Gesellschaft mit beschränkter Haftung 1)	Braunschweig	16.85	50.00	n/a	n/a
GMS Holding GmbH 1)	Paderborn	58.89	45.00	12,993	2,836
Herakleitos 3050 LLC 1)	Majuro, Marshall Islands	50.00		n/a	n/a
Intermodal Investment Fund IV LLC 1)	Majuro, Marshall Islands	50.00		22,252	3,123
Intermodal Investment Fund VIII LLC 1)	Majuro, Marshall Islands	50.00	0.00	6,439	874
IZD-Holding S.à.r.l. 1)	Luxembourg, Luxembourg	50.30	50.00	1,280	43,275
MS Oceana Schifffahrtsgesellschaft mbH & Co. KG 1)	Hamburg	0.00		7,041	-595
MS Octavia Schifffahrtsgesellschaft mbH & Co. KG 1)	Hamburg	0.00		5,695	-1,063
Norafin Verwaltungs GmbH 1)	Mildenau	44.72		21,808	997
Prvá stavebná sporitel'na, a.s. 1)	Bratislava, Slovakia	32.50		243,381	16,272
R+V Kureck Immobilien GmbH Grundstücksverwaltung Braunschweig 1)	Wiesbaden	50.00		7,566	310
Raiffeisen Banca Pentru Locuinte S.A. 1)	Bucharest, Romania	33.32		14,187	1,102
TrustBills GmbH	Hamburg	25.00		-1,125	-2,572
Versicherungs-Vermittlungsgesellschaft des Sächsischen Landesbauernverbandes mbH 1)	Dresden	50.00		203	24
Versicherungs-Vermittlungsgesellschaft mbH des Bauernverbandes Mecklenburg-Vorpommern e.V. (VVB) 1)	Neubrandenburg	50.00		164	10
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Brandenburg (VVB) 1)	Teltow	50.00		32	3
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Sachsen-Anhalt e.V. (VVB) 1)	Magdeburg	50.00		60	5
Zhong De Zuh Fang Chu Xu Yin Hang (Sino-German-Bausparkasse) Ltd. 1)	Tianjin, China	24.90		368,643	-1,652

ASSOCIATES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
A330 Parts Ltd. 1)	Newark, USA	20.00		10,121	2,436
adorsys GmbH & Co. KG 1)	Nuremberg	25.89		1,340	2,218
adorsys Verwaltungs GmbH 1)	Nuremberg	25.90		29	1
Aer Lucht Limited 1)	Dublin, Ireland	47.80		n/a	n/a
Artemis Gas 1 Shipping Inc. 1)	Piraeus, Greece	20.00		n/a	n/a
Bankenkonsortium der Zenit GmbH, GbR	Düsseldorf	33.30		0	0
bbv-service Versicherungsmakler GmbH 1)	Munich	25.20		2,142	614
Bergina AS 1)	Grimstad, Norway	40.00		n/a	n/a
Danae Gas Shipping Inc 1)	Majuro, Marshall Islands	5.00		n/a	n/a
Dr. Förster Holding GmbH 1)	Neu-Isenburg	20.06		25	0
Dr. Neuberger Holding GmbH 1)	Wiesbaden	40.00		n/a	n/a
Epic Gas Ltd. 1)	Tortola, Virgin Islands	15.71	0.16	n/a	n/a
European Convenience Food GmbH 1)	Garrel	44.29		8,172	-351
European Property Beteiligungs-GmbH 1)	Frankfurt am Main	38.90	33.20	2,815	1,825
Flag Hope Shipping Limited 1)	Monrovia, Liberia	25.00		n/a	n/a
Flag Tom Shipping Limited 1)	Monrovia, Liberia	25.00		n/a	n/a
GBS Beteiligungsgesellschaft mbH 1)	Bayreuth	42.33		2,367	-454
GGB-Beratungsgruppe GmbH	Stuttgart	23.13		-1,123	-1,858
GHM Holding GmbH 1)	Erolzheim	40.00		17,219	-17
GHM MPP Reserve GmbH 1)	Regenstauf	50.00		357	-4
GHM MPP Verwaltungs GmbH 1)	Remscheid	50.00		21	-1
Global Asic GmbH 1)	Dresden	30.80		1,118	-101
Global Offshore Services B.V. 1)	Amsterdam, Netherlands	32.13		n/a	n/a
Goldeck Zetti Beteiligungsgesellschaft mbH 1)	Leipzig	39.23		31,334	684
Gram Car Carriers Holdings Pte. Ltd. 1)	Singapore, Singapore	5.88		n/a	n/a
Groneweg Verwaltungsgesellschaft mbH 1)	Greven	48.00		17,598	2,344
Hör Technologie GmbH 1)	Weiden i.d.OPf.	62.78	49.99	24,872	3,313
Hudson Chemical Tankers Ltd 1)	Middlesex, UK	25.00		n/a	n/a
Imperial Rose SA 1)	Majuro, Marshall Islands	25.00		n/a	n/a
Imperial Sea SA 1)	Majuro, Marshall Islands	25.00		n/a	n/a
Kapitalbeteiligungsgesellschaft für die mittelständische Wirtschaft in Nordrhein-Westfalen mbH - KBG -	Neuss	23.60		3,244	477
KCM Bulkers International Limited 1)	Tortola, Virgin Islands	49.00		n/a	n/a
KCM Bulkers Ltd. 1)	Tortola, Virgin Islands	49.00		n/a	n/a
KOTANI JV CO. BV 1)	Amsterdam, Netherlands	0.00		75,060	10,720
KTP Holding GmbH 1)	Bous	37.36		38,295	3,880
LogPay Transport Services GmbH 1)	Eschborn	49.02		0	276
Mandarin Containers Limited 1)	Tortola, Virgin Islands	17.01		n/a	n/a
MON A300 Leasing Ltd. 1)	George Town, Cayman Islands	20.00		73	1,560
MON Engine Parts Inc. 1)	Wilmington, USA	20.00		3,373	297
Mount Faber KS i.L. 1)	Oslo, Norway	0.00		n/a	n/a
MSEA Aframax Holdings LLC 1)	Majuro, Marshall Islands	48.00		n/a	n/a
MSEA Marlin Holdings LLC 1)	Majuro, Marshall Islands	32.19		n/a	n/a
MSN 1272&1278 Aircraft Leasing 1)	Grand Cayman, Cayman Islands	20.00		n/a	n/a
n3k Informatik GmbH 1)	Heilbronn	58.33	49.99	10,812	1,092
Ostertag DeTeWe Group GmbH 1)	Walddorfhäslach	58.52	49.90	n/a	n/a
PI-SM GmbH 1)	Ehringshausen	40.80		2,422	-155
SCL GmbH 1)	Butzbach	49.00		3,765	1,966
SRF Railcar Leasing Limited 1)	Cashel, Ireland	49.00		n/a	n/a
TAP Ltd. 1)	Hamilton, Bermuda	38.05		n/a	n/a
TES Holding Ltd. 1)	Bridgend, UK	40.00		28,308	-4,853
Touax Rail Finance 3 Ltd. 1)	Bracetown, Ireland	28.92		n/a	n/a
Treuhand- und Finanzierungsgesellschaft für Wohnungs- und Bauwirtschaft mit beschränkter Haftung. Treufinanz	Düsseldorf	33.14		1,979	-220
TREVA Entertainment GmbH i. L. 1)	Hamburg	32.70		1,269	-529
United MedTec Holding GmbH 1)	Bückeburg	41.01		9,750	230
Weisshaar Holding GmbH 1)	Deisslingen	84.94	49.92	3,668	-582
Wessel-Werk Beteiligungsverwaltung GmbH i.L. 1)	Karlsruhe	45.00		-2,088	-1,527
WÜRTT. GENO-HAUS GmbH & Co. KG	Stuttgart	29.70		35,884	1,548
ZBI Partnerschafts-Holding GmbH 1)	Erlangen	49.90		6,074	985
ZT Finance GmbH 1)	Weilheim	26.67		-21	-20

SHAREHOLDINGS OF 20% OR MORE

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
ANDROS GmbH & Co. Immobilien KG 1)	Gilching	20.00	8.00	27	99
ARDIAN Infrastructure Fund V B S.C.S., SICAV-RAIF 1)	Luxembourg, Luxembourg	31.80	0.00	n/a	n/a
Assiconf S.r.l. 1)	Turin, Italy	20.00	0.00	80	6
ASSICRA Servizi Assisurativi Banche di Credito Cooperativo Abruzzo e Molise S.r.l. 1)	Pescara, Italy	25.00	0.00	376	28
BCC RISPARMIO & PREVIDENZA S.G.R.P.A. 1)	Milan, Italy	25.00		38,393	12,806
BLE Bau- und Land-Entwicklungsgesellschaft Bayern GmbH 1)	Munich	20.00		247	-45
BRASIL FLOWERS S.A. 1)	Barbacena, Brazil	45.00		n/a	n/a
Burghofspiele GmbH 1)	Eltville	20.00		61	-14
Bürgschaftsbank Brandenburg GmbH	Potsdam	25.31		29,088	1,486
Bürgschaftsbank Mecklenburg-Vorpommern GmbH	Schwerin	30.38		16,562	212
Bürgschaftsbank Sachsen-Anhalt GmbH	Magdeburg	29.73		15,612	454
Bürgschaftsbank Thüringen GmbH	Erfurt	22.13		25,946	642
Cheyne Real Estate Credit (CRECH) Fund IV Loans SCS SICAV-SIF 1)	Luxembourg, Luxembourg	20.83		n/a	n/a
CMMT Partners L.P. 1)	Camden, USA	26.64	0.00	n/a	n/a
Corpus Sireo Health Care III SICAV-FIS 1)	Luxembourg, Luxembourg	33.33	0.00	54,751	2,388
Corpus Sireo Health Care IV SICAV-FIS 1)	Luxembourg, Luxembourg	66.67	0.00	26,209	115
Credit Suisse Global Infrastructure SCA SICAR 1)	Luxembourg, Luxembourg	30.09		320,954	107,991
DZ BANK Mikrofinanzfonds eG 2)	Frankfurt am Main	30.64	0.82	193	6
Finatem II GmbH & Co. KG 1)	Frankfurt am Main	20.20		20,149	9,537
FREUNDE DER EINTRACHT FRANKFURT Aktiengesellschaft 1)	Frankfurt am Main	32.05		4,653	-1
GbR Ottmann GmbH & Co. Südhausbau KG, München VR Hausbau AG, Stuttgart (GbR 'Ackermannbogen.de-Wohnen am Olympiapark') 1)	Munich	50.00		2	-86
GENO-Haus Stuttgart Beteiligungs GmbH	Stuttgart	33.33		30	1
GENO-Haus Stuttgart GmbH & Co. KG Verwaltungsgesellschaft	Stuttgart	45.45		13	0
GENOPACE GmbH 1) 6)	Berlin	22.49		200	0
Global Infrastructure Partners III-C2, L.P. 1)	New York, USA	27.97	0.00	n/a	n/a
Golding Mezzanine SICAV IV 1)	Munsbach, Luxembourg	49.98		11,863	1,851
GTIS Brazil II S-Feeder LP 1)	Edinburgh, UK	100.00	0.00	20,195	-9,401
Hermann-Löns-Grundstücks- und Entwicklungs GbR 1)	Münster	50.00		1,059	1,008
Kreditgarantiegemeinschaft in Baden-Württemberg Verwaltungs-GmbH	Stuttgart	20.00		1,023	0
Macquarie Asia Infrastructure Fund 2 SCSp 1)	Luxembourg, Luxembourg	50.48	0.00	n/a	n/a
Macquarie Asia Infrastructure Fund EU Feeder L.P 1)	London, UK	100.00	0.00	n/a	n/a
MB Asia Real Estate Feeder (Scot.) L.P. 1)	Edinburgh, UK	34.80	0.00	7,188	-1,634
Medico 12 GmbH & Co. KG 1)	Frankfurt am Main	99.98		1,869	301
Nuveen Immobilien GmbH 1)	Frankfurt am Main	50.00		132	10
Nuveen Immobilien GmbH & Co. GB I KG 1)	Frankfurt am Main	73.91	73.21	20,888	2,759
paydirekt GmbH	Frankfurt am Main	33.33		16,278	-4,421
PT. VAUTID WEAR TECHNOLOGY INDONESIA 1)	Tangerang (Banten), Indonesia	50.00		130,427	9,283
RV-CVIII Holdings, LLC 1)	Camden, USA	100.00		39,544	1,072
Schroder Italien Fonds GmbH & Co. KG 1)	Frankfurt am Main	23.08	19.74	728	-26
Schroder Property Services B.V. S.à.r.l. 1)	Amsterdam, Netherlands	30.00		255	87
Technology DZ Venture Capital Fund I GmbH & Co. KG i.L. 1)	Munich	34.33		7,595	-96
TF H III Technologiefonds Hessen Gesellschaft mit beschränkter Haftung	Wiesbaden	25.00		5,597	-87
TF H Technologie-Finanzierungsfonds Hessen Gesellschaft mit beschränkter Haftung (TF H GmbH) i.L.	Wiesbaden	33.33		570	-2
Tishman Speyer Brazil Feeder (Scots/D), L.P. 1)	Edinburgh, UK	100.00		21,901	2,539
Tishman Speyer European Real Estate Venture VIII Parallel SCSp 1)	Luxembourg, Luxembourg	55.88	0.00	n/a	n/a
Tishman Speyer European Strategic Office Fund Feeder, L.P. 1)	London, UK	97.18		19,895	7,249
TXS GmbH 1)	Ellerau	24.50		1,498	616
VAUTID & HUIFENG (WUHU) Wear Resistant Material Co. Ltd. 1)	Wuhu, China	50.00		730	108
VAUTID Arabia Coating & Treatment of Metals LLC 1)	Ras Al Khaimah, United Arab Emirates	24.50	0.00	196	-37
Vautid North America, Inc. 1)	Carnegie, USA	100.00	0.00	-311	36
VBI Beteiligungs GmbH 1)	Vienna, Austria	24.50		623	-292
VR-NetWorld GmbH 2)	Bonn	43.48		5,633	384
ZhangJiaGang Vautid Yao Yu Wear Resistance Material Co., Ltd. 1)	Yangshe Town, China	50.00		201	67

MORE THAN 5% OF VOTING RIGHTS (LARGE CORPORATIONS)

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Banco Cooperativo Español S.A.	Madrid, Spain	12.02		503,220	36,391
DEPFA BeteiligungsHolding II Gesellschaft mit beschränkter Haftung 1)	Düsseldorf	10.00		240	-16
EDEKABANK Aktiengesellschaft	Hamburg	8.35		157,870	6,091
equensWorldline SE	Utrecht, Netherlands	11.89		862,859	20,622
EURO Kartensysteme GmbH	Frankfurt am Main	19.60		11,835	199
PANELLINIA BANK SOCIETE ANONYME (under special liquidation)	Athens, Greece	8.42	5.28	50,143	-12,637
Protektor Lebensversicherungs-AG 1)	Berlin	5.27		105,796	384
Raiffeisendruckerei GmbH 1)	Neuwied	7.88		8,914	3,345
SCHUFA Holding AG 1)	Wiesbaden	17.94		88,595	29,348

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
'Hotel Wagramerstrasse 8' Errichtungs- und BetriebsgmbH & Co KG 1)	Vienna, Austria	0.00		23,896	1,486
ABE Clearing S.A.S a Capital Variable	Paris, France	1.92		24,722	4,321
AERS Consortio AG 1)	Stuttgart	16.50		125	-19
Airport Garden Services and Business Center S.A. 1)	Brussels-Zaventem, Belgium	0.33		273	184
AKA Ausfuhrkredit-Gesellschaft mit beschränkter Haftung	Frankfurt am Main	0.31		238,732	11,080
Akademie Badischer Volksbanken und Raiffeisenbanken GmbH 1)	Karlsruhe	0.03		n/a	0
Almack Mezzanine I LP 1)	London, UK	9.82		6	64,126
Anlegerentschädigung von Wertpapierfirmen GmbH 1)	Vienna, Austria	0.57	1.61	n/a	n/a
Architrave GmbH 1)	Berlin	13.00		n/a	n/a
Assicoop-Assicurazioni Cooperative S.r.l. 1)	Catania, Italy	0.41	0.00	n/a	n/a
assistance partner GmbH & Co. KG 1)	Munich	5.01	0.00	1,246	0
Bank Polskiej Spoldzielczosci Spolka Akcyjna	Warsaw, Poland	1.00		189,384	362
Baro Beteiligungs-GmbH & Co. KG 1)	Münster	5.10		500	-1.426
BayBG Bayerische Beteiligungsgesellschaft mbH	Munich	9.38		232,843	6,129
Bayerische Raiffeisen- Beteiligungs-Aktiengesellschaft 2)	Beilngries	1.85		846,313	33,848
Berliner Volksbank eG 1)	Berlin	0.00	0.10	1,029,942	19,628
Beteiligungs-Aktiengesellschaft der bayerischen Volksbanken 1)	Pöcking	1.14		232,305	7,409
BGG Bayerische Garantiegesellschaft mit beschränkter Haftung für mittelständische Beteiligungen	Munich	13.15		51,389	2,653
Blackrock Renewable Income Europe Fund 1)	London, UK	7.69		n/a	n/a
Blackstone Real Estate Partners Europe III L.P. 1)	New York, USA	1.62	0.00	70	644,548
Blackstone Real Estate Partners International I.E. L.P. 1)	New York, USA	9.77		17	3,051
BTG Beteiligungsgesellschaft Hamburg mbH	Hamburg	10.00		4,322	163
Bürgschaftsbank Bremen GmbH	Bremen	4.86		7,400	562
Bürgschaftsbank Hessen GmbH	Wiesbaden	15.87		19,989	827
Bürgschaftsbank Nordrhein-Westfalen GmbH Kreditgarantiegemeinschaft	Neuss	15.75		35,440	1,282
Bürgschaftsbank Rheinland-Pfalz GmbH	Mainz	14.31		16,605	79
Bürgschaftsbank Sachsen GmbH	Dresden	14.66	16.59	42,015	1,645
Bürgschaftsbank Schleswig-Holstein GmbH	Kiel	11.79		40,182	971
BürgschaftsGemeinschaft Hamburg GmbH	Hamburg	6.36		25,243	744
Caprese S.A. 1)	Brussels-Zaventem, Belgium	0.00		4,766	-457
Cash Logistik Security AG 1)	Düsseldorf	4.10		2,520	-1,481
Cassa Centrale Banca - Credito Cooperativo del Nord Est Società per Azioni	Trento, Italy	3.69		1,073,685	13,431
Celt S. A. 1)	Kraków, Poland	4.44	0.00	n/a	n/a
Centrast S. A. 1)	Warsaw, Poland	0.64		n/a	n/a
CLS Group Holdings AG	Lucerne, Switzerland	0.69		518	1,904
Coop System S.p.A. 1)	Rome, Italy	1.97		n/a	n/a
Copenhagen Infrastructure III K/S 1)	Copenhagen K, Denmark	5.77	0.00	n/a	n/a
Cruz Martins & Wahl Lda. 1)	Lousado, Portugal	10.00		7,415	-264
Curzon Capital Partners III LP 1)	London, UK	11.99	0.00	n/a	n/a
Curzon Capital Partners IV LP 1)	London, UK	10.73	0.00	0	0
DePfa Beteiligungsholding III Gesellschaft mit beschränkter Haftung 1)	Düsseldorf	0.40		318	-15
Deutsche Bauernsiedlung - Deutsche Gesellschaft für Landentwicklung (DGL) mbH 1)	Frankfurt am Main	16.26		6,681	-122
Deutsche Börse Commodities GmbH	Frankfurt am Main	16.20	14.48	6,768	4,016
Deutscher Genossenschafts-Verlag eG 2)	Wiesbaden	1.54	1.37	10,344	1,414
DG ANLAGE Holland-Fonds 'Nieuwegein, 's-Hertogenbosch' GmbH & Co. KG (DGI 48)	Frankfurt am Main	0.57		0	3,225
DG IMMOBILIEN MANAGEMENT Gesellschaft mbH	Frankfurt am Main	5.01		5,406	1,461
DG Immobilien-Anlagegesellschaft 'Berlin, Pariser Platz 3' Dr. Neumann & Prüske KG (DGI 43) i.L.	Frankfurt am Main	6.24		10,942	324
DG Immobilien-Anlagegesellschaft Nr. 32 'Chemnitz, Essen' Schütze & Dr. Neumann KG i.L.	Frankfurt am Main	0.18		283	-311
DG Immobilien-Anlagegesellschaft Nr. 34 'Berlin, Darmstadt, Frankfurt' Schütze & Dr. Neumann KG i.L.	Frankfurt am Main	0.06		2,901	22
DG Immobilien-Anlagegesellschaft Nr. 35 'Berlin, Frankfurt' Prüske & Dr. Neumann KG i.L.	Frankfurt am Main	0.07		3,475	4,444
DG Immobilien-Anlagegesellschaft Nr. 36 'Seniorenresidenz Oberursel' Kreft & Dr. Neumann KG i.L.	Frankfurt am Main	0.26		1	16,572
DG Immobilien-Anlagegesellschaft Nr. 37 'Berlin-Wegedornstrasse' GbR mit quotaler Haftung i.L.	Frankfurt am Main	0.66		1,115	-7
DG IMMOBILIEN-Objektgesellschaft 'Stuttgart, Industriestrasse' Kreft & Dr. Neumann KG (DGI 49) i.L.	Frankfurt am Main	0.98		352	89
DI Rathaus-Center Pankow Nr.35 KG 1)	Düren	3.86	0.00	n/a	n/a
Domus Beteiligungsgesellschaft der Privaten Bausparkassen mbH Berlin 1)	Berlin	14.13		13	-2
EDD AG i.L. 2)	Düsseldorf	9.99		27,792	-3,009
EIG Energy Fund XVI (Scotland) L.P. 1)	Edinburgh, UK	14.02	0.00	180,318	-2,536
Euro Capital S.A.S. 1)	Metz, France	6.67		32,736	1,659

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
European Property Investors Special Opportunities, L.P. 1)	London, UK	6.35	0.00	23,003	0
European Property Investors, L. P. 1)	London, UK	6.50		0	0
Evonik Projekt-Beteiligungs-GmbH & Co. KG 1)	Essen	1.00	0.00	343,141	-32
EXTREMUS Versicherungs-Aktiengesellschaft 1)	Cologne	5.00		64,740	300
Fiducia & GAD IT AG 2)	Frankfurt am Main	0.35		447,211	20,644
FIDUCIA Mailing Services eG 2)	Karlsruhe	0.12		81	0
Flugplatz Schwäbisch Hall GmbH 1)	Schwäbisch Hall	2.00		49	0
GAD Beteiligungs GmbH & Co. KG 2)	Münster	2.28		117,992	3,001
GBK Holding Gmbh & Co. KG 1)	Kassel	0.02		470,693	10,691
GDV Dienstleistungs-GmbH 1)	Hamburg	2.82		26,529	-515
German Equity Partners IV GmbH & Co. KG 1)	Frankfurt am Main	4.36		241,163	37,659
GLADBACHER BANK Aktiengesellschaft von 1922	Mönchengladbach	17.53		39,278	2,748
GMS Mitarbeiter Beteiligungsgesellschaft UG & Co.KG 1)	Münster	4.00	0.00	993	-7
Golding Mezzanine SICAV III 1)	Munsbach, Luxembourg	1.30		199,401	39,212
Grand Hotel Heiligendamm GmbH & Co. KG Fundus Fonds Nr. 34 1)	Disternich	1.90	0.00	0	0
Gründerfonds Ruhr GmbH & Co. KG 1)	Essen	7.25		n/a	n/a
HANDWERKSBAU NIEDERRHEIN AKTIENGESELLSCHAFT	Düsseldorf	10.15		23,563	1,610
Hines European Value Fund SCSp 1)	Luxembourg, Luxembourg	13.87		n/a	n/a
immigon portfolioabbau ag	Vienna, Austria	3.79		673,679	248,509
Immo Feest en Cultuurpaleis Oostende SA 1)	Brussels, Belgium	0.00		16,524	403
Interessengemeinschaft Frankfurter Kreditinstitute GmbH	Frankfurt am Main	7.01		24,619	8,937
IVS Immobilien GmbH 1)	Schiffweiler	6.00		26	0
K in Kortrijk S.A. 1)	Brussels, Belgium	0.00		92,110	-707
Karen Notebook S. A. 1)	Warsaw, Poland	2.17		n/a	n/a
KLAAS MESSTECHNIK GmbH 1)	Seelze-Harenberg	15.00		28	0
KLV BAKO Vermittlungs-GmbH	Karlsruhe	10.00		224	9
Konsortium der Absatzfinanzierungsinstitute plettac-assco GbR	Wuppertal	0.00	7.08	n/a	n/a
Kreditgarantiegemeinschaft der Freien Berufe Baden-Württemberg Verwaltungs GmbH	Stuttgart	4.76		153	0
Kreditgarantiegemeinschaft der Industrie, des Verkehrsgewerbes und des Gastgewerbes Baden-Württemberg Verwaltungs-GmbH	Stuttgart	15.28		1,300	0
Kreditgarantiegemeinschaft des bayerischen Gartenbaues GmbH	Munich	9.07		649	0
Kredit-Garantiegemeinschaft des bayerischen Handwerks Gesellschaft mit beschränkter Haftung	Munich	12.00		4,846	0
Kreditgarantiegemeinschaft des Gartenbaues Baden-Württemberg Verwaltungs-GmbH	Stuttgart	12.00		138	0
Kreditgarantiegemeinschaft des Handels Baden-Württemberg Verwaltungs-GmbH	Stuttgart	10.05		1,022	0
Kreditgarantiegemeinschaft des Handwerks Baden-Württemberg Verwaltungs-GmbH	Stuttgart	10.05		1,001	0
Kreditgarantiegemeinschaft des Hotel- und Gaststättengewerbes in Bayern GmbH	Munich	9.66		4,359	0
Kreditgarantiegemeinschaft für den Handel in Bayern GmbH	Munich	7.19		6,317	0
Kunststiftung Baden-Württemberg GmbH 1)	Stuttgart	0.50		2,899	-17
Les Grands Pres S.A. 1)	Brussels-Zaventem, Belgium	0.00	0.11	51,504	3,485
Macquarie European Infrastructure Fund 4 L.P. 1)	St. Peter Port, Guernsey	5.70	0.00	1,392,438	7,874
Maritim Hotel Königswinter Grundstücksverwaltungsgesellschaft mbH & Co. Immobilien-Vermietungs KG 1)	Bad Salzuflen	6.00	24.50	n/a	n/a
MBG H Mittelständische Beteiligungsgesellschaft Hessen GmbH	Wiesbaden	16.26		10,891	444
MBG Mittelständische Beteiligungsgesellschaft Baden-Württemberg Gesellschaft mit beschränkter Haftung	Stuttgart	9.94		72,488	5,540
MBG Mittelständische Beteiligungsgesellschaft Rheinland-Pfalz mbH	Mainz	9.80	11.11	35,400	1,334
MBG Mittelständische Beteiligungsgesellschaft Schleswig-Holstein mbH	Kiel	14.59	15.22	39,021	2,978
Mittelständische Beteiligungsgesellschaft Berlin-Brandenburg mbH	Potsdam	8.89		20,061	1,783
Mittelständische Beteiligungsgesellschaft Mecklenburg-Vorpommern mbH	Schwerin	16.00		14,429	288
Mittelständische Beteiligungsgesellschaft Niedersachsen (MBG) mbH	Hannover	19.92		13,638	507
Mittelständische Beteiligungsgesellschaft Sachsen mbH	Dresden	9.38		46,694	1,965
Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt (MBG) mbH	Magdeburg	19.84		23,304	434
Mittelständische Beteiligungsgesellschaft Thüringen mbH	Erfurt	10.28		24,944	1,214
MORIO GmbH & Co. Immobilien KG 1)	Wegberg	6.00	24.00	n/a	n/a
Münchener Hypothekenbank eG 2)	Munich	1.24	1.25	1,343,867	46,252
Munster S.A. 1)	Luxembourg, Luxembourg	0.11		n/a	n/a
NELO Vierte GmbH & Co. Immobilien KG 1)	Waldems	6.00	24.00	3	4
Niedersächsische Bürgschaftsbank (NBB) GmbH	Hannover	17.68		26,397	1,934
Norddeutsche Genossenschaftliche Beteiligungs-Aktiengesellschaft 1)	Hannover	0.55		1,322,633	41,374
Oberbergische Aufbau-Gesellschaft mit beschränkter Haftung	Gummersbach	6.09		1,966	44
Opción Jamantab S. A. DE C. V. 1)	Mexico City, Mexico	0.00		n/a	n/a
Partners Group Global Mezzanine 2007 S.C.A., SICAR 1)	Luxembourg, Luxembourg	2.24		76,442	4,186
PAXOS GmbH & Co. KG 1)	Pullach i. Isartal	6.00	9.80	n/a	n/a

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Prosa Beteiligungs GmbH & Co. KG 1)	Frankfurt am Main	15.63		n/a	n/a
Prosolis GmbH The Solution House i.L. 1)	Fulda	6.00		n/a	n/a
Raiffeisen Waren-Zentrale Rhein-Main eG	Cologne	2.03		123,110	816
Raiffeisen-Kassel A-Beteiligungs GmbH & Co. KG	Kassel	8.22		40,415	295
Raiffeisen-Kassel B-Beteiligungs GmbH & Co. KG	Kassel	8.22		40,659	295
Royale 120 New Building S.A. 1)	Brussels-Zaventem, Belgium	0.00		43,697	907
Royale 120 S.A. 1)	Brussels-Zaventem, Belgium	0.01		833	13
RREEF Pan-European Infrastructure Feeder GmbH & Co. KG 1)	Eschborn	17.70		364,623	-146
Rund Vier GmbH & Co. KG 1)	Vienna, Austria	0.00		47,707	3.397
S.W.I.F.T. Society for Worldwide International Financial Telecommunication 2)	La Hulpe, Belgium	0.26		394,698	81,079
Saarländische Wagnisfinanzierungsgesellschaft mbH	Saarbrücken	2.59		5,419	-915
SALEG Sachsen-Anhaltinische Landesentwicklungs GmbH 1)	Magdeburg	1.15		14,428	587
Sana Kliniken AG 1)	Munich	0.69		413,693	38.288
Schulze-Delitzsch-Haus, eingetragene Genossenschaft 1)	Bonn	0.95		549	27
Sechzehnte Gamma Trans Leasing Verwaltungs-GmbH & Co. Finanzierungs-Management KG i.L. 1)	Nidderau	16.51		n/a	n/a
SGB-Bank Spólka Akcyjna	Poznań, Poland	0.38		185,051	764
SIGNA Prime Selection AG 1)	Innsbruck, Austria	5.00		n/a	n/a
Société de la Bourse de Luxembourg S.A. 1)	Luxembourg, Luxembourg	0.06		n/a	n/a
Süddeutsche Zuckerrübenverwertungs-Genossenschaft eG	Ochsenfurt	4.44	4.55	182,258	1,961
Target Partners Capital GmbH & Co. KG 1)	Munich	10.00	10.01	535	0
Technologiezentrum Schwäbisch Hall GmbH 1)	Schwäbisch Hall	4.17	5.56	569	62
Teko - Technisches Kontor für Versicherungen Gesellschaft mit beschränkter Haftung 1)	Düsseldorf	10.00	0.00	81	30
The Co-operators Group Ltd. 1)	Guelph, Canada	3.60		n/a	n/a
True Sale International GmbH	Frankfurt am Main	7.69		4,928	119
Ufficio Centrale Italiano di Assistenza Assicurativa Automobilisti in Circolazione Internazionale -U.C.I. Societe consortie a R.L. 1)	Milan, Italy	0.09		n/a	n/a
UIR Belgique 1 S.A. 1)	Brussels, Belgium	0.13		592	-383
UIR Belgique 2 S.A. 1)	Brussels, Belgium	0.01		49,177	1,322
UIR Le Président 1 1)	Brussels-Zaventem, Belgium	0.00	0.06	4,310	-931
UIR Le Président 2 1)	Brussels-Zaventem, Belgium	0.00		361	-42
UIR MU III S.A. de C.V. 1)	Mexico City, Mexico	0.00		n/a	n/a
Visa Inc.	San Francisco, USA	0.00		29,686,600	8,992,580
Vorgebirgs-Residenz Bonn-Endenich GmbH & Co. Kommanditgesellschaft	Unterschleissheim	5.00		102	0
VR-Bank Schwäbisch Hall eG 1)	Schwäbisch Hall	0.01		116,485	4,482
WESTFLEISCH Finanz AG 1)	Münster	0.36		82,669	0
WN Real Estate GmbH & Co. KG 1)	Weilheim	6.00		28	454
WRW Wohnungswirtschaftliche Treuhand Rheinland-Westfalen Gesellschaft mit beschränkter Haftung i.L.	Düsseldorf	2.73		n/a	n/a
ZAWISLA Immobilien GmbH + Co. KG 1)	Jockgrim	6.00	24.00	25	15
ZG Raiffeisen eG	Karlsruhe	1.05	0.02	81,049	2,513
Zweite EMH Grundstücksverwaltung GmbH & Co. KG 1)	Minden	5.20	24.50	n/a	n/a

1) Held indirectly.

2) Including shares held indirectly.

3) A letter of comfort exists.

4) A subordinated letter of comfort exists.

5) Profit-and-loss transfer agreement with DZ BANK (direct or indirect).

6) The company makes use of the exemptions provided for under section 264b HGB.

n/a = no figures available.

>> 48 Disclosures pursuant to section 285 no. 11a HGB

As at the balance sheet date, DZ BANK was a shareholder with unlimited liability in the following entities:

- Bankenkonsortium der Zenit GmbH, GbR, Mülheim an der Ruhr
- DG Immobilien-Anlagegesellschaft Nr. 37 'Berlin-Wegedornstrasse' GbR mit quotaler unbeschränkter Haftung i.L., Frankfurt am Main
- Konsortium der Absatzfinanzierungsinstitute plettac-assco GbR, Wuppertal
- VR GbR, Frankfurt am Main.

>> 49 Events after the balance sheet date

There were no events of particular importance after the end of the financial year.

Responsibility statement

To the best of our knowledge, and in accordance with the applicable reporting principles, the annual financial statements of DZ BANK give a true and fair view of the assets, liabilities, financial position and profit or loss of DZ BANK, and the management report of DZ BANK includes a fair review of the development and performance of the business and the position of DZ BANK, together with a description of the principal opportunities and risks associated with the expected development of DZ BANK.

Frankfurt am Main, March 5, 2019

DZ BANK AG
Deutsche Zentral-Genossenschaftsbank

The Board of Managing Directors

Fröhlich

Dr. Riese

Berghaus

Dr. Brauckmann

Brouzi

Köhler

Speth

Ullrich

Independent auditor's report

To DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main

Report on the audit of the annual financial statements and of the management report

Opinions

We have audited the annual financial statements of DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, which comprise the balance sheet as at 31 December 2018, and the income statement for the financial year from 1 January 2018 to 31 December 2018, and notes to the financial statements, including the recognition and measurement policies presented therein. In addition, we have audited the management report of DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, for the financial year from 1 January 2018 to 31 December 2018. In accordance with the German legal requirements, we have not audited the content of the statement on corporate governance pursuant to Sec. 289f (4) HGB ["Handelsgesetzbuch": German Commercial Code] contained in section IV.1.11 of the management report.

In our opinion, on the basis of the knowledge obtained in the audit,

– the accompanying annual financial statements comply, in all material respects, with the requirements of German commercial law applicable to institutions and give a true and fair view of the assets, liabilities and financial position of the Institution as at 31 December 2018 and of its financial performance for the financial year from 1 January 2018 to 31 December 2018 in compliance with German legally required accounting principles, and

– the accompanying management report as a whole provides an appropriate view of the Institution's position. In all material respects, this management report is consistent with the annual financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our opinion on the management report does not cover the content of the statement on corporate governance referred to above.

Pursuant to Sec. 322 (3) Sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the annual financial statements and of the management report.

Basis for the opinions

We conducted our audit of the annual financial statements and of the management report in accordance with Sec. 317 HGB and the EU Audit Regulation (No 537/2014, referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's responsibilities for the audit of the annual financial statements and of the management report" section of our auditor's report. We are independent of the Institution in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements.

In addition, in accordance with Art. 10 (2) f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Art. 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the annual financial statements and on the management report.

Key audit matters in the audit of the annual financial statements

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the annual financial statements for the financial year from 1 January 2018 to 31 December 2018. These matters were addressed in the context of our audit of the annual financial statements as a whole, and in forming our opinion thereon; we do not provide a separate opinion on these matters.

Below, we describe what we consider to be the key audit matters:

1. Measurement of equity investments and shares in affiliates

Reasons why the matter was determined to be a key audit matter

The determination of the fair values of equity investments and shares in affiliates is generally based on business plans which are drawn up separately for each entity. The figures in such plans are based on assumptions which require the use of judgement by the Board of Managing Directors or estimates. In particular, the current uncertainty surrounding the future economic development of the investees and affiliates influences these assumptions, also in light of the prevailing low interest rates. In addition, in determining the capitalised earnings value, assumptions must be made regarding, in particular, the derivation of the return on an alternative investment with the same risk and maturity profile using capital market models (Capital Asset Pricing Model) in order to derive the discount rate to apply to the cash flows of the forecast.

As the measurement of equity investments and shares in affiliates is based to a high degree on assumptions involving the use of estimates or judgement, and these items are material in amount, this was a key audit matter. Our focus was on the measurement of the shares in affiliates (Bausparkasse Schwäbisch Hall AG, DVB Bank SE, R+V Versicherung AG, DZ PRIVATBANK AG) whose business model is currently particularly affected by the prevailing low interest rates and the general economic development.

Auditor's response

To assess the recoverability of the carrying amounts of the equity investments and shares in affiliates, we examined the design of the process for valuing shareholdings to determine whether the methods defined therein are consistent with the professional pronouncements of the Institut der Wirtschaftsprüfer (IDW) on the valuation of companies and equity investments (IDW AcP HFA 10 in conjunction with IDW S1).

Based on the Bank's capitalised earnings valuations or alternative valuation methods, we assessed the recoverability of the carrying amounts of the equity investments for a risk-based sample of affiliates and equity investments.

For the audit of the recoverability of the carrying amounts of the equity investments, we used specialists in the audit team who have special expertise in the area of business valuation.

We examined whether the valuation model developed by DZ BANK ensures arithmetical accuracy. We assessed the significant planning assumptions (e.g., new business and margin planning), taking the results achieved in the past and the quality of the entities' planning into account. We analysed the data used by the Bank based on our knowledge of the business activities and forecast industry development and, where available, compared specific data and assumptions with external market data. During our audit, we also obtained an understanding of how the sustainable earnings at the respective entities and the capitalisation rate were derived.

Our procedures did not lead to any reservations relating to the measurement of the equity investments and shares in affiliates.

Reference to related disclosures

Information on the principles applied for measuring equity investments and shares in affiliates is contained in section A, note 02 of the notes to the financial statements. Information on the development of equity investments and shares in affiliates is provided in section B, note 14, while the list of shareholdings is provided in section D, note 47.

2. Recoverability of deferred tax assets

Reasons why the matter was determined to be a key audit matter

The Board of Managing Directors of DZ BANK exercised the option under Sec. 274 (1) Sentence 2 HGB to recognise deferred tax assets.

DZ BANK estimates whether the differences between the carrying amounts of assets, liabilities, prepaid expenses and deferred income in the statutory accounts and their tax carrying amounts underlying the deferred taxes are likely to reverse in subsequent financial years on the basis of a forecast of tax earnings for the next five financial years, which in turn is derived from the internal planning for the entities in the tax group. In light of the material significance and use of the judgement in relation to the assumptions used in the forecast, the assessment of the recoverability of deferred tax assets was a key audit matter.

Auditor's response

We examined the design of the process for recognising deferred tax assets and assessing the recoverability of such assets to determine whether deferred tax differences are identified and measured in accordance with the provisions of tax and commercial law governing the recognition of deferred taxes.

In addition, we reconciled the tax forecasts for the tax group with internal planning documents in accordance with German commercial law and obtained an understanding of the amount and cause of differences in taxable profit in light of the requirements of tax law. We assessed the commercial law forecasts of the entities in the income tax group, taking into account our knowledge of the entities' business activities and the development of the respective industry, with regard to the underlying planning inputs (e.g., new business and margin planning) and the quality of past forecasts.

Furthermore, we examined whether existing tax group relationships were correctly taken into account in the tax planning and assessed the underlying planning horizon and the tax rates used for the tax group.

Our procedures did not lead to any reservations relating to the assessment of the recoverability of deferred tax assets.

Reference to related disclosures

Information on the recognition and measurement of deferred tax assets is contained in section A, note 02 and in section B, note 17 of the notes to the financial statements.

3. Recognition and measurement of the restructuring provision in connection with the "Verbund First 4.0" programme

Reasons why the matter was determined to be a key audit matter

In connection with the "Verbund First 4.0" strategy presented by the Board of Managing Directors of DZ BANK AG in financial year 2018, a socially acceptable reduction in headcount for 2020 and subsequent years was announced. Following discussion in the Supervisory Board, this was communicated at an employee meeting.

As of the reporting date, the Board of Managing Directors recognised a restructuring provision for the headcount reduction. In light of the material significance and the use of judgement, the recognition and measurement of the restructuring provision was a key audit matter.

Auditor's response

Under Sec. 249 (1) Sentence 1 HGB, a provision can only be recognised for an obligation to third parties which arose legally or economically in the financial year. Furthermore, there must be a serious expectation that the provision will be utilised. On the basis of the negotiation documents available (e.g., memorandum of understanding and the current redundancy plan) and communication with the workforce, the central works council and the Supervisory Board, and drawing on past experience of previous restructuring programmes, we assessed whether they establish an obligation to third parties in the financial year and whether utilisation is seriously expected in future periods (audit of the basis for the provision).

We also assessed the measurement of the restructuring provision in relation to the requirements of Sec. 253 (1) Sentence 2 and (2) Sentences 1 and 4 HGB (audit of the amount of the provision). In so doing, we obtained an understanding of the forecast provided with regard to the underlying assumptions such as the planned utilisation and costs for each headcount reduction model and compared it with the Bank's past experience from previous restructuring programmes (including the merger with the former WGZ Bank in 2016).

Our procedures did not lead to any reservations relating to the recognition and measurement of the restructuring provision in connection with the "Verbund First 4.0" programme.

Reference to related disclosures

With regard to the recognition and measurement policies applied for the restructuring provision, we refer to the information provided in the notes, section A, note 02; for explanations about the "Verbund First 4.0" programme and the related restructuring measures we refer to the information in section I.1 of the management report.

Other information

The executive directors are responsible for the other information. The other information comprises the statement on corporate governance pursuant to Sec. 289f (4) HGB and the responsibility statement pursuant to Sec. 289 (1) Sentence 5 HGB.

Our opinions on the annual financial statements and on the management report do not cover the other information, and consequently we do not express an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

– is materially inconsistent with the annual financial statements, with the management report or our knowledge obtained in the audit, or

– otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the executive directors and the Supervisory Board for the annual financial statements and the management report

The executive directors are responsible for the preparation of the annual financial statements that comply, in all material respects, with the requirements of German commercial law applicable to institutions, and that the annual financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Institution in compliance with German legally required accounting principles. In addition, the executive directors are responsible for such internal control as they, in accordance with German legally required accounting principles, have determined necessary to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the annual financial statements, the executive directors are responsible for assessing the Institution’s ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting, provided no actual or legal circumstances conflict therewith.

Furthermore, the executive directors are responsible for the preparation of the management report that, as a whole, provides an appropriate view of the Institution’s position and is, in all material respects, consistent with the annual financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the management report.

The Supervisory Board is responsible for overseeing the Institution’s financial reporting process for the preparation of the annual financial statements and of the management report.

Auditor’s responsibilities for the audit of the annual financial statements and of the management report

Our objectives are to obtain reasonable assurance about whether the annual financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the management report as a whole provides an appropriate view of the Institution’s position and, in all material respects, is consistent with the annual financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor’s report that includes our opinions on the annual financial statements and on the management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sec. 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these annual financial statements and this management report.

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

– Identify and assess the risks of material misstatement of the annual financial statements and of the management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit of the annual financial statements and of arrangements and measures (systems) relevant to the audit of the management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems of the Institution.

- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.

- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Institution's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the annual financial statements and in the management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Institution to cease to be able to continue as a going concern.

- Evaluate the overall presentation, structure and content of the annual financial statements, including the disclosures, and whether the annual financial statements present the underlying transactions and events in a manner that the annual financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Institution in compliance with German legally required accounting principles.

- Evaluate the consistency of the management report with the annual financial statements, its conformity with [German] law, and the view of the Institution's position it provides.

- Perform audit procedures on the prospective information presented by the executive directors in the management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

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

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the annual financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

Other legal and regulatory requirements

Further information pursuant to Art. 10 of the EU Audit Regulation

We were elected as auditor by the Annual General Meeting on 30 May 2018. We were engaged by the Supervisory Board on 14 June 2018. We have been the auditor of DZ BANK AG Deutsche Zentral-Genossenschaftsbank without interruption since financial year 2002.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the Audit Committee pursuant to Art. 11 of the EU Audit Regulation (long-form audit report).

In addition to the financial statement audit, we have provided to the Institution or entities controlled by it the following services that are not disclosed in the annual financial statements or in the management report: reviews of interim financial statements, voluntary audits of the annual financial statements of controlled entities, project-based reviews and audit of reporting requirements and rules of conduct pursuant to Sec. 36 (1) WpHG ["Wertpapierhandelsgesetz": German Securities Trading Act] (prior to revision) and Sec. 89 (1) WpHG (revised), including the audit of custody operations, issuance of comfort letters, certificates pursuant to Sec. 5 InvStG ["Investmentsteuergesetz": German Investment Tax Act], agreed-upon procedures pursuant to ISRS 4400, reviews pursuant to ISRE 2410 and IDW AuS 900, assurance engagements relating to the internal control system at service organisations pursuant to IDW AsS 951 and ISAE 3402, audits of single financial statements or elements thereof in accordance with IDW AuS 490, other assurance engagements pursuant to ISAE 3000, reviews of financial investment brokers pursuant to IDW AsS 840, assurance engagements relating to compliance management systems pursuant to IDW AsS 980. In addition, permitted non-audit services in the form of tax and other advisory services for DZ BANK and its controlled entities (organisational or professional support for quantitative and qualitative data requests from supervisory authorities and in connection with regulatory reports, provision of information in connection with current and planned legislative amendments and events for employees of DZ BANK Group, review of specialist designs for new accounting topics, support services in connection with the digitalisation of product processes, preparation of certificates for foreign tax purposes, support with regard to new or amended tax reporting or documentation requirements, review of tax returns and tax brochures, tax due diligence services).

German Public Auditor responsible for the engagement

The German Public Auditor responsible for the engagement is Christian Mai.

Eschborn/Frankfurt am Main, 7 March 2019

Ernst & Young GmbH
Wirtschaftsprüfungsgesellschaft

Dr. Freiling
Wirtschaftsprüfer
[German Public Auditor]

Mai
Wirtschaftsprüfer
[German Public Auditor]

Editorial information

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Dr. Cornelius Riese (Co-Chief Executive Officer)
Uwe Berghaus
Dr. Christian Brauckmann
Ulrike Brouzi
Wolfgang Köhler
Michael Speth
Thomas Ullrich

Chairman of the Supervisory Board:
Henning Deneke-Jöhrens

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