Volksbanken Raiffeisenbanken
cooperative financial network

2021
Annual Report

DZ BANK Group

Key figures

DZ BANK GROUP

€ million	2021	2020
FINANCIAL PERFORMANCE		
Income [1]	7,242	6,159
Loss allowances	120	-678
Profit before taxes	3,096	1,445
Net profit	2,176	973
Cost/income ratio (percent)	58.9	65.5

	Dec. 31, 2021	Dec. 31, 2020
FINANCIAL POSITION		
Assets		
Loans and advances to banks	107,659	103,020
Loans and advances to customers	195,665	190,294
Financial assets held for trading	47,321	42,788
Investments	52,440	60,232
Investments held by insurance companies	129,131	121,668
Remaining assets	95,058	76,532
Equity and liabilities		
Deposits from banks	196,562	177,852
Deposits from customers	138,975	133,925
Debt certificates issued including bonds	79,652	70,500
Financial liabilities held for trading	43,411	50,410
Insurance liabilities	118,863	111,213
Remaining liabilities	21,149	21,520
Equity	28,661	29,116
Total assets/total equity and liabilities	**627,273**	**594,535**
Volume of business	**1,166,289**	**1,059,874**

	Dec. 31, 2021	Dec. 31, 2020
RISK POSITION		
LIQUIDITY ADEQUACY		
DZ BANK Group		
Economic liquidity adequacy (€ billion)	19.4	15.3
DZ BANK banking group		
Liquidity coverage ratio – LCR (percent)	147.7	146.3
Net stable funding ratio – NSFR (percent)	127.1	122.4
CAPITAL ADEQUACY		
DZ BANK Group		
Economic capital adequacy (percent)	208.1	171.7
DZ BANK financial conglomerate		
Coverage ratio (percent)	152.7	146.0
DZ BANK banking group		
Common equity Tier 1 capital ratio (percent)	15.3	15.3
Tier 1 capital ratio (percent)	16.8	17.0
Total capital ratio (percent)	18.5	19.5
Leverage ratio (percent)	7.3	5.7
MREL ratio (percent)	11.5	11.9
AVERAGE NUMBER OF EMPLOYEES DURING THE YEAR	**32,271**	**31,410**
LONG-TERM RATING		
Standard & Poor's	A+	AA-
Moody's Investors Service	Aa2	Aa1
Fitch Ratings	AA-	AA-

1 Total of net interest income, net fee and commission income, gains and losses on trading activities, gains and losses on investments, other gains and losses on valuation of financial instruments, gains and losses from the derecognition of financial assets measured at amortized cost, net income from insurance business, and other net operating income.

Contents

Note
The figures in this report are rounded to the nearest whole number. This may give rise to small discrepancies between the totals shown in the tables and diagrams and totals calculated from the individual values shown.

The English version of this report is a convenience translation. In cases of doubt, the German original version shall prevail.

Uwe Fröhlich (left) and Dr. Cornelius Riese, Co-Chief Executive Officers

Dear Shareholders,

We can look back on a special year. With profit before taxes of €3.1 billion, the DZ BANK Group posted the best results in its history.

To a certain extent, we were helped along by an economic tailwind. The economy staged a recovery in 2021 and made up for much of the loss of growth experienced in 2020 when the coronavirus pandemic first emerged. At the same time, movements in capital markets, especially equity markets, were very favorable. Furthermore, we continued to be spared a much feared wave of corporate insolvencies, which meant that we barely had to make use of the projected loss allowances.

However, beyond all the special factors, the record earnings are based primarily on our business model and the close collaboration within the cooperative financial network. Together, we are increasingly leveraging yet more of the upside potential inherent in our business model. Once again in 2021, this translated into successful operating performance from all the units in the DZ BANK Group. For example, benefiting from market developments, Union Investment achieved a significant volume growth as well as an increase in performance-related income components. R+V Versicherung generated a further rise in premiums earned and was able to absorb the exceptionally high expenses resulting from the catastrophic flooding along the Rhine and Ahr rivers in the last year thanks to a prudent reinsurance strategy. Bausparkasse Schwäbisch Hall was able to turn the corner in 2021, reporting a profit before taxes in the triple-digit millions on the back of a substantial volume of new business. The banking business within the DZ BANK Group also performed well: Both DZ HYP and TeamBank performed stably at a good level. DZ BANK – central institution and corporate bank continued to expand its customer business in the Capital Markets, Corporate Banking, and Transaction Banking business lines. Growth in the relationship with existing corporate banking customers was encouraging: Export finance income rose by 24 percent and income from cross-selling by 11 percent. The scaling back of DVB Bank's business portfolio continued apace, which means that the remaining portfolio can be integrated into DZ BANK on schedule in the summer of 2022.

The key results in detail:

The DZ BANK Group's **net interest income** amounted to €2.79 billion, which was slightly above the figure for 2020 of €2.69 billion. The central institution and corporate bank increased its net interest income thanks to its strong business performance. Bausparkasse Schwäbisch Hall's net interest income stabilized, having recently decreased. However, net interest income declined at DVB Bank owing to the ongoing reduction of its portfolio. **Net fee and commission income** jumped significantly to €2.94 billion (2020: €2.12 billion). This was primarily due to Union Investment's very encouraging business performance. The central institution and corporate bank also contributed to this increase. Despite healthy capital markets business at the central institution and corporate bank, **gains and losses on trading activities** declined to a net gain of €152 million (2020: €693 million). This decrease was primarily attributable to IFRS-related valuation effects in connection with own issues. The net gain under **gains and losses on investments** rose to €245 million (2020: €166 million). The main reason for this was the sale of direct long-term equity investments. **Other gains and losses on valuation of financial instruments** improved to a net gain of €242 million (2020: net loss of €62 million). This was thanks to positive valuation effects at DVB Bank and positive changes in the valuation of guarantee commitments at Union Investment. On the back of a strong operating performance and the recovery of the capital markets, **net income from insurance business** increased to €842 million (2020: €347 million) despite significant flooding and storm claims. Additional loss allowances had been required in 2020 as a consequence of the COVID-19 pandemic, but the economic recovery paved the way for reversals, especially at the central institution and corporate bank and at DVB Bank, resulting in an overall net reversal of **loss allowances** of €120 million (2020: net addition of €678 million). **Administrative expenses** went up slightly to €4.27 billion (2020: €4.04 billion), which included not only larger contributions to the bank levy and the BVR protection scheme but also expenses arising from the first-time consolidation of the ZBI Group within Union Investment.

The DZ BANK Group's very strong business performance in 2021 was made possible by the dedication and flexibility of our employees. We would like to express our heartfelt thanks and appreciation to them.

The DZ BANK Group's capital adequacy held steady at a good level thanks to careful management of risk-weighted assets and the retention of profits. The common equity Tier 1 capital ratio stood at 15.3 percent as at December 31, 2021 (December 31, 2020: 15.3 percent); the leverage ratio was 7.3 percent (December 31, 2020: 5.7 percent).

We are delighted to be able to distribute an appropriate share of this year's record profits to our owners. In view of the very strong performance and taking account of the requirements of diligent capital management, we will propose an increased dividend of 20 cents per share to the Annual General Meeting.

Due to the war in Ukraine and the associated sanctions, the economic recovery expected for the spring is likely to be clearly weaker than previously anticipated – although German companies have plenty of orders on their books. Our economists predict growth of 1.9 percent for the German economy this year. In view of the geopolitical crisis, significantly higher prices for energy and raw materials and further supply bottlenecks also remain factors of uncertainty in the new fiscal year. Given that interest rates are likely to start being raised in order to tackle persistently high inflation rates, additional pressure may also be put on the markets. Because it is an institutional investor, the DZ BANK Group is particularly exposed to these risks and its earnings can thus be prone to some volatility. On the other hand, we have continued to see robust demand from customers in our operating business at the start of this year. This positive trend also reflects our positioning within the cooperative financial network, the confidence of our customers, and our strong regional roots. Therefore, we were optimistic and anticipated that our profit before taxes will be at the upper end of our long-term target range of €1.5 billion to €2 billion in 2022. However, the geopolitical situation significantly increases the uncertainty of forecasts.

Beyond performance in the immediate future, we are also keeping our eye on our long-term success and forging ahead in pursuit of our strategic objectives. We believe that sustainability and digitalization, the two big issues of our time in the industry, offer potential for signing up new customers and breaking into profitable new markets. We are exceptionally well placed to capitalize on these opportunities. For example, as far as sustainability is concerned, we are an important strategic partner for the real economy. Over the past two years, we have taken significant steps to embed sustainability as an interdisciplinary approach in all lines of business, all processes and in every discussion with customers. The fruits of our labor can increasingly be seen in our results.: We are providing ever greater levels of transition support for customers and ESG-related business is steadily growing. To quote just two highlights: DZ BANK has doubled the volume of supported transactions in connection with sustainable issues in its capital markets business; in funds business, Union Investment is one of the market leaders with €125.6 billion of sustainable assets under management.

The systematic digitalization of existing business models and processes forms the basis for our further development. To this end, we have restructured and partly automated the entire lending process in DZ BANK's core business. After two years of development, a key component of the BVR's digitalization initiative has gone live in the form of the corporate banking portal "DZ Banking". In Transaction Banking, we are bringing together resources and services for payments processing on a single centralized platform. Throughout the group, we are working to integrate our products and services much more closely into the value chains of the real economy, thereby reaching new customers. By way of illustration, we are upgrading the homes and housebuilding digital ecosystem at Bausparkasse Schwäbisch Hall and have invested in the strategic acquisition of the FinCompare sales platform to generate further growth from the provision of finance to small and medium-sized enterprises.

At the same time, we are working to find new ways of using the key technologies of tomorrow. Alongside efforts to use blockchain technology for processes, products, and assets, our attentions have also been focused on digitalizing different points of the value chain: We are carrying out groundbreaking work for capital markets on automated blockchain-based transaction processing with pilot projects such as that for the finledger platform and others related to smart derivatives contracts. We are also involved in the development of innovative payment models for use in the Internet of Things (pay-per-use models) and the expansion of the instant payments infrastructure (Request to Pay). In addition, we are providing detailed support for the activities to design the digital euro. These and other initiatives will establish the foundations for our future growth.

We have what it takes, in terms of potential, customer trust, and strategic answers, to ensure the future success of the business.

Kind regards,

Uwe Fröhlich
Co-Chief Executive Officer

Dr. Cornelius Riese
Co-Chief Executive Officer

Group management report

I DZ BANK Group fundamentals

1 Business model and strategic focus

The DZ BANK Group focuses its strategy on the local cooperative banks with the objective of consolidating the positioning of the cooperative financial network over the long term as one of the leading financial services providers in Germany. Strengthening the market position of the cooperative banks is the most important prerequisite for their success. The partnership between the cooperative banks and the entities in the DZ BANK Group is built on the principles of subsidiarity, decentralization, and regional market responsibility.

Strategic initiatives and programs are developed and implemented at the following three levels in the DZ BANK Group: firstly, at the level of the cooperative financial network, with the leading role taken by the Bundesverband der Deutschen Volksbanken und Raiffeisenbanken e.V., Berlin, (BVR) [National Association of German Cooperative Banks]; secondly, at the level of the DZ BANK Group; and thirdly, at the level of the individual entities in the DZ BANK Group, which may draw up their own specific strategic programs. As regards overarching strategic projects and initiatives for the entire cooperative financial network, the entities in the DZ BANK Group work in partnership with the cooperative banks, Atruvia AG, Karlsruhe and Münster, (Atruvia), and the BVR on the strategic agenda and have set up the KundenFokus (customer focus) project. At DZ BANK Group level, the entities have jointly identified – and together will press ahead with – key areas of collaboration that offer the potential for reinforcing the future viability and profitability of all the members of the cooperative financial network. These areas include measures to streamline the business model. In addition, each individual entity in the DZ BANK Group pursues its own strategic initiatives, such as the 'Verbund First 4.0' strategic program at DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, (DZ BANK), the 'WIR @ R+V – Growth. Innovation. Profitability.' program at R+V Versicherung AG, Wiesbaden, (R+V Versicherung, subgroup abbreviated to R+V), and the 'Fokus 2020' program at DZ HYP AG, Hamburg and Münster, (DZ HYP).

In the reporting year, the joint activities were particularly focused on sustainability, which is becoming an issue of major importance for the entities in the DZ BANK Group, both in their core businesses and in their own operations. Since the spring of 2020, sustainability has been treated as a key topic in the strategic dialog within the DZ BANK Group and has been evaluated against the backdrop of the changing regulatory and market conditions. In 2021, the strategic planning process was used to identify the key sustainability issues applicable to each of the group entities, as the priorities vary according to business model. The sustainability strategy is described in detail in the Sustainability Report of the DZ BANK Group.

1.1 DZ BANK – central institution and corporate bank

The strategic focus of DZ BANK, as described below, essentially relates to the activities of DZ BANK – central institution and corporate bank. DZ BANK – central institution and corporate bank comprises both the cooperative central institution function, which supports the operating activities of the local cooperative banks, and the corporate bank function. DZ BANK – holding function, which is presented separately in this report in line with the internal reporting structure, is used to pool a range of responsibilities, notably tasks carried out on behalf of the DZ BANK Group in relation to commercial law, tax, and prudential supervision. It does not therefore constitute a separate operating segment within the meaning of IFRS 8.5 and is not analyzed separately in this chapter.

At DZ BANK, the strategic initiatives designed to ensure the bank's resilience for the future are brought together in 'Verbund First 4.0', a strategic program launched in 2018. The program is aimed at improvements in three key areas: market offering, control and production processes, and corporate culture. Under the program, DZ BANK is working on various measures based on defined action areas.

The following sections describe how DZ BANK is implementing its strategy in the various business lines.

1.1.1 Cooperative Banks/Verbund

The cooperative banks are DZ BANK's most important customer group and its partners in joint activities covering sales and the provision of advisory services, as well as being shareholders. The focus of the Cooperative Banks/Verbund division is to meet the needs of this relationship of support for the cooperative banks. The Regionaldirektoren [regional directors] of DZ BANK are the first port of call and customer relationship manager for the cooperative banks, with the aim of assisting them with their business activities in the regional markets. DZ BANK's presence throughout Germany ensures that it can be physically close to the banks it supports.

DZ BANK offers the cooperative banks consultancy and other services at every stage of strategic bank management and regulatory processes. In addition, DZ BANK assists the local cooperative banks with 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. DZ BANK offers the cooperative banks systems such as GENO-SAVE and EGon that help them to meet requirements in the areas of own-account investing, reporting, and accounting.

Key network committees ensure that the cooperative banks are closely involved in DZ BANK's strategic considerations and initiatives. The Central Advisory Council enables important strategic matters in the DZ BANK Group to be discussed in depth and connects the various players and levels in the cooperative financial network. DZ BANK also has five regional Banking Advisory Councils that carry out an advisory and multiplier function.

1.1.2 Corporate Banking

In the corporate banking market, DZ BANK supports the cooperative banks. This support concept is geared to the needs of corporate customers and the individual market situation, and is closely integrated with the activities of the cooperative financial network. DZ BANK has four regional customer care centers that look after both its direct customers and customers in the joint business with the cooperative banks. Customer relationship management for multinationals, the agricultural and healthcare sectors, and cooperative financial network customers has been grouped together in the Central Corporate Banking division.

DZ BANK continually upgrades its range of corporate banking services and processes in Germany. The new DZ Banking corporate banking portal went live in June 2021. The new portal represents another step forward in DZ BANK's digitalization of its customer interfaces, and thereby in its digital capability in support of direct corporate banking. DZ BANK is also carrying out work to refine the digital processing of lending business and upgrade the digital sales workstation (Market of the Future workstation). Alongside digitalization-related matters, another important priority in 2021 was to integrate sustainability into the dialog with customers. DZ BANK introduced a number of initiatives with this in mind, including discussion guidelines on sustainability and special training sessions for corporate banking relationship managers. In 2021, in the context of optimizing its processes in the jointly extended loan business with the cooperative banks (referred to as Meta business in German), DZ BANK developed a new module known as MetaMarktplatz (Meta marketplace) for its existing VR GeschäftsNavigator (VR business navigator) platform. Going forward, MetaMarktplatz will offer digital assistance to help cooperative banks originate syndicated finance within the cooperative financial network.

Support is also provided for the international business of the cooperative financial network's corporate customers, where required. DZ BANK offers a range of solutions geared to Germany's internationally oriented economy, including foreign payments processing, import and export credit guarantees and financing, and currency hedging. It has four branches and six representative offices outside Germany and also makes use of its contacts with well-established partner banks in the countries concerned to open local accounts or obtain financing in the relevant currency. The VR International information and communications platform has also been specially developed to help local cooperative banks support the international business of small and medium-sized enterprises. In the reporting year, DZ BANK extended its range of products for international business to include a standardized offering for small-ticket buyer credit via a digital platform.

In development lending, DZ BANK offers the cooperative banks, their corporate customers, and group entities various advisory, process, and digitalization services in connection with public-sector development and support loans. In this context, it primarily works with Kreditanstalt für Wiederaufbau (KfW) [Germany's KfW development bank], the federal states' own development banks, and Landwirtschaftliche Rentenbank. In order to increase process automation throughout the value chain, the first development and support loan programs have already been integrated into the sales platform used by the cooperative financial network. Efforts will continue to be focused in the future on achieving efficiency gains through automation and on reinforcing DZ BANK's market positioning in relation to this business.

1.1.3 Retail Banking

In retail banking, one of DZ BANK's primary areas of focus is the marketing of securities business with retail customers. In this business, DZ BANK offers services in the form of products, processes, and platforms, which are predominantly made available to the cooperative banks and cooperation banks. DZ BANK's aim is to help these banks with their marketing and strategic planning in relation to securities business with retail customers. As well as securities and savings plans, this includes advisory services, market data, research, and trading/advisory/e-business platforms.

DZ BANK makes available individual analyses and data tools to support the cooperative banks with their planning, implementation, and review of strategy throughout the management cycle. It thereby helps the cooperative banks to meet their regulatory obligations. This support is being accompanied by the expansion of a range of sustainable products aimed at satisfying regulatory requirements as part of DZ BANK's approach to sustainability in its advisory services. The range of sustainable products is being extended in parallel with the implementation of the Sustainability marketing program. Marketing programs include lists of action options whose implementation focuses on critical individual aspects of retail customer securities business with the aim of bolstering growth in the cooperative banks. In addition to the Sustainability marketing program, DZ BANK offers New Investment Accounts and Young Customers marketing programs, whose objectives are to broaden and reduce the average age of the cooperative banks' customer base.

In accordance with the digitalization strategy, DZ BANK is developing solutions that can be used to provide customers of the cooperative banks and cooperation banks with digital access to their bank in addition to branch visits. Alongside online banking applications, this also includes a facility whereby retail customers are able to quickly open an investment account themselves online, thereby cutting the administrative burden, both for themselves and the bank. Brokerage for end customers has been integrated into Atruvia's omnichannel platform with the addition of new functions covering products such as equities and fund-linked savings plans. DZ BANK's meinGIS platform provides advisors with access to the latest market information, such as share prices, charts, and corporate news. Retail customers can access the Meine Anlagezertifikate digital world at any time and from any device to obtain detailed information on investment products in their investment accounts. DZ BANK's derivatives portal completes the product and information offering for independent retail investors.

1.1.4 Capital Markets

DZ BANK offers advisory and sales services in relation to investment and risk management products covering the interest-rate, credit, equities, and currency asset classes for the benefit of its institutional customers in Germany and abroad, the cooperative banks in their own-account investing activities, and its corporate customers. Its offering encompasses primary market, secondary market, and research services.

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

As part of the 'Verbund First 4.0' strategic program, DZ BANK is focusing its capital markets activities on using digitalization measures to reinforce customer retention and enhance process efficiency. It is investing in expanding its customer trading platforms and sales infrastructure, and in improving the provision of data in its operations. Its objective is to consolidate its market position and expand its range of products and services in the business with institutional clients and corporate customers. In this context, DZ BANK is constantly working, for example, on expanding its expertise and business in sustainable capital market products, and on positioning itself as a leader in the structuring and placement of new issues in the ESG (environmental, social, corporate governance) and green finance market segment. As one of the lead managers, DZ BANK was also mandated to support the European Union's first social bond aimed at funding the NextGenerationEU recovery package. After placing issues of its own green bond in 2018 and 2020, DZ BANK placed a third such bond with a volume of €300 million in November 2021. For the first time, the bond is based on a portfolio with offshore projects in Germany, France, the UK, and the Netherlands.

In cooperative network business, DZ BANK is continually updating its advisory and sales processes to take account of the changing requirements of cooperative banks and in order to leverage potential efficiencies. The EGon own-account investing platform is being expanded into an application integrated into the systems and processes used by the cooperative banks for their own-account investing activities. The first development stage was successfully completed in 2021. The application enables cooperative banks to trade structured and unstructured bonds online as part of their own-account investing activities. Investment decisions are supported by functionality such as product search or trade simulation, which enables the bank concerned to analyze in advance the impact that a transaction would have on relevant key figures and the utilization of limits.

1.1.5 Transaction Banking

In the Transaction Banking business line, DZ BANK provides its customers with payments processing, card processing, customer-centric solutions, and capital markets services. It also offers depositary and advisory services. DZ BANK makes platforms available in order to consolidate and continually improve the competitiveness of the entities within the cooperative financial network with regard to transaction banking.

DZ BANK also constantly updates its range of products. In card processing, new products for relevant target groups have been added to the product range. Examples include the environmentally friendly 'Naturliebe Karte' and a gold corporate credit card. In payments processing, DZ BANK is working on expansion of the instant payments infrastructure and related services (including Request to Pay) and is actively participating in initiatives to consolidate payment systems at national and European levels. DZ BANK is also involved in activities connected with the design and introduction of the digital euro. Other areas of focus in this business line include the expansion of customer-oriented services (such as digitalization support with VR Ticket, VR eKiosk, and VR Entertain) and the strengthening of international payments processing with targeted advisory and professional development services.

Based on the strategy adopted by the cooperative financial network, DZ BANK is creating a central platform to merge the two existing payments processing 'production lines', which currently run in parallel. The aim is to generate economies of scale, reduce costs, and pool expertise. At the same time, new regulatory requirements are being satisfied. DZ BANK embraces new payments processing technologies. In 2021, it developed a prototype for a pay-per-use model in which a customer only pays for a machine or a service if he or she has actually used it.

In the capital market services business, DZ BANK is implementing a complex series of action plans aimed at digitalizing processes. For example, in a project entitled Finledger, it is steadily refining the digital processing of promissory notes on the basis of blockchain technology; it is also investigating strategies for the future use of distributed ledger technology. In this regard, it took part in the testing of a new processing interface for electronic securities in 2021 that has been developed by Deutsche Börse, Deutsche Bundesbank, and Bundesrepublik Deutschland – Finanzagentur GmbH (Finanzagentur) [Federal Republic of Germany – Finance Agency]. The testing involved using a blockchain network to issue a ten-year German government bond entirely in digital form and place this bond with the participating banks. Secondary market transactions were then successfully carried out in the same way.

In the depositary business, DZ BANK continues to forge ahead with its growth strategy and has recently expanded the assets under custody in collaboration with DZ PRIVATBANK S. A., Luxembourg, (DZ PRIVATBANK).

1.2 BSH
Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, (Bausparkasse Schwäbisch Hall; subgroup abbreviated to BSH) is the consumer home finance provider in the DZ BANK Group and offers solutions that enable customers to obtain home finance, build up private retirement or other savings, or own their own home. The long-term objective is to secure BSH's role as the leading product and solutions provider in the homes and housebuilding cooperative ecosystem, working in close collaboration with the cooperative banks on a decentralized basis.

In its core home finance business, BSH positions itself as a provider of the full range of services, which include a focus on sustainability. The main areas of activity are traditional home savings loans, its own instant finance options backed by home savings, building loans, and the brokering of cooperative bank real estate loans.

In the core home savings business, BSH is continuously developing its range of products. In this regard, a new scale of rates and charges was introduced in 2021, very much with an environmental and social emphasis, and featuring benefits to attract young customers and to support energy-saving renovation work.

BSH also remains active in its international business, focusing on maintaining the existing approach to business through investee companies in Slovakia, Hungary, and China.

BSH is meeting the challenges of the protracted low level of interest rates and changes in customer needs by managing costs on a sustainable basis and investing in forward-looking projects. One example is Impleco GmbH, a joint venture between BSH and PSD Bank Rhein-Ruhr, PSD Bank Berlin-Brandenburg, and PSD Bank Westfalen-Lippe. The joint venture is bringing together and upgrading the 'wohnglück.de' service and content platform and the white-label 'PIA – personal real estate assistant' interface, so that a relevant regional offering can be created for the homes and housebuilding cooperative ecosystem.

1.3 R+V
R+V is the cooperative provider of insurance and pension products and operates in the non-life, life, health, and reinsurance sectors.

R+V is meeting future challenges with a strategy entitled Vision 2025. It states: "R+V is the cooperative center of excellence for insurance, healthcare provision, and retirement pensions. We contribute to the success of the cooperative financial network with sustainable services and income." The pillars of the strategy are making customers as happy as possible, increasing profitability, generating growth, and maintaining a strong capital base. In this context, R+V is focusing on activities such as developing new products with due regard to the market environment, accelerating the implementation of omnichannel sales (which includes professionalizing digital sales), implementing a target operational structure for customers and processes, digitalization, upgrading IT, and developing a strategic capital management system.

In addition, R+V plans to expand in the growth areas of healthcare and long-term nursing care, and sustainability. It intends to steadily expand its range of services in these growth areas, paying due attention to the increasing level of customer awareness. R+V has signed up to the UN Principles for Sustainable Insurance (PSI) to underpin its commitment to sustainability. This enshrines the sustainability criteria more firmly in R+V's core business.

In addition, R+V is continuing to invest in digitalization and joined forces with a competitor in 2021 to establish the Trustlog service platform for processes related to sureties. The platform facilitates efficient digital collaboration and ensures a high level of security in the processes associated with the storage of digital sureties. In the next phase, it is planned to connect further insurers, and also banks, to the platform.

1.4 TeamBank

TeamBank AG Nürnberg, Nuremberg, (TeamBank) acts as the center of excellence in the cooperative financial network for state-of-the-art liquidity management. In Germany, it offers its easyCredit family of consumer finance products. The product range also includes 'ratenkauf by easyCredit', which is an installment purchase solution that can be used both online and in-store. In Austria, it collaborates with the cooperative banks to offer 'der faire Credit', a consumer finance product.

TeamBank's strategic activities are focused on generating long-term profitable growth for the cooperative financial network. The company aims to be customers' first choice for liquidity management. For example, it broadened the range of services in connection with 'ratenkauf by easyCredit' in 2021 and adapted the services in line with changing requirements in both in-store and online sales. A click-and-collect service and an option for in-store ordering have been introduced in connection with the solution.

TeamBank also focuses on using groundbreaking technologies and laying the technical foundations for its pursuit of growth. In 2021, it established the GENOFLEX joint venture in partnership with platform technology provider Hypoport. Participating cooperative banks will now be able to use GENOFLEX if they cannot find a suitable easyCredit option for their customers and offer either an alternative option from other cooperative banks or a different product from financial institutions outside the cooperative banking sector. The pilot phase involving the first cooperative banks is expected to run until mid-2022.

1.5 UMH

Union Asset Management Holding AG, Frankfurt am Main, (Union Asset Management Holding; subgroup abbreviated to UMH) is the asset manager in the cooperative financial network and offers investment solutions for retail and institutional clients. In both areas of business, it is aiming for further expansion of the volume of assets under management.

In retail business, UMH is working to extend its range of solutions for partner banks with a view to maintaining its growth trajectory. To this end, it is steadily expanding its omnichannel capability and supporting the efforts of the cooperative banks to develop business on a digital basis by helping them to improve technological platforms and satisfy regulatory requirements. UMH is also responding to changing investor requirements and in recent years, for example, has constantly extended its range of services in connection with sustainable investment funds.

In the institutional client business, UMH is the central asset manager for the cooperative financial network. It also provides asset management for German and international institutional clients outside the cooperative sector. It offers special funds, institutional mutual funds, asset management, advisory services, capital preservation strategies, and quantitative asset management strategies. UMH's objective in its institutional client business is to consolidate its positioning as an active risks/returns manager and sustainability manager. With this in mind, UMH constantly updates its product range and focuses on profitable growth, both in Germany and in other selected European markets.

To give a further boost to its sustainability credentials, UMH also adopted a climate-related strategy for portfolio management in 2021. The aim of the strategy is to ensure that the securities portfolio becomes carbon-neutral, even before 2050.

1.6 DZ HYP

The core business policy objective of DZ HYP AG, Hamburg and Münster, (DZ HYP) is to embed real estate finance and public-sector finance in the cooperative financial network and to operate the finance business jointly with the cooperative banks. To this end, DZ HYP offers products and services to the cooperative banks and works together with them to develop business in the regional markets focusing on corporate, retail, and public-sector customers. DZ HYP's sales activities in its business lines are based on long-term customer relationships in its direct and cooperative network business and on products and services that are defined with a view to their risk and reward.

In corporate customer business, the cooperative banks can work in collaboration with DZ HYP using the range of products in the IMMO-META family to provide their small and medium-sized real estate customers with larger-volume financing arrangements while at the same time diversifying their own risk. In the retail customer business, DZ HYP offers the local cooperative banks initial and follow-up finance for new builds, purchases, and modernization/renovation. Within the DZ BANK Group, DZ HYP also operates as the center of excellence for collaboration with public-sector customers.

As a result of action taken under the 'Fokus 2020' strategic program, DZ HYP managed to achieve some cuts in administrative expenses and to tap into new sources of income in 2021. It concentrated on measures to sharpen its customer focus, optimize and digitalize its processes, and harness market potential in its retail and corporate customer business.

In 2021, DZ HYP also revised its sustainability strategy in order to ensure that aspects of sustainability are more tightly enshrined in its core business. In addition, it is carrying out detailed preparation work for the issue of a green Pfandbrief. Business processes, together with the internal and external reporting systems, are being systematically upgraded and progressively expanded to include the various aspects of sustainability.

1.7 DZ PRIVATBANK

DZ PRIVATBANK, together with its eight branches in Germany, its two subsidiaries DZ PRIVATBANK (Schweiz) AG (DZ PRIVATBANK Schweiz) and IPConcept (Luxemburg) S. A. (IPC LU), and IPConcept (Schweiz) AG (IPC CH), a subsidiary of DZ PRIVATBANK (Schweiz), is the international center of excellence for private banking/wealth management, fund services, and lending in all currencies in the cooperative financial network.

DZ PRIVATBANK's products and services encompass not only asset management and advisory mandates, and investment and financing solutions for high-net-worth individuals, business people/business shareholders/business partners, foundations, and semi-institutional customers, but also comprehensive fund and depositary services for professional fund initiators and flexible loan products denominated in euros and other currencies for retail and corporate customers.

DZ PRIVATBANK has specified targeted areas for very ambitious sales growth in its sectors of the market. These include financial portfolio management (asset management), for example for sustainability-oriented client accounts and Switzerland-oriented client accounts, the latter of which facilitates asset diversification in Europe, including outside the eurozone. In recent years, DZ PRIVATBANK has further consolidated its market position by achieving strong growth in close partnership with the cooperative banks. The core growth areas at DZ PRIVATBANK also include third-party fund business relating to liquid and alternative asset classes, for example in close partnership with DZ BANK AG (Fondshafen (fund havens) sales initiative), and euro-denominated LuxCredit financing in collaboration with the cooperative banks to cover customers' variable borrowing needs in the retail and business financing sector.

1.8 VR Smart Finanz

VR Smart Finanz AG, Eschborn, (VR Smart Finanz) is the digital provider of finance for the self-employed and small businesses in the cooperative financial network. It supports self-employed and small business customers as well as small enterprise customers of its sales partners with their day-to-day financial needs. It offers its customers leasing and hire purchase solutions as well as loans up to €750,000. In addition, it provides digital services. These include Bonitätsmanager (credit status manager) and VR Smart Guide, a tool for financial planning and bookkeeping geared to the needs of this customer group.

Once again in 2021, VR Smart Finanz helped its sales partners and their SME customers to deal with the COVID-19 pandemic and, mirroring the extension of the special program of immediate assistance offered by Germany’s KfW development bank, extended the ‘VR Smart flexibel’ support loan product launched in March 2020.

VR Smart Finanz attaches particular importance to offering rapid finance decisions within a few minutes and to providing an omnichannel approach for business loans. Sales partners also benefit from IT-supported business development strategies and efficient finance processing that meets regulatory requirements.

As part of its strategy, VR Smart Finanz constantly strives to enhance its network of solutions and integrate them into the internal platforms used by the cooperative financial network as well as develop alternative decentralized sales channels, such as digital financing platforms for the cooperative financial network.

1.9 DVB

DVB Bank SE, Frankfurt am Main, (DVB Bank; subgroup abbreviated to DVB) is a specialist niche provider in the area of international transport finance, focusing on shipping finance.

Since the restructuring initiated in 2017, DVB has undertaken a number of strategic initiatives, resulting in the sale of core business areas and other changes. This has enabled it to make progress with implementing its run-off strategy over the past few years, i.e. reducing the volume of the portfolio, simplifying the organizational structure, and lowering the cost base. On April 1, 2021, DVB published the decision to integrate with DZ BANK. This is planned to take the form of a merger, to be carried out in 2022.

2 Management of the DZ BANK Group

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 group 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 form the core of the financial services group:

– BSH
– R+V
– UMH
– TeamBank
– DZ BANK – central institution and corporate bank (DZ BANK – CICB)
– DZ HYP
– DZ PRIVATBANK
– VR Smart Finanz
– DVB

The management units are each managed as a separate operating segment. DZ BANK – holding function is also presented separately, although it does not constitute an operating segment within the meaning of IFRS 8.5.

The DZ BANK – CICB operating segment comprises both the cooperative central institution function, which supports the operating activities of the local cooperative banks, and the corporate bank function. DZ BANK – holding function is used to pool a range of responsibilities, notably tasks carried out on behalf of the DZ BANK Group in relation to commercial law, tax, and prudential supervision.

All risks at DZ BANK, and therefore arising in connection with the CICB segment and the holding function, are determined, reported, and managed for DZ BANK on an integrated basis. The aim of this approach is to satisfy the regulatory requirements under Basel Pillar 1 and Pillar 2 whereby DZ BANK must be treated as one bank overall. This also meets the German Minimum Requirements for Risk Management for Banks and Financial Services Institutions (MaRisk BA), which is a generally accepted framework for risk management that DZ BANK is under an obligation to apply. The operating segments presented in the risk report (chapter VII) are consistent with the operating segments in the consolidated financial statements, because the CICB segment accounts for the main risks at DZ BANK. These risks are credit risk, market risk, equity investment risk, and most of the business risk, reputational risk, and operational risk.

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. Because of the particular nature of the DZ BANK Group, it is managed both centrally and locally 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

Figure 1 provides an overview of the committees of particular importance in the management of the DZ BANK Group.

FIG. 1 – MANAGEMENT COMMITTEES IN THE DZ BANK GROUP

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 also aims to ensure 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. Its members 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 Smart Finanz.

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 Group Procurement Committee, the Heads of Internal Audit working group, the Economic Roundtable, the Innovation Roundtable, and the Group Corporate Responsibility Committee.

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 of the German Supervision of Financial Conglomerates Act (FKAG) and section 25a of the German Banking Act (KWG). It assists DZ BANK with groupwide financial and liquidity management, risk capital management, and recovery planning. 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, 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 risk reporting.

- 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 further developing 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 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 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 Group Risk and Finance Committee's **Market working group** is responsible for providing implementation support throughout the group in the following areas from the market viewpoint: capital management, balance sheet and balance sheet structure management, liquidity and liquidity risk management, and funding activities. This body also focuses on coordinating and dovetailing funding strategies and liquidity reserve policies, as well as on independently determining funding needs and on preparing consistent investor relations and rating documents within the DZ BANK Group. In addition, the Market working group is responsible for refining the management of centrally measured market risk.

- 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 objective of the Finance working group is to continually update the uniform management framework used throughout the group (definitions, nomenclature, methodologies), particularly taking into account requests made by the supervisory authorities.

- The **Compliance working group**, whose members comprise the heads of the management units and of ReiseBank AG, Frankfurt am Main, (ReiseBank), assists DZ BANK with compliance management across the group if this is legally required. It also advises the DZ BANK Group's Group Risk and Finance Committee on fundamental compliance-related issues. One of the primary tasks of the Compliance working group is to draw up common compliance standards for the DZ BANK Group; in addition, it serves as a platform enabling specialists to share information and agree on requirements across the group. When fulfilling its responsibilities, the 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 Heads of Compliance working group reports to the Group Risk and Finance Committee, headed by the member of the DZ BANK Board of Managing Directors responsible for compliance and finance, and by the member of the DZ BANK Board of Managing Directors responsible for risk control.

– The **Information Security working group** of the Group Risk and Finance Committee and of the Group IT Committee is the central body responsible for managing information security and information security risk in the DZ BANK Group. It advises the Group Coordination Committee, the Group Risk and Finance Committee, and the Group IT Committee on matters relating to specifying and adjusting information security targets and on the group's corporate strategy in this regard. The working group encourages information and experience relating to information security issues to be shared throughout the group, is responsible for the design of the risk management system for information security in the DZ BANK Group, and signs off the documentation forming part of the rules and regulations for the groupwide information security management system before this documentation is presented, where required, to the Boards of Managing Directors in the DZ BANK Group for approval.

– The **Outsourcing Management working group** is the central committee in the DZ BANK Group responsible for the management of outsourcing and sets out the framework for the management of outsourcing risk in the DZ BANK Group. It encourages information and experience relating to issues in connection with the management of outsourcing to be shared throughout the group. The Outsourcing Management working group is responsible for the design of the risk management system from the perspective of the group's minimum requirements for the management of outsourcing in the DZ BANK Group. It signs off the documentation forming part of the rules and regulations for the groupwide outsourcing management system before this documentation is presented, where required, to the Boards of Managing Directors in the DZ BANK Group for approval and assists the Group Coordination Committee, the Group Risk and Finance Committee, and the Group IT Committee with matters relating to specifying and adjusting targets for the management of outsourcing and with the group's corporate strategy in this regard.

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 strategic IT matters. This committee manages the DZ BANK Group's IT activities that are relevant throughout the group. In particular, the Group IT Committee is responsible for the group IT strategy of the DZ BANK Group, makes decisions on collaboration issues between IT units, identifies and realizes synergies, specifies common IT standards, and initiates joint IT projects.

The **Group HR Committee** normally comprises 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 aim of the **institutional clients** product and sales committee is to help strengthen the position of the DZ BANK Group in the institutional clients market.

The **Group Procurement Committee**, comprising the members of the Boards of Managing Directors and executives holding power of attorney in the main group entities, supports the Group Coordination Committee in matters relating to procurement strategy in the DZ BANK Group. This committee manages the DZ BANK Group's procurement activities that are relevant throughout the group. In particular, the Group Procurement Committee makes decisions on collaboration issues between procurement units, identifies and realizes synergies, and specifies common standards and procedures with the objective of achieving optimum procurement terms and conditions for the entities of the DZ BANK Group. From an operational perspective, the activities are coordinated by the Procurement Board and implemented in the procurement units in the DZ BANK Group.

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 Boards 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 **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 innovation 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.

The **Group Corporate Responsibility Committee**, which is coordinated by DZ BANK and whose members include the sustainability coordinators in the management units and at ReiseBank, is a platform for sharing specialist information throughout the group about the latest sustainability-related trends and activities. The committee identifies key issues relevant to the whole of the group and initiates joint projects. The head of the Group Corporate Responsibility Committee reports to the DZ BANK Co-Chief Executive Officer responsible for sustainability. He or she also reports annually and on an ad hoc basis to the Group Coordination Committee.

2.3 Key performance indicators

The DZ BANK Group's KPIs for profitability, volume, productivity, liquidity adequacy, and capital adequacy, as well as the regulatory return on risk-adjusted capital (RORAC), are presented below.

- **Profitability figures in accordance with International Financial Reporting Standards (IFRS):** The profitability figures (primarily loss allowances for loans and advances, profit/loss before taxes, net profit/loss) are presented in chapters II.3.1 and II.3.2 of this group management report as well as in note 33 of the notes to the consolidated financial statements.

- **IFRS volume figures:**
  The main volume-related KPIs include equity and total assets. These are set out in chapter II.4 of the group management report, in the consolidated financial statements (balance sheet as at December 31, 2021), and in note 33 of the notes to the consolidated financial statements.

- **Productivity:**
  The KPI for productivity is the cost/income ratio. This KPI is described in chapters II.3.1 and II.3.2 of this group management report and in note 33 of the notes to the consolidated financial statements.

- **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 normative internal liquidity adequacy presented in chapters VII.5.2 and VII.5.3 of this group management report. The minimum liquidity surplus reflects economic liquidity adequacy. Normative internal 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 VII.6.2 of this group management report. The KPIs for normative internal capital adequacy (coverage ratio for the financial conglomerate, total capital ratio, Tier 1 capital ratio, common equity Tier 1 capital ratio, leverage ratio, and the minimum requirement for own funds and eligible liabilities (MREL)) are included in chapter VII.6.3.

- **Regulatory RORAC:**
  Regulatory RORAC is a risk-adjusted performance measure. In the year under review, it reflected the relationship between profit before taxes and the average own funds for the year (calculated as an average of the figure for the four quarters) in accordance with the own funds/solvency capital requirement. It therefore shows the return on the regulatory risk capital employed. This KPI is described in chapters II.3.1 and II.3.2 of this group management report and in note 33 of the notes to the consolidated financial statements.

Forecasts for core KPIs in the DZ BANK Group are set out in the outlook in the group 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 strategic finance and capital 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, which aims to facilitate 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.

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

Like the previous year, 2021 was largely dominated by the COVID-19 pandemic. In the reporting year, however, the German economy was not brought to a virtual standstill by a prolonged hard lockdown, as it had been in 2020, but was nevertheless hit by repeated periods of economic slowdown caused by the various waves of infection. To add to the difficulties, industrial activity was also hampered by disruption to international supply chains. Germany's total economic output rose by 2.8 percent in 2021, following a contraction of 4.6 percent in 2020.

In the first quarter of 2021, the adverse effects from the ongoing restrictions were felt primarily by the retail sector. The measures introduced to combat the pandemic proved to be particularly painful for brick-and-mortar stores, whose revenues fell away, whereas online and mail-order businesses flourished. Overall, seasonally adjusted economic output contracted by 1.7 percent in the first quarter of 2021. In the spring, the improvement in the pandemic situation and the removal of many of the restrictions then led to a broadly based economic recovery, which was reflected in a 2.2 percent gain in gross domestic product (GDP) in the second quarter.

Economic activity in Germany continued to bounce back in the third quarter of 2021, with GDP up by 1.7 percent in real terms compared with the previous quarter. Most of the momentum in the rebound came from growth in the service sector. The easing of the COVID-19 safeguards released pent-up demand in some areas of activity, although this quickly subsided again in the summer months as a new wave of infection took hold. Industrial production continued to fall, critically because the middle of the year saw a further deterioration in the shortages of intermediate products and commodities. In the fourth quarter of 2021, economic output in Germany then went down by 0.7 percent. Restrictions on brick-and-mortar retailers and on other service activities remained at the end of the year, forcing down consumer demand.

The eurozone economy also picked up during 2021. Following a 6.4 percent year-on-year drop in GDP in 2020, the eurozone's economic output grew by 5.2 percent in 2021, although GDP decreased by 0.2 percent in the first quarter of the year. In the second quarter of 2021, it rose by 2.2 percent compared with the previous quarter. This gave way to growth of 2.3 percent in the third quarter, followed by further expansion of 0.3 percent in the final quarter of 2021.

The US benefited from an overall upward trend in economic growth during 2021, driven primarily by expansionary fiscal policy. GDP rose by 5.7 percent in 2021 compared with the previous year, following a contraction of 3.4 percent in 2020. Consumer spending was boosted particularly by extensive government support payments. The unemployment rate declined over the year, quickly returning close to its pre-pandemic level.

The rate of economic expansion in China slowed during 2021. Nevertheless, economic output still advanced by 8.1 percent, compared with a rise of 2.2 percent in 2020. In the reporting year, the Chinese economy continued to benefit from the sustained high level of international demand for its products but was also hit by temporary COVID-19-related restrictions and a weaker housing market.

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

The capital markets continued to stage a recovery in 2021. By contrast, the main focus in the previous year had been on dealing with the economic impact of the action taken to contain the spread of the COVID-19 pandemic and on addressing the resulting recession.

The STOXX Europe 600, a share index comprising 600 large listed European companies, stood at 487.80 points as at December 31, 2021, which was 88.77 points higher than its level at the end of the prior year (December 31, 2020: 399.03 points). In 2020, the index had declined by 16.81 points.

Some EU countries still exceeded the ratios for new and overall indebtedness required for compliance with the stability criteria specified in the Fiscal Compact agreed by the EU member states at the beginning of 2012. 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. However, the rules have been suspended until the end of 2022 because of the COVID-19 pandemic.

At the end of the third quarter of 2021, the total borrowing of the 19 eurozone countries equated to 97.7 percent of their GDP, an increase of 1.1 percentage points compared with the figure of 96.6 percent as at September 30, 2020.

Greece's public debt as a percentage of GDP was 200.7 percent in the third quarter of 2021 (third quarter of 2020: 200.0 percent). In April 2021, the rating agency S&P upgraded Greece's rating by one notch to BB and changed its outlook to positive. This took into account the structural reforms implemented by the government in Athens and the benefit derived by Greece from money it is receiving from the EU recovery fund. In addition, the ECB's pandemic emergency purchase program (PEPP) is ensuring that favorable funding terms are available.

Italy's public debt as a percentage of GDP stood at 155.3 percent in the third quarter of 2021 (third quarter of 2020: 154.2 percent), which is the highest in the eurozone after that of Greece. Italy too has benefited from the favorable financing conditions maintained by the ECB's PEPP bond-buying program. In December 2021, the Fitch rating agency upgraded Italy's rating from the previous level of BBB- to BBB. Before the start of the COVID-19 pandemic, Fitch had downgraded Italy to BBB- from BBB.

Portugal's public debt as a percentage of GDP was 130.5 percent in the third quarter of 2021, compared with 131.6 percent in the third quarter of 2020.

In Spain, public debt as a percentage of GDP was 121.8 percent in the third quarter of 2021 (third quarter of 2020: 114.1 percent).

Based on a policy of quantitative easing, the ECB has continued to support the markets for government bonds, thereby creating the necessary time over the last few years for the European Monetary Union (EMU) countries burdened with excessive debt to reduce their budget deficits. In the reporting year, the ECB's monetary policy continued to be focused predominantly on mitigating the negative impact of the protective measures introduced to contain the spread of the COVID-19 pandemic on EU member state public finances and on financial markets. Nonetheless, even in the years prior to the COVID-19 pandemic, the countries specified above had not made sufficient efforts to reduce their high levels of indebtedness, which are above the Maastricht limit of 60 percent. The ECB made additional liquidity available under the TLTRO III program in order to support lending to households and companies during the COVID-19 pandemic.

The ECB's policy of zero and negative interest rates prevailing in 2020 was maintained in the reporting year. At its meeting on December 16, 2021, the ECB decided to leave the rate for the deposit facility at minus 0.50 percent. The main refinancing rate remained the same at 0.00 percent, while the rate for the marginal lending facility was also unchanged at 0.25 percent. The ECB also decided that net asset purchases under the PEPP, in a total amount of €1,850.0 billion, would be discontinued in March 2022. The reinvestment period for the PEPP was extended. The maturing principal payments from securities purchased under the PEPP will be reinvested until at least the end of 2024. On the other hand, net purchases under the asset purchase program (APP) are being temporarily increased to a monthly volume of €40.0 billion. The ECB Governing Council still expects monthly net asset purchases under the APP to be made for as long as necessary to reinforce the accommodative impact of its policy rates, and to end shortly before it starts raising the key ECB interest rates.

On December 15, 2021, the US Federal Reserve (Fed) announced that the federal funds rate would remain unchanged in the range of 0.00 to 0.25 percent. It also let it be known that it would be trimming back its US$ 120.0 billion monthly bond-buying program by US$ 30 billion a month from January 2022. The Fed will therefore wind up its asset purchases in March 2022.

The financial performance of Germany's two largest banks was generally positive in 2021. One of them reported a fourfold upturn in net profit compared with the previous year, whereas the other turned a loss in the billions of euros in 2020 into a net profit for 2021. The loss allowances for loans and advances recognized by these major banks fell sharply compared with the previous year. In the case of both banks, there was a slight rise in administrative expenses in 2021.

3 Financial performance

3.1 Financial performance at a glance

Despite the persistently challenging market conditions resulting from the effects of the COVID-19 pandemic and the extremely low level of interest rates, the DZ BANK Group was able to report a sharp rise in profit before taxes in 2021 to €3,096 million (2020: €1,445 million).

The year-on-year changes in the key figures that made up the net profit generated by the DZ BANK Group in 2021 were as described below.

FIG. 2 – INCOME STATEMENT

€ million	**2021**	2020
Net interest income	**2,785**	2,686
Net fee and commission income	**2,935**	2,121
Gains and losses on trading activities	**152**	693
Gains and losses on investments	**245**	166
Other gains and losses on valuation of financial instruments	**242**	-62
Gains and losses from the derecognition of financial assets measured at amortized cost	**-**	-2
Net income from insurance business	**842**	347
Loss allowances	**120**	-678
Administrative expenses	**-4,265**	-4,036
Staff expenses	**-2,021**	-1,910
Other administrative expenses[1]	**-2,244**	-2,126
Other net operating income	**41**	210
Profit before taxes	**3,096**	1,445
Income taxes	**-920**	-472
Net profit	**2,176**	973

1 General and administrative expenses plus depreciation/amortization expense.

Operating income in the DZ BANK Group amounted to €7,242 million (2020: €6,159 million). This figure comprises net interest income, net fee and commission income, gains and losses on trading activities, gains and losses on investments, other gains and losses on valuation of financial instruments, gains and losses from the derecognition of financial assets measured at amortized cost, net income from insurance business, and other net operating income.

Net interest income in the DZ BANK Group rose by €99 million year on year to €2,785 million (2020: €2,686 million). Within this figure, interest income from lending and money market business declined by €544 million to €4,523 million (2020: €5,067 million) and interest income from bonds and other fixed-income securities went down by €178 million to €341 million (2020: €519 million). On the other hand, there was a positive change in interest income from portfolio hedges of interest-rate risk, which improved by €33 million to a net expense of €381 million (2020: net expense of €414 million). Current income and expense from using the equity method fell by €30 million to income of €19 million (2020: income of €49 million), largely because of the lower equity-accounted measurement of Deutsche Wertpapierservice Bank AG, Frankfurt am Main, compared with the previous year. Interest expense on deposits from banks and customers declined by €317 million to €1,934 million (2020: €2,251 million) and interest expense from debt certificates issued including bonds decreased by €244 million to €209 million (2020: €453 million).

Net fee and commission income in the DZ BANK Group grew by €814 million to €2,935 million (2020: €2,121 million). Net fee and commission income from securities business saw an uptick of €761 million to €2,612 million (2020: €1,851 million). This year-on-year change was mainly attributable to an increase of €350 million in the volume-related net income contribution to €1,751 million (2020: €1,401 million) because of the higher average level of assets under management and a rise in performance-related management fees of €349 million to €381 million (2020: €32 million) in the Union Investment Group. In addition, net fee and commission income from asset management improved by €21 million to €114 million (2020: €93 million), lending and trust activities by €14 million to €54 million (2020: €40 million), and building society operations by €10 million to an expense of €23 million (2020: expense of €33 million).

The DZ BANK Group's **gains and losses on trading activities** in 2021 came to a net gain of €152 million compared with a net gain of €693 million for 2020. This change in gains and losses on trading activities was attributable to various factors, notably the fair value gains and losses on own issues. Gains and losses on non-derivative financial instruments and embedded derivatives went down by €414 million to a net loss of €298 million (2020: net gain of €116 million) and gains and losses on derivatives fell by €282 million to a net gain of €310 million (2020: net gain of €592 million). Gains and losses on exchange differences improved by €156 million to a net gain of €141 million (2020: net loss of €15 million).

Gains and losses on investments rose by €79 million to a net gain of €245 million (2020: net gain of €166 million). The main components of the gains and losses on investments in associates were the gains of €128 million recognized from the disposal of direct equity investments held by VR Equitypartner and impairment losses of €20 million, likewise in connection with VR Equitypartner. In addition, gains and losses on the disposal of bonds and other fixed-income securities increased by €68 million to a net gain of €139 million (2020: net gain of €71 million) for a number of reasons, including the sale of Spanish government bonds.

Other gains and losses on valuation of financial instruments in the DZ BANK Group amounted to a net gain of €242 million in 2021 (2020: net loss of €62 million). This year-on-year change was predominantly attributable to improvements in gains and losses on derivatives used for purposes other than trading of €231 million to a net gain of €58 million (2020: net loss of €173 million), in gains and losses on financial instruments designated as at fair value through profit or loss of €41 million to a net gain of €111 million (2020: net gain of €70 million), and in gains and losses on financial assets mandatorily measured at fair value through profit or loss of €52 million to a net gain of €52 million (2020: net gain of €0 million).

The DZ BANK Group's **net income from insurance business** comprises premiums earned, gains and losses on investments held by insurance companies and other insurance company gains and losses, insurance benefit payments, insurance business operating expenses, and gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business.

In 2021, this figure increased by €495 million to €842 million (2020: €347 million). The year-on-year rise in net income in this case was due to the increase in premiums earned of €253 million to €18,994 million (2020: €18,741 million) and the improvement of €3,204 million in gains and losses on investments held by insurance companies and other insurance company gains and losses to a net gain of €5,251 million (2020: net gain of €2,047 million). Some of these increases were offset by a rise in insurance benefit payments of €2,857 million to €20,356 million (2020: €17,499 million). The non-life insurance business saw an accumulation of natural disaster claims owing to storms (notably Storm Bernd), resulting in claims incurred of €418 million as at the reporting date. In the inward reinsurance business, major claims of €75 million arose in 2021 in connection with the Texas Freeze winter storm in the United States. An amount of €100 million (net, after claims covered by reinsurers) was recognized for Storm Bernd, and €63 million for the storms in June 2021. Hurricane Ida was the source of net claims amounting to €38 million and the tornado outbreak in December 2021 net claims of €30 million. In addition, insurance business operating expenses incurred in the course of ordinary business activities went up by €125 million to €3,047 million (2020: €2,922 million).

Loss allowances amounted to a net reversal of €120 million (2020: net addition of €678 million). Loss allowances for loans and advances to customers came to a net reversal of €71 million (2020: net addition of €610 million), which was mainly accounted for by income from the reversal of loss allowances for individual exposures in the reporting year. In 2020, a significant addition to loss allowances had been required because of the COVID-19 pandemic.

Further disclosures on the nature and extent of risks arising from financial instruments and insurance contracts can be found in note 88 in the notes to the consolidated financial statements.

Administrative expenses in the DZ BANK Group went up by €229 million to €4,265 million (2020: €4,036 million). Within this figure, staff expenses rose to €2,021 million compared with €1,910 million in 2020. Wages and salaries increased by €102 million to €1,692 million (2020: €1,590 million), with social security expenses rising by €16 million to €217 million (2020: €201 million). Other administrative expenses rose to €2,244 million (2020: €2,126 million), mainly because of a higher level of contributions and fees.

The DZ BANK Group's **other net operating income** amounted to €41 million (2020: €210 million). A number of factors contributed to this year-on-year decline, including lower income from the reversal of provisions and accruals, which fell by €30 million to €86 million (2020: €116 million), and higher restructuring expenses, which increased by €51 million to €78 million (2020: €27 million).

Profit before taxes for 2021 amounted to €3,096 million, compared with €1,445 million in 2020.

The DZ BANK Group's **cost/income ratio** (i.e. the ratio of administrative expenses to operating income) for 2021 was 58.9 percent (2020: 65.5 percent).

The **regulatory return on risk-adjusted capital (RORAC)** was 15.7 percent (2020: 7.1 percent).

The DZ BANK Group's **income taxes** amounted to €920 million in the reporting year (2020: €472 million).

The DZ BANK Group generated a **net profit** of €2,176 million in 2021 compared with a net profit of €973 million in 2020.

The following provides an explanation of the above information and the details below (section 3.2) concerning the financial performance of the DZ BANK Group with reference to the corresponding presentation in the outlook for 2021 (chapter V of the 2020 group management report).

In 2021, the DZ BANK Group generated profit before taxes that was significantly higher than the budgeted figure. However, net interest income was slightly lower than budgeted. By contrast, net fee and commission income rose substantially in the reporting year, mainly as a consequence of the growth in assets under management and the performance-related income components. As forecast, gains and losses on trading activities deteriorated sharply, predominantly reflecting IFRS-related valuation effects in connection with own issues. The outlook in 2020 predicted a deterioration in gains and losses on investments, but this figure improved significantly in 2021 because of gains recognized on the disposal of direct equity investments held by VR Equitypartner. Net income from insurance business rose substantially in the reporting year, exceeding the budgeted figure. In view of the potential negative fallout from the COVID-19 pandemic, the budget provided for a moderate increase in the loss allowance requirement, but developments in 2021 meant that there was an overall reversal of loss allowances previously recognized. Administrative expenses saw a marginal increase, which was in line with the previous year's forecast.

3.2 Financial performance in detail

The following sections describe the details of the financial performance of the DZ BANK Group's operating segments in 2021 compared with 2020.

3.2.1 BSH

Net interest income in the BSH subgroup advanced by €50 million to €581 million (2020: €531 million); however, adjusted for the special addition to provisions relating to building society operations in the previous year (described below) in an amount of €115 million, net interest income declined by €65 million.

The main reason for the decrease in adjusted net interest income was the persistently low level of interest rates. At the end of the reporting year, the ten-year swap rate was 0.30 percent (December 31, 2020: minus 0.27 percent).

Net interest income arising on investments declined by €97 million to €350 million (2020: €447 million) because capital market rates for investments remained low.

On the other hand, the interest expense on home savings deposits fell by €159 million to €731 million (2020: €890 million), largely because the current tariffs have lower interest rates and the prior-year figure included an extra charge of €115 million in connection with a special addition to the provisions relating to building society operations. The volume of home savings deposits from retail customers in the BSH subgroup grew by €1.5 billion to €66.2 billion as at December 31, 2021 (December 31, 2020: €64.7 billion).

In the case of loans issued under advance or interim financing arrangements and other building loans, income amounted to €1,083 million (2020: €1,062 million) on the back of the expansion in business over the last few years and despite a fall in average returns. In this context, the amount of €999 million disclosed in the prior-year group management report included the expense of €70 million from the amortization of transaction costs to profit or loss. Income from home savings loans amounted to €70 million (2020: €72 million).

BSH incorporates the fees, commissions, and transaction costs directly assignable to the acquisition of home savings contracts and loan agreements into the effective interest method applied to home savings deposits and building loans. The deferred charges arising each year from fees, commissions, and transaction costs are amortized to profit or loss under interest cost over the maturity of the home savings deposits and building loans. In 2021, the amortization amount included in interest cost was €200 million (2020: €165 million).

Net fee and commission income amounted to €12 million in the reporting period (2020: net expense of €9 million).

In the home savings business in 2021, BSH entered into approximately 441 thousand (2020: 456 thousand) new home savings contracts with a volume of €24.0 billion (2020: €24.2 billion) in Germany.

In the home finance business, the realized volume of new business advanced to €18.3 billion (2020: €17.0 billion) in Germany. This figure includes finance of €9.0 billion referred to institutions in the cooperative financial network (2020: €7.9 billion). In addition, home savings loans and bridging loans from BSH and other referrals amounted to €1.9 billion (2020: €2.1 billion).

Gains and losses on investments amounted to a net gain of €22 million (2020: €56 million). This figure stemmed mainly from the sale of securities in an amount of €27 million (2020: €56 million).

Gains and losses from the derecognition of financial assets measured at amortized cost amounted to a net gain of €2 million (2020: net gain of €15 million) and largely resulted from the sale of interest-bearing securities.

Loss allowances amounted to a net addition of €14 million in total (2020: net addition of €29 million). The main factor that affected loss allowances in 2021 was the recalibration of the rating systems, whereas the COVID-19 pandemic had dominated the previous year, requiring a net addition of €21 million.

Administrative expenses went down by €11 million to €515 million (2020: €526 million). At €232 million, staff expenses were €24 million lower than in the previous year (2020: €256 million), primarily because a provision of €29 million had been recognized in 2020 for a program aimed at the structural optimization and management of costs. Other administrative expenses including depreciation and amortization rose by €13 million to €283 million (2020: €270 million), mainly due to higher depreciation and amortization expenses in connection with strategic initiatives and investment in information technology and to increased contributions for the bank levy and deposit guarantee fund.

Other net operating income amounted to €42 million (2020: €38 million).

Profit before taxes went up by €49 million to €130 million (2020: €81 million), because of the changes described above.

The **cost/income ratio** in 2021 was 78.1 percent (2020: 82.7 percent).

Regulatory RORAC was 10.0 percent (2020: 6.6 percent).

3.2.2 R+V

Premiums earned went up by €253 million to €18,994 million (2020: €18,741 million), thanks to the tight integration of the R+V subgroup into the cooperative financial network.

Premium income earned in the life insurance and health insurance business grew by a total of €89 million to €9,400 million (2020: €9,311 million).

Premiums earned from the life insurance business declined by €10 million to €8,635 million. The new guarantees and occupational pension businesses performed well, but activities contracted in traditional product business, unit-linked life insurance, and credit insurance. In the health insurance business, net premiums earned rose by €100 million to €766 million, with notably strong growth in private supplementary health insurance and full health insurance product groups, but a fall in premiums for international health insurance.

In the non-life insurance business, premium income earned grew by €217 million to €6,564 million, with most of this growth being generated from retail customer business, motor vehicle insurance, and corporate customer business.

Premiums earned from the inward reinsurance business fell by €54 million to €3,029 million. Europe remained the largest market for inward reinsurance. Growth was generated from the motor vehicle, fire, and property classes of insurance, and from other products. However, the positive effects were outweighed by a contraction in the loan/deposit product group.

Gains and losses on investments held by insurance companies and other insurance company gains and losses went up by €3,189 million to a net gain of €5,280 million (2020: net gain of €2,091 million). This figure includes the fair value-based gains and losses on investments held by insurance companies in respect of insurance products constituting unit-linked life insurance for the account and at the risk of employees, employers, and holders of life insurance policies (unit-linked contracts). The gains and losses on investments held by insurance companies attributable to unit-linked contract products generally have no impact on profit/loss before taxes, because this line item is matched by an insurance liability addition or reversal of the same amount. The net gain on investments held by insurance companies, excluding unit-linked contracts, amounted to €2,985 million in 2021 (2020: €2,137 million).

The level of long-term interest rates was higher than in 2020. The movement of spreads on interest-bearing securities had a positive impact on this item. Spreads had widened in 2020 but held steady in the reporting year, although some widening was evident again at the end of 2021. A weighted spread calculated in accordance with R+V's portfolio structure stood at 66.7 points as at December 31, 2021 (December 31, 2020: 50.3 points; December 31, 2019: 53.5 points).

During 2021, equity markets relevant to R+V performed better than in 2020. For example, the EURO STOXX 50, a share index comprising 50 large listed companies in the eurozone, saw a rise of 745 points from the start of 2021, closing the year on 4,298 points. This index had fallen by 192 points in 2020. In the reporting year, movements in exchange rates between the euro and various currencies were generally more favorable than in the previous year. For example, the US dollar/euro exchange rate on December 31, 2021 was 0.879 compared with 0.817 as at December 31, 2020. For comparison with the previous twelve months, the corresponding rate as at December 31, 2019 had been 0.891.

Overall, these trends in 2021 essentially resulted in a €2,109 million positive change in unrealized gains and losses to a net gain of €2,616 million (2020: net gain of €507 million), a €29 million increase in the contribution to earnings from the derecognition of investments to a gain of €70 million (2020: gain of €41 million), an improvement of €1,503 million in the foreign exchange gains and losses to a net gain of €761 million (2020: net loss of €742 million), and an €89 million improvement in the balance of depreciation, amortization, impairment losses, and reversals of impairment losses to a net expense of €76 million (2020: net expense of €165 million). In addition, net income under current income and expense fell by €36 million to €2,096 million (2020: €2,132 million). Other insurance gains and losses and non-insurance gains and losses deteriorated by €505 million to a net loss of €187 million (2020: net gain of €318 million).

Owing to the inclusion of provisions for premium refunds (particularly in the life insurance and health insurance business) and claims by policyholders in the fund-linked life insurance business, the change in the level of gains and losses on investments held by insurance companies also affected the 'insurance benefit payments' line item presented below.

Insurance benefit payments amounted to €20,356 million, which equated to a rise of €2,857 million compared with the corresponding figure of €17,499 million in the prior year.

The increase in insurance benefit payments reflected both the trend in net premiums earned and the policyholder participation in gains and losses on investments held by insurance companies.

At the companies offering personal insurance, the changes in insurance benefit payments were in line with the change in premium income and in gains and losses on investments held by insurance companies and other insurance company gains and losses. For example, a large part of the net gain of €2,846 million under gains and losses on investments held by insurance companies from unit-linked life insurance was also reflected in insurance benefit payments. An amount of €730 million (2020: €739 million) was added to the supplementary change-in-discount-rate reserve.

In the non-life insurance business, the claims rate trend was lower than expected. The overall claims rate was above the level of the prior year; likewise the rates for major claims, basic claims, and natural disaster claims. An accumulation of natural disaster claims occurred in 2021 owing to storms in the early summer (notably Storm Bernd), resulting in claims incurred of €418 million as at the reporting date. There was again a mitigating impact from motor vehicle insurance as a result of the COVID-19 pandemic.

In the inward reinsurance business, the net claims ratio was down by 9.7 percentage points compared with the prior year at 73.5 percent (2020: 83.2 percent). The ratios for major and basic claims were below those in 2020, but the ratio for medium claims went up. As a result, the overall claims rate was below the level of the prior year. In 2020, the COVID-19 pandemic had given rise to a provision of €323 million, with a corresponding impact on earnings. As at the reporting date, claims of €138 million had been received from ceding insurers, an increase of €42 million compared with the figure of €96 million at the end of 2020. The Texas Freeze winter storm in the US gave rise to major claims of €75 million. An amount of €100 million (net, after claims covered by reinsurers) was recognized for Storm Bernd, and €63 million for the storms in June 2021. Hurricane Ida was the source of net claims amounting to €38 million and the tornado outbreak in December 2021 net claims of €30 million.

Insurance business operating expenses incurred in the course of ordinary business activities went up by €137 million to €3,183 million (2020: €3,046 million). The largest portion of the change was attributable to the non-life division, which saw an increase of €59 million or 4.0 percent. Expenses also rose in the inward reinsurance business, by €41 million or 5.4 percent. In addition, the life/health division accounted for an increase of €36 million, which equated to a 4.4 percent rise.

As a result of the factors described above, **profit before taxes** improved by €495 million to €772 million (2020: €277 million).

Regulatory RORAC was 7.7 percent (2020: 2.6 percent).

3.2.3 TeamBank

Net interest income amounted to €492 million, which was unchanged year on year (2020: €492 million). The average volume of consumer finance over the reporting year came to €8,892 million (2020: €8,845 million).

As at December 31, 2021, the volume of consumer finance stood at €8,967 million (December 31, 2020: €8,818 million, December 31, 2019: €8,873 million). The change in the volume of consumer finance should be viewed in the context of the consequences of the ongoing COVID-19 pandemic.

As at December 31, 2021, TeamBank was working with 701 (December 31, 2020: 734) of Germany's 772 (December 31, 2020: 814) cooperative banks and with 148 (December 31, 2020: 145) partner banks in Austria. In addition, more than 65 thousand (2020: 65 thousand) members of cooperative banks benefited from favorable terms and conditions in 2021.

Despite the ongoing fallout from the pandemic, the business model of a consumer finance provider constructed on the basis of the easyCredit-Liquiditätsberater advisory concept, which includes a financial compass created individually for each customer and provides both the customer and the advisor with transparency about the credit decision reached, enabled TeamBank to maintain the level of loans and advances to customers, which amounted to €9,208 million as at the end of 2021 (December 31, 2020: €9,031 million). The number of customers rose to 984 thousand (December 31, 2020: 962 thousand). TeamBank had made credit facilities from easyCredit-Finanzreserve totaling €2,555 million available to its customers as at December 31, 2021 (December 31, 2020: €1,912 million). In 2021, 18.6 percent (2020: 19.0 percent) of new business was generated through easyCredit-Finanzreserve.

Net fee and commission income amounted to a net expense of €1 million and was therefore €29 million better than the corresponding net expense of €30 million in 2020. Within this figure, income from participation in the DZ BANK Group's bidder group in the ECB's TLTRO III tender procedures amounted to €11 million (2020: €0 million). Income from credit insurance business was lifted by €2 million on the back of a higher level of new business compared with the previous year.

The net addition to **loss allowances** amounted to €57 million, which was down by €2 million compared with the prior-year figure of €59 million.

Administrative expenses went up by €33 million to €289 million (2020: €256 million). Staff expenses rose by €10 million to €110 million (2020: €100 million), primarily because of early retirement schemes and the increase in average headcount. Other administrative expenses went up by €23 million to €179 million

(2020: €156 million), notably because of year-on-year increases in IT costs as a result of capital investment as well as consultancy costs and the bank levy.

Profit before taxes for the year under review amounted to €151 million. The decrease of €3 million compared with the figure of €154 million reported for 2020 was a consequence of the factors described above.

TeamBank's **cost/income ratio** in 2021 was 58.1 percent (2020: 54.6 percent).

Regulatory RORAC was 26.1 percent (2020: 27.0 percent).

3.2.4 UMH

Net fee and commission income at UMH went up by €727 million to €2,293 million (2020: €1,566 million). The change in net fee and commission income was predominantly due to the factors described below.

Because of the rise in the average assets under management of the Union Investment Group, which climbed by €56.2 billion to €421.3 billion (2020: €365.1 billion), the volume-related contribution to net fee and commission income rose to €1,751 million (2020: €1,401 million).

The assets under management of the Union Investment Group comprise the assets and the securities portfolios measured at their current market value, also referred to as free assets or asset management, for which Union Investment offers investment recommendations (advisory) or bears responsibility for portfolio management (insourcing). The assets are managed both for third parties and in the name of the group. Changes in the managed assets occur as a result of factors such as net inflows, changes in securities prices, and exchange-rate effects.

Net income from performance-related management fees amounted to €381 million (2020: €32 million). The increase was largely the result of a higher number of high-volume funds more comfortably fulfilling the conditions for the transfer of a performance-related management fee in 2021. Income from real estate fund transaction fees came to €90 million in the reporting year (2020: €55 million).

In 2021, Union Investment managed to generate net inflows from its retail business of €19.7 billion (2020: €8.8 billion) in collaboration with the local cooperative banks.

The number of traditional fund-linked savings plans, which are used by retail customers as investments aimed at long-term capital accumulation, had risen to 3.7 million contracts as at December 31, 2021, with an increase in the 12-month savings volume to €7.4 billion (December 31, 2020: €5.8 billion).

The total assets in the portfolio of Riester pension products swelled to €27.5 billion (December 31, 2020: €22.0 billion).

The number of fund-linked savings plans managed by Union Investment in its retail business as at December 31, 2021 totaled 6.4 million (December 31, 2020: 5.7 million). These plans included contracts under employer-funded capital formation schemes as well as the traditional savings plans and Riester pension contracts referred to above.

The open-ended real estate funds offered by the Union Investment Group, which are an intrinsic-value-based component of the investment mix, generated net new business totaling €2.6 billion in 2021 (2020: €2.3 billion).

Assets under management in the PrivatFonds family amounted to €27.2 billion as at December 31, 2021 (December 31, 2020: €25.0 billion).

In its institutional business, the Union Investment Group generated net inflows amounting to €20.8 billion (2020: €6.3 billion).

The portfolio of sustainably managed funds grew to €125.6 billion (December 31, 2020: €61.0 billion). This portfolio includes open-ended real estate funds with a value of €37.5 billion that have been managed since November 1, 2021 as products that comply with article 8 of the Sustainable Finance Disclosure Regulation (SFDR).

Gains and losses on investments amounted to a net gain of €2 million (2020: net gain of €44 million). The net gain generated in the prior year was derived mainly from a non-recurring gain in connection with the acquisition of a majority stake in ZBI GmbH (formerly ZBI Partnerschafts-Holding GmbH) in an amount of €48 million.

Other gains and losses on valuation of financial instruments improved by €123 million to a net gain of €40 million (2020: net loss of €83 million), which was largely attributable to gains of €37 million from the valuation of guarantee commitments (2020: loss of €94 million) and the net gain of €2 million arising on the valuation of Union Investment's own-account investments (2020: net gain of €14 million).

Administrative expenses went up by €199 million to €1,118 million (2020: €919 million). Staff expenses rose by €104 million to €556 million (2020: €452 million). Disregarding the effect in connection with the acquisition of a majority stake in ZBI GmbH, this increase was mainly attributable to the rise in salary components linked to the performance of the business reflected in UMH's KPIs, higher average pay, and appointments to new and vacant posts. Within staff expenses, the effect of the acquisition of a majority stake in ZBI GmbH was an additional expense of €42 million (2020: additional expense of €7 million). Other administrative expenses went up by €95 million to €562 million (2020: €467 million), mainly because of higher expenses incurred in connection with consultancy, information technology, public relations, marketing, and depreciation of right-of-use assets. The effect on the other administrative expenses of the acquisition of a majority stake in ZBI GmbH was an additional expense of €40 million (2020: additional expense of €5 million).

Other net operating income amounted to €0 million (2020: €31 million). This year-on-year change was attributable to various factors, including a provision in connection with taxation relating to corporate action.

Based on the changes described above, **profit before taxes** amounted to €1,233 million (2020: €649 million).

The **cost/income ratio** in 2021 was 47.5 percent (2020: 58.6 percent).

Regulatory RORAC was greater than 100.0 percent (2020: greater than 100.0 percent).

3.2.5 DZ BANK – CICB

In the DZ BANK – CICB operating segment, internal management reporting is used as the basis for presentation of the income statement, which means that the figures include internal transactions. These internal transactions are eliminated in the Other/Consolidation segment so that the net profit for the group is reported correctly.

Net interest income is primarily attributable to the lending business portfolios (Corporate Banking business line and a separately managed real estate lending portfolio), the portfolios from the capital markets business, and the long-term equity investments allocated to the central institution and corporate bank. Net interest income increased to €1,026 million (2020: €832 million).

In the Corporate Banking business line, net interest income rose by €79 million to €560 million (2020: €481 million). The net interest income in the four regional corporate customer divisions plus Central Corporate Banking increased to €318 million (2020: €264 million). This reflected the rise in the average lending volume, higher commitment fees for loans, and the recognition of bonus interest as a result of participating in the TLTRO III program.

Net interest income in the Structured Finance division amounted to €178 million, an increase of €16 million compared with the prior-year figure of €162 million. This increase was driven by international trade finance, especially export finance. Income from the TLTRO III program was also included.

In the Investment Promotion division, net interest income advanced by €9 million to €64 million (2020: €55 million). This year-on-year increase resulted from substantial portfolio growth in recent years in response to high demand for development and support loans in all development lending segments.

At €11 million, net interest income from the separately managed real estate lending portfolio was down compared with the prior-year figure of €23 million due to the reduction in the size of portfolio caused by the transfer of some of its components to DZ HYP.

Net interest income from the Capital Markets business line and the proportion of the TLTRO III bonus interest not allocated to operating business segments declined overall by €5 million. Net interest income attributable to business with institutional customers and the treasury portfolios fell by €111 million to €145 million (2020: €256 million). The year-on-year reduction resulted largely from the positive impact of the specific funding structure in 2020. Income from the TLTRO III program not allocated to other operating business segments was also included for the first time.

Other net interest income rose by €4 million to €23 million (2020: €19 million), mainly comprising loan administration fees.

Income from profit-pooling, profit-transfer, and partial profit-transfer agreements, together with income from other shareholdings and current income from investments in subsidiaries, amounted to €182 million (2020: €53 million). This increase was attributable to higher income from long-term equity investments at the following: VR Equitypartner GmbH, up by €80 million to €101 million; DZ Beteiligungsgesellschaft mbH Nr. 18, up by €29 million to €30 million; IMPETUS Bietergesellschaft mbH, up by €15 million to €15 million; and VR Factoring GmbH, up by €6 million to €6 million.

Net fee and commission income went up by €30 million to €471 million (2020: €441 million).

The principal sources of income were service fees in the Corporate Banking business line (in particular, from lending business including guarantees and international business), in the Capital Markets business line (mainly from 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 (primarily from payments processing including credit card processing, safe custody, and gains/losses from the currency service business).

In the Corporate Banking business line, net fee and commission income was €29 million higher than in 2020 at €151 million (2020: €122 million). This year-on-year gain was largely due to higher fees and commissions on lending and guarantees, and greater income from the corporate finance business.

In the Capital Markets business line, the contribution to net fee and commission income rose by €10 million to €224 million (2020: €214 million). Of particular note were the increases in issuance business income and sales commissions (primarily in connection with Union Investment funds).

Net fee and commission income in the Transaction Banking business line was also up year on year at €158 million, a rise of €26 million compared with the prior-year figure of €132 million. This increase was primarily attributable to higher volumes in the safe custody and payments processing businesses.

As part of service procurement arrangements, DZ BANK has transferred processing services in the lending business to Schwäbisch Hall Kreditservice, in the payments processing business to equensWorldline SE and Cash Logistic Security AG, and in capital markets business/transaction banking to Deutsche WertpapierService Bank AG. The expenses arising in connection with obtaining services from the above external processing companies amounted to a total of €190 million (2020: €188 million) and were broken down and reported under the net fee and commission income for the individual business lines as follows: Corporate Banking €9 million (2020: €9 million) and Capital Markets/Transaction Banking €181 million (2020: €179 million).

Aside from the aforementioned business lines, net fee and commission income from other financial services amounted to a greater net expense of €62 million in 2021 (2020: net expense of €27 million). This figure included the reclassification of loan administration fees of €28 million (2020: €22 million) and the expense as a result of passing on the bonus interest from the TLTRO III program to the participating group subsidiaries.

Gains and losses on trading activities declined by €451 million to a net gain of €67 million (2020: net gain of €518 million).

Gains and losses on trading activities reflect the business activity of the Capital Markets business line and gains and losses on money market business entered into for trading purposes (mainly repurchase agreements) and on derivatives of the Group Treasury division ('financial assets and liabilities measured at fair value through profit or loss' (fair value PL)). The fair value gains and losses on financial assets and liabilities designated as at fair value through profit or loss (fair value option) are also included in gains and losses on trading activities.

In 2021, there was an improvement in gains and losses on operating trading activities on the one hand and a sharp fall as a result of IFRS-related valuation effects on the other.

Gains and losses on operating trading activities in the Capital Markets business line amounted to a net gain of €616 million, a year-on-year rise of €95 million (2020: net gain of €521 million).

In the retail customer business, a year-on-year increase of 72 percent was achieved in own issues of structured products, with particularly strong growth for investment certificates. This was mainly attributable to the cooperative banks. Flow business (direct sales of structured products without a subscription period) was also up by 14 percent as a result of significant market movement in 2021.

As anticipated, the institutional customer business did not reach the previous year's record level, which had been caused by exceptional factors (outbreak of the COVID-19 pandemic). In 2021, income remained at a very high level across the various customer groups but was down compared with the previous year.

From an asset class perspective, a particularly significant proportion of the income was generated from the trading volume of bank bonds and interest-rate derivatives. The trading volume of interest-rate derivatives and in individual bond segments (government and supranational, subsovereign, and agency (SSA) bonds) went up year on year.

Interest-rate and currency management activities in corporate banking also saw higher trading volumes. Spot exchange trading was one of the main areas of volume growth, although income remained at the prior-year level.

Gains and losses on trading activities reflected the gains and losses from IFRS-related effects with an adverse change of €546 million. In both 2020 and 2021, the key factors behind this figure were the fair value gains and losses relating to own issues in the fair value PL and fair value option subcategories. In the prior year, a net gain had arisen for these issues under fair value gains and losses, primarily due to the widening of mark-ups in the bond market in the context of the COVID-19 pandemic. However, this item had the opposite effect on the income statement in 2021 due to the calmer conditions in the bond markets.

In 2021, the fair value gains and losses on issues in the aforementioned categories amounted to a net loss of €257 million (2020: net gain of €149 million). Within this amount, a net gain of €34 million arose from other gains and losses on valuation of financial instruments. Reserves increased in the category of financial instruments measured at amortized cost.

There was also an adverse impact from derivative hedging transactions that are related to group finance and are therefore not permitted to be included in hedge accounting. In subsequent years, this adverse impact on earnings will be eliminated due to the pull-to-par effect. To a lesser extent, ineffectiveness in hedge accounting also took its toll on earnings. This expense was matched by income in the same amount recognized under other gains and losses on valuation of financial instruments.

Gains and losses on investments improved by €60 million to a net gain of €75 million (2020: net gain of €15 million). The net gain in the reporting year resulted from the combination of gains of €72 million from the sale of securities in the category 'fair value through other comprehensive income' and losses of €4 million arising from the termination of hedges accounted for in the category 'fair value through other comprehensive income' and held in the fair value hedge accounting portfolio. In the prior year, a net gain of €13 million arose from the sale of securities. There was also a contribution of €5 million resulting from the repayment of outstanding Tier I issues.

Other gains and losses on valuation of financial instruments improved to a net gain of €58 million (2020: net gain of €1 million). While the credit-risk-related measurement effects relating to financial assets designated as at fair value through profit or loss (fair value option) improved by €74 million to a net gain of €34 million, the net gain from ineffectiveness in hedge accounting declined by €16 million to €21 million.

Gains and losses from the derecognition of financial assets measured at amortized cost improved by €32 million to a net gain of €29 million (2020: net loss of €3 million). The improvement resulted from the derecognition of financial assets giving rise to a net gain of €29 million.

Loss allowances amounted to a net reversal of €89 million (2020: net addition of €337 million). Of this total, net reversals of €49 million related to loss allowances in stage 1, net additions of €68 million related to loss allowances in stage 2, and net reversals of €40 million related to loss allowances in stage 3. The net reversal in respect of recoveries on loans and advances previously impaired, directly recognized impairment losses, and additions to other provisions for loans and advances was €68 million (2020: net reversal of €5 million).

The net reversals of loss allowances in stage 1 were influenced by the transfer of a counterparty between stages, resulting in a reversal of €16 million under investments. The additions in stage 2 were primarily due to the worsening of major counterparties' credit ratings. The reversals in stage 3 were largely the result of the scaling back of an individual exposure of €51 million. There were also recoveries on loans and advances previously impaired of €20 million due to the recovery of collateral from a counterparty.

In the prior year, the requirement for the addition of €93 million (2021: addition of €3 million) in stages 1 and 2 in connection with the COVID-19 pandemic arose because the anticipated macroeconomic conditions were included in the calculation, in particular by adjusting the model-based default probability profiles (referred to as shift factors), which are taken into account when determining the expected losses. Loss allowances in stage 3 had also gone up due to significant individual additions.

Administrative expenses went up by €20 million to €1,292 million (2020: €1,272 million).

The €27 million rise in staff expenses to €630 million (2020: €603 million) was mainly due to higher remuneration expenses and social security contributions in the reporting year.

Other administrative expenses declined to €663 million (2020: €669 million). Most of this decrease (€34 million) resulted from lower management consultancy costs. Taking into account the reversal of provisions in the prior year, the expenses relating to the restructuring fund for banks (bank levy) and contributions to the BVR protection scheme together rose to €78 million (2020: €55 million). The depreciation and amortization charges included in other administrative expenses went down by €4 million to €79 million. The breakdown of these charges was as follows: depreciation of right-of-use assets €32 million (2020: €36 million), depreciation of property, plant and equipment, and investment property €28 million (2020: €28 million), and amortization of other intangible assets €19 million (2020: €19 million).

In 2021, **other net operating income** amounting to a net expense of €58 million (2020: net income of €39 million) included reversals of provisions and accruals amounting to income of €38 million (2020: income of €67 million), an addition to provisions for onerous contracts relating to leased out buildings amounting to an expense of €18 million (2020: expense of €1 million), expenses for paydirekt of €11 million (2020: expenses of €11 million), and transfers of losses amounting to an expense of €4 million (2020: expense of €15 million).

Profit before taxes amounted to €465 million in the reporting year, which was €231 million higher than the figure of €234 million reported for 2020.

The **cost/income ratio** in 2021 was 77.5 percent (2020: 69.0 percent).

Regulatory RORAC was 8.8 percent (2020: 4.4 percent).

3.2.6 DZ HYP

At €721 million, the **net interest income** of DZ HYP was €7 million higher than in the previous year (2020: €714 million). DZ HYP's participation in the ECB's TLTRO III program gave rise to bonus interest of €15 million in the reporting year (2020: €8 million).

The rise in net interest income was mainly the result of portfolio growth generated from new business. The volume of real estate loans swelled by €2,156 million to €55,494 million (December 31, 2020: €53,338 million). The volume of new business (including public-sector finance) increased by €1,312 million to €12,048 million (2020: €10,736 million).

In the corporate customer business, the volume of new business came to €8,736 million (2020: €8,039 million). The volume of new lending jointly generated with the local cooperative banks in this area of business amounted to €3,859 million in 2021 (2020: €3,349 million). In the retail customer business, the volume of new commitments reached €2,730 million (2020: €2,066 million). In the public-sector business, DZ HYP generated a new business volume of €582 million (2020: €631 million). Of this amount, €497 million (2020: €521 million) was attributable to business brokered through the cooperative banks and €85 million to direct business (2020: €110 million).

Net interest income also included a negative effect of €38 million caused by an early redemption of DZ HYP's own liabilities.

Net fee and commission income went up by €12 million to €18 million (2020: €6 million). Within this figure, income from participation in the DZ BANK Group's bidder group in the ECB's TLTRO III tender procedures amounted to €18 million (2020: €0 million).

Gains and losses on trading activities deteriorated to a net loss of €6 million (2020: net gain of €9 million) due to currency translation effects.

Gains and losses on investments amounted to a net gain of €42 million (2020: net gain of €1 million). The net gain in 2021 was significantly influenced by the sale of Spanish government bonds, which accounted for a gain of €43 million.

Other gains and losses on valuation of financial instruments declined by €55 million to a net gain of €63 million (2020: net gain of €118 million). A narrowing of credit spreads was evident in both 2021 and 2020, although this had resulted in a significantly more positive valuation effect in 2020. For example, the gains and losses on valuation of bonds from the peripheral countries of the eurozone amounted to a net gain of €87 million in 2021 (2020: €105 million). Of this amount, €33 million (2020: €89 million) was attributable to Italian government bonds, €39 million (2020: €14 million) to Spanish government bonds, and €15 million (2020: €2 million) to Portuguese government bonds.

Loss allowances amounted to a net addition of €24 million (2020: net addition of €47 million). The prior-year loss allowance requirement was largely attributable to additions of €37 million in connection with the COVID-19 pandemic.

Administrative expenses went up by €10 million to €247 million (2020: €237 million). Staff expenses went up by €4 million to €96 million (2020: €92 million). Other administrative expenses rose by €7 million to €152 million (2020: €145 million), mainly owing to a higher bank levy and a higher contribution to the deposit guarantee fund, although some of the increases were offset by lower project and consultancy costs.

Profit before taxes in 2021 amounted to €588 million, which was up by €6 million compared with the equivalent prior-year figure of €582 million, predominantly as a consequence of the factors described above.

The **cost/income ratio** in 2021 was 28.8 percent (2020: 27.4 percent).

Regulatory RORAC was 41.6 percent (2020: 36.7 percent).

3.2.7 DZ PRIVATBANK

Net interest income at DZ PRIVATBANK decreased by €10 million to €59 million in 2021 (2020: €69 million) because of the persistently low interest rates. In the prior year, net interest income had particularly benefited from lower US dollar money market rates.

In 2021, the average volume of guaranteed LuxCredit loans issued by DZ PRIVATBANK, which acts as the competence center for foreign-currency lending and investing in the interest-earning business, amounted to €4.9 billion (2020: €4.9 billion).

Net fee and commission income went up by €24 million to €212 million (2020: €188 million). The increase in net fee and commission income was mainly attributable to the larger contributions to income from the fund services business and private banking.

As at December 31, 2021, high-net-worth individuals' assets under management, which comprise the volume of securities, derivatives, and deposits of customers in the private banking business, amounted to €23.2 billion (December 31, 2020: €20.0 billion).

The value of funds under management amounted to €182.1 billion as at December 31, 2021 (December 31, 2020: €139.5 billion). The number of fund-related mandates was 550 (December 31, 2020: 515).

Administrative expenses went up by €16 million to €251 million (2020: €235 million). Staff expenses rose by €10 million to €154 million (2020: €144 million), predominantly because of the recognition of severance provisions, a rise in the average number of employees, the statutory indexing of salaries, pay rises, and a higher addition to the provision for bonuses. Other administrative expenses are subject to stringent process and cost management but increased year on year to €97 million (2020: €91 million) due, in particular, to the higher bank levy and capital expenditure on income-generating projects in the market segments.

Profit before taxes went up by €3 million to €41 million overall (2020: €38 million), because of the changes described above.

The **cost/income ratio** in 2021 was 85.7 percent (2020: 85.8 percent).

Regulatory RORAC was 12.1 percent (2020: 10.8 percent).

3.2.8 VR Smart Finanz

Following the sale of VR Factoring to DZ BANK on September 29, 2020, the composition of the operating segment has changed compared with the prior year.

Net interest income at VR Smart Finanz declined by €13 million to €125 million (2020: €138 million).

In 2021, new lending and object finance business continued to be impacted by the fallout from the COVID-19 pandemic. The stuttering economic recovery and self-employed and small-business customers' caution with regard to capital investment led to a decrease in new business of 31.0 percent year on year (2020: decrease of 7.0 percent). Demand for 'VR Smart flexibel' business loans, which had been temporarily withdrawn from the product range in 2020 because of the pandemic, picked up gradually during the reporting year and offset some of the fall in demand for 'VR Smart flexibel' support loans. As at December 31, 2021, the number of applications for 'VR Smart flexibel' support loans, which had been launched in the spring of 2020, stood at 12,012 (December 31, 2020: 41,780) and the volume of approved loans came to approximately €246.6 million (December 31, 2020: €832.2 million). These loans will be offered until the end of April 2022 in line with the extension of the special program of immediate assistance offered since 2020 by Germany's KfW development bank in response to the COVID-19 pandemic. Overall, demand for the VR Smart Finanz loan finance offering in 2021 came to €361.9 million, which was down by 48.5 percent compared with the 2020 figure of €702.1 million (although the prior-year figure had been boosted by the support loan business) and below the 2019 pre-pandemic level of €539.1 million. Demand for object finance went down by 3.4 percent year on year overall to €504.6 million (2020: €522.4 million). The 'VR Smart express' focus product saw new business grow to €381.4 million, which equated to an overall increase of 4.1 percent compared with the prior-year figure of €366.3 million.

Net fee and commission income declined by €6 million to a net expense of €30 million (2020: net expense of €24 million), largely as a function of fees and commissions paid to the cooperative banks.

The addition to **loss allowances** was cut by €35 million to €14 million (2020: €49 million). This reflected developments in the reporting year, notably a contraction in the lending volume, the continued provision of the 'VR Smart flexibel' support loan product, and a lower level of actual defaults. The higher loss allowances in the prior year had primarily been attributable to the adjustment of risk parameters used to calculate expected credit risk, and the addition in connection with the COVID-19 pandemic.

Administrative expenses went down by €22 million to €80 million (2020: €102 million). Staff expenses declined by €8 million to €47 million (2020: €55 million), mainly due to the lower headcount. Other administrative expenses decreased by €13 million to €34 million (2020: €47 million), largely as a result of outsourcing IT operations and payments processing.

VR Smart Finanz incurred a **loss before taxes** of €9 million in the year under review (2020: loss before taxes of €45 million), primarily as a consequence of the factors described above.

The **cost/income ratio** in 2021 was 93.0 percent (2020: 96.2 percent).

Regulatory RORAC was minus 5.2 percent (2020: minus 17.5 percent).

3.2.9 DVB

Net interest income in the DVB subgroup decreased by €51 million to a net expense of €21 million (2020: net income of €30 million). This decline was essentially due to the absence of interest income following the scaling back of the portfolio over the course of the reporting year and the prior year.

The nominal volume of customer loans in the DVB subgroup stood at €1.6 billion as at December 31, 2021 (December 31, 2020: €3.9 billion).

Net fee and commission income amounted to €9 million (2020: €25 million). This decrease predominantly arose because of the absence of income following the reduction of the portfolio.

Gains and losses on trading activities deteriorated by €21 million to a net gain of €5 million. The higher prior-year net gain of €26 million had mainly been achieved thanks to the movement of the euro/US dollar exchange rate.

Other gains and losses on valuation of financial instruments came to a net gain of €44 million (2020: net loss of €81 million). The net gain for the reporting year mainly reflected the positive impact of net gains on valuation of derivatives used for purposes other than trading in an amount of €19 million and net gains from the application of the fair value option in an amount of €26 million. By contrast, in the prior year there had been a negative valuation impact from derivatives that were not included in hedge accounting and from use of the fair value option.

In 2021, **loss allowances** amounted to a net reversal of €140 million (2020: net addition of €153 million), which was mainly attributable to the progress made with scaling back the portfolio and reversals in connection with individual exposures as a consequence of the better economic environment in some shipping sectors. The higher expense for loss allowances in 2020 had been primarily attributable to the COVID-19 pandemic and the further adjustment of risk parameters used to calculate expected credit risk.

Administrative expenses amounted to €118 million (2020: €154 million), a year-on-year decrease of €36 million. Staff expenses declined by €17 million to €51 million owing to the reduction in headcount (2020: €68 million). Other administrative expenses came to €66 million, which was down year on year owing, in particular, to the lower level of consultancy and legal expenses (2020: €86 million).

Other net operating income amounted to a net expense of €36 million (2020: net income of €23 million). Significant components of this figure in the reporting year were sale proceeds of €25 million in investment management, sale proceeds of €6 million from an individual offshore transaction, and restructuring expenses of €70 million.

Items of note in the prior year had included a gain of €71 million on the disposal of a further part of the aviation finance business and other effects amounting to an expense of €44 million resulting from the recognition of impairment losses on assets held for sale.

In 2021, DVB generated **profit before taxes** of €23 million (2020: loss before taxes of €285 million), largely as a consequence of the factors described above.

The **cost/income ratio** in 2021 was greater than 100.0 percent (2020: greater than 100.0 percent).

Regulatory RORAC was 25.3 percent (2020: greater than 100.0 percent).

3.2.10 DZ BANK – holding function

Net interest income includes the interest expense on subordinated capital, together with the net interest income from the funding of the main long-term equity investment carrying amounts and the investment of capital.

Net interest income amounted to a net expense of €32 million in the reporting year (2020: net expense of €50 million).

The average level of subordinated capital in 2021 was lower than in the previous year and the interest expense on this capital went down by €13 million to €42 million (2020: €55 million).

Net interest income from the funding of long-term equity investment carrying amounts and the investment of capital amounted to €10 million in 2021 (2021: €5 million).

Administrative expenses went up by €20 million year on year to €208 million (2020: €188 million).

Expenses from the group management function went down by €2 million to €60 million (2020: €62 million), which was predominantly attributable to lower staff expenses. Taking into account the reversal of provisions in the prior year, the expenses relating to the bank levy and contributions (in particular to the BVR protection scheme) together came to €56 million, which was €17 million higher than in the previous year (2020: €39 million). Furthermore, IT and project expenses increased from €55 million in 2020 to €63 million in 2021. Other expenses for the benefit of the group and local cooperative banks decreased by €2 million to €29 million (2020: €31 million).

3.2.11 Other/Consolidation

The consolidation-related adjustments shown under Other/Consolidation to reconcile operating segment profit/loss before taxes to consolidated profit/loss before taxes are attributable to the elimination of intragroup transactions and to the fact that investments in joint ventures and associates were accounted for using the equity method. Differences between the figures in internal management reporting and those reported in the consolidated financial statements that arise from the recognition of internal transactions in the DZ BANK – CICB operating segment are also eliminated.

The adjustments to net interest income were primarily the result of the elimination of intragroup dividend payments and profit distributions in connection with intragroup liabilities to dormant partners and were also attributable to the early redemption of issued bonds and commercial paper that had been acquired by entities in the DZ BANK Group other than the issuer. Internal transactions in the DZ BANK – CICB operating segment were also eliminated in net interest income and with offsetting entries under gains and losses on trading activities.

The figure under Other/Consolidation for net fee and commission income largely relates to the fee and commission business of TeamBank and the BSH subgroup with the R+V subgroup.

The remaining adjustments are mostly also attributable to the consolidation of income and expenses.

4 Net assets

As at December 31, 2021, the DZ BANK Group's **total assets** had increased by €32.8 billion, or 5.5 percent, to €627.3 billion (December 31, 2020: €594.5 billion). The **volume of business** amounted to €1,166.3 billion (December 31, 2020: €1,059.8 billion). This figure comprised the total assets, the assets under management at UMH as at December 31, 2021 amounting to €454.1 billion (December 31, 2020: €385.9 billion), the financial guarantee contracts and loan commitments amounting to €82.6 billion (December 31, 2020: €77.3 billion), and the volume of trust activities amounting to €2.3 billion (December 31, 2020: €2.1 billion).

The DZ BANK Group's **cash and cash equivalents** went up by €17.6 billion, or 25.9 percent, to €86.0 billion (December 31, 2020: €68.4 billion) as a result of the corresponding rise in balances with central banks. The increase was predominantly attributable to DZ BANK – CICB (liquidity management function).

The DZ BANK Group's **loans and advances to banks** rose to €107.7 billion, an increase of €4.7 billion or 4.5 percent. Loans and advances to banks in Germany went up by €5.6 billion to €99.9 billion, whereas loans and advances to foreign banks fell by €1.0 billion to €7.7 billion.

The DZ BANK Group's **loans and advances to customers** amounted to €195.7 billion, which was €5.4 billion, or 2.8 percent, higher than at the end of 2020. Within this figure, loans and advances to customers in Germany rose by €5.6 billion to €169.7 billion, whereas loans and advances to customers outside Germany went down by €0.3 billion to €25.9 billion.

As at December 31, 2021, **financial assets held for trading** amounted to €47.3 billion, an increase of €4.5 billion, or 10.6 percent, on the figure as at December 31, 2020. This change was largely attributable to a rise in money market placements (up by €9.7 billion) and in bonds and other fixed-income securities (up by €0.5 billion) combined with a decline in derivatives (positive fair values) (down by €6.0 billion).

Investments declined by €7.8 billion, or 12.9 percent, to €52.4 billion. The main reason for this change was the €8.3 billion decrease in the portfolio of bonds and other fixed-income securities.

Investments held by insurance companies rose by €7.4 billion (6.1 percent) to €129.1 billion (December 31, 2020: €121.7 billion). This was due, above all, to a €3.9 billion increase in assets related to unit-linked contracts to €18.7 billion, a €2.1 billion increase in mortgage loans to €13.0 billion, and a €2.1 billion increase in variable-yield securities to €13.7 billion.

The DZ BANK Group's **deposits from banks** as at December 31, 2021 amounted to €196.6 billion, which was €18.8 billion, or 10.5 percent, higher than the figure reported as at December 31, 2020. Deposits from domestic banks were up by €18.3 billion to €187.8 billion, while deposits from foreign banks increased by €0.5 billion to €8.8 billion. The growth reflects the expansion of support loan business since the outbreak of the COVID-19 pandemic. As at December 31, 2021, the DZ BANK Group had also participated in the ECB's TLTRO III program with a total drawdown amount of €32.4 billion (December 31, 2020: €17.8 billion), leading to a further increase in deposits from banks.

Deposits from customers grew by €5.1 billion, or 3.8 percent, to €139.0 billion (December 31, 2020: €133.9 billion). Deposits from domestic customers decreased by €0.5 billion to €115.7 billion (December 31, 2020: €116.2 billion). Deposits from foreign customers rose by €5.6 billion to €23.3 billion (December 31, 2020: €17.7 billion).

At the end of the reporting year, the carrying amount of **debt certificates issued including bonds** in the DZ BANK Group was €79.7 billion (December 31, 2020: €70.5 billion). The rise of €9.2 billion was largely due to growth of €4.9 billion in the portfolio of other debt certificates issued to €12.6 billion while, at the same time, the portfolio of bonds issued expanded by €4.3 billion to €67.1 billion.

Financial liabilities held for trading went down by €7.0 billion, or 13.9 percent, to €43.4 billion (December 31, 2020: €50.4 billion). This change was largely attributable to a decline in derivatives (negative fair values) (down by €4.7 billion) and in money market deposits (down by €3.3 billion). On the other hand, short positions rose by €0.9 billion to €1.5 billion.

Insurance liabilities went up by €7.7 billion, or 6.9 percent, to €118.9 billion (December 31, 2020: €111.2 billion). This was largely attributable to rises of €3.7 billion in the benefit reserve, €3.5 billion in the reserve for unit-linked insurance contracts, and €1.8 billion in the provision for claims outstanding. However, the provision for premium refunds declined by €1.4 billion to €11.2 billion.

As at December 31, 2021, the **equity** reported by the DZ BANK Group was €28.7 billion (December 31, 2020: €29.1 billion). The decrease of €0.4 billion compared with the end of 2020 was due to the reduced reserve from other comprehensive income (down by €0.5 billion) and the decrease in non-controlling interests (down by €1.3 billion), which was essentially attributable to the repayment in full of the issued bonds of DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey, and of the non-cumulative trust preferred securities of DZ BANK Capital Funding Trust I, DZ BANK Capital Funding Trust II, and DZ BANK Capital Funding Trust III, all Wilmington, Delaware, USA. Some of these decreases were offset by a rise in retained earnings of €1.7 million, which for the most part reflected the retention of the net profit generated in 2021.

The **capital and solvency situation** of the DZ BANK financial conglomerate, the DZ BANK Group, and the R+V Versicherung AG insurance group is described in the risk report within this group management report (chapter VII.7.3).

5 Financial position

Liquidity management for the entities in the DZ BANK Group 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 the Group Treasury division in Frankfurt and by the associated treasury units in its international branches, although Frankfurt has primary responsibility.

In the context of liquidity management, the DZ BANK Group 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).

The DZ BANK Group has a 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 cooperative banks to invest available liquidity with DZ BANK or obtain liquidity from DZ BANK if they need it. This regularly results in a liquidity surplus, which provides one of the main bases for short-term funding in the unsecured money markets. Corporate customers and institutional clients are another important source of funding for covering operational liquidity requirements.

For funding purposes, the DZ BANK Group also issues money market products based on debt certificates under a standardized groupwide multi-issuer euro commercial paper program through its offices and branches in Frankfurt, New York, Hong Kong, London, and Luxembourg. In addition, a US CP head office program is used centrally by DZ BANK Frankfurt.

Key repo and securities lending activities, together with the collateral management process, are managed centrally in DZ BANK's Group Treasury division as a basis for secured money market financing activities. Funding on the interbank market is not strategically important to the DZ BANK Group.

The DZ BANK Group also has at its disposal liquid securities that form part of its counterbalancing capacity. These securities can be used as collateral in monetary policy funding transactions with central banks, or in connection with secured funding in private markets.

Structural liquidity activities are used to manage and satisfy the long-term funding requirements (more than one year) of DZ BANK and, in coordination with the group entities, those of the DZ BANK Group.

As at December 31, 2021, the DZ BANK Group had participated in the ECB's TLTRO III program with a total drawdown amount of €32.4 billion (December 31, 2020: €17.8 billion).

The Group Treasury division at DZ BANK draws up a groupwide **liquidity outlook** annually. This involves determining the funding requirements of the DZ BANK Group for the next financial year on the basis of the coordinated business plans of the individual companies. The liquidity outlook 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. In addition to this description of the funding structure, the risk report within this group management report includes disclosures on **liquidity risk** (chapter VII.6.2). The year-on-year changes in cash flows from operating activities, investing activities, and financing activities are shown in the **statement of cash flows** in the consolidated financial statements. Contractual cash inflows and cash outflows are set out in the **maturity analysis** in note 89 of the notes to the consolidated financial statements.

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

The non-financial report of the DZ BANK Group in accordance with section 340i in conjunction with section 315b of the German Commercial Code (HGB) is combined with the non-financial report of DZ BANK AG in accordance with section 340a in conjunction with section 289b HGB and integrated into the 2021 Sustainability Report.

The 2021 Sustainability Report is published in German at www.dzbank.de/berichte and in English at www.dzbank.com/reports.

V Outlook

1 Economic conditions

1.1 Global economic trends

The Russian invasion of Ukraine and the fierce fighting are casting a pall over the global economic outlook. The European Union, including Germany, and the other western allies have been gradually tightening their sanctions against Russia. In the coming months, many countries – not just Russia – will feel the negative economic impact of the higher energy prices and the sanctions imposed. Germany and other EU countries are particularly badly affected because of the extent to which they are dependent on energy supplies from Russia.

Other factors impacting the economic outlook include the COVID-19 pandemic and international trade disputes. At the beginning of 2022, many countries saw a sharp rise in new COVID-19 infections caused by the spread of the Omicron variant of the virus. This development has had negative effects on the global economy, especially in the first quarter of 2022. It is likely to lead to greater consumer caution – especially in respect of services – and new disruptions to global supply chains. There is a risk that stringent containment measures will be imposed in some places, principally in China. Overall, the uncertainty surrounding the evolution of the COVID-19 pandemic presents the greatest threat to global economic growth in 2022.

Even though the changeover in the White House at the beginning of 2021 has lessened the risk of further protectionist measures, the trade disputes between the United States, China, and Europe have not yet been eliminated. A renewed escalation of these disputes would adversely affect the global economy and hit the heavily export-dependent German economy particularly hard. Inflation is already at a high level but rising energy prices could push up the rate even further.

Assuming that a negotiated settlement for the war in Ukraine can be found over the coming months, leading at the very least to a ceasefire, the global economy is likely to gradually recover from the third quarter of 2022.

Inflation rates soared during 2021, especially in the major industrialized nations, primarily driven by high energy prices and cost increases caused by global supply chain problems. In 2022, a further climb in inflation rates is expected at first because of the war in Ukraine and the rising price of crude oil on global markets, although a return to calmer waters is anticipated in the second half of the year. Nevertheless, it will probably be a while before inflation rates return to significantly more moderate levels.

1.2 Trends in the USA

At the end of 2021, the US was still enjoying the benefits of a strong economic upturn, with momentum derived from the release of significant pent-up demand following the end of the Delta wave of the coronavirus. However, the economic boom in the final quarter of 2021 will probably have been brought to an abrupt end in the first quarter of 2022 by the explosion in the number of new coronavirus infections following the Christmas holiday period. The war in Ukraine and the Omicron wave are unsettling consumers and bringing new disruptions to global supply chains. However, DZ BANK believes a marked recovery of the economy from the third quarter of 2022 is quite probable, making it reasonable to assume GDP growth of 3.3 percent for the whole of the year.

The rate of inflation leapt up to 7.0 percent in December 2021. Significant rises in business costs caused by supply chain problems, coupled with considerable wage pressure, are likely to ensure that the core inflation rate, i.e. excluding food and energy, remains high in 2022. Overall, however, DZ BANK believes that the energy component of inflation will diminish after the middle of the year so that the inflation rate will then start to fall again.

1.3 Trends in the eurozone

In 2021, the eurozone made up for most of the loss of growth experienced in 2020 when the COVID-19 pandemic first emerged. A weak lockdown-induced start to the year gave way to a vigorous catch-up process from the second quarter and over the summer months, despite increasing disruption to international trade. However, the final quarter of the year then saw a marked slowdown in economic growth again, caused by a fourth wave of COVID-19. Overall, eurozone GDP grew by 5.2 percent in 2021.

At the beginning of 2022, the economy was seriously impacted as the Omicron variant took hold. Shortages of raw materials and intermediate products continued to hamper industrial production, to add to the problems caused by the pandemic. However, these difficulties have been eclipsed since the end of February by the war in Ukraine. High energy prices and the sanctions imposed on Russia are weighing heavily on the eurozone economy, which is only likely to pick up momentum again from the third quarter. DZ BANK expects economic growth of 2.3 percent in 2022.

The impact of the COVID-19 pandemic has also been reflected to a considerable degree in consumer prices, not just in economic growth. Both services and foodstuffs have been subject to considerable inflationary pressure. Supply shortages have also caused the prices of industrial goods to rise more sharply than previously. However, by far the greatest proportion of the high consumer price inflation has been attributable to energy prices, which are now skyrocketing again as a result of the war in Ukraine. From the high in the spring of 2022, the price pressure at consumer level is likely to ease slowly. Under these conditions, the average rate of inflation in 2022 will probably once again be much higher than in the previous year (2.6 percent).

1.4 Trends in Germany

Despite the various waves of the COVID-19 pandemic and the global supply chain difficulties, Germany still recorded economic growth of 2.8 percent in 2021. Even before the start of the war in Ukraine, the Omicron wave and the ongoing supply problems were creating tough conditions for the German economy. As in the final quarter of 2021, negative economic growth is therefore anticipated for the first quarter of 2022. The second quarter will be largely dominated by the adverse impact of the war in Ukraine, which is likely to lead to high inflation rates and impaired foreign trade as well as to heightened uncertainty and caution among both consumers and investors. Nevertheless, the middle of the year will probably see the start of an economic rebound driven by the release of pent-up demand, mainly from consumers, with the service sector likely to benefit in particular. The effect of the disruption to production caused by supply shortages is only expected to subside gradually over the course of 2022. It would also be a mistake to think that the COVID-19 pandemic has been overcome because there is a risk that new coronavirus variants may still emerge. Overall, DZ BANK predicts that GDP growth in Germany will be 1.9 percent in 2022.

In December 2021, the inflation rate based on the European Harmonized Index of Consumer Prices (HICP) stood at 5.7 percent. The effect from the reversal of previous VAT cuts was a key factor adding to inflationary pressure in 2021, but this no longer applied from January 2022. Nonetheless, the acceleration in the prices of energy, food, and industrial goods proved to be more persistent than anticipated. Over the next few months, high energy prices mean that the inflation rate is likely to continue to rise, at least initially, and the subsequent correction in the level of prices will probably be a slow process. The average inflation rate projected for the whole of 2022 is much higher than the corresponding figure for 2021 (3.2 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 implement structural change to adapt to competitive conditions and to comply with regulatory reforms.

A large number of competitors, frequently with approaches based on the use of 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 processes, including sales channels. The corresponding capital investment is likely to continue to push up costs in the industry before the anticipated profitability gains can be realized.

The regulatory measures introduced since the financial crisis have had a range of objectives, including to make the financial sector more resilient in the event of a crisis, mainly through improved capital and liquidity adequacy, and to ensure that the risks arising from the business activities in the financial industry are not borne by the public sector.

In response to these regulatory requirements, the financial industry has reduced its leverage over the last few years and substantially bolstered its risk-bearing capacity by improving liquidity and capital adequacy. The imminent implementation of the final Basel III framework and the corresponding requirements imposed by EU banking regulators should be seen in this context. In addition, BaFin will address the specific risks in Germany by imposing a countercyclical buffer and a sectoral systemic risk buffer for the residential real estate sector from 2023. The potential ramifications of these changes will need to be studied.

Over the coming years, one issue that is likely to shape activities in the financial industry is the implementation of the multifaceted ESG standards and their implications for the business models used in the sector. The standards embody a political objective, which is to facilitate and actively support the transition of the economy to a sustainable basis, a process that is deemed to be necessary because of climate change and risks to the environment. At present, the primary challenge faced by the financial sector is to implement the relevant requirements at an operational level throughout the value chain, which includes business management, risk management, and the internal and external reporting systems. A focus in financial and capital markets on ESG is opening up new market opportunities for the financial sector. At the same time, events in the various ESG categories should also be seen as risks and managed accordingly. Information on the handling of ESG risk factors can be found in the risk report (chapter VII.4.4).

Turning to interest-rate markets, there are clear signs of a change in direction as far as monetary policy is concerned. The main central banks have signaled their intention to depart from the highly expansionary monetary policy pursued in response to the financial crisis, although there are big differences between them in terms of the extent and timing of the monetary policy measures themselves. For example, the Bank of England raised its base rate back in December 2021 in response to the surge in inflation rates. In the US, the Fed has announced that its asset purchase program will end in March 2022 and, as a result, the markets are anticipating multiple key interest-rate hikes in 2022 and 2023. Following the latest jump in the inflation rate for the spring, the ECB has announced that it is reassessing the situation, hinting at the prospect of a gradual normalization of monetary policy. It is therefore becoming increasingly probable that the bond-buying program will be terminated and the first interest-rate rise initiated, even before the end of 2022.

In view of these shifts in monetary policy, it is anticipated that the low nominal interest rates – which are accompanied by a relatively flat yield curve and prevent any significant increase in margins in interest-related business – could start to move back toward normal levels. However, a sharp rise in interest rates is currently not expected, even though the anticipated hikes in the US could trigger a certain degree of upward pressure.

In the last few years, central banks' expansionary monetary policy, and particularly the ECB's bond-buying programs, largely prevented structural problems in some EMU member countries from being perceivable in the capital markets. Because of the way in which the COVID-19 pandemic has spread, the economic fallout in these countries has been especially severe and their need to obtain funding in the capital markets has risen sharply in view of the fiscal support measures that have been required. Asset-buying programs in response to the pandemic have so far limited an increase in risk premiums. However, a funding and securities valuation risk could arise in conjunction with a generally more restrictive approach to the bond-buying programs.

As already described, the COVID-19 pandemic, global supply chain problems, and other factors are acting as a brake on the global economy (see sections 1.1 to 1.4 of the outlook). Even though the economic situation is projected to improve – a trend that could be boosted by fiscal policy support measures – and the surge in inflation is expected to ease during 2022, it is not possible to rule out the risk of stagflation, i.e. the combination of economic stagnation and rising prices.

The assumption of a global economic recovery combined with a modest rise in interest rates should serve to stabilize the financial position and financial performance of the entities in the financial sector. However, it is not possible to rule out negative effects from a potential economic stagnation in 2022, especially on businesses and consumers, which in turn could have an adverse impact on the financial sector.

The potential impact of uncertain political developments on the economic position of banks and insurance companies should also not be ignored. Relevant information on macroeconomic risk factors can be found in the risk report (chapter VII.4.2).

2 Financial position and financial performance

In 2022, the DZ BANK Group will continue to pursue its strategic objectives in the context of its role within the cooperative financial network. In an environment that remains challenging in terms of both market and competition, this means, for example, rigorously exploiting potential business in collaboration with the cooperative banks with due regard to the focus on sustainability, while at the same time maintaining the planned implementation of various initiatives aimed at the digitalization of the DZ BANK Group along the entire value chain.

The forecasts below are based on the outcome of the DZ BANK Group's annual planning process. Further information on the planning process can be found under 'DZ BANK Group fundamentals' (chapter I.2.4). Potential variances during 2022 from the underlying planning scenario, in the form of opportunities and risks, may have an influence on the financial position and the financial performance.

According to the planning for 2022, **total assets** will generally remain steady compared with the figure as at the end of 2021. The forecast growth in the customer business, which will have a corresponding impact on the balance sheet, is expected to be focused in the DZ BANK – CICB, TeamBank, and VR Smart Finanz operating segments, as well as in the R+V operating segment in relation to the projected rise in investments in line with the planned portfolio growth. The resulting increase in total assets is likely to be offset by the planned reduction in the portfolios of loans and advances of DVB, which still exists as an operating segment, and the reduced use of open market operations under the ECB's TLTRO III programs.

Despite the ongoing COVID-19 pandemic, the DZ BANK Group generated an exceptionally satisfying **profit before taxes** in the reporting year, which was boosted by a number of factors, including conditions that were extremely favorable from the perspective of loss allowances and net fee and commission income. Based on current assessments and provided that the geopolitical situation surrounding the war in Ukraine can be stabilized again, **profit before taxes** in 2022 is predicted to be at the upper end of the long-term target range of €1.5 billion to €2 billion.

The future financial performance of the DZ BANK Group could be subject to risks arising from the economic conditions outlined above, especially from the potential economic consequences of the war in Ukraine. However, as things stand at the moment, it is not yet possible to make a full assessment of the ramifications for the business activities of the DZ BANK Group arising from the economic sanctions imposed on Russia, or from any retaliatory measures.

The consequences of the war in Ukraine, unrelated price increases and supply shortages, and further potential fallout from the COVID-19 pandemic are among the challenges faced by the individual business models in the

DZ BANK Group. These challenges could impact economic growth and debt and equity markets in different ways. The uncertainties referred to above are monitored continuously and factored into the DZ BANK Group's planning, reporting system, and management.

Based on current assessments, **net interest income** (including net income from long-term equity investments) will decline slightly in 2022 because it is probable that the period of low interest rates will continue and because of the aforementioned reduction of TLTRO III open market operations. Net interest income is expected to be stabilized by the forecast growth in the interest-bearing business, especially in the DZ HYP, TeamBank, and VR Smart Finanz operating segments.

Although **net fee and commission income** is projected to be noticeably lower in 2022 compared with the exceptionally high level achieved in 2021, it will still make a hefty contribution to the earnings of the DZ BANK Group. In the UMH and DZ PRIVATBANK operating segments, slightly higher volume-related income has been budgeted in association with the net inflows, whereas income from the commission-bearing business in the DZ BANK – CICB operating segment is predicted to be well down.

Gains and losses on trading activities in 2022 are expected to show a strong improvement compared with 2021. This is likely to be attributable to the absence of effects from the valuation of own issues that had a negative impact in 2021 (see chapter II.3.2.5 'DZ BANK – CICB' of the business report) and a boost from the customer-driven capital markets business in the DZ BANK – CICB operating segment.

Gains and losses on investments are anticipated to decline sharply in 2022 because of the absence of positive one-off items recognized in 2021 (see chapters II.3.2.5 'DZ BANK – CICB' and II.3.2.6 'DZ HYP' of the business report).

Other gains and losses on valuation of financial instruments are likely to deteriorate significantly in 2022 compared with the reporting year based on the expected changes in the valuation parameters.

Net income from insurance business is predicted to decline sharply in 2022. This forecast is largely based on the anticipated deterioration in gains and losses on investments held by insurance companies, which is expected to more than offset the forecast growth in premiums earned from the insurance business in the various divisions of the R+V operating segment.

In 2022, **loss allowances** will probably rise sharply compared with the relatively low level in the reporting year in line with the volume of the lending portfolio, the targeted volume of new business, and the long-term standard risk costs.

Administrative expenses are likely to increase slightly in 2022 compared with the reporting year because of growth-related capital investment combined with a slight contraction in staff expenses and rigorous management of costs.

The **other net operating income** generated by the DZ BANK Group in 2022 is expected to rise substantially, largely because of the absence of negative one-off items recognized in 2021 (see chapters II.3.2.5 'DZ BANK – CICB' and II.3.2.9 'DVB' of the business report).

The **cost/income ratio** for the DZ BANK Group is likely to go up significantly in 2022 as a result of the forecast marked decrease in income and an almost unchanged level of expenses compared with the reporting year.

Regulatory RORAC, the risk-adjusted performance measure based on regulatory risk capital, will probably decline sharply in 2022 because of the lower earnings projections.

3 Liquidity and capital adequacy

Based on the position at the end of 2021 and the funding measures planned for 2022, the DZ BANK Group predicts that it will be able to continue maintaining an appropriate level of economic and regulatory **liquidity adequacy** in 2022.

Further information on liquidity adequacy can be found in the risk report (chapter VII.6).

As matters currently stand, the DZ BANK Group's **capital adequacy** will continue to be assured for 2022 from both economic and regulatory perspectives; that is to say, it will continue to have at its disposal the available internal capital and own funds necessary to cover the risks associated with the finance business and other risks arising from the group's business operations. This statement on capital adequacy already takes into account the capital requirements associated with the systemic risk buffer for the residential real estate sector announced by BaFin on January 12, 2022 and the increase in the countercyclical capital buffer enacted on January 31, 2022. According to the information currently available, these requirements will need to be met entirely by common equity Tier 1 capital from February 1, 2023.

Over the last few years, the DZ BANK Group has greatly strengthened its capital base from its own resources (through the retention of profits) and through corporate action. In 2022, a high priority will once again be given to strengthening the capital base in order to ensure stable capital ratios.

Further information on capital adequacy can be found in the risk report (chapter VII.7).

4 Operating segments in detail

4.1 BSH

Low interest rates, a housing shortage, a lack of investment alternatives, and an expanding economy are expected to continue to fuel the real estate boom in Germany in 2022. These conditions are reflected in orders on hand, which stood at almost €13 billion at the end of September 2021, which was just under 20 percent higher than the figure a year earlier. Further growth in demand is also projected; by the end of September 2021, over 282,000 homes had been approved, which equated to a year-on-year increase of 5.1 percent. Increases in the costs of construction materials, such as wood, cement, and steel, combined with the persistent skills shortage in the construction industry, are likely to continue to drive up prices. Demand for new houses and apartments will remain high in Germany over the coming years, as the Institut der Deutschen Wirtschaft (IW) [German Economic Institute] confirmed in one of its reports just recently. According to this report, there is a need for a further increase in construction activity in almost all major cities in order to meet demand in each location. The agreement forming the basis of Germany's governing coalition has targeted the building of 400,000 new homes each year during the legislative period. The Zentralverband des deutschen Baugewerbes e.V. (ZDB) [German Construction Confederation] and the Hauptverband der Deutschen Bauindustrie e.V. (HDB) [Federation of the German Construction Industry] believe this target to be ambitious because it equates to a sudden increase of around 30 percent in the number of homes completed each year. The two industry associations predict that around 320,000 homes will be completed in 2022.

On December 15, 2021, the European Commission published its proposal for a recast Energy Performance of Buildings Directive. Under these proposals, all buildings in the EU would be carbon-neutral by 2050. One of the aims would be to ensure that there are no longer any buildings in the worst efficiency category (G) by 2030. In Germany, three million buildings would be affected by these requirements. At the beginning of 2020, the European Commission set out in the Sustainable Europe Investment Plan, which forms part of the European Green Deal, where the enormous capital requirement of around €1 trillion needed for a carbon-neutral Europe was going to come from. Just under half of the total sum will be provided from the EU budget. Incentives are to be created to generate the necessary capital investment required from both the public and the private sectors. The Commission believes that the greatest need for capital investment will be in relation to buildings.

In its core home finance business, BSH has enjoyed five successive record years in terms of the volume of new business, but it expects the figure for 2022 to be slightly lower than the 2021 figure. As regards home savings, the second core business at BSH, new business is predicted to be just below the 2021 level because of the continuing challenges presented by persistently low interest rates and COVID-19 restrictions, especially in the first quarter of 2022.

Taking these various factors into account, BSH anticipates that its **profit before taxes** will see a moderate year-on-year decline in 2022.

The low interest rates are likely to have a detrimental impact on interest income in 2022. Some of the effect will be offset by the lower rates of interest in the new home savings tariffs. Based on these expectations, **net interest income** is forecast to decline marginally in 2022.

With regard to **loss allowances**, BSH will continue to benefit from Germany's improving economic performance and low unemployment rate. It is assumed that there will also be some benefit as the COVID-19 pandemic tails off during the year. Because of the substantial growth in the lending portfolio in recent years, loss allowances will probably increase slightly from their current low level.

Net fee and commission income, which was just in positive territory in the reporting year, is expected to decline sharply in 2022 in percentage terms. A marginal contraction of the home finance business, combined with new home savings business just under the 2021 level, will lead to a small net expense being recognized under net fee and commission income.

Gains and losses on investments are expected to remain at the 2021 level.

In 2022, **administrative expenses** are projected to remain unchanged compared with 2021. The reason for this is a program aimed at the structural optimization and management of costs (SOKS), which was set up in 2020. The SOKS program is a project over a number of years in the Schwäbisch Hall Group aimed at creating greater cost transparency and keeping costs to a lower level on a permanent basis.

Based on current assessments, the **cost/income ratio** will rise slightly.

Regulatory RORAC is expected to decline significantly.

4.2 R+V

In the opinion of R+V, the 2022 financial year will continue to be shaped by the challenging conditions. The market environment will remain very tough because of the economic uncertainty and the potential long-term economic consequences of the COVID-19 pandemic, and from other perspectives, including political issues, regulation, low interest rates, competition, and consumer behavior.

Building on the success of the 'Wachstum durch Wandel' (growth through change) program, R+V launched the WIR@R+V program in 2021, adapting the strategy to reflect the significant changes to the operating environment. The objective is to overcome the new challenges and maintain performance levels. In this regard, R+V has raised the level of ambition in many areas of activity in order to remain competitive. The strategy focuses on making customers as happy as possible, increasing profitability, generating growth, and maintaining a strong capital base.

In line with this strategy, R+V – the composite insurer in the cooperative financial network – is planning to continue on its trajectory of profitable growth in 2022. The value added for the cooperative financial network should also increase steadily as a result.

Slight overall growth is expected in **gross premiums written**.

The **non-life insurance** division benefited from premium growth in 2021 despite the challenges presented by the COVID-19 pandemic. From today's perspective, this growth is expected to continue in 2022. In this regard, a slight rise in **gross premiums written** is predicted. The **claims rate** is projected to be slightly below the level of 2021 as a result of the measures specified in the WIR@R+V strategy program. The slight rise in the **expense ratio** is attributable to a number of factors, including higher capital investment in IT. Overall, the **combined ratio** (total of insurance business operating expenses and claims expenses divided by premiums earned) is projected to be unchanged compared with the 2021 level. A large number of activities in connection with the strategy program aim to secure the long-term success of the division. Areas of focus in these activities include both income enhancement and customer-oriented service processes.

As the period of low interest rates continues, business management in the **life and health insurance** division will again have a greater focus on profitability in 2022. **Gross premiums written** are forecast to be slightly below the 2021 level. Within this figure, a decrease in single premiums in life insurance will probably be offset by a slight rise in business involving ongoing premiums. A hefty rise in gross premiums written is anticipated in health insurance.

The latest pension insurance report (2021) published by the Bundesministerium für Arbeit und Soziales (BMAS) [German Federal Ministry of Labour and Social Affairs] states that the ratio of pensions to pay (before tax), referred to as the net replacement rate, will fall from the current level of 49.4 percent to 45.8 percent by 2035. In the report, the German government explicitly highlights that there is a need for policyholders to take action and make additional pension provision so that their income in later life will be improved. Based on a continually updated range of products, R+V offers customers a diverse range of options in this regard to meet their needs. In addition to unit-linked products, R+V is increasingly focusing on products that combine protective components with potential returns. The pension insurance report recommends that individuals make use, in good time, of the financial latitude offered by the German Retirement Income Act (AltEinkG) and government subsidies.

The German Act to Strengthen Occupational Pensions (BRSG), which came into force on January 1, 2018, is a further component in the efforts to prevent old-age poverty. This act is focused particularly on small and medium-sized enterprises (SMEs) as well as on employees with low incomes, who are more likely to be affected by old-age poverty. Industry-specific pension schemes such as the dedicated schemes available in Germany for the chemicals industry (Chemie-Versorgungswerk), engineering industry (MetallRente), pharmacy industry (ApothekenRente), healthcare industry (KlinikRente), and media industry (Versorgungswerk der Presse) are helping to popularize occupational pension provision. In addition, the collective pay agreement in the chemicals industry includes the provision of CareFlex Chemie, a scheme for occupational long-term care insurance offered via a consortium of insurers in which R+V is the managing consortium member. The freely available monthly care benefit complements the benefits received under statutory long-term care insurance and helps to close the financing gaps.

The current German government has embedded various objectives in its coalition agreement, including the strengthening of occupational pension provision, a fundamental reform of personal pensions, and the option to add voluntary supplementary provision to statutory long-term care insurance. R+V will actively support these changes.

In the **inward reinsurance** division, awareness of economic losses from natural disasters (made more acute by various events of this nature), the return to economic growth around the globe, and the steadily growing global population are expected to generate greater demand for reinsurance. Following the major loss events that occurred in previous years, it is also anticipated that there will be a further increase in the price of reinsurance cover in 2022. The inward reinsurance division will be focusing to a greater extent on improving other insurance gains and losses in 2022 in line with an adjustment to the division's strategy. Further moderate growth in **gross premiums written** is predicted. On the costs side, R+V anticipates a slightly lower **expense ratio** (net insurance business operating expenses divided by net premiums earned) and an unchanged **combined ratio** in 2022 compared with 2021.

Investing activity is based on a long-term investment strategy combined with an integrated approach to risk management. Focusing on asset protection, the strategy is designed to ensure that insurance obligations can be met at all times.

Gains and losses on investments held by insurance companies (excluding the portion attributable to unit-linked life insurance) are forecast to deteriorate sharply compared with 2021. The corresponding net gains in 2021 had gone up compared with the prior year because of the rebound in equity markets and the beneficial impact of exchange-rate movements. In 2022, equity markets are expected to stabilize and fixed incomes to return to normal levels.

The overall result of the above factors in the planning for 2022 is a substantial decline in **profit before taxes** compared with the 2021 figure, which had reflected the improvement within the underwriting business in the gains and losses on investments held by insurance companies, positive effects of the COVID-19 pandemic, but also the negative impact of storms.

Regulatory RORAC is likely to decline sharply in 2022 because of the forecast financial performance.

4.3 TeamBank

Consumer spending, which is largely responsible for driving economic growth, will again depend to a large degree on the epidemiological situation regarding COVID-19 in 2022. Other factors include the duration of the supply shortages and the extent of the anticipated acceleration in inflation. It is likely that a substantial economic recovery will only materialize from the second quarter of 2022. Based on the information currently available, the competitive situation in the consumer finance market will remain largely unchanged, although a further increasing consumer preference for digital channels is anticipated. The greater prevalence of online sales will also encourage the use of installment payment plans in e-commerce.

In collaboration with the cooperative banks, TeamBank is aiming in 2022 to generate profitable, sustainable growth at a rate that is higher than that of the market.

TeamBank is forecasting significant portfolio growth in 2022, which is projected to lead to a marked rise in **net interest income**.

Net fee and commission income is predicted to deteriorate substantially compared with 2021, mainly because of increased bonus payments to partner banks in line with the higher level of new business and a fall in fee and commission income from the brokering of credit insurance policies as a consequence of the German Act on Supporting the Regulation of Crowdfunding Service Providers (SFBG).

Because of the portfolio growth referred to above, it is likely that **loss allowances** will rise significantly.

Administrative expenses are expected to remain steady in 2022.

In view of the changes described above, TeamBank forecasts that **profit before taxes** will fall significantly.

The **cost/income ratio** for 2022 is likely to remain at the same level as that in 2021.

Because of the change in profit before taxes in 2022, there is likely to be a significant decline in **regulatory RORAC**.

4.4 UMH

Capital markets are expected to continue to reflect the impact of the COVID-19 pandemic. The increasing problems in global supply chains and the persistently low level of interest rates will also present a challenge in addition to those surrounding the emergence and spread of new coronavirus variants and necessary associated development and widespread availability of modified vaccines. However, extensive economic and monetary policy measures are helping to provide support. Against this backdrop, UMH plans to continue to systematically exploit opportunities for business growth and maintain its trajectory of successful business performance of recent years.

UMH is aiming for a significantly higher level of assets under management by the end of 2022. New business is expected to be at a high level, but will nevertheless be down significantly compared with the exceptionally successful year in 2021. Expectations regarding overall performance are slightly higher for 2022.

Net fee and commission income is projected to fall substantially in 2022, the main reason being a sharp decrease in the income expected from performance-related management fees. On the other hand, a small increase in volume-related net fee and commission income is anticipated based on a significantly higher average level of assets under management.

Net finance costs – comprising net interest income, gains and losses on investments, and other gains and losses on valuation of financial instruments – are likely to deteriorate significantly in 2022, largely because of an anticipated sharp negative change in the effect from the valuation of guarantee commitments for investment products. In addition, the contribution from own-account investing is predicted to decline significantly.

Administrative expenses are projected to rise considerably in 2022. Staff expenses at UMH are likely to remain steady. Based on current assessments, general and administrative expenses will rise markedly, largely because of higher office expenses and greater costs associated with public relations/marketing, ongoing professional fees, real estate audits, information procurement, IT, and rents for land and buildings. Depreciation and amortization charges are likely to increase moderately, mainly in connection with office furniture and equipment and because of the recognition of new capital assets.

A sharp increase in **other net operating income** is expected. This is primarily attributable to the absence of non-recurring expenses recognized in 2021. On the other hand, there will probably be a decline in income from the remeasurement of provisions.

Based on the factors described above, **profit before taxes** in 2022 is projected to decline significantly compared with 2021.

From the current perspective, the **cost/income ratio** is expected to rise sharply and **regulatory RORAC** fall significantly.

4.5 DZ BANK – CICB

It is more or less two years since the outbreak of the COVID-19 pandemic and yet the coronavirus and its fallout still continue to have a significant impact on economic activity. The effects of the COVID-19 pandemic, combined with supply shortages and higher energy and commodity prices, are expected to push up inflation rates and unsettle financial markets.

At the same time, the COVID-19 pandemic is accelerating the process of digitalization and transforming customer behavior, thereby placing long-established institutions under pressure to offer user-friendly and innovative digital services in order to prevent their customers from drifting away to fintechs and digital banks. Additionally, the persistently low level of interest rates and recent income volatility are challenging banks to optimize their cost base so that they can safeguard their profitability in the medium term.

The strains from the challenges presented for a number of years now by low interest rates, regulation, and digitalization, combined with those from planning uncertainty and risks during the COVID-19 pandemic, mean that the ongoing trend toward consolidation in the German banking industry is likely to continue. In 2022, there is not expected to be any letup in the pressure on banks in Germany and throughout Europe in general.

In view of these circumstances, **profit before taxes** in the DZ BANK – CICB operating segment is expected to fall sharply in 2022. To a large degree, this contraction is explained by particular effects in 2021, notably negative valuation effects, unexpectedly high income from long-term equity investments, and significant income from the ECB's TLTRO III programs.

Net interest income in 2022 is predicted to fall sharply and will therefore be below the 2021 level. In the reporting year, net interest income benefited from a number of factors, including income from the TLTRO III bonus interest, the amount of which will probably be lower in 2022.

The aim will be to achieve further growth in operating income, specifically in net interest income from corporate banking based on an increase in the lending volume. The DZ BANK – CICB operating segment expects slightly higher margins in corporate banking in 2022 despite a market environment still considered to be competitive.

In line with the strategic ambitions of the DZ BANK – CICB operating segment, corporate banking will remain a key area of growth. It is intended to achieve the planned growth in volume with packages of measures under the 'Verbund First 4.0' strategy, such as greater customer focus and an improvement in new customer acquisition through greater regionalization. It is also planned to expand development lending by involving further development banks and integrating these activities into the sales platform. At the same time, there are plans for further digitalization-driven process optimization in sales in order to enhance cost efficiency and improve profitability.

In the reporting year, income from the reduction of exposures and the recognition of collateral proceeds had a positive impact on **loss allowances**. However, loss allowances are likely to rise sharply in 2022 because of the economic uncertainty and anticipated growth in the lending volume. Loss allowances will therefore continue to be shaped by the effects of the COVID-19 pandemic, which is still unlikely to be overcome in 2022.

Net fee and commission income in 2022 is not projected to reach the high level of 2021 and will probably decline significantly. This is largely the result of the prudently budgeted service fees in the individual operating units within the DZ BANK – CICB operating segment in response to the general market uncertainty.

The DZ BANK – CICB operating segment aims to continue to perform well on the back of the excellent market positioning in the Transaction Banking business line, the digitalization strategy, and a steady increase in the number of transactions in payments processing and depositary services. In addition, the net fee and commission income in the Capital Markets business line is likely to improve overall because of an expected rise in income from the brokerage fees derived from retail and institutional customers.

Gains and losses on trading activities are expected to improve significantly in 2022, provided there is no serious market turmoil. This improvement is due to the absence of negative effects arising on the valuation of own issues that had been reflected in the 2021 figure.

Gains on trading activities in the DZ BANK – CICB operating segment will be generated from margins and trading volume in customer business involving investment and risk management products and from the related customer-initiated trading contributions. In operating capital markets business, key income drivers in 2022 are likely to include the further exploitation of capital-markets-related cross-selling potential in corporate banking, the expansion of the range of products via targeted product initiatives, and the harnessing of potential in the securities business by stepping up collaboration with the cooperative banks in customer business. It is anticipated that trading activity in the market as a whole will remain at a high level in 2022 because of the COVID-19 pandemic.

In all probability, **administrative expenses** in 2022 will be slightly below the level of 2021. As things stand, based on the systematic implementation of the forward-looking 'Verbund First 4.0' strategic program, further reductions in the number of employees (full-time equivalents), and a decrease in consultancy costs, it will be possible to leverage specific efficiencies. Some of the gains are expected to be offset by rising general and administrative expenses. These include expenses related to strategic investment in further digitalization of market access and the expansion of next-generation working methods. Higher contributions to the BVR protection scheme and for banking supervision are also anticipated.

Current assessments show that the **cost/income ratio** will go down slightly in 2022 as a result of the forecast decline in financial performance compared with 2021 and the slight fall in administrative expenses.

As things stand, **regulatory RORAC** will probably decline significantly in 2022 based on slightly higher capital requirements and the forecast of lower profit before taxes.

4.6 DZ HYP

In view of the COVID-19 pandemic, real estate as an investment product is proving itself to be generally stable and there have been no material changes to this position for the moment. However, a change to demand for commercial real estate cannot be ruled out, for example, as a consequence of remote working or the growth in e-commerce. Developments are being closely monitored overall and could have an impact on lending. Because of the perpetually low level of interest rates, real estate remains an attractive investment product. Real estate in Germany will play a key role because of the economic and political stability in the country. Capital adequacy requirements in the banking sector are expected to have an adverse effect. It is anticipated that business activities will remain stable, based on reasonable lending margins combined with a volume of new real estate finance business at the level of 2021.

Net interest income in 2022 is projected to be slightly above the 2021 figure. Real estate lending is expected to increase slightly, with adequate margins.

It is anticipated that **loss allowances** will go up significantly in 2022 because of effects that could potentially hit the real estate sector as a consequence of the COVID-19 pandemic.

Current assessments show that credit spreads in public-sector finance are likely to come under pressure in 2022. **Other gains and losses on valuation of financial instruments**, which resulted in a net gain in 2021, will therefore probably move into negative territory in 2022.

Greater regulatory requirements and the continued high level of charges from third parties (such as the bank levy) will have a negative impact on **administrative expenses**, with the result that this figure is expected to be markedly higher than the corresponding 2021 figure.

Based on stable operating performance, but particularly because of the decline in other gains and losses on valuation of financial instruments and higher loss allowances, **profit before taxes** at DZ HYP in 2022 is predicted to be significantly below the corresponding 2021 figure.

Accordingly, the **cost/income ratio** is expected to rise significantly.

Regulatory RORAC is likely to decline sharply due to the fall in profit before taxes forecast for 2022.

4.7 DZ PRIVATBANK

In 2022, it is anticipated that the economic recovery will continue, inflation will fall during the course of the year, and monetary policy in Germany, the eurozone, and the US will become less expansionary.

Based on current assessments, **net interest income** will fall slightly in 2022 because of the persistently low interest rates and low market volatility.

In 2022, **net fee and commission income** is predicted to rise substantially, driven by forecasts that the private banking and fund services businesses will perform well.

The assets under management in private banking are also projected to rise due to the forecast inflows. The main value driver is fund volume, and the volume of funds from Union Asset Management Holding AG and third parties is expected to grow markedly.

Gains and losses on trading activities are forecast to deteriorate significantly in 2022 because of lower customer-driven transaction figures.

Administrative expenses are expected to rise slightly in 2022. The increase will be due not only to the sustained growth of costs relating to regulatory requirements but also to high levels of capital expenditure.

Based on current forecasts, **profit before taxes** in 2022 will be well above the corresponding 2021 figure, despite a challenging market environment.

The **cost/income ratio** in 2022 is likely to be slightly lower than the 2021 figure, whereas **regulatory RORAC** will be well above the level in the reporting year.

4.8 VR Smart Finanz

In 2022, VR Smart Finanz will continue to pursue a decentralized approach with the aim of providing the best possible support for the cooperative banks as a strategic partner in the corporate customer business and meeting the needs of their business customers for fast, easily accessible digital solutions. In this context, VR Smart Finanz will focus on joint marketing with the cooperative banks and on the objective of tapping into the available potential for income and growth from small businesses, the self-employed, and the SME segment.

Adverse effects from supply shortages and high energy prices, together with the ongoing impact of the COVID-19 pandemic, are expected to continue to affect economic activity at the beginning of 2022. Demand for German goods is likely to remain at a high level, so it is reasonable to expect the release of significant pent-up demand as supply shortages are gradually eliminated during the year.

VR Smart Finanz plans to make use of the forecast economic tailwind to return to the growth trajectory it enjoyed in the years before the COVID-19 pandemic. It intends to respond to the ever-fiercer competition by stepping up its collaboration with the cooperative banks and breaking into alternative sales channels, such as digital financing platforms. VR Smart Finanz also aims to expand data-driven analysis with a view to further strengthening the reach of the cooperative banks in the target customer segment. It is planning to tap into additional potential by developing its omnichannel capabilities and gradually integrating its solutions and digital services into the cooperative financial network’s omnichannel platform. In addition, there are plans to systematically upgrade the functionality of the VR Smart Guide and Bonitätsmanager (credit status manager) based on customer feedback and to continue to step up market penetration. The latter is to be achieved by signing up more banks and making specific use of strategic partnerships.

Risks arising from the economic environment adversely impacted by the COVID-19 pandemic are to be actively managed using a proactive, IT-supported risk management system. Measures to prevent fraud are also being expanded to counter the increasing risks arising in connection with digital environments.

In the context of the forecast economic recovery, the planned initiatives to generate new business growth and accelerate collaboration with the cooperative banks and other partner banks are likely to result in a significant increase in **net interest income** and a steep rise in the **fee and commission expenses** paid to the cooperative banks for recommending VR Smart Finanz financing solutions to their customers.

Current forecasts show that **loss allowances** will rise substantially in 2022 in line with the planned new business growth. On the basis of a projected marginal decline in **administrative expenses** compared with 2021 and an increase in new business, there will be a sharp improvement in the **cost/income ratio.**

The developments described above are likely to lead to an improvement from a loss to a **profit before taxes** and a positive **regulatory RORAC** in 2022.

4.9 DVB

New COVID-19 variants and an increase in case numbers due to seasonal factors are continuing to dominate public life, unsettle financial markets, and hinder an economic recovery. In the first half of 2022, the progress made in the booster vaccination campaign and the milder spring weather are likely to pave the way for a return to a certain degree of normality.

In a challenging operating environment, DVB's top priorities continue to be to uphold the stability of its business operations, carry out all necessary tasks, and satisfy the requirements and obligations applicable to a regulated bank.

These ongoing, stable business operations remain fundamental to the diligent implementation of the strategic initiatives and the attainment of the core objectives:

- Successfully complete the post-closing activities in connection with the disposal of the old businesses (Aviation Investment Management/Aviation Asset Management)
- Continue to allow the maritime portfolio to run off successfully and actively wind down the NPL portfolio while preserving as much value as possible
- In the event that the merger of DVB with DZ BANK planned for 2022 is carried out (see chapter I.1.9 'DVB' under 'DZ BANK Group fundamentals'), implement the preparations to migrate the remaining activities from the DVB operating segment and integrate them into DZ BANK
- Seamlessly integrate the employees from the DVB operating segment into DZ BANK, thereby ensuring the stability of the business
- Finalize the internal transformation activities prior to the legal merger; includes simplifying the operating model, closing sites, and managing costs.

DVB is committed to achieving the objectives outlined above and living up to its reputation as a reliable and solid financial institution. DVB will focus on achieving the centrally determined targets for 2022. It is optimistic that its results for 2022 will be in line with the financial planning and will meet stakeholders' expectations. As the positive contribution to earnings in 2021 was attributable to special factors to a large degree, it is anticipated that DVB will report a loss before taxes in 2022 because of the contraction of its operations.

4.10 DZ BANK – holding function

The **loss before taxes** is forecast to be moderately higher in 2022.

Net interest income in 2022 is likely to improve significantly compared with the 2021 figure because of a reduction in the portfolio of subordinated liabilities.

Administrative expenses are projected to rise substantially in 2022. Within this figure, expenses related to protection levies are likely to go up significantly in the forecast period. IT and project expenses will probably see a hefty increase. A slight increase in group function expenses and in other expenses for the benefit of the group and local cooperative banks is also anticipated.

VI DZ BANK Group and DZ BANK opportunity report

The details relating to DZ BANK are included in the opportunity report for the DZ BANK Group so that the disclosures are more transparent and understandable. A separate opportunity report is not prepared for DZ BANK. Unless stated otherwise, the disclosures relating to the DZ BANK Group also apply to DZ BANK.

1 Management of opportunities

The DZ BANK Group and DZ BANK define **opportunities** as situations presenting the potential for further returns that could be exploited.

The management of opportunities is integrated into the **annual strategic planning process**. The potential for returns is identified and analyzed on the basis of various macroeconomic scenarios, trends, and changes in the market environment, and then included in strategic financial planning. Details about the strategic planning process are presented in chapter I.2.4 in 'DZ BANK Group fundamentals' in this (group) management report.

Opportunity management is an integral component of **governance** and is therefore taken into account in the general management approach, in the management of subsidiaries via appointments to key posts, and in the DZ BANK Group's committees. Details about the governance of the DZ BANK Group can be found in chapter I.2.2 in 'DZ BANK Group fundamentals'.

2 Potential opportunities

The strategic focus in the DZ BANK Group 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. The partnership between the cooperative banks and the entities in the DZ BANK Group is built on the principles of subsidiarity, decentralization, and regional market responsibility.

The DZ BANK Group drives forward **strategic initiatives and programs** at three levels.

- Firstly, the entities in the DZ BANK Group work on strategic projects and initiatives in collaboration with the cooperative banks and Atruvia, with the BVR taking a leading role. The strategy agenda entitled 'Shaping the future cooperatively' provides a framework within which the entities of the cooperative financial network are implementing the initiatives in the strategic KundenFokus (customer focus) project with the aim of establishing an omnichannel model to strengthen their competitiveness.

- Secondly, the entities in the DZ BANK Group have jointly identified key areas of collaboration (such as operating models and sustainability) that offer the potential for reinforcing the future viability and profitability of all the members of the cooperative financial network. The aim is to continue to press ahead with collaboration in these areas of activity over the coming years.

- At the third level, each individual entity in the DZ BANK Group pursues its own strategic initiatives, such as the 'Verbund First 4.0' strategic program at DZ BANK. The strategic focus of the DZ BANK Group is described in chapter I.1 in 'DZ BANK Group fundamentals' in this (group) management report.

VII DZ BANK Group and DZ BANK risk report

1 Disclosure principles

In its capacity as the parent company in the DZ BANK Group, DZ BANK is publishing this risk report in order to meet the transparency requirements for risks applicable to the DZ BANK Group as specified in **section 114** and **section 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 risk report meets the transparency requirements regarding 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 risk reporting requirements specified in the International Accounting Standards (IASs) and International Financial Reporting Standards (IFRSs), specifically those set out in the following legal standards:
– **IAS 1.134–136** (capital)
– **IFRS 7.31–42** (nature and extent of risks arising from financial instruments)
– **IFRS 4.38–39A** (nature and extent of risks arising from insurance contracts).

This does not include the legal standards below, because the required disclosures are not used to manage risk. In these instances, the disclosures are included in the notes to the consolidated financial statements ('notes'):
– Accounting-related credit disclosures in accordance with **IFRS 7.35F(a)–36(b)**: note 88
– Maturity analysis in respect of financial assets and financial liabilities in accordance with **IFRS 7.39(a) and (b)**: note 89
– Maturity analysis in respect of financial assets and financial liabilities in accordance with **IFRS 4.39(d)(i)**: note 89
– Claims rate trend for direct non-life insurance business and for the inward reinsurance business in accordance with **IFRS 4.39(c)(iii)**: note 42.

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 risk report.

The 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 are intended to improve the usefulness of the disclosures in the decision-making process.

The quantitative disclosures in this 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**). The disclosure of this information, which is important for knowledgeable users, is designed to ensure that external reporting is useful when such users need to make decisions.

The details relating to DZ BANK are included in the risk report for the DZ BANK Group so that the disclosures are more transparent and understandable. A separate 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.

Detailed information on individual subsidiaries of DZ BANK is only provided if the subsidiaries are of material significance to risk management, risk factors or the risk position, and if the situation in the subsidiaries differs substantially from the overall descriptions applicable to the DZ BANK Group. However, subsidiaries are always mentioned where this is necessary to explain the amount, structure, and management of the risks in the DZ BANK Group, and the changes in these risks.

The disclosure of **non-financial risks** in accordance with section 315c HGB in conjunction with section 289c HGB is included in the separate combined non-financial report, which forms part of the Sustainability Report. The statement analyzes the impact of the activities of the entities in the DZ BANK Group on economic units and persons outside the DZ BANK Group. The concept of risk in section 315c HGB therefore fundamentally differs from the standard concept of risk as defined in Basel Pillar 2, which is concerned with risks that affect the entities in the DZ BANK Group themselves. The risks as defined in Basel Pillar 2 are disclosed in this risk report.

Non-financial risks subject to regulatory standards comprise reputational risk and operational risk. Details on the management of these risks are included in sections 13 and 19 (Reputational risk) and in sections 14 and 20 (Operational risk).

DZ BANK Group

2 Summary

2.1 Risk management system

2.1.1 Fundamental features

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 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 and additions in **risk strategies**, which are consistent with the business strategy 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 requirements reflecting risk appetite.

The methods used to **measure risk** are an integral element of the risk management system and are progressively refined and enhanced. Risk model calculations are used to manage the DZ BANK Group, DZ BANK, and its subsidiaries.

DZ BANK and its subsidiaries have a **risk management system** that is updated on an ongoing basis in line with changes to the business and regulatory environment. The risk management system is designed to enable them to identify material risks – particularly risks to their survival as a going concern – at an early stage and to initiate the necessary control measures. The system therefore incorporates various elements, including organizational arrangements, methods, IT systems, the limit system based on economic risk-bearing capacity, stress testing of all material risk types, and internal reporting.

The tools used for the purposes of risk management are also designed to enable the DZ BANK Group to respond appropriately to **significant market movements**. Possible changes in risk factors 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.

2.1.2 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 key risk management figures used in respect of **liquidity** are the minimum liquidity surplus, the liquidity coverage ratio (LCR), and the net stable funding ratio (NSFR). The key risk management figures used in respect of **capital** are economic capital adequacy, the coverage ratio for the financial conglomerate, and the regulatory capital ratios, plus the leverage ratio and the minimum requirement for own funds and eligible liabilities (MREL).

2.1.3 Management units

Based on the requirements set out in GAS 20.A1.3, this risk report is structured according to **risk type**. The DZ BANK Group is managed using the main types of risk, taking into account particular features relating to DZ BANK and its material subsidiaries (referred to below as **management units**).

All entities in the DZ BANK Group are integrated into the groupwide risk management system. The DZ BANK Group largely comprises the DZ BANK banking group and R+V. The management units form the core of the financial services group.

The insurance business operated at R+V differs in material respects from the other businesses of the DZ BANK Group. For example, actuarial risk is subject to factors that are different from those affecting the 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 have been created within the DZ BANK Group for the purposes of economic risk management. The management units are assigned to the Bank sector and Insurance sector as follows:

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

Insurance sector:
- R+V.

The management units represent the operating segments of the DZ BANK Group. From a risk perspective, the 'DZ BANK' management unit equates to the central institution and corporate bank operating segment and the holding function.

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

The management units are deemed to be material in terms of their contribution to the DZ BANK Group's aggregate risk and are directly incorporated into the group's risk management system. The other subsidiaries and investee entities of DZ BANK are integrated into the risk management system either indirectly as part of equity investment risk or directly as part of other types of risk. This is decided for each of them annually.

The management units' subsidiaries and investees are also included in the DZ BANK Group's risk management system – indirectly via the majority-owned entities – with due regard to the minimum standards applicable throughout the group.

Risk is managed groupwide on a consolidated basis.

2.1.4 Expansion of ESG risk management

DZ BANK is currently analyzing the effects of various regulatory initiatives on the management of environmental, social, and corporate governance (ESG) risks, in particular, the Guide on climate-related and environmental risks published by the European Central Bank (ECB) and the delegated regulation concerning the EU's climate taxonomy. In addition, DZ BANK will participate in the ECB's macroeconomic climate stress test, which is scheduled for 2022.

2.2 Risks and risk profile

2.2.1 Risks

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. 3 and Fig. 4. The risks shown correspond to the outcome of the risk inventory check carried out for 2021 and reflect the risks that are material to the DZ BANK Group.

To ensure that the presentation of the disclosures remains clear, the risk management system disclosures included in the risk report are limited to the main material entities in the group (indicated in Fig. 3 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 risk report cover all the management units included in the internal reporting system (indicated additionally in Fig. 3 by a dot on a light gray background).

FIG. 3 – RISKS AND OPERATING SEGMENTS IN THE BANK SECTOR[1]

Risks

	Risk type	Definition	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)	– Follow-up funding risk – Collateral risk – Fair value risk – Drawdown risk – Termination risk – New business risk – Repurchase risk – Intraday risk – Foreign currency funding risk
	RISK COVERED BY CAPITAL		
Financial 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	General credit risk factors: – Increase in the concentration of volume in counterparties, industries, or countries – Accumulation of exposures with longer terms to maturity Specific credit risk factors: – Economic divergence in the eurozone – Challenging markets in the cruise ship business – Risks to the global economy – Physical climate-related and environmental risks
Financial 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 risks	**Market risk** – Interest-rate risk – Equity risk – Fund price risk – Currency risk – Commodity risk – Spread risk and migration risk – Asset-management risk – Market liquidity risk	– Risk of losses that could arise from adverse changes in market prices or in the parameters that influence prices (market risk in the narrow sense of the term) – Risk of losses that could arise from adverse changes in market liquidity such 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)	General market risk factors: – Changes in the yield curve – Changes in credit spreads – Changes in exchange rates – Changes in share prices Specific market risk factors: – Low interest rates – Risks to the global economy
Financial risks	**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)
Financial risks	**Business risk**	Risk that financial performance is not in line with expectations, and this is not covered by other types of risk	– Costs of regulation – Competition based on pricing and terms
Non-financial risks	**Reputational risk[3]**	Risk of losses from events that damage confidence, mainly among customers (including the 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 – Materialization of the social risks and corporate government risks assessed in connection with the ESG risk factors
Non-financial risks	**Operational risk**	Risk of losses from human behavior, technological failure, weaknesses in process or project management, or external events	– Compliance risk including conduct risk: Violations of legal provisions; failure to comply with corporate policies – Legal risk: Violations of legal provisions or failures in applying such provisions; adverse changes in the legal environment – Information risk including ICT risk: Failure to maintain the confidentiality, integrity, availability, or authenticity of information or data – Security risk: Inadequate protection of individuals, premises, assets, or time-critical processes – Outsourcing risk: Disruptions to outsourced processes and services – Project risk: Failure to complete projects on schedule

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 Smart Finanz
– Liquid securities – Unsecured short-term and medium-term funding – Minimum liquidity surplus – LCR – NSFR	Section 6.2.6 Section 6.2.6 Section 6.2.7 Section 6.3.3 Section 6.3.4	•	•	•	•	•	•		•
– Lending volume – Risk capital requirement for credit risk	Sections 8.6, 8.7, and 8.8 Section 8.9	•	•	•	•	•	•		•
– Carrying amounts of investments – Risk capital requirement for equity investment risk	Section 9.5 Section 9.5	•	•	•	•		•	•	•
– Value-at-risk for market risk – Risk capital requirement for market risk	Section 10.7.1 Section 10.7.2	•	•	•	•	•	•	•	•
– Risk capital requirement for the technical risk of a home savings and loan company	Section 11.5		•						
– Risk capital requirement for business risk	Section 12.6	•				•			•
		•	•	•	•	•	•	•	•
– Losses from operational risk – Risk capital requirement for operational risk	Section 14.6 Section 14.7	•	•	•	•	•	•	•	•

Management unit disclosures in the risk report:

• Quantitative and qualitative disclosures

• Quantitative disclosures

Not relevant

FIG. 4 – RISKS IN THE INSURANCE OPERATING SEGMENT AND SECTOR

Category	Risk type	Definition	Risk factors	Risk management KPIs disclosed	
	RISK COVERED BY CAPITAL PURSUANT TO SOLVENCY II				
Financial risks	**Actuarial risk** – Life actuarial risk – 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: – Adverse change in the calculation assumptions for life insurance over the lifetime of the contract – Increase in claim events as a result of pollution and climate change Health actuarial risk: – Higher drawdown of benefits by health insurance policyholders – Increase in claim events as a result of pollution and climate change Non-life actuarial risk: – Unexpected rise in claims incurred, e.g. due to weather-related natural disasters attributable to climate change - Rise in claims incurred as a result of silent cyber risk	– Claims rate trend in non-life insurance – Overall solvency requirement	Section 16.6 Section 16.7
Financial risks	**Market risk** – Interest-rate risk – Spread risk – Equity risk – Currency risk – Real-estate risk – Concentration risk	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 becomes difficult to generate a guaranteed rate of return because of – a protracted period of low interest rates – a narrowing of spreads on investments The fair values of investments fall because of – a fast rise in interest rates – a widening of spreads on investments – the issuer's transition risk	– Lending volume – Overall solvency requirement	Section 17.4 Section 17.5
Financial risks	**Counterparty default risk**	Risk of losses due to unexpected default or deterioration in the credit standing of counterparties or debtors of insurance or reinsurance companies over the subsequent twelve months	Deterioration of counterparties' financial circumstances	– Lending volume – Overall solvency requirement	Section 18.4
Non-financial risks	**Reputational risk**[1]	Risk of losses that could arise from 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 – Materialization of the social risks and corporate government risks assessed in connection with the ESG risk factors		
Non-financial risks	**Operational risk**	Risk of losses arising from inadequate or failed internal processes, personnel, or systems, or from external events (including legal risk)	– Legal and compliance risk: Violations of legal provisions or failures in applying such provisions; adverse changes in the legal environment; violations of statutory provisions; failure to comply with corporate policies – Information risk, including IT risk: Malfunctions or breakdowns in IT systems – Security risk: Business interruptions could result in lasting disruptions to processes and workflows – Outsourcing risk: Disruptions to outsourced processes and services – Project risk: Failure to complete projects on schedule	Overall solvency requirement	Section 20.4
	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 The Insurance sector's reputational risk is included in the overall solvency requirement for life actuarial risk (lapse risk).

2.2.2 Risk profile

The DZ BANK Group's **business model** and the associated business models used by the management units (see chapter I.1 in 'DZ BANK Group fundamentals' in this (group) management report) shape the risk profile of the group. The main risks associated with the business models are shown in Fig. 3 and Fig. 4. The businesses operated by the management units that have a significant impact on the risk profile are described under 'Business background and risk strategy' within the sections of the risk report covering the different risk types.

The values for the measurement of **liquidity and capital adequacy** presented in Fig. 5 reflect the liquidity risks and the risks backed by capital assumed by the DZ BANK Group. They illustrate the **risk profile** of the DZ BANK Group. The values for these KPIs are compared against the (internal) threshold values specified by the Board of Managing Directors of DZ BANK – also referred to below as **risk appetite** – and against the (external) minimum targets laid down by the supervisory authorities. The KPIs are explained in more detail later in this risk report.

FIG. 5 – LIQUIDITY AND CAPITAL ADEQUACY KPIS

	Measured figure		Internal minimum threshold value		External minimum target	
	Dec. 31, 2021	Dec. 31, 2020	2021	2020	2021	2020
LIQUIDITY ADEQUACY						
DZ BANK Group (economic perspective)						
Economic liquidity adequacy (€ billion)[1]	19.4	15.3	4.0	4.0	0.0	0.0
DZ BANK banking group						
Liquidity coverage ratio (%)[2]	147.7	146.3	110.0	110.0	100.0	100.0
Net stable funding ratio (%)	127.1	122.4	105.0		100.0	
CAPITAL ADEQUACY						
DZ BANK Group (economic perspective)						
Economic capital adequacy (%)	208.1	171.7	120.0	120.0	100.0	100.0
DZ BANK financial conglomerate (normative internal perspective)						
Coverage ratio (%)[3]	152.7	146.0	110.0	110.0	100.0	100.0
DZ BANK banking group (normative internal perspective)						
Common equity Tier 1 capital ratio (%)[3, 4]	15.3	15.3	10.0	10.0	9.0	9.0
Tier 1 capital ratio (%)[3, 4]	16.8	17.0	11.9	11.9	10.8	10.8
Total capital ratio (%)[3, 4]	18.5	19.5	14.3	14.3	13.3	13.3
Leverage ratio (%)[3, 5]	7.3	5.7	3.5	3.5	3.26	
MREL ratio (%)[6]	11.5	11.9	8.3	8.3		8.0

Not available

1 The measured value relates to the stress scenario with the lowest minimum liquidity surplus. The internal minimum target relates to the observation threshold.
2 In view of the COVID-19 pandemic, the supervisory authorities tolerated a value below the external minimum target of 100 percent until December 31, 2021.
3 Measured values based on the CRR transitional guidance. In the 2020 risk report, the values stated as at December 31, 2020 were based on full application of the CRR.
4 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.
5 The external minimum target for 2021 applies from June 28, 2021.
6 The supervisory authorities temporarily suspended the external minimum target for the second half of the year.

In view of the fallout from the COVID-19 pandemic, the supervisory authorities tolerated values that had temporarily fallen below the external minimum targets for regulatory liquidity adequacy and regulatory capital adequacy during the reporting period.

The **solvency** of DZ BANK and its subsidiaries was never in jeopardy at any point during the reporting period. They also complied with regulatory requirements for liquidity adequacy. By holding ample liquidity reserves, the group aims to be able to protect its liquidity against any potential crisis-related threats.

In addition, the DZ BANK Group remained within its economic **risk-bearing capacity** in 2021 and also complied with regulatory requirements for capital adequacy on every reporting date.

3 Dealing with the impact of the COVID-19 pandemic

3.1 Relaxation of supervisory requirements

The lowering of the **external minimum targets** for regulatory key figures that had been carried out by the supervisory authorities in 2020 continued to apply unchanged in 2021. The same was true for the lower **internal thresholds** for selected regulatory capital adequacy metrics that had been adopted by the Board of Managing Directors of DZ BANK in 2020.

The banking supervisor's relaxing of requirements relating to the preparation of a group recovery plan in 2020 was scaled back. In particular, the number of stress scenarios to be prepared increased from one in 2020 to two in the reporting year. Before the start of the COVID-19 pandemic, banks had been required to present four stress scenarios to the banking supervisor.

3.2 Risk management measures

3.2.1 Risk reporting

The changes to the **risk reporting** (financial and risk radar, CET1 radar, credit risk report) to the Board of Managing Directors of DZ BANK that had been made in 2020 due to the COVID-19 pandemic were maintained in 2021. The same applied to the **stress testing** regarding the impact of the COVID-19 pandemic that had been introduced in 2020 and to the associated internal reporting.

Credit risk management and monitoring

Over the course of 2021, the economies of the countries relevant to the DZ BANK Group's lending business began to recover. The credit risk situation improved compared with the previous year, and this was reflected in the positive trend in the credit risk metrics. Nevertheless, the credit portfolio of the Bank sector remains subject to **close monitoring** in view of the fifth wave of COVID-19 now taking place. This is especially the case for the subportfolios in which the fallout from the COVID-19 situation was evident.

The COVID-19 pandemic primarily affected credit risk in the Bank sector in 2021. Ad hoc remeasurements mostly related to **cruise ships** and companies from the **service and automotive sectors**. The quality of the **hotel, department store, and shopping mall financing** portfolio of DZ HYP remains stable. Further information on the volume of lending to industries that have been hit particularly hard by the COVID-19 pandemic is provided in section 8.7 .

The COVID-19 pandemic may continue to have an adverse impact on credit risk in the Bank sector in **2022**. The extent of this impact will depend primarily on the duration and intensity of the pandemic and any measures taken by the government in response. An increase in corporate insolvencies and private bankruptcies could become a source of pressure, although there were no signs of a pronounced increase as at the reporting date.

3.2.2 Operational risk

To ensure that day-to-day operations could continue during the lockdowns that were imposed to contain the pandemic, the entities in the DZ BANK Group made additional technical equipment available to facilitate **remote working**. Medical protective measures and safety plans for enclosed spaces were implemented in order to protect the **health of employees**.

4 Fundamental principles of risk management

4.1 Regulatory framework for risk management

The **DZ BANK Group's risk management system** takes into account 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 the DZ BANK Group designed the risk management system, it followed the guidance provided by the EBA and the European Insurance and Occupational Pensions Authority (EIOPA), together with the pronouncements of the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB) on risk management issues.

In the reporting year, DZ BANK updated its **group recovery plan** for the DZ BANK Group in accordance with the requirements specified by banking supervisors and submitted it to the ECB. 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) 2016/1075, various EBA guidelines, and the German Regulation on Minimum Requirements for the Design of Recovery Plans (MaSanV). As requested by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) [German Federal Financial Supervisory Authority], R+V prepared a hypothetical recovery plan in accordance with section 26 (1) VAG in conjunction with section 275 (1) VAG. **R+V's recovery plan** was updated in 2021 and submitted to BaFin on time.

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 that are 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 2021 in Germany, this was BaFin).

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 once again in 2021 supported 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.

4.2 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 the day-to-day handling of risk:
- **Leadership culture**: The management must set out clear expectations regarding the handling of risk and lead by example.
- **Risk appetite**: Every individual at DZ BANK must understand their role 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**: DZ BANK 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.

4.3 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 the supervisory authorities 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 threshold values are set internally. The values for the KPIs and the internal threshold values are shown in Fig. 5. The monthly overall risk report is used to monitor the internal threshold values.

4.4 Risk strategies

The **systematic controlled assumption of risk in relation to target returns** is an integral part of corporate control in the DZ BANK Group. The activities resulting from the business model require the ability to identify, measure, assess, manage, monitor, and communicate 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.

For each of the material risks, the Board of Managing Directors of DZ BANK draws up risk strategies that are linked to the **business strategy**. 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 risk strategies are each valid for one calendar year.

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

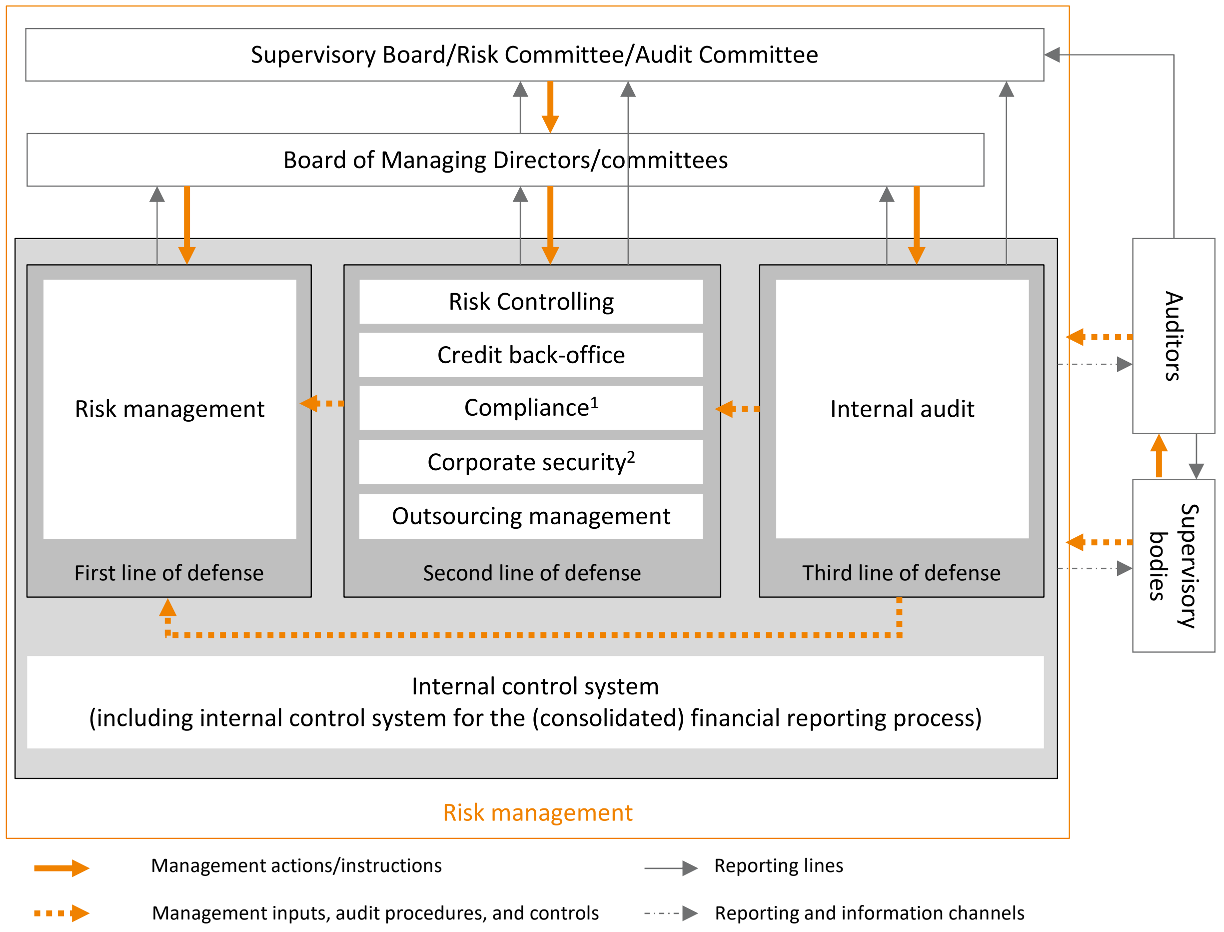
The risk strategies are described in the sections covering the individual risk types in this risk report.

4.5 Risk-oriented corporate governance

4.5.1 Governance structure

The DZ BANK Group's **risk management system** builds on the risk appetite statement and risk strategies. It is based on three lines of defense that are interlinked and well established in the monitoring and control environment. Fig. 6 shows the governance structure for risk management. R+V has implemented a modified governance structure because it is subject to different regulatory requirements.

FIG. 6 – GOVERNANCE STRUCTURE OF RISK MANAGEMENT IN THE DZ BANK GROUP (SCHEMATIC DIAGRAM)



1 Including data protection.
2 Including information security and business continuity management.

The **three-lines-of-defense model** clarifies the understanding of risk management within the DZ BANK Group and sets out the roles and responsibilities.

The interaction between the three functional areas, or lines of defense, is intended to provide 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 line of defense and related reporting to the Supervisory Board and Board of Managing Directors
- Second vote in credit decisions as defined in MaRisk BA and KAMaRisk
- Development and monitoring of principles for compliance with data protection requirements and structuring and monitoring of corporate security. This particularly affects the Group Risk Controlling, Credit, Credit Services, and Compliance divisions and the Group IT Governance department. These rules do not limit the data protection officers' freedom to operate independently.
- The Group Risk Controlling division and the Credit divisions (Credit and Credit Services) together form the risk management function.

Third line of defense:
- Process-independent examination and assessment of risk management and control processes in the first and second lines of defense
- Reporting to the Board of Managing Directors, Supervisory Board, and Audit Committee
- Communication with external control functions

Independent auditors, together with banking and insurance supervisory authorities, form the **external control functions** and these functions regularly hold discussions with all three lines of defense. The supervisory authorities can specify key points to be covered by independent auditors in their audits of financial statements. The auditors report to the supervisory authorities on the findings of their audits of financial statements and special audits.

Risk management is an integral component of governance and is therefore taken into account in the general management approach, in the management of subsidiaries via appointments to key posts, and in the DZ BANK Group's committees. The governance of the DZ BANK Group is described in chapter I.2.2 in 'DZ BANK Group fundamentals' in this (group) management report.

4.5.2 Risk management
Risk management refers to the operational implementation of the risk strategies 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 in the first line of defense are separated in terms of both organization and function from the divisions in the second and third lines of defense.

4.5.3 Risk control
Group Risk Controlling at DZ BANK is responsible for identifying, measuring, and assessing risk in the DZ BANK Group. This role 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. Group 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. In cooperation with the other management units, Group 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.

4.5.4 Credit back-office division

The Credit divisions of the entities in the Bank sector form the back office within the meaning of MaRisk BA and KAMaRisk. They are responsible for aspects of identifying, measuring, monitoring, and managing credit risk. These aspects include analyzing the risk (including ratings), approving or rejecting a credit decision with the back office's 'second vote', ensuring compliance with the credit risk strategy, and identifying and appropriately assessing the risks from loans to members of the governing bodies. The responsibilities of the back office also comprise the ongoing monitoring of loan exposures, including identifying and processing non-performing exposures and deciding on measures to be implemented if limits are exceeded, as well as the management of loan collateral. In the case of exposures that are relevant for management, the exposure throughout the group is taken into account and appropriate management guidance is given to the management units.

The Credit back-office division also specifies credit standards, processes, and procedures for the lending business and monitors compliance in a number of ways, notably through the comply-or-explain approach. In addition, the Credit divisions are responsible for supervising and updating the group credit risk reporting system, which complements the risk control reporting system.

4.5.5 Compliance

Compliance function

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 with 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, the 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 legal provisions, external and internal agreements, and internal standards. 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), a single compliance framework must be established for the main entities in the DZ BANK Group. This framework must lay down rules on cooperation between the individual compliance functions and set 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 compliance framework is reviewed annually to check that it is up to date.

Further disclosures relating to compliance risk can be found in sections 14.5.1 and 20.3.1.

Code of conduct

The risk culture principles (see section 4.2) are mirrored in the DZ BANK Group's code of conduct. The code of conduct represents a framework for the group entities, the details of which are implemented by means of internal regulations and policies in the management units according to their respective core businesses and entity-specific requirements. The code of conduct encompasses the responsibility to stakeholders who are directly affected by the management unit concerned. These stakeholders include customers, business partners, shareholders, and employees. Compliance with social and ethical standards also forms part of the code of conduct, as do aspects of sustainability.

The subsidiaries of DZ BANK have undertaken to uphold DZ BANK's standards on preventing money laundering, the financing of terrorism, and other criminal offenses. The measures required by the German Anti-Money Laundering Act (GwG) have been put in place and implemented. They are reviewed and modified on an ongoing basis. No corruption is tolerated, either in the entities of the DZ BANK Group or at business partners or other third parties. The DZ BANK Group implements appropriate organizational arrangements designed to ensure compliance with all applicable sanctions and embargoes.

Data protection

The entities in the DZ BANK Group have introduced suitable precautions aimed at ensuring 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. A Data Protection Officers working group was created for the DZ BANK Group in the reporting year; it generally meets three times a year. The working group deals with current issues relating to data protection.

4.5.6 Corporate security

The entities in the DZ BANK Group take into account the relevant regulatory requirements in the following areas of corporate security:
- Information security
- Business continuity management (contingency and crisis management).

The regulatory requirements are implemented in all of the group's subsidiaries by means of written specifications and compliance is monitored by DZ BANK.

Information security

The DZ BANK Group understands information security management to encompass organizational structures, processes, and IT infrastructures that serve to protect data and information.

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, information, 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.

Further disclosures relating to information risk, including ICT risk, can be found in sections 14.5.3 and 20.3.2.

Business continuity management

A groupwide business continuity management (contingency and crisis management) system has been set up to implement regulatory requirements throughout the group and to mitigate security risk relating to time-critical processes. Group standards are applied to address the regulatory minimum requirements for this system, and a governance process is used to track compliance with the standards.

At DZ BANK, business continuity management provides structures and methodologies that will enable time-critical business processes to be maintained should an emergency arise (dealing with emergencies). Measures to protect people, premises, and assets are also developed and implemented (preventing emergencies). In this way, DZ BANK aims to ensure that it can maintain its operations in the event of emergencies, even though the level of activity may have to be reduced. This applies particularly if there are situations in which whole groups of individuals, significant parts of the buildings or IT infrastructure, or the procurement of services are affected.

At DZ BANK, time-critical business processes are identified in accordance with the rules of the head-office team for business continuity management using business impact analyses and protected by business continuity planning. DZ BANK's business continuity management system has been certified in accordance with the ISO 22301 standard.

Further disclosures relating to security risk can be found in sections 14.5.4 and 20.3.3.

4.5.7 Outsourcing management

At DZ BANK, the Central Outsourcing Management unit acts as the central point of contact for all issues relating to the management of external procurement. This includes outsourcing and management-relevant external procurement (external procurement of IT services and other purchases from third parties). The Central Outsourcing Management unit is responsible for developing, introducing, and monitoring the framework specifications as well as for appropriately implementing the statutory requirements in respect of regulated external procurement at DZ BANK.

The sector-wide rules on outsourcing management include general requirements for the management units in the Bank sector to ensure that the management of outsourcing is largely standardized throughout the DZ BANK Group. The Insurance sector is subject to separate regulatory requirements that are described in internal guidance issued by R+V.

Further disclosures relating to outsourcing risk can be found in sections 14.5.5 and 20.3.4.

4.5.8 Control functions

Internal audit

The internal audit departments of the management units are responsible for control and monitoring tasks, which are carried out independently of individual processes. 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 the entities in the DZ BANK Group report to the chief executive officer or other senior managers of the entity concerned.

DZ BANK's internal audit department is responsible for internal audit tasks at group level. These tasks include, in particular, the design and 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 general parameters, the operational details of which are set out in a separate group audit manual. DZ BANK's internal audit department also carries out audit activities for selected subsidiaries under service agreements.

Supervisory Board

The Board of Managing Directors reports to the Supervisory Board of DZ BANK four times a year 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. The Board of Managing Directors also provides the Supervisory Board with reports about significant loan and investment exposures and the associated risks, again four times a year. The Supervisory Board discusses these issues with the Board of Managing Directors, advises it, and monitors its management activities. The Supervisory Board is involved in decisions of fundamental importance.

The Supervisory Board has set up a Risk Committee, which addresses issues related to overall risk appetite and risk strategy. The chairman of the Risk Committee reports to the full Supervisory Board four times a year on the material findings of the committee's work.
At least quarterly, the Board of Managing Directors makes the centrally produced risk reports available to the members of the Risk Committee and the other members of the Supervisory Board. 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
Independent **auditors** carry out audits pursuant to section 29 (1) sentence 2 no. 2a KWG in conjunction with section 25a (1) sentence 3 KWG in relation to the risk management system, including the internal control functions, of the entities in the Bank sector. For the Insurance sector, verification of the Solvency II balance sheet is carried out pursuant to section 35 (2) VAG and an audit of the early-warning system for risk, including the internal monitoring system of R+V, is carried out 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.

4.5.9 General internal control system

The objective of the internal control systems operated in the entities of the DZ BANK Group is to ensure the effectiveness and efficiency of business activity and compliance with the relevant legal provisions by means of suitable basic principles, action plans, and procedures.

DZ BANK has a bank-wide internal control system that is able to adapt to changing business and operating environments. The methodology of this control system is based on the Internal Control – Integrated Framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO), a comprehensive and internationally accepted framework for the appropriate design of internal control systems.

As part of the control system, regular updates and assessments are carried out in respect of the internal controls for reducing material risk in the business processes documented in the written set of procedural rules. The outcome of the assessments provides a statement on the appropriateness and effectiveness of the bank-wide internal control system for the Board of Managing Directors and Supervisory Board. The organizational and technical measures integrated into DZ BANK's operational and organizational structure are the starting point for the design of the controls.

The internal control system for the (consolidated) financial reporting process, which is described in section 4.5.10 below, is a sub-system of the bank-wide internal control system.

4.5.10 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 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, the entities in the DZ BANK Group 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 with DZ BANK's Group Finance division, 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 instructions and rules are audited to assess whether they remain appropriate and are amended in line with changes to internal and external requirements.

Resources and methods for minimizing risk

The group's financial reporting process is decentralized. Responsibility for preparing and checking the quantitative and qualitative information required for the consolidated financial statements lies with the organizational units used for this purpose in the entities of the DZ BANK Group. DZ BANK implements the relevant controls and checks in respect of data quality and compliance with the DZ BANK Group rules.

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 used for this purpose in the entities of 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 subsidiaries. These plans set out the procedures for collating and generating the quantitative and qualitative information required for the preparation of statutory financial reports. The plans also apply to the financial reports prepared for DZ BANK.

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 IT systems. 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 automated and manual checks.

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.

Information technology

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 IT security principles in the 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 audits carried out by the internal audit departments of the entities in the DZ BANK Group.

Ensuring and improving effectiveness

The processes used are reviewed to ensure they remain appropriate and fit for purpose; they are adapted in line with new products, circumstances, or changes in statutory requirements. To guarantee and increase the quality of (consolidated) accounting in the entities of 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 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.

4.6 Risk management tools

4.6.1 Accounting basis for risk management

Accounting basis for risk measurement

The transaction data that is used to prepare the DZ BANK Group's consolidated financial statements forms the basis for the measurement of risk in the Bank sector and Insurance sector. Similarly, the transaction data used by the entities in the DZ BANK Group to prepare separate financial statements and subgroup financial statements is also used for the measurement of risk in the management units. 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 risk report.

The line items in the consolidated financial statements significant to risk measurement are shown in Fig. 7. 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.

FIG. 7 – RISK-BEARING LINE ITEMS IN THE CONSOLIDATED FINANCIAL STATEMENTS[1]

		BANK SECTOR												INSURANCE SECTOR									
		Credit risk				Market risk								Actuarial risk			Market risk						
						General market risk																	
Consolidated financial statements		Traditional credit risk	Issuer risk	Replacement risk	Equity investment risk	Interest-rate risk	Equity risk	Fund price risk	Currency risk	Commodity risk	Spread risk and migration risk	Asset-management risk	Technical risk of a home savings and loan	Life	Health	Non-life	Interest-rate risk	Spread risk	Equity risk	Currency risk	Real-estate risk	Counterparty default risk	Operational 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 line items in the consolidated financial statements, the details for liquidity risk are not provided here for reasons of clarity.

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 8.6.2.

The investments used for the purposes of measuring **equity investment risk** are the following items reported in note 56 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 issuer and credit spreads using available market data whereas the accounting treatment uses liquid bond prices. If no liquid prices are available for bonds, issuer and credit spreads are also used to measure bonds for accounting purposes. 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 64 and 65 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**. Insurance liabilities are also a determining factor in the calculation of **risks from entities in other financial sectors**. The line item Investments held by insurance companies is 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 in the Bank sector, **business risk** (Bank sector), and **reputational risk** (Bank sector and Insurance sector) are measured without a direct link to balance sheet line items reported in the consolidated financial statements. On the other hand, **operational risk in the Insurance sector** is based on insurance liabilities.

The calculation of **liquidity risk** is derived from future cash flows, which in general terms are determined from all of the on-balance-sheet and off-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.

4.6.2 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**. The group uses this approach to implement the regulatory requirements for the internal liquidity adequacy assessment process (ILAAP) and the internal capital adequacy assessment process (ICAAP). This involves dovetailing between the economic and normative internal perspectives within the ILAAP and ICAAP.

A distinction is also made between **economic and normative internal liquidity adequacy and between economic and normative 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**. There is no capital requirement in connection with 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).

Liquidity risk at R+V (Insurance sector) is not material at DZ BANK Group level. This is because liquidity is typically tied up in liabilities with maturities of five years or more in insurance business.

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 one year and a unilateral confidence level of 99.9 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 99.5 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 sector-specific and cross-sector 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, which aim to provide a holistic view across all types of risk.

4.6.3 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. They also help to identify and quantify specific risks and potential risk concentrations in the DZ BANK Group or in individual portfolios and to assess risk drivers, vulnerabilities, and threats.

The stress tests include scenarios for the purposes of liquidity management, capital, funding, and balance sheet planning, as well as internal capital and risk management. Stress tests are also carried out as part of bank recovery and resolution planning. Furthermore, the DZ BANK Group takes part in supervisory stress tests organized by the EBA and ECB. The outcome of the stress tests provides guidance for the management of risk, business planning, and decisions on liquidity measures or corporate action.

4.6.4 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 aims to ensure 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 and monitored using a traffic light system.

4.6.5 Hedging objectives and hedging transactions

Hedging activities can be undertaken where appropriate in order to transfer 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 86 of the notes to the consolidated financial statements.

DZ BANK has not recognized any hedges on the balance sheet in accordance with section 254 HGB.

4.6.6 Risk reporting and risk manual

The quarterly **overall risk report** includes the risks throughout the group identified by DZ BANK. Together with the **DZ BANK Group stress tests report**, which is also compiled on a quarterly basis, the overall risk report is the main channel through which risks incurred by the DZ BANK Group and the management units are communicated to the Supervisory Board's Risk Committee, the Board of Managing Directors, and the Group Risk and Finance Committee. Economic and regulatory key risk indicators are also made available to the Board of Managing Directors in a **monthly overall risk report**, which is intended to ensure that the Board is informed promptly about the overall risk situation. In addition, the Board of Managing Directors and the Supervisory Board's Risk Committee receive 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.

To complement the above, the management units have further reporting systems for all relevant types of risk. Depending on the degree of materiality in the risk exposures concerned, these systems aim to ensure that decision-makers and supervisory bodies receive transparent information at each measurement date 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 has Solvency II guidelines.

4.6.7 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.

DZ BANK also conducts an annual **appropriateness test**, both for itself and at DZ BANK Group level. The appropriateness test may also be carried out at other times in response to specific events. The aim is to check 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.

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.

5 General risk factors

The entities in the DZ BANK Group are exposed to a range of risk factors that could affect a number of risk types. These general risk factors are explained below.

The management of risk factors has been reorganized, as a result of which the **regulatory risk factors** previously assigned to business risk and the **rating downgrades** risk factor have been reclassified as risk factors affecting all types of risk. Consequently, the disclosures included in sections 10.3.1 (Regulatory risk factors) and 10.3.3 (Rating downgrades) in the 2020 risk report have been moved to sections 5.1 and 5.4 respectively in the 2021 risk report.

5.1 Regulatory risk factors

5.1.1 Regulatory capital buffers

BaFin has set a countercyclical capital buffer rate for banks of 0.75 percent. It is also planning to introduce a systemic risk buffer for the residential real estate sector of 2 percent of the risk-weighted assets attributable to these exposures. The domestic buffer rate for the countercyclical capital buffer is currently 0 percent. The sectoral systemic risk buffer is a new risk buffer. These two capital buffers are to be met using common equity Tier 1 capital and are likely to result in higher minimum requirements for the common equity Tier 1 capital ratio, Tier 1 capital ratio, and total capital ratio. Based on the latest information, the new rules are expected to apply from February 1, 2023 onward.
All management units in the Bank sector are affected by the countercyclical capital buffer. The sectoral systemic risk buffer will affect DZ BANK, BSH, and DZ HYP. The two capital buffers will also apply at the level of the DZ BANK banking group.

There is a risk that, in the face of higher minimum requirements, it will not be possible to obtain the necessary additional own funds needed to comply with the stricter requirements, it will be possible to obtain them only at increased cost, or existing risk-weighted assets will have to be scaled back. This could reduce profitability and limit the flexibility enjoyed by the management units in the Bank sector and by the DZ BANK Group as a whole in the operation of their business. However, this would only be the case if the capital ratios measured in the future were significantly lower than at present. This scenario is not currently foreseeable.

5.1.2 Switch in interest-rate benchmarks

To implement Regulation (EU) 2016/1011 (Benchmarks Regulation) and to respond to international market developments, the German and European financial industry is currently pressing ahead with the replacement of the present interest-rate benchmarks (some of which do not comply with the EU Benchmarks Regulation) with (virtually) risk-free interest-rate benchmarks.

The reformed interest-rate benchmarks and the new risk-free interest-rate benchmarks are provided by central banks or administrators. Such administrators must be entered in the benchmarks register maintained by ESMA. This means that Euribor can continue to be used, but EONIA can no longer be used because it was discontinued at the end of 2021. In the case of Libor rates, which are already compliant with the EU benchmark requirements, the banks involved were expected to continue supplying the necessary data only up to the end of 2021. The Financial Conduct Authority (FCA), which is responsible for regulating interest-rate benchmarks in the United Kingdom, had published the announcement of ICE Benchmark Administration (the administrator engaged by the UK government to manage Libor), according to which the Libor settings in Swiss francs, pound sterling, Japanese yen, and euros would be discontinued at the end of 2021. The administrator will provide a 'synthetic' (non-representative) Libor for the Japanese yen and pound sterling until further notice. However, it can only be used for existing business that is difficult to amend, known as the 'tough legacy'.

Since December 31, 2021, the aforementioned Libor settings have no longer been deemed representative by the supervisory authorities. US dollar Libor will be discontinued on June 30, 2023. From January 1, 2022 to June 30, 2023, US dollar Libor will continue to be available, primarily for existing business. The extension of the deadline for US dollar Libor offers significant relief to the entities in the DZ BANK Group because they now have more flexibility regarding timing for the required changeover of the affected contracts to successor interest-rate benchmarks. This reduces the risk that the affected transactions of the entities in the Bank sector will be adversely affected by a late or delayed changeover to an alternative interest-rate benchmark.

The main reformed interest-rate benchmark of significance for the entities in the DZ BANK Group is Euribor; the new risk-free interest-rate benchmarks of significance are €STR, SOFR, SONIA, and SARON. Under the IBOR reforms, the new risk-free interest-rate benchmarks were designated as the replacements for the previous interest-rate benchmarks, such as EONIA and Libor. Assets and liabilities of entities in the DZ BANK Group in national and international interbank and customer business are linked to the aforementioned interest-rate benchmarks. The changeover of the transactions that previously referenced EONIA was carried out as at December 31, 2021. Business continuity is assured due to Implementing Regulation (EU) 2021/1848 dated October 21, 2021 on the designation of a replacement interest rate. The changeover of individual transactions referencing non-US dollar Libor is to be completed by the relevant first fixing after the benchmark is discontinued. The deadline for the changeover of the transactions referencing US dollar Libor is June 30, 2023. However, a number of issues need to be clarified before then, especially regarding new market practices and the establishment of possible successor interest-rate benchmarks.

If the changeover of the relevant contracts to the successor interest-rate benchmarks for US dollar Libor is not completed by the aforementioned deadlines, there is a risk that the ability of the entities in the Bank sector to handle the transactions concerned may be constrained. The transactions affected are, for example, the issuance of floating-rate securities referencing a Libor rate or interest-rate derivatives. Both the acquisition of new business and the calculation and billing of interest payments in connection with securities already issued, and the valuation of these securities, could be adversely affected. This could give rise to business risks (such as withdrawal from profitable areas of business), legal risks (such as compensation claims), and reputational risks.

The risks described above also apply in relation to interest-rate benchmarks from administrators based in third countries, in respect of which the European Commission has not yet made any decision regarding equivalence. Such administrators have thus not yet been able to obtain approval or register as third-country administrators with ESMA. In this regard, Libor and term rates based on risk-free rates are relevant to DZ BANK. For supervised entities such as DZ BANK, a reference to these third-country interest-rate benchmarks is only permitted in respect of financial instruments, financial contracts, and the measurement of the performance of investment funds if the reference to the interest-rate benchmark concerned has been completed by the end of the transitional period on December 31, 2023.

5.2 Macroeconomic risk factors

5.2.1 Low interest rates

Chapter V.1.5 in the outlook describes the anticipated trend in interest rates in 2022. Permanently low interest rates could have the following negative consequences for the DZ BANK Group.

- In BSH's **building society operations**, the current very low level of interest rates means that home savings loans are not particularly appealing for customers, whereas high-interest home savings deposits under older contracts are attractive. If interest rates were to go down yet again, interest income on home savings loans could fall further, while the interest expense for home savings deposits could rise. Furthermore, available liquidity could only be invested on the capital markets at low rates of return or disbursed in non-collective loans. Despite countermeasures being taken, such as the introduction of new scales of rates and charges and the implementation of portfolio measures, this would be an additional factor depressing earnings and could lead to a decrease in capital. The portfolio measures in the collective business (e.g. the use of termination rights) help to reduce high-interest home savings deposits under older contracts. When deciding whether to terminate older contracts, the business necessity and the interests of the stakeholders are always taken into consideration.

- In addition, a long period of low interest rates and the growing importance of central banks' bond-buying programs also increase the risk of **incorrect valuations** in the financial and real estate markets in the form of significant overpricing. If bubbles like this are created, there is a risk of a sudden correction, which could lead to a sharp drop in share prices and widening credit spreads. In extreme cases, a **market crisis** of this nature could cause the interbank market to crash. These effects could increase the specific risk factors applicable to liquidity risk and the risks covered by capital, resulting in a fall in the DZ BANK Group's liquidity and capital adequacy. Information on the inclusion of market crises in liquidity risk management can be found in sections 6.2.5 and 6.2.7.

Further potential effects of the low interest rates on **individual risks in the DZ BANK Group** are described within the sections of this risk report covering the following:
- Market risk factors in the Bank sector (section 10.3.2)
- Market risk factors in the Insurance sector (sections 17.2 and 17.3.5).

5.2.2 Risks to the global economy

Chapter V.1 in the outlook includes assessments as to the expected economic impact of the **COVID-19 pandemic** in the coming year. Chapter V.1.1 in the outlook also provides information on the anticipated developments in **international trade disputes** and risks arising from geopolitical disputes, such as the military **confrontation between Russia and Ukraine**.

In addition to the above information, the impact of the COVID-19 pandemic and the international trade disputes on **the DZ BANK Group's risks** is also discussed within the sections of this risk report covering the following:
- Credit risk factors in the Bank sector (section 8.3.2)
- Market risk factors in the Bank sector (section 10.3.2)
- Market risk factors in the Insurance sector (section 17.2).

5.2.3 Economic divergence in the eurozone

Although **Italy** has made significant progress, its government debt remains high and its credit quality is still in need of improvement. Italian banks therefore have to accept an appropriate risk premium if they want to obtain funding in the capital markets. In 2020, the financial performance of Italian banks had suffered due to large additions to loss allowances as well as losses relating to the ongoing elimination of non-performing loans. In 2021, however, the brighter economic outlook meant there was a much smaller need for loss allowances, which boosted the banks' financial performance. This trend is set to continue in 2022 in view of the expected robust rate of economic growth. Despite the forecast decrease in government debt – as a percentage of gross domestic product (GDP) – in 2022 and 2023, it will remain at a high level, partly due to the devastating initial impact of the COVID-19 pandemic and the resulting economic problems. This means that Italy will continue to have very high funding requirements. The financial risks arising from capital markets funding are currently being mitigated by the bond-buying program, the ECB's low-interest-rate policy, and the high level of central bank liquidity. However, a rise in interest rates, a reduction in bond purchases, or the absence of progress with eliminating government debt could again make it very difficult for Italy and its banks to access the capital markets in 2022.

The ongoing COVID-19 pandemic continues to substantially exacerbate the existing difficulties in **Spain**. Its already high level of government debt is coming under even more pressure due to increased government spending as part of its fiscal support measures, although COVID-19 support provided by the EU is helping to ease the situation. Despite early signs of economic recovery and thus the prediction of slightly higher growth rates for GDP, the macroeconomic outlook is only cautiously optimistic in view of the persistently high unemployment rate. The tensions in Catalonia could give rise to further risks for the Spanish economy. Overall, these factors could prejudice the ability of the country and its banks to obtain funding in international capital markets.

Portugal's financial strength is restricted by a significant level of government, corporate, and personal debt that has risen even higher owing to the COVID-19 pandemic. An economic recovery is forecast in the medium term thanks to domestic and EU-funded economic support, but this is contingent on economic policy remaining focused on cost-saving measures and reforms after the snap election that was brought forward to January 2022. There are further risks to financial stability in the still ailing banking sector, where banks are carrying substantial portfolios of non-performing loans and have relatively poor capital ratios. To add to this, the earnings prospects for the sector are weak because of the current low level of interest rates. The Portuguese financial market is highly susceptible to volatility in investor confidence. At the same time, the country's ability to respond to negative shocks with fiscal policy measures is limited because of the high level of public debt.

In the last few years, the **expansionary monetary policy of the ECB**, and particularly its buying programs in various bond segments, largely prevented the structural problems in some European Monetary Union (EMU) member countries from being reflected in the capital markets. Expansion of the ECB's asset purchase programs has so far limited the widening of credit spreads. But there is a risk that this situation could change if the pandemic emergency purchase program (PEPP) were to end. Highly indebted countries could find it considerably more difficult to arrange funding through capital markets.

The effects of the economic divergence in the eurozone particularly impact on the **credit risk of the Bank sector**. Details are provided in section 8.3.2 (Credit risk factors in the Bank sector).

5.2.4 Inflation – stagflation

Chapter V.1 of the outlook describes the anticipated trend in inflation. Given the risk that prices will continue to rise faster than the currently expected rates of inflation, this issue is also addressed below as a risk factor.

Prices in the eurozone increased markedly in 2021 due to a combination of several factors. As well as low prices in the previous year and pent-up demand for consumer products and capital goods as a result of the pandemic, the main reasons were rising energy prices worldwide and problems in global supply chains. The military confrontation between Russia and Ukraine is causing energy prices to rise even more quickly. Current shortages of some products as a result of the supply bottlenecks may still trigger substantial price increases for manufacturers, which may pass them on to consumers. This means that there is a risk that the currently elevated level of inflation may not be a temporary phenomenon and some major components could keep the inflation rate above the ECB's inflation target for an extended period. This would be particularly problematic if the higher prices, combined with the reduction in manufacturing output, also made consumers reluctant to spend and wages rise, as this would result in a wage/price spiral. This could ultimately lead to a phase of stagflation, i.e. a combination of elevated inflation, stagnant output and demand, and rising unemployment. Moreover, the ECB's latitude for tackling inflation is probably more limited than in the past, not least because the pandemic has resulted in further increases in government debt in vulnerable eurozone countries.

The effects of stagflation on the risks in the Bank sector are described in section 8.3.2 (Specific credit risk factors) of this risk report.

5.3 ESG risk factors

5.3.1 Concept of ESG risk factors

The ESG risk factors are not delineated as a separate risk type in the DZ BANK Group. Rather, they are events or conditions affecting environmental (E), social (S), or corporate governance (G) matters that have an effect on the managed risks and, through this transmission mechanism, could have an adverse impact on the DZ BANK Group's financial position or financial performance.

Fundamentally, all of the risk types relevant to the DZ BANK Group are affected by the ESG risk factors. The risks that are managed as part of ICAAP are covered by capital. Evaluation of the ESG risk factors was a focus of the risk inventory check conducted in 2021.

DZ BANK is currently analyzing the effects of various regulatory initiatives on the management of environmental, social, and corporate governance (ESG) risks, in particular, the Guide on climate-related and environmental risks published by the European Central Bank (ECB) and the delegated regulation concerning the EU's climate taxonomy. In addition, DZ BANK will participate in the ECB's macroeconomic climate stress test, which is scheduled for 2022. DZ BANK uses a classification tool based on the 17 sustainable development goals of the United Nations to assess the sustainability of the lending business. In addition, DZ BANK analyzes the transition risks of its credit portfolio, focusing in particular on the combination of climate-related, environmental, and credit risks.

5.3.2 Climate-related and environmental risks

The significant risks in relation to the environmental aspect of the ESG risk factors are physical climate-related and environmental risks and transition risks. The **physical climate-related and environmental risks** may relate to acute events, for example the more frequent occurrence of natural disasters such as flooding, or negative effects attributable to long-term climate change.

Transition risks may occur in connection with the switch to a lower-carbon and more environmentally friendly economy. They are frequently linked to new legislation and changes in consumer behavior.

Property damage caused by climate change and the transformation to a low-emission economy could have a considerable negative impact on the real economy, the financial system, and banks.

Climate-related and environmental risks affect the following risks managed by the DZ BANK Group:

– **Physical climate-related and environmental risks** affect the lending business of the entities in the Bank sector. Their significance to **credit risk** in the Bank sector is described in section 8.3.2.

– In the Insurance sector, catastrophe risk (which forms part of **non-life actuarial risk**) is the main type of risk that could be significantly affected by physical climate-related risk (see sections 16.2 and 16.5). Specifically, in any one year, the actual impact from the size and frequency of losses could exceed the forecast impact.

– In both the Bank sector and the Insurance sector, physical climate-related risk materializing in a number of forms, such as weather or environmental events, could also give rise to **operational risk** from the non-availability of buildings. This type of security risk is described for the Bank sector in section 14.5.4, and for the Insurance sector in section 20.3.3.

– Furthermore, negative effects from physical climate-related risk on the **reputation** of individual entities in the DZ BANK Group or on the DZ BANK Group as a whole cannot be ruled out.

Climate-related transition risk, as a consequence of the transition to a lower-carbon, more sustainable economy, could be reflected in all of the risk types that are material to the DZ BANK Group. In the case of **credit risk** in the Bank sector, for example, this could be the deterioration of borrowers' ability to service their debts owing to regulatory changes to public policy, such as the transition to clean energy, carbon pricing, environmental protection requirements, and resource conservation requirements. Moreover, climate-related and environmental legal risks could create reputational damage, as could changes in consumer behavior.

5.3.3 Social risks and corporate governance risks

Social risks could arise due to inadequate standards for upholding DZ BANK Group employees' **basic rights** and for **protecting them against discrimination** or due to inappropriate **leadership practices**. If social risks materialize, employees may bring financial claims against entities in the DZ BANK Group or employees may leave who are particularly crucial to the success of the business. Ineffective or disruptive **business processes** may also lead to the loss of key employees. Other potential sources of social risk are unfair, opaque, or improper business practices in respect of customers, especially if these lead to changes in customer behavior or in demand.

Potential causes of **corporate governance risks** include **governance structures** that are inadequate or lack transparency. Another possibility is if an entity has an inadequate **code of conduct** or does not have one at all. These shortcomings may weaken employees' confidence in the effectiveness of the entity's senior management and lead to ineffective business processes. A lack of, or only inadequate, measures to tackle **money laundering** and all forms of **corruption** (acceptance of advantages, granting of advantages, active bribery, and passive bribery) constitute further forms of corporate governance risk. They may damage the DZ BANK Group entities' reputation among employees, customers, and business partners.

Social and corporate governance risks alike may have negative effects on the **reputation** of individual entities in the DZ BANK Group or on the DZ BANK Group as a whole.

Both risk factors may also arise as a **primary effect**, initially at the level of customers in the lending business of the Bank sector and at the level of counterparties and debtors of R+V. There is then a danger that the materialization of these risk factors leads to a **second-round effect** because the deterioration of customers' credit quality creates heightened credit risk (Bank sector) and counterparty default risk (Insurance sector), thereby resulting in a growing requirement for impairment losses at the entities in the Bank sector and at R+V.

5.4 Rating downgrades for DZ BANK

For the entities in the DZ BANK Group, their own credit rating is an important element in any comparison with competitor banks. A downgrade or even just the possibility of a downgrade in the rating for a management unit could have a detrimental effect in all entities in the DZ BANK Group on the relationship with customers and on the sale of products and services.

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 DZ BANK's **costs of raising equity and borrowing**. In the event of a rating downgrade, new **liabilities** could also arise, or liabilities dependent on the maintenance of a specific credit rating could become due for immediate payment.

Furthermore, if a rating downgrade were to occur, the management units could face a situation in which they had to furnish additional **collateral** in connection with rating-linked collateral agreements for derivatives (regulated by a credit support annex to an appropriate master agreement for financial futures) or in which they were no longer considered suitable **counterparties for derivative transactions** at all.

If the credit rating for a management unit were to fall out of the range covered by the top four rating categories (investment-grade ratings, disregarding rating subcategories), the operating businesses of all the entities in the

DZ BANK Group could be adversely affected. This could also lead to an increase in the **liquidity requirement in relation to derivatives** and to a rise in **funding costs**. The effects of downgrades of long-term ratings are discussed in the section covering the measurement of liquidity risk (see section 6.2.5).

In June 2021, **Standard & Poor's** lowered DZ BANK's long-term issuer rating by one notch to A+ with a stable outlook. This change of rating also affected the majority of issue ratings and the short-term rating. The main reason for the downgrade was the bleaker view of the German banking market. In October 2021, **Moody's** also lowered DZ BANK's long-term issuer rating by one notch to Aa2 with a stable outlook. The main reason for this downgrade was a changed assessment of the cooperative financial network owing to the difficult market conditions. This led to a reduction in the support factor from the cooperative financial network for DZ BANK's rating, which was previously three notches and is now two notches. In the reporting year, **Fitch** confirmed DZ BANK's ratings at AA- and raised the outlook from negative to stable.

6 Liquidity adequacy

6.1 Principles

The management of liquidity adequacy is an integral component of business management in the DZ BANK Group and the management units. 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 normative internal (regulatory) perspective. Whereas the economic perspective takes into account the requirements of MaRisk BA and the ECB Guide to the ILAAP, the normative internal perspective – while also taking account of the ECB Guide to the ILAAP – additionally applies the requirements from the CRR and the German national requirements for the implementation of the Capital Requirements Directive (CRD) in the KWG.

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. Liquidity risk is significantly influenced by the risks that are backed by capital and those that are not backed by capital. In particular, reputational risk is relevant to liquidity risk. The DZ BANK Group fulfills the regulatory liquidity adequacy requirements by managing economic liquidity adequacy.

6.2 Economic perspective

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. Liquidity risk at DZ BANK to a large degree determines liquidity risk in the DZ BANK Group.

6.2.1 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. It is therefore defined as insolvency risk.

6.2.2 Business background and risk strategy

The activities of DZ BANK and the management units BSH, DVB, DZ HYP, DZ PRIVATBANK, TeamBank, and VR Smart Finanz are relevant to the level of liquidity risk in the DZ BANK Group.

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 aims to establish a binding basis for implementing these requirements at operational level.

The operations of the entities in the DZ BANK Group are governed by the principle that liquidity risk must only be assumed if it is in compliance 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 source of funding.

DZ BANK aims to ensure that the liquidity risk strategy is consistent with the **business strategies**. To this end, the liquidity risk strategy is reviewed at least once a year with due regard to the business strategies and adjusted as necessary.

6.2.3 Risk factors

The following factors, alone or in combination with each other, could lead to an increase in liquidity risk, adversely affect financial position and, in an extreme case, cause the insolvency of DZ BANK:
- Funding is withdrawn but cash nevertheless still flows out when legally due (**follow-up funding risk**).
- Derivatives result in greater collateral requirements that involve cash outflows (**collateral risk**).
- Changes in the fair value of financial instruments mean that less liquidity can be generated (**fair value risk**).
- Cash is paid out earlier than expected because drawing rights are exercised (**drawdown risk**).
- Cash outflows are earlier than expected or cash inflows later than expected because termination rights are exercised (**termination risk**).
- New business is entered into on a significant scale, resulting in cash outflows (**new business risk**).
- Products are repurchased on a significant scale, resulting in cash outflows (**repurchase risk**).
- The liquidity requirement to ensure intraday payment obligations can be satisfied is greater than expected (**intraday risk**).
- There has been a negative impact on opportunities for funding in foreign currencies, for example the generation of currency-related liquidity through currency swaps (**foreign currency funding risk**).

These events are incorporated into the calculation of liquidity risk as **stress scenarios** (see section 6.2.5).

6.2.4 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 one year and structural liquidity of one year or more are reported by liquidity risk control at DZ BANK on a daily basis to the **members of the Board of Managing Directors** of DZ BANK responsible for the Group Treasury and Group Risk Controlling divisions. 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 **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 in the unsecured money markets. This is reported to the **Treasury and Capital Committee** and the **Board of Managing Directors** on a monthly basis. These reports make a distinction between customers and banks, ensuring that any possible concentration risk as regards sources of liquidity can be clearly identified at an early stage.

6.2.5 Risk management

Measurement of liquidity risk

DZ BANK uses an **internal risk model** to determine liquidity risk for the DZ BANK Group and DZ BANK over a time horizon of one year. Using this model, four stress scenarios and one risk scenario are simulated on a daily basis. In addition to DZ BANK, all other entities in the DZ BANK Group relevant to liquidity risk are integrated into the groupwide measurement of this risk.

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.

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.

Liquidity risk stress tests

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 are defined as follows:

- **Downgrading**: Long-term ratings awarded by Standard & Poor's, Moody's, and Fitch Ratings to one or more entities in the DZ BANK Group downgraded by one notch. The downgrade is triggered by a deterioration in profitability or in the earnings forecast or by a preceding loss of confidence among customers and banks.

- **Corporate crisis**: Serious entity-specific crisis, for example caused by reputational damage. The main consequences of this scenario could be a considerable negative impact on customer behavior and the downgrading by three notches of the long-term ratings awarded by all of the aforementioned rating agencies.

- **Market crisis**: Turmoil in global money and capital markets. The primary feature of this scenario is a sudden, sharp fall in the value of assets traded in these markets. The scenario assumes, for example, a loss of confidence among money market players, which could lead to a liquidity squeeze.

- **Combination crisis**: Analysis of a combination of bank-specific and market-related factors. However, it does not constitute a mere aggregation of the two stress scenarios arising from a market crisis and a corporate crisis. Instead, the interaction between the two scenarios is taken into account. The combination crisis assumes that the financial sector would be particularly badly affected. The underlying scenario is also based on a deterioration in the reputation of the entities in the DZ BANK Group. It assumes there would only be very limited access to unsecured funding from customers, banks, and institutional investors over the forecast period of one year.

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.

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.

Management of limits for liquidity risk

Liquidity risk is monitored and managed with the aim of ensuring economic liquidity adequacy at every measurement date. 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 threshold value for economic liquidity adequacy specified in the risk appetite statement. The observation threshold and limit as at December 31, 2021 were unchanged compared with the end of 2020. 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 aims to ensure 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 treasury units of the management units. Active liquidity risk management is made possible by holding 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 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 for all significant products. The transfer pricing system takes into account the holding period and market liquidity of the products and has an impact on risk/return management.

6.2.6 Quantitative variables

Liquid securities

The available liquid securities have a significant influence on the level of the minimum liquidity surplus. Liquid securities are a component of the **counterbalancing capacity** and are largely held in the portfolios managed by DZ BANK's Group Treasury and Capital Markets Trading divisions or in the portfolios of the treasury units at the subsidiaries of DZ BANK. Only bearer bonds are counted 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 one-year forecast period that is relevant for liquidity risk.

Securities are only eligible as liquid securities if 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. 8 shows the liquidity value of the liquid securities that would result from secured funding or if the securities were sold.

FIG. 8 – LIQUID SECURITIES

	DZ BANK Group		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Liquid securities eligible for GC Pooling (ECB Basket)[1]	**16.4**	**21.7**	**9.8**	**14.1**
Securities in own portfolio	23.0	29.7	10.3	15.9
Securities received as collateral	16.9	8.5	16.9	8.5
Securities provided as collateral	-23.6	-16.5	-17.4	-10.3
Liquid securities eligible as collateral for central bank loans	**8.0**	**9.1**	**4.5**	**5.8**
Securities in own portfolio	20.5	20.5	13.4	13.4
Securities received as collateral	8.2	5.7	8.2	5.7
Securities provided as collateral	-20.6	-17.2	-17.0	-13.3
Other liquid securities	**5.9**	**6.1**	**5.6**	**5.8**
Securities in own portfolio	5.8	5.7	5.5	5.2
Securities received as collateral	0.1	0.8	0.1	0.8
Securities provided as collateral	-	-0.3	-	-0.2
Total	**30.3**	**36.9**	**19.9**	**25.7**
Securities in own portfolio	49.3	55.9	29.1	34.5
Securities received as collateral	25.3	15.0	25.3	15.0
Securities provided as collateral	-44.2	-33.9	-34.5	-23.8

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

As at December 31, 2021, the total liquidity value at the level of the **DZ BANK Group** was €30.3 billion (December 31, 2020: €36.9 billion). The total liquidity value attributable to **DZ BANK** as at December 31, 2021 was €19.9 billion (December 31, 2020: €25.7 billion). The decline in the volume of liquid securities was largely attributable to the sale of securities from the DZ BANK Group's own portfolio, and not replacing others as they matured, in favor of investments at the ECB.
Liquid securities represent the largest proportion of the counterbalancing capacity and make a major contribution to maintaining solvency 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 were almost exclusively responsible for maintaining solvency in the stress scenarios with defined limits.

Unsecured short- and medium-term funding

Other than liquid securities, the main factors determining the minimum liquidity surplus are the availability and composition of the sources of funding.

The DZ BANK Group has a 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**. Under these arrangements, the cooperative banks can invest free cash flow with DZ BANK. Conversely, if the cooperative banks need liquidity, they can obtain it from DZ BANK. This regularly results in a liquidity surplus in the DZ BANK Group and at DZ BANK, which provides one of the main bases for short-term funding in the unsecured money markets.

Corporate customers and **institutional customers** are another important source of funding for covering operational liquidity requirements in the DZ BANK Group. In the context of liquidity risk, corporate customers are those customers that are not banks and are not classified as institutional customers.

For funding purposes, the management units also issue **money market products based on debt certificates** under a standardized groupwide multi-issuer euro commercial paper program through the offices and branches in Frankfurt, New York, Hong Kong, London, and Luxembourg. DZ BANK also runs a US-dollar-denominated commercial paper program for Frankfurt. Key repo and securities lending activities, together with the collateral management process, are managed centrally in DZ BANK's Group Treasury division. Funding on the **interbank market** is not strategically important, either to the DZ BANK Group or to DZ BANK.

Each month, Group Treasury at DZ BANK prepares a groupwide **funding outlook** that is based on the funding requirements calculated for the DZ BANK Group and DZ BANK for the next twelve months.

The range of funding sources in the unsecured money markets is shown in Fig. 9. The information presented has changed compared with the 2020 risk report due to adjustments in internal management reporting. The changes in the composition of the sources of funding compared with the end of 2020 were attributable to money market policy implemented by the ECB and a pandemic-related increase in the savings ratio.

FIG. 9 – UNSECURED SHORT-TERM AND MEDIUM-TERM FUNDING

	DZ BANK Group		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Deposits	**97.5**	94.5	**83.6**	84.4
Deposits of local cooperative banks	58.5	61.6	58.5	61.5
Current account deposits of other customers	39.0	32.9	25.2	22.9
Money market borrowing	**32.2**	26.6	**28.7**	22.7
Central banks, interbank, and customer banks	5.5	6.0	5.2	5.1
Corporate customers and institutional customers	14.1	13.2	14.0	12.5
Certificates of deposit/commercial paper	12.6	7.5	9.5	5.1

Further information on liquidity management and funding can be found in chapter II.5 in the business report.

The **maturity analysis of contractual cash inflows and cash outflows** is set out in note 89 of the notes to the consolidated financial statements. However, the cash flows in these disclosures are not the same as the expected and unexpected cash flows used for internal liquidity risk management.

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 key risk indicator 'minimum liquidity surplus'. Fig. 10 shows the results of measuring liquidity risk. 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 one year is at its lowest point.

FIG. 10 – LIQUIDITY UP TO 1 YEAR IN THE STRESS SCENARIOS WITH DEFINED LIMITS: MINIMUM LIQUIDITY SURPLUSES FOR THE DZ BANK GROUP

	Forward cash exposure		Counterbalancing capacity		Minimum liquidity surplus	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Downgrading	-22.5	-31.1	51.7	58.4	29.2	27.4
Corporate crisis	-11.0	-34.2	32.9	49.6	21.9	15.3
Market crisis	-13.2	-32.8	42.2	53.9	29.0	21.1
Combination crisis	0.5	-35.8	18.9	53.5	19.4	17.7

The liquidity risk value measured for the **DZ BANK Group** as at December 31, 2021 for the stress scenario with defined limits with the lowest minimum liquidity surplus (squeeze scenario) was €19.4 billion (December 31, 2020: €15.3 billion). The liquidity risk value attributable to **DZ BANK** as at December 31, 2021 was €4.5 billion (December 31, 2020: €4.4 billion). The increase in the minimum liquidity surplus for the DZ BANK Group was largely due to an increase in current account deposits at DZ PRIVATBANK and to the issuance of Pfandbriefe at BSH.

The risk values as at December 31, 2021 for the **DZ BANK Group** were above the internal threshold value (€4.0 billion) and above the limit (€1.0 billion). They were also above the external minimum target (€0 billion). The observation threshold, limit, and external minimum target remained unchanged compared with 2020. Furthermore, **DZ BANK** did not exceed the limit of €325 million (December 31, 2020: €700 million).

The minimum liquidity surplus as at December 31, 2021 for both the DZ BANK Group and DZ BANK 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 in every 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 rating 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 Normative internal perspective

6.3.1 Regulatory framework

The normative internal perspective is based on the liquidity ratios required under Basel 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).

Since December 31, 2021, **DZ BANK** and **DZ HYP** have been applying the waiver pursuant to article 8 CRR (**liquidity waiver**). This was approved by the ECB in 2021. The waiver enables the LCR and NSFR to be applied at the level of a single liquidity subgroup consisting of DZ BANK and DZ HYP. This means that it is no longer necessary to comply with the regulatory liquidity requirements at the level of the two individual institutions. The two regulatory liquidity ratios did not change at the level of the DZ BANK banking group as a result of applying the waiver.

Internal liquidity risk management is supplemented by the LCR specified in the Basel III framework, which was transposed into law with the CRR and Commission Delegated Regulation (EU) 2015/61, and by the NSFR, which is based on the Basel III framework (BCBS 295) and which was implemented in European law with CRR II.

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. 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) 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. The 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. The NSFR-related requirements came into force on June 28, 2021 as part of CRR II. Since then, the NSFR has been managed 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 and Commission Delegated Regulation (EU) 2015/61 are calculated for DZ BANK by the **Group Financial Services** 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** (including DZ HYP) calculated in accordance with Commission Delegated Regulation (EU) 2015/61 are shown in Fig. 11.

FIG. 11 – LIQUIDITY COVERAGE RATIOS AND THEIR COMPONENTS

	DZ BANK banking group		DZ BANK (including DZ HYP)[1]	
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020[2]
Total liquidity buffer (€ billion)	97.3	91.4	84.6	73.7
Total net liquidity outflows (€ billion)	65.9	62.5	63.8	55.2
LCR (%)	**147.7**	**146.3**	**132.5**	**133.5**

1 DZ BANK and DZ HYP have formed a liquidity subgroup pursuant to article 8 CRR since December 31, 2021.
2 The values stated as at December 31, 2020 are those that were disclosed in the 2020 risk report and therefore do not reflect the effects of the liquidity waiver. DZ HYP is not included in the values for DZ BANK as at December 31, 2020.

The increase in the LCR for the **DZ BANK banking group** from 146.3 percent as at December 31, 2020 to 147.7 percent as at December 31, 2021 was largely attributable to higher excess cover at **DZ BANK**, although some of the gain was offset by countervailing effects in the other management units. The rise in excess cover at DZ BANK was mainly due to the issuance of long-term funding instruments. Excess cover in relation to the LCR is the difference between the liquidity buffer and the net liquidity outflows.

Due to the application of the liquidity waiver for the first time, the LCR as at December 31, 2021 comprised the liquidity buffer and the net liquidity outflows of the single liquidity subgroup consisting of DZ BANK and DZ HYP. Consequently, the LCR as at December 31, 2021 is not directly comparable with the LCR as at December 31, 2020 (before the liquidity waiver was applied).

The **internal threshold value** that applies only to the DZ BANK banking group (110.0 percent) was exceeded as at the reporting date. The regulatory **external minimum target** applicable to the DZ BANK banking group and to DZ BANK (100 percent) was also exceeded as at December 31, 2021. In view of the COVID-19 pandemic, the supervisory authorities tolerated a value that was temporarily below the external minimum target until December 31, 2021, but the DZ BANK Group did not need to use this option.

6.3.4 Net stable funding ratio

Since June 28, 2021, when CRR II began to apply, DZ BANK has been obliged to calculate the NSFR for the DZ BANK banking group. Following the granting of approval by the ECB to apply the liquidity waiver, it has also had to calculate the NSFR for the liquidity subgroup consisting of DZ BANK and DZ HYP since December 31, 2021. It manages the NSFR within groupwide liquidity risk management.

The NSFR is intended to limit mismatches between the maturity structures of assets-side and liabilities-side business. The 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. The NSFR, which has a longer-term focus, complements the LCR, which has a short-term focus.

The NSFR of the **DZ BANK banking group** and of **DZ BANK** (including DZ HYP) is shown in Fig. 12.

FIG. 12 – NET STABLE FUNDING RATIO AND ITS COMPONENTS

	DZ BANK banking group		DZ BANK (including DZ HYP)[1]	
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020[2]
Available stable funding (weighted equity and liabilities; € billion)	293.7	268.2	225.3	145.9
Required stable funding (weighted assets; € billion)	231.1	219.1	185.2	124.9
Excess cover/shortfall (€ billion)[3]	62.6	49.2	40.2	21.1
NSFR (%)	127.1	122.4	121.7	116.9

1 DZ BANK and DZ HYP have formed a liquidity subgroup pursuant to article 8 CRR since December 31, 2021.
2 DZ HYP is not included in the values as at December 31, 2020. The values relate to DZ BANK and correspond to the simulation produced for internal reporting purposes.
3 Excess cover = positive values, shortfall = negative values.

Excess cover in relation to the NSFR is the difference between the available stable funding and the required stable funding.

The increase in the NSFR from 122.4 percent as at December 31, 2020 to 127.1 percent as at December 31, 2021 and the related rise in excess cover were primarily due to the higher amount of available stable funding owing to DZ BANK's drawing down of long-term funding in the context of its participation in the ECB's TLTRO III program. The improved NSFR was also attributable to the greater volume of retail customer deposits at subsidiaries.

A change of method for the inclusion of deposits of the banks in the cooperative financial network (operational deposits from the cooperative financial network) also contributed to the increase in the NSFR. The method was changed with effect from September 30, 2021 following the ECB's approval of an application to increase the operational deposits from the cooperative financial network as a source of available stable funding from 50 percent to 75 percent.

As at the reporting date, both the **internal threshold** for the NSFR of 105.0 percent and the regulatory **external minimum target** of 100 percent were exceeded at the level of the **DZ BANK banking group**. The regulatory **external minimum target** of 100 percent was also satisfied at the level of **DZ BANK (including DZ HYP)** as at the reporting date.

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 the management units. 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 normative internal perspective. Whereas the economic perspective takes into account the requirements of the ECB Guide to the ICAAP and MaRisk BA, the normative internal perspective – while also taking account of the ECB Guide to the ICAAP – additionally applies the requirements from the CRR and the German national requirements for the implementation of the CRD.

The aim of the ICAAP is to ensure that, from two complementary perspectives (the economic and the normative internal perspectives), **capital resources are adequate** for an institution to be able to continue operating. Both perspectives are equally valid management approaches. They are integrated mainly on the basis of the risk inventory check, which the management uses to determine and specify the main risks in the DZ BANK Group.

All management units are included in the groupwide management of capital adequacy. Management of economic and normative internal capital adequacy aims to ensure that the assumption of risk is consistent with the capital resources of the DZ BANK Group, the DZ BANK financial conglomerate, and the DZ BANK banking group.

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

The management of economic and normative internal 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 limits and risk-weighted assets are planned 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. Any corresponding measures to raise capital are approved by the Treasury and Capital Committee or recommended to the Board of Managing Directors for approval. The implementation of the measures is then coordinated by **Group Treasury** at DZ BANK.

At DZ BANK, the **Group Finance** division is responsible for managing regulatory capital adequacy. Regular monitoring is designed to ensure that the applicable minimum regulatory requirements for solvency are met at every reporting date. Monitoring takes place monthly for the DZ BANK financial conglomerate, the DZ BANK banking group, and DZ BANK, and at least quarterly for 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 perspective

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

The **economic perspective** is an internally defined management perspective aimed at ensuring that all of the DZ BANK Group's material capital risks are fully backed by capital plus an internally specified management buffer. The economic perspective is based on the assumption that an institution will continue to operate as a going concern.

The economic perspective is based on internal risk measurement methods that take into account all types of risk that are material with regard to capital adequacy. The methods selected ensure that risk capital management is integrated across the group.

In the **risk-bearing-capacity analysis**, the risk capital requirement is compared with the available internal capital. The risk capital requirement is determined by aggregating the capital required for the various risk types relevant to the DZ BANK Group.

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 of 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 of 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 Board of Managing Directors determines the risk capital requirement **limits** for the year on the basis of the available internal capital. If necessary, the limits can be adjusted during the year, e.g. if economic conditions change. Since the third quarter of 2021, AT1-related components have no longer been included in the available internal capital. The method was changed due to implementation of a directive of the ECB.

The purpose of the **capital buffer** is to cover the lack of precision in some areas of risk measurement. A distinction is made between centralized and decentralized capital buffer requirements. Decentralized capital buffer requirements are managed within the limits for the individual risk types, whereas the centralized capital buffer is managed on the basis of a limit covering all sectors and risk types.

R+V uses two measures defined by the supervisory authorities – the transitional measure on technical provisions and the volatility adjustment – for individual personal insurance companies. Both measures have a positive impact on economic and regulatory capital adequacy. The transitional measure on technical provisions is a time-limited measure designed to make it easier for insurance companies to transition from Solvency I to the current regulatory regime, Solvency II. The volatility adjustment, which can be used indefinitely, prevents a brief phase of heightened market volatility from affecting the valuation of long-term insurance guarantees. Both measures have a positive impact on economic and regulatory capital adequacy.

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 internal threshold value for economic capital adequacy specified in the risk appetite statement, which in 2021 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 110.0 percent in the year under review, again unchanged compared with 2020. The threshold values for economic capital adequacy are reviewed annually and adjusted if necessary.

7.2.3 Risk-bearing capacity

Retrospective recalculation of the overall solvency requirement

The annual recalculation of the overall solvency requirement took place as at December 31, 2020 owing to scheduled changes to the parameters for the risk measurement procedures carried out in the second quarter of 2021 for the Insurance sector on the basis of R+V's 2020 consolidated financial statements and the updating of actuarial assumptions. 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, 2020 given in this risk report have been restated accordingly and are not directly comparable with the figures in the 2020 opportunity and risk report.

Available internal capital and limit

The DZ BANK Group's **available internal capital** as at December 31, 2021 stood at €31,532 million. The comparable figure as at December 31, 2020 was €30,020 million. The increase in available internal capital compared with December 31, 2020 was largely attributable to the Insurance sector, where the main factors were developments in the capital markets, portfolio changes, and the merger of R+V Luxembourg S.A., Luxembourg-Strassen, with R+V Lebensversicherung AG in 2021.

Fehler! Verweisquelle konnte nicht gefunden werden. The **limit** derived from the available internal capital was specified at €23,588 million as at December 31, 2021 (December 31, 2020: €23,730 million).

As at December 31, 2021, **aggregate risk** was calculated at €15,151 million. The comparable figure as at December 31, 2020 was €17,482 million. The decrease was primarily driven by lower credit risk and market risk in the Bank sector and by a sharp fall in actuarial risk in the Insurance sector.

Economic capital adequacy

As at December 31, 2021, the economic capital adequacy ratio for the **DZ BANK Group** was calculated at 208.1 percent. The comparable figure as at December 31, 2020 was 171.7 percent. As at the reporting date, the economic capital adequacy ratio was higher than the internal threshold value of 120.0 percent and the external minimum target of 100.0 percent. The internal threshold value and the external minimum target for 2021 were unchanged compared with those for 2020. The increase in the economic capital adequacy ratio compared with the end of 2020 was due to the higher amount of available internal capital and the reduction in aggregate risk.

Fig. 13 provides an overview of economic capital adequacy and its components.

FIG. 13 – ECONOMIC CAPITAL ADEQUACY OF THE DZ BANK GROUP

	Dec. 31, 2021	Dec. 31, 2020
Available internal capital (€ million)[1]	31,532	30,020
Limit (€ million)	23,588	23,730
Aggregate risk (€ million)[1]	15,151	17,482
Economic capital adequacy (%)[1]	**208.1**	**171.7**

1 Value as at December 31, 2020 after recalculation of R+V's overall solvency requirement. Different values were stated in the 2020 risk report.

In the case of the risk types in the Bank sector and Insurance sector, the risk capital requirement also contains any decentralized **capital buffer requirement** that has been assigned. To simplify matters, only the terms 'risk capital requirement' and 'overall solvency requirement' will be used in the remainder of this risk report. These include the decentralized capital buffer requirement.

The limits and risk capital requirements for the **Bank sector**, broken down by risk type, are shown in Fig. 14.

FIG. 14 – LIMITS AND RISK CAPITAL REQUIREMENTS IN THE BANK SECTOR

	Bank sector				DZ BANK			
	Limit		Risk capital requirement		Limit		Risk capital requirement	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Credit risk	7,188	6,978	5,037	5,496	2,750	2,730	2,134	2,227
Equity investment risk	1,220	1,090	996	936	700	725	636	634
Market risk	5,725	5,725	3,713	4,310	2,400	2,600	1,517	1,908
Technical risk of a home savings and loan company[1]	706	550	639	545				
Business risk[2]	640	550	407	382	445	500	295	356
Operational risk	1,102	1,020	941	844	596	547	515	467
Total (after diversification)[3]	**15,403**	**14,835**	**10,871**	**11,647**				

Not relevant

1 Including business risk and reputational risk of BSH.
2 Apart from that of BSH, reputational risk is contained in the risk capital requirement for business risk.
3 The total after diversification is not shown for DZ BANK because the management within the Bank sector is by risk type.

Fig. 15 sets out the limits and overall solvency requirements for the **Insurance sector**, broken down by risk type, and includes policyholder participation. The definition of the 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 limit for each risk type are not cumulative.

FIG. 15 – LIMITS AND OVERALL SOLVENCY REQUIREMENTS IN THE INSURANCE SECTOR

	Limit		Overall solvency requirement	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020[1]
Life actuarial risk	600	1,400	328	1,070
Health actuarial risk	350	700	240	293
Non-life actuarial risk	4,600	4,500	1,762	3,780
Market risk	4,400	5,750	3,127	3,511
Counterparty default risk	350	220	222	178
Operational risk	1,000	800	715	694
Risks from entities in other financial sectors	180	140	124	126
Total (after diversification)	**7,460**	**8,170**	**3,705**	**5,201**

1 Values after recalculation of the overall solvency requirement. Different values were stated in the 2020 risk report.

In addition to the figures shown in Fig. 14 and Fig. 15, the aggregate risk includes **a centralized capital buffer requirement across all types of risk**, which was calculated at €575 million as at December 31, 2021 (December 31, 2020: €633 million). The corresponding **limit** was €725 million (December 31, 2020: €725 million). The reduction in the central capital buffer requirement was predominantly due to DVB's business risk being transferred to the decentralized capital buffer requirement.

7.2.4 Possible impact from crystallized risk covered by capital

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 that 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. 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 Normative internal perspective

7.3.1 Regulatory framework

The normative internal perspective is based on the capital ratios in Basel Pillar 1. It comprises three management dimensions: monitoring of actual regulatory KPIs, capital planning, and adverse stress tests.

Whereas the monitoring of actual and projected figures, together with capital planning, in the baseline scenario focuses on the current regulatory ratios and their changes in probable scenarios, the analysis of these ratios in adverse scenarios is based on capital planning and the quarterly adverse stress tests.

From the normative internal perspective, the DZ BANK Group's risk-bearing capacity is assured if, in the medium term, the group is in a position to meet all regulatory minimum solvency requirements at any future reporting date, even in crisis situations. An internal management buffer over and above the regulatory requirements for each ratio is also included in order to ensure that the group has an adequate level of capital.

The normative internal perspective is an integral part of the ICAAP. The key risk indicators in the normative internal perspective are specified by the regulatory requirements, mainly the CRR, but the selection and specific design of the scenarios are internal decisions. With due regard to regulatory and supervisory guidance, such as the ECB Guide to the ICAAP and the EBA Guidelines on stress testing, the DZ BANK Group selects and simulates scenarios that adequately reflect the vulnerabilities of the business models operated in the group. The scenarios to be analyzed are determined at least once a year.

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 those that are required under the CRR I transitional guidance.

Until the end of 2020, the internal management of the regulatory capital adequacy of the DZ BANK banking group and thus the DZ BANK financial conglomerate was based on full application of the CRR. At the start of 2021, internal management was switched to the CRR transitional guidance. As a result, the values in this risk report have been calculated in accordance with the CRR transitional guidance. To ensure the comparability of the key figures shown as at the reporting date (CRR transitional guidance) with the figures as at the end of 2020 (full application of the CRR), the figures as at December 31, 2020 shown in sections 7.3.2 and 7.3.3 are in accordance with the changed calculation method. This means that they differ from the corresponding disclosures in the 2020 risk report.

7.3.2 DZ BANK financial conglomerate

The DZ BANK financial conglomerate comprises the DZ BANK banking group and the R+V Versicherung AG insurance group.

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 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 coverage ratio and in the own funds and solvency requirements of the DZ BANK financial conglomerate are shown in Fig. 16.

FIG. 16 – REGULATORY CAPITAL ADEQUACY OF THE DZ BANK FINANCIAL CONGLOMERATE[1]

	Dec. 31, 2021[2]	Dec. 31, 2020[3]
Own funds (€ million)	36,719	35,805
Solvency requirements (€ million)	24,049	24,516
Coverage ratio (%)	**152.7**	**146.0**

1 The values for the DZ BANK banking group included in the calculations were determined in accordance with the CRR transitional guidance.
2 Preliminary figures.
3 Final figures taking account of the CRR transitional guidance. The preliminary figures stated in the 2020 risk report were based on full application of the CRR.

The rise in the coverage ratio calculated for the DZ BANK financial conglomerate from 146.0 percent as at December 31, 2020 to 152.7 percent as at December 31, 2021 was attributable, in particular, to the reduction in capital requirements. By contrast, the DZ BANK financial conglomerate's own funds increased. The change in the coverage ratio is attributable to effects in the DZ BANK banking group and in the R+V Versicherung AG insurance group (see sections 7.3.3 and 7.3.4).

The preliminary coverage ratio calculated for the financial conglomerate as at December 31, 2021 was higher than both the internal threshold value (110.0 percent) and the external minimum target (100.0 percent). According to current projections, this is also expected to be the case in 2022.

7.3.3 DZ BANK banking group

Procedure for determining regulatory risk-weighted assets

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

- **Credit risk**: Primarily the foundation internal ratings-based (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**: Primarily the Standardized Approach.

Regulatory capital ratios

The regulatory **own funds** of the **DZ BANK banking group** as at December 31, 2021 determined in accordance with the CRR transitional guidance amounted to a total of €27,729 million (December 31, 2020: €28,669 million). This equates to a decline in own funds of €940 million compared with the end of 2020, comprising an increase in common equity Tier 1 capital of €546 million, a decrease in additional Tier 1 capital of €441 million, and a decrease in Tier 2 capital of €1,045 million.

The increase in **common equity Tier 1 capital** was primarily due to the profit for the year of €1,601 million.

Tier 2 capital declined from €3,591 million as at December 31, 2020 to €2,546 million as at December 31, 2021, a decrease of €1,045 million. Of this decrease, €918 million was attributable to the termination of non-CRR-compliant hybrid capital instruments that had still been partly eligible as Tier 2 capital under the CRR transitional guidance until December 31, 2020. The decrease in Tier 2 capital was also attributable, in an amount of €132 million, to the reduced level of eligibility under CRR rules for own funds instruments in the last five years before their maturity date.

Risk-weighted assets in the DZ BANK banking group went up from €147,252 million as at December 31, 2021 to €150,137 million as at December 31, 2020, a rise of €2,885 million that comprised two opposing effects. On the one hand, credit risk increased as a result of the CRR II rules being applied for the first time with effect from June 28, 2021, in particular the new standardized approach to measuring the counterparty risk of derivative financial transactions. Conversely, market risk declined because the market scenarios that materialized in spring 2020 in the context of the COVID-19 pandemic were no longer included in the historical observation period used in the market risk model.

As at December 31, 2021, the DZ BANK banking group's **common equity Tier 1 capital ratio** was 15.3 percent. This was the same as the figure at the end of 2020. The **Tier 1 capital ratio** of 16.8 percent calculated as at the reporting date was lower than the figure of 17.0 percent as at December 31, 2020. The **total capital ratio** also went down, from 19.5 percent as at December 31, 2020 to 18.5 percent as at the reporting date.

Fig. 17 provides an overview of the regulatory capital ratios for the DZ BANK banking group and for DZ BANK.

FIG. 17– REGULATORY CAPITAL RATIOS[1]

	DZ BANK banking group		DZ BANK	
	Dec. 31, 2021	Dec. 31, 2020[2]	Dec. 31, 2021	Dec. 31, 2020[2]
Capital				
Common equity Tier 1 capital (€ million)	23,021	22,476	14,197	13,620
Additional Tier 1 capital (€ million)	2,161	2,602	2,150	2,150
Tier 1 capital (€ million)	**25,183**	**25,078**	**16,347**	**15,770**
Total Tier 2 capital (€ million)	2,546	3,591	2,414	3,840
Own funds (€ million)	**27,729**	**28,669**	**18,761**	**19,611**
Risk-weighted assets				
Credit risk including long-term equity investments (€ million)	132,296	128,256	85,150	83,585
Market risk (€ million)	7,355	8,388	6,504	7,502
Operational risk (€ million)	10,487	10,608	3,379	3,249
Total (€ million)	**150,137**	**147,252**	**95,033**	**94,336**
Capital ratios				
Common equity Tier 1 capital ratio (%)	15.3	15.3	14.9	14.4
Tier 1 capital ratio (%)	16.8	17.0	17.2	16.7
Total capital ratio (%)	18.5	19.5	19.7	20.8

1 In accordance with the CRR transitional guidance.
2 The values differ from those shown in the 2020 risk report. In the 2020 risk report, the values stated as at December 31, 2020 were based on full application of the CRR.

Regulatory minimum capital requirements specified by the SREP

The minimum capital requirements that the **DZ BANK banking group** had to comply with in 2021 under the SREP 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 2020, also had to be satisfied. In this process, the banking 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.

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.

BaFin has classified DZ BANK as an other systemically important institution (O-SII). The DZ BANK banking group had 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 2021.

The minimum capital requirements applicable to **DZ BANK** comprised those components of **Pillar 1** laid down as mandatory by law and those individually specified by the banking supervisor. Pillar 2 add-ons are currently not relevant to DZ BANK.

The mandatory minimum capital requirements relevant to the DZ BANK banking group under the SREP, and their components, are shown in Fig. 18. For 2022, the minimum capital requirements shown will be lowered by 0.05 percentage points with effect from March 1, 2022. This is predominantly attributable to a reduction in the additional capital requirements in Pillar 2.

FIG. 18 – REGULATORY MINIMUM CAPITAL REQUIREMENTS ACCORDING TO SREP[1]

	DZ BANK banking group		DZ BANK	
%	**2021**	2020	**2021**	2020
Minimum requirement for common equity Tier 1 capital	**4.50**	4.50	**4.50**	4.50
Additional Pillar 2 capital requirement	**0.98**	0.98		
Capital conservation buffer	**2.50**	2.50	**2.50**	2.50
Countercyclical capital buffer[1]	**0.02**	0.01	**0.01**	0.01
O-SII capital buffer	**1.00**	1.00		
Mandatory minimum requirement for common equity Tier 1 capital	**9.01**	**9.00**	**7.01**	**7.01**
Minimum requirement for additional Tier 1 capital	**1.50**	1.50	**1.50**	1.50
Additional Pillar 2 capital requirement	**0.33**	0.33		
Mandatory minimum requirement for Tier 1 capital	**10.84**	**10.82**	**8.51**	**8.51**
Minimum requirement for Tier 2 capital[2]	**2.00**	2.00	**2.00**	2.00
Additional Pillar 2 capital requirement	**0.44**	0.44		
Mandatory minimum requirement for total capital	**13.27**	**13.26**	**10.51**	**10.51**

Not available

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 buffers shown for 2021 and 2020 relate solely to the reporting dates.
2 The minimum requirement can also be satisfied with common equity Tier 1 capital.

Relaxation of the minimum capital requirements in response to the COVID-19 pandemic

Because of the COVID-19 pandemic, the supervisory authorities introduced various relief measures for banks, including in relation to the **binding minimum capital requirements**. For example, a bank can temporarily use up its capital conservation buffer and O-SII capital buffer without incurring sanctions. In such an eventuality, it must submit a capital conservation plan to the supervisory authorities. If, as a result, the combined capital buffer requirement and thus one of the three thresholds for the maximum distributable amount can no longer be met, the rules regarding the limits for distributions continue to apply. Consequently, DZ BANK does not use the aforementioned relief measures and they are not taken into account in Fig. 18.

Because of the COVID-19 pandemic, the supervisory authorities in some countries reduced the capital buffer rates used to calculate the countercyclical capital buffer, which is another part of the mandatory minimum capital requirements. In some cases, the authorities lowered the rates right down to 0 percent. In a general administrative act dated March 31, 2020, BaFin also lowered the domestic countercyclical capital buffer rate for Germany to 0 percent (it was originally supposed to be raised to 0.25 percent with effect from July 1, 2020). On February 26, 2021, BaFin announced that the rate would not be raised until at least December 31, 2021. These reduced capital buffer rates for Germany and other countries are factored into the calculation of the institution-specific countercyclical capital buffer rate. DZ BANK is therefore obliged to apply them.

Banks are also temporarily permitted to not comply with the **Pillar 2 capital recommendation** without this having any impact on a possible distribution. DZ BANK does not currently exercise this option.

Compliance with the minimum capital requirements

The **internal threshold values** and **external minimum targets** applicable 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 exceeded at the level of the DZ BANK banking group and DZ BANK as at December 31, 2021. The internal threshold values are shown in Fig. 5 in section 2.2.2.

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 exposures in the calculation of the leverage ratio are not allocated their own risk weight but are generally included in the total exposure without any risk weight at all.

The leverage ratio of the **DZ BANK banking group** determined in accordance with the CRR transitional guidance went up by 1.6 percentage points from 5.7 percent as at December 31, 2020 to 7.3 percent as at December 31, 2021. This increase was mainly the result of applying the CRR II rules for the first time with effect from June 28, 2021. It was primarily attributable to the introduction of the exemption from the total exposure for exposures within the cooperative financial network. This means that domestic loans and advances to members of the protection scheme of the Bundesverband der Deutschen Volksbanken und Raiffeisenbanken (BVR) [National Association of German Cooperative Banks] no longer have to be included. The resulting mitigating effect amounted to €106.8 billion. The main countervailing effects were expansion of the portfolio of reverse repos on securities of DZ BANK and the growth of on-balance-sheet business.

The exempted amount for balances with central banks rose from €62.0 billion as at December 31, 2020 to €79.8 billion as at December 31, 2021, an increase of €17.8 billion. This exemption had originally applied until June 27, 2021 but was extended by the ECB until March 31, 2022. In a press release dated February 10, 2022, the ECB announced that this exemption would not be extended again. Excluding the preferential treatment of balances with central banks, the DZ BANK Group's leverage ratio would be 5.9 percent as at December 31, 2021.

DZ BANK's leverage ratio as at December 31, 2021 was calculated at 9.2 percent (December 31, 2020: 4.1 percent). As was also the case for the DZ BANK banking group, this increase was mainly due to applying the CRR II rules for the first time with effect from June 28, 2021, especially the exemption for exposures within the cooperative financial network. This reduced the total exposure at DZ BANK by €234.0 billion. Another reason for the increase in the leverage ratio was the €577 million rise in Tier 1 capital.

As at June 30, 2021, the banking supervisor introduced a binding **external minimum target** of 3.0 percent in connection with initial application of CRR II. Because both the DZ BANK banking group and DZ BANK are applying the aforementioned temporary exemption for balances with central banks, this external minimum target has temporarily increased to 3.26 percent until the exemption expires on March 31, 2022.

Both the **internal threshold value** of 3.5 percent for the leverage ratio of the DZ BANK banking group and the **external minimum target** of 3.26 percent specified by the banking regulator since June 28, 2021 were exceeded as at December 31, 2021.

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 requirements are 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 DZ BANK banking group's MREL ratio is the ratio of the total of the regulatory own funds of the DZ BANK banking group and the eligible bail-in-able liabilities of DZ BANK to the total liabilities and own funds (TLOF) of the DZ BANK banking group (known as the hybrid approach).

DZ BANK's Board of Managing Directors set the **internal threshold value** for the **DZ BANK banking group's** MREL ratio for 2021 at 8.3 percent. This was the same as the figure for 2020. No external minimum target had been set by December 31, 2021.

The **MREL ratio** measured for the DZ BANK banking group in TLOF was 11.5 percent as at December 31, 2021 (December 31, 2020: 11.9 percent). The fall in the ratio compared with the figure at the end of 2020 was attributable to the decrease in own funds and a significant increase in total assets on the back of secured borrowing in the money markets. An increased volume of liabilities eligible for the MREL only partly offset these two effects. The MREL ratio was above the **internal threshold** of 8.3 percent.

The calculation of the MREL ratio was changed with effect from January 1, 2022. The MREL ratio is now the ratio of the total of the regulatory own funds and the eligible bail-in-able liabilities to the total risk exposure amount (TREA) or to the leverage ratio exposure (LRE) of the DZ BANK banking group. Furthermore, TLOF is used solely as a benchmark for calibrating subordinated requirements. The MREL ratios based on TREA and LRE have to be met, as do the subordinated MREL ratios based on TREA and LRE. The numerator of these ratios may only include the subordinated liabilities eligible for MREL, including senior non-preferred issues of DZ BANK, and the regulatory own funds of the DZ BANK banking group.

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.

Since 2020, R+V has been using two measures defined by the supervisory authorities – the transitional measure on technical provisions and the volatility adjustment – for individual personal insurance companies. Both measures have a positive impact on regulatory and economic capital adequacy. Further disclosures on these measures can be found under Economic capital adequacy in section 7.2.1.

The preliminary figure for the **regulatory risk-bearing capacity** of the R+V Versicherung AG insurance group as at December 31, 2021 was calculated at 232.1 percent. The coverage ratio was thus above the external minimum target of 100.0 percent. The final figure as at December 31, 2020 was 182.8 percent (preliminary figure given in the 2020 risk report: 173.2 percent). Fig. 19 shows how the solvency requirements are covered by eligible own funds.

FIG. 19 – REGULATORY CAPITAL ADEQUACY OF THE R+V VERSICHERUNG AG INSURANCE GROUP[1]

	Dec. 31, 2021[1]	Dec. 31, 2020[2]
Own funds (€ million)	17,499	15,161
Solvency requirements (€ million)	7,539	8,295
Coverage ratio (%)	**232.1**	**182.8**

1 Preliminary figures.
2 Final figures. The preliminary figures were stated in the 2020 risk report.

The growth of **own funds** was primarily attributable to the increase in the transitional measure on technical provisions. The remeasurement of the transitional measure on technical provisions, which was agreed with BaFin, was carried out due to the merger of R+V Luxembourg S.A. into R+V Lebensversicherung AG during the reporting year.

The lower **solvency requirements** can mainly be explained by the reduction in life actuarial risk and in market risk. Disclosures on the reasons for this reduction can be found in sections 16.7 and 17.5.

The **recalculation of the overall solvency requirement** described in section 7.2.3 for economic risk-bearing capacity 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 2020. The prior-year figures as at December 31, 2020 given in this risk report have been restated accordingly and are not directly comparable with the figures in the 2020 risk report.

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 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 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 submitted in the DZ BANK Group stress tests report and are noted by the **Board of Managing Directors** and by the DZ BANK Supervisory Board's **Risk Committee**.

Specific **COVID-19 scenarios** were also analyzed as adverse scenarios in 2021. These consisted of a two-year scenario and a three-year scenario. The two-year scenario, which was reported on as at the reporting dates of March 31, 2021 and June 30, 2021, assumed severe economic disruption during further waves of the pandemic. The three-year scenario, which was introduced as at the reporting date of September 30, 2021, looked at the fallout from the pandemic, assuming that the ongoing global infection situation – including new variants – would prevent an economic recovery in the eurozone and this would ultimately result in a severe economic and capital markets crisis in Europe.

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

7.4.3 Scenario analyses in the risk types

The quarterly report on stress tests in the DZ BANK Group is supplemented by a credit risk stress test in the normative internal perspective and by various scenario analyses in the risk types in the economic perspective. These analyses serve as a link between risk drivers and sensitivities, and between potential events and adverse scenarios. The scenario analyses also enhance the risk quantification for each risk type by including an alternative perspective.

In the scenario analyses, specific risk drivers, risk concentrations, or events are examined in detail for each type of risk by simulating economic losses and comparing them against the relevant risk limit.

Scenario analyses in the risk types are carried out quarterly. The results are submitted in the DZ BANK Group stress tests report and are noted by the **Board of Managing Directors** and by the DZ BANK **Supervisory Board's Risk Committee**.

Bank sector

8 Credit risk

8.1 Definition

Credit risk is defined as the risk of losses arising from the default of counterparties (borrowers, issuers, other counterparties) or from the migration of the credit ratings of these counterparties, or of losses in connection with the recovery of loans, advances, receivables, or collateral.

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 securities business and unsecured money market business. The securities business comprises securities in both the banking book and the trading book, promissory notes, derivatives, and secured money market business (such as repo transactions).

In **traditional lending business**, credit risk arises mainly in the form of default risk and migration 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. It also includes risks arising from contingent liabilities (such as issued guarantees and indemnities). The calculation of the exposure encompasses loan facilities promised to third parties and any existing overdrawn accounts in addition to loans that have already been drawn down. Migration risk is a sub-risk within traditional credit risk and reflects changes in the fair value of types of exposure subject to credit risk caused by a change in the rating for a borrower (rating migration).

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.

Transaction processing risk is a default risk subcategory of replacement risk and is considered as 'extended' replacement risk. It is therefore also factored into the exposure calculation for replacement risk. Transaction processing risk arises in connection with both delivery-versus-payment (DVP) settlement and unilateral payments in a trading transaction (for example in an interest-rate swap). Transaction processing risk arises when the counterparty in a trading transaction fails to perform its contractual obligation. For the purposes of determining economic capital, the amount of the transaction processing risk is the net present value of the reciprocally required performance in favor of the entities in the Bank sector.

Recovery risk forms part of credit risk. It cannot be determined as an exposure amount but increases the risk capital requirement for traditional credit risk, issuer risk, and replacement risk. Recovery risk results from uncertainty regarding the recovery rate for existing collateral, the recovery rate for unsecured receivables (or partial 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 refers to sovereign risk (the risk arising from exposure to a government itself) or the risk that the quality of the overall exposure in a country may be impaired as a result of country-specific events (country-related borrower risk). In this case, it is not viewed as a separate risk type but as a component of credit risk and is thus recorded within traditional credit risk, issuer risk, and replacement risk.

8.2 Business background and risk strategy

The DZ BANK Group is exposed to considerable credit risk in the Bank sector. The lending business is one of the most important core activities of the entities in the Bank sector. In its role as the central institution, DZ BANK covers the **entire range of lending business**, either in partnership with the local cooperative banks or in direct business, and provides its customers with financing solutions. Its customers include the local cooperative banks themselves, corporate customers, retail customers, the public sector, international companies, and banks and institutions both in Germany and abroad.

Default risk from traditional lending business arises primarily at DZ BANK, BSH, 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 and DZ HYP. Replacement risk arises for the most part at DZ BANK.

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. It takes into account the business models of each of the management units.

Lending throughout the group is predominantly based on the **VR rating** system, a rating procedure developed by DZ BANK in collaboration with the BVR.
The management units aim to ensure that their credit portfolios always have **a sound credit quality and risk structure**. One of the objectives is to make sure that the portfolios remain highly diversified going forward.

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.

8.3 Risk factors

8.3.1 General credit risk factors

Key values used in determining credit risk include the concentrations of lending volume in terms of counterparties, sectors, country groups, and residual maturities, and the credit quality structure of the credit portfolio. **Significant concentrations of volume** in counterparties, sectors, or countries increase the risk that an accumulation of credit risk will become critical, for example if there are defaults among greater concentrations of counterparties or, in economic crises, defaults in sectors or countries with significant concentrations in the credit portfolio.

The term of loan agreements is also a key credit risk factor because the probability of a deterioration in credit rating and therefore of a counterparty default during the term of an agreement generally increases over time. 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 and the recognition of impairment losses will become necessary.

8.3.2 Specific credit risk factors

Definition

In addition to the general risk factors, the **macroeconomic and environmental trends** described below could lead to higher credit risk, more defaults among individual counterparties, and therefore to a greater requirement for the recognition of impairment losses in the lending business.

The following sections explain risk factors that are directly relevant to distinct subportfolios in the lending business and have a material measurable effect in those subportfolios. Information is also provided on risk factors that are potentially significant for the whole of the credit portfolio, but that do not at the moment have any material impact on portfolio quality.

Credit risk factors of material importance to individual credit portfolios

DZ BANK and DZ HYP hold investments in Italian, Spanish, and Portuguese bonds. DZ BANK has also entered into lending, derivatives, and money market business with Italian and Spanish counterparties. The prolonged **economic divergence in the eurozone**, combined with the ECB's expansionary monetary policy, thus leads to heightened risk in the Bank sector's lending business. The macroeconomic background to this risk factor is described in section 5.2.3. Disclosures on the lending volume and credit value-at-risk in relation to the exposures in Italy, Spain, and Portugal can be found in sections 8.8.2 and 8.9.2.

DZ BANK finances the building, purchase, and operation of cruise ships. The **COVID-19 pandemic** is having a direct impact on this business. The economic background to this risk factor is described in chapters V.1.1 to V.1.4 in the outlook. The lending volumes related to cruise ship finance and the financing of cruise ship building, together with the associated credit value-at-risk, are presented in sections 8.8.3 and 8.9.2.

Credit risk factors with a potential impact on the entire lending business

The COVID-19 pandemic, international trade disputes, and the conflict between Russia and Ukraine constitute **risks for the global economy**. The background to these risk factors is described in chapters V.1.1 to V.1.4 in the outlook. If the pandemic persists for a while longer yet, the international trade disputes cannot be resolved, or the military confrontation between Russia and Ukraine continues, there is a risk that the Bank sector's credit risk will rise significantly.

The reporting year saw an increase in **stagflation risk** in the eurozone and therefore in the risk of an economic recession. If this trend were to persist or become more entrenched, the credit quality of corporate financing arrangements could be gradually eroded. A situation in which stagflation took hold over the long term could also lead to interest rate hikes, which would have a negative impact on real estate and funding activities. Overall, these effects could lead to a substantial deterioration in credit risk in the Bank sector. The macroeconomic context for this risk factor is explained in section 5.2.4.

There is also a risk that collateral for loan exposures could become impaired if **physical climate-related and environmental risks** were to materialize. In addition, the profitability of corporate finance borrowers (mainly at DZ BANK) and of real estate finance borrowers (mainly at BSH and DZ HYP) could be diminished by **transition effects** such as those arising from the transition to a carbon-neutral economy. A resulting deterioration of the borrowers' credit quality could lead to a greater requirement for the recognition of impairment losses.

8.4 Organization, responsibility, and 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 termination, 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 Board of Managing Directors, the Group Risk and Finance Committee, and the Supervisory Board's Risk 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 credit rating class, industry, country group, and the lending volume to single borrowers. In addition, the report includes details on specific exposures. In the context of the risk limit, the credit value-at-risk is also included in the credit risk report.

8.5 Risk management

8.5.1 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 aims to ensure 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, investment funds, and project finance (slotting approach). 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 the competent supervisory authority for the purposes of calculating regulatory capital using the **foundation IRB approach** or the **slotting approach**.

For **internal management purposes**, DZ BANK uses further rating systems to assess SMEs (German Mittelstand), countries, asset finance, acquisition financing, agricultural businesses, public-sector entities, not-for-profit organizations, foreign SMEs, and insurance companies.

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 and those approved by the banking supervisor for solvency reporting were validated in the reporting year. The regulatory review of the rating system for major corporations was initiated in December of the reporting year, but had not yet been completed by the Board of Managing Directors on the date the group management report was prepared.

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. 20 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 Ratings. 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.

FIG. 20 – 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	DPD default				Default
5B	Specific loan loss allowance / internal neutralization of interest / rating-related sale with significant loss / further bank-internal criteria				
5C	Distressed restructuring				
5D	Insolvency				
5E	Direct impairment / workout				
NR	Not rated				

8.5.2 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.

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, **economic and regulatory costs of capital** based on the capital requirement are integrated into the contribution margin costing carried out by the entities in the Bank sector. This enables the Bank sector 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.

8.5.3 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 one 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 building society operations, nominal amounts are used as a basis for measuring the gross lending volume. 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 customers. 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.

8.5.4 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, these add-ons are 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. The add-ons for the remaining derivatives not included in the portfolio simulation are determined on the basis of a product-specific allocation, which also takes into account specific risk factors and residual maturities.

Transaction processing risk is additionally factored into the exposure calculation for replacement risk. This risk is largely determined as the net present value of the reciprocally required performance.

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. The transaction processing risk forming part of the replacement risk is included in the shortest maturity band. 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.

In the reporting year, the standardized methodology for measuring and monitoring trading exposure at DZ BANK (**post-transaction control**) was migrated in its entirety from two IT-supported limit monitoring systems to one IT system. All relevant trading systems are directly or indirectly connected to this IT system. The second IT system still exists but is used solely for most of the **pre-transaction control**. 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.

8.5.5 Management of risk concentrations and correlation risks

Identifying risk concentrations

One of the Bank sector’s key concerns in the management of credit risk is to avoid undesirable concentrations and correlations of risks in the credit portfolio. To this end, it has established credit risk strategies, policies, and principles that must be applied in the various areas of business. The main structural elements are managed on this basis with the aim of ensuring that the credit portfolio is appropriately diversified. The structural elements include specifications for rating-related maximum exposures, strategic borrower limits, restriction of areas of business to specified countries or regions, maturity limits, specific requirements for certain operating segments and industries, and requirements relating to collateral, loan agreement clauses, and key credit-risk-related figures.

Measurement and monitoring of risk concentrations

The structural requirements include general parameters to ensure that the credit portfolio in the Bank sector is comprehensively diversified. They therefore provide important guidance for managing new business. The ongoing monitoring of potential risk concentrations is also of fundamental importance. With this in mind, the Bank sector's credit portfolio is constantly checked for concentrations in terms of asset class, area of business, industry, country, country group, residual maturity, size category, and rating class. Significant attention is also paid to monitoring concentrations linked to individual borrowers. Exposures are analyzed and managed using monitoring lists, particularly to identify if specified volume limits are exceeded (see also section 8.5.7).

Besides volume-oriented parameters, the credit value-at-risk for individual exposures and borrowers is a core parameter used in modeling concentration risk. A key factor 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. The modeling of these risk concentrations was improved in July 2021 with the help of the groups of connected clients defined by the regulators.

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 unless the value of the furnished collateral can be objectively assessed to be stable over time (as in the case of a pledged credit balance or a charge over real estate).

Wrong-way risk in trading activities

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.

Other measures to prevent concentration risk and wrong-way risk in trading activities

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**. Both policies are described under collateral management in section 8.5.6.

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.

8.5.6 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. In particular, collateral received reduces the credit value-at-risk (see section 8.5.8 'Credit-portfolio management').

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 3E 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 limit defaults in these transactions, 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. Entities in the Bank sector also enter 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.

Credit derivatives, such as credit default swaps, are used to reduce the issuer risk arising on 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. 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), both collateral agreements for variation margin (Credit Support Annex to the ISDA Master Agreement and Collateralization Annex to the German Master Agreement for Financial Futures) and collateral agreements for initial margin 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. Under 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 accepted for mitigating risks arising from OTC derivatives on the basis of the Credit Support Annex (ISDA Master Agreement) and the Collateralization Annex (German Master Agreement for Financial Futures). 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 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 generally accepted master agreements and DZ BANK's own internal **minimum requirements for bilateral reverse repo transactions and securities lending transactions**, although the range of collateral is somewhat broader here than in the case of OTC derivatives. There are a few individual exceptions for banks in the cooperative financial network.

Furthermore, the minimum requirements applicable at DZ BANK 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.

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 requirements.

Collateral agreements generally include minimum transfer amounts and, in some cases, also **thresholds** 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'). The supervisory authorities have specified these contractual provisions as standard for EMIR-compliant agreements.

EMIR requires the exchange of an initial margin in bilateral OTC derivatives transactions in addition to the variation margin. The entities in the Bank sector have been meeting this obligation since September 1, 2021 for all relevant new transactions. The transfer of initial margin takes account of counterparty-specific thresholds.

Central counterparties

Under EMIR, 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. DZ 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.

8.5.7 Management of closely monitored and non-performing lending exposures

The following descriptions apply to **DZ BANK**. 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.

Management and monitoring

Early identification of risk is a key component of the management and monitoring of traditional lending business. The system for identifying risk at an early stage aims to ensure that non-performing loan exposures, or exposures that are close to non-performing, are highlighted in good time. The objective of managing and monitoring is to return the quality of the risk in the identified loans to acceptable levels and minimize losses from loan defaults.

Risk is identified at an early stage by using a **risk classification system** that specifies when exposures must become subject to special monitoring (intensified loan management) and when the management of the relationship must be transferred to units specifically responsible for loan restructuring and workout.

The following lists are maintained to closely monitor non-performing loans, or loans that are close to non-performing:

- The **yellow list** covers latent risk. There is no direct risk to the loan exposure, as yet.
- The **watchlist** is concerned with heightened risk. The loan exposures are already close to being non-performing.
- The **default list** consists of exposures that are classified as non-performing because of serious heightened risk.

A loan is classified as **non-performing** if it has been rated between 5A and 5E on the VR credit rating master scale. This corresponds to the definition of default specified by the CRR. Non-performing loan exposures are also referred to by the abbreviation NPL. They are managed using the following key figures:

- **Coverage ratio** (specific loan loss allowances plus collateral as a proportion of the volume of non-performing loans)
- **NPL ratio** (volume of non-performing loans as a proportion of total lending volume).

Workout units become involved at an earlier stage of identified difficulties. By providing intensified loan management for critical exposures and applying problem-solving strategies, these special units aim to establish the basis for securing and optimizing exposures with heightened risk.

Exposures with heightened risk are generally reviewed, updated, and reported on a quarterly basis. The process is also carried out at shorter intervals if required. This process is supported by IT systems. Prompt internal reporting focused on target groups is a key component of this approach.

Forbearance

Forbearance is a tool for managing non-performing exposures or those close to non-performing. Forbearance measures include **concessions** regarding the borrower's obligations under a loan agreement. Such concessions may consist of **contractual modifications**, such as adjustments to covenants or changes to the interest rate, repayment structure, or loan maturity. They may also amount to **refinancing measures**, such as debt-equity swaps, further loan facilities, turnaround or bridging financing, or debt restructuring. The aim of such concessions is to ensure that borrowers who cannot satisfy the terms and conditions of their loan agreements because of their financial circumstances are placed in a position whereby they can repay the loans granted by DZ BANK.

The use of forbearance measures can be contemplated if a borrower is found to meet one of the following **criteria** during the monitoring of credit risk:
- Borrower is included in the default list, watchlist, or yellow list with a rating of 4A
- Borrower is classified with a rating of 4B or worse, regardless of whether it is on one of the lists or not
- Borrower is classified with a rating of 4A and payments are past due by more than 30 days within a period of three months prior to the concession.

The borrower must satisfy all of the following criteria before it can exit **forbearance status**:
- Borrower is classified as performing.
- Borrower has undergone a probation period of at least two years. In the case of borrowers who have recovered from a default, the probation period begins with their reclassification as 'recovered'. Borrowers not previously in default begin the probation period when forbearance measures are initiated.
- Borrower has made regular interest payments or repayments of principal during at least half of the probation period.

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.

8.5.8 Credit-portfolio management

Internal credit-portfolio models operated decentrally in the main management units are used together with value-at-risk methods to quantify unexpected losses from lending and trading business. The **credit value-at-risk** reduced by the expected loss is referred to as the risk capital requirement for transactions subject to credit risk. The risk capital requirement quantifies the risk of unexpected losses if default or migration events were to materialize.

Expected loss is calculated by multiplying the exposure at default (EAD) by the loss given default (LGD) and by the probability of default (PD). **Exposure at default** equates to the expected outstanding loan or receivable or the potential economic loss in respect of a counterparty if the counterparty defaults, without taking into account any collateral. **Loss given default** refers to the expected percentage loss on default of a borrower, whereby the loss is reduced by any proceeds anticipated from the recovery of **collateral**. **Probability of default** is the probability, calculated on the basis of historical data, that a borrower will not be able to meet his or her payment obligations within a particular, future period. For the purposes of credit-portfolio management in the Bank sector, this period is one year. The probability of default reflects the borrower's current rating and, in individual cases, also takes into account business-specific factors.

When determining credit value-at-risk, **recovery risk** is 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. Existing netting agreements are included in the measurement of trading exposures subject to default risk.

The credit value-at-risk amounts determined for the management units are aggregated by DZ BANK at **Bank sector** level.

For the purposes of **managing** the credit portfolio, the credit value-at-risk and the decentralized capital buffer requirement are restricted by the **credit risk limit**. The calculation of the decentralized capital buffer requirement is explained in section 7.2.1. A **traffic light system** is used to monitor Bank sector management units' compliance with the limits specified for credit risk.

8.6 Lending volume

8.6.1 Definition of lending volume

One of the ways in which credit risk is managed is on the basis of the **lending volume**. In the traditional lending business, the lending volume is no more than the total amount of loans already drawn down, plus commitments to third parties. In the trading business (securities business, together with derivatives business and money market business), the lending volume largely equates to the exposure at default.

8.6.2 Reconciliation of lending volume to the consolidated financial statements

To reconcile the lending volume managed at Bank sector level with the lending volume reported on the balance sheet, the volume is broken down by traditional lending business, securities business, derivatives business, and money market business, because this breakdown corresponds to the classes of risks from financial instruments used for external reporting purposes.

Fig. 21 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.

FIG. 21 – BANK SECTOR: RECONCILIATION OF THE LENDING VOLUME

€ billion Lending volume for internal management accounts			Reconciliation Scope of consolidation		Carrying amount and measurement					
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021		Dec. 31, 2020	
Traditional lending business	337.2	321.5	4.6	3.8	26.6	24.2	368.4	96.5	349.5	87.6
								96.5		87.6
								-		-
								189.3		184.6
								191.2		186.9
								-1.9		-2.2
								82.6		77.3
Securities business	75.4	83.0	-	0.3	-14.6	-15.0	60.8	60.8	68.2	68.2
								10.8		10.1
								1.3		1.2
								48.6		56.9
Derivatives business	11.0	12.4	-0.1	-0.2	-11.4	-12.5	-0.5	-0.5	-0.3	-0.3
								0.4		0.2
								16.2		22.3
								-1.7		-2.6
								-15.4		-20.1
Money market business	7.1	5.8	-	-	26.3	21.4	33.3	33.3	27.2	27.2
								11.2		15.4
								4.4		3.4
								0.1		0.4
								17.1		7.4
								0.5		0.5
Total	430.7	422.6	4.5	3.9	26.9	18.0	462.0		444.5	
								Balance as at Dec. 31, 2021	31.3	7.3%
								Balance as at Dec. 31, 2020	21.9	5.2%

Not relevant

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 aggregate 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.

The differences between the measurements in the **derivatives business** and those in the **money market business** arise because of differences in the treatment of offsetting items in internal risk management and in external financial reporting. Offsetting items are actually netted for the purposes of risk management, whereas netting of this nature is not permitted 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.

Lending volume for the consolidated financial statements	Note
Loans and advances to banks	
of which: loans and advances to banks excluding money market placements	52
of which: loss allowances for loans and advances to banks	61
Loans and advances to customers	
Loans and advances to customers excluding money market placements	53
of which: loss allowances for loans and advances to customers	61
Financial guarantee contracts and loan commitments	92
Bonds and other securities	
of which: financial assets held for trading/bonds excluding money market placements	55
of which: financial assets held for trading/promissory notes, registered bonds, and loans and advances	55
of which: investments/bonds excluding money market placements	56
Derivatives	
of which: derivatives used for hedging (positive fair values)	54
of which: financial assets held for trading/derivatives (positive fair values)	55
of which: derivatives used for hedging (negative fair values)	67
of which: financial liabilities held for trading/derivatives (negative fair values)	68
Money market placements	
of which: loans and advances to banks/money market placements	52
of which: loans and advances to customers/money market placements	53
of which: financial assets held for trading/money market instruments	55
of which: financial assets held for trading/money market placements	55
of which: investments/money market instruments	56

In money market business, further discrepancies arise between the consolidated financial statements and internal risk management due to the method used for the recognition of repo transactions. In contrast to the treatment in the consolidated financial statements, securities provided or received as collateral are offset against the corresponding assets or liabilities for the purposes of the internal analysis.

8.6.3 Asset class structure of the credit portfolio

The reporting to the Board of Managing Directors on concentrations of credit risk includes a presentation of the credit portfolio broken down by asset class. This is done by dividing the credit portfolio into business-related homogeneous segments on the basis of characteristics such as industry code to reflect the sector, product type, and the rating system used to determine the credit rating. The characteristics are selected in such a way that the segments are subject to uniform risk drivers. The presentation of asset classes replaces the sectoral presentation used in this section in the 2020 risk report, which was based solely on sector classification.

In its role as central institution for the 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, which are assigned to the asset class **entities within the cooperative financial network**, account for one of the largest loans and 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. Corporate banking exposures relate to business with commercial customers, which is assigned mainly to one of the following asset classes: corporates, commercial real estate customers, and asset-based lending/project finance. The syndicated business resulting from the corporate customer lending business, the direct business of DZ BANK, the real estate lending business of DZ HYP and BSH, and DZ HYP's local authority lending business determine the asset-class breakdown for the remainder of the portfolio.

The total lending volume of the **Bank sector** increased by 2 percent in the year under review, from €422.6 billion as at December 31, 2020 to €430.7 billion as at December 31, 2021. The rise in the lending volume was mainly due to an increase in volume in the entities within the cooperative financial network and real estate asset classes, which went up by €8.5 billion and €6.2 billion respectively compared with the end of 2020. DZ BANK accounted for most of the increase, which was driven by lending business with entities in the cooperative financial network (primarily support loan business) and business performance in the Corporate Banking and Structured Finance divisions. The increase in the real estate asset class was mainly attributable to real estate finance transactions with retail customers of BSH and DZ HYP. By contrast, the lending volume in the public sector asset class went down. This mainly related to the portfolios of bonds in this asset class. The asset-based lending/project finance asset class also saw a contraction in lending volume due to DVB's run-off strategy.

As at December 31, 2021, a significant proportion (38 percent) of the Bank sector's lending volume was concentrated in the financial sector (December 31, 2020: 37 percent). In addition to the local cooperative banks, the borrowers in this customer segment comprised banks from other sectors of the banking industry and other financial institutions.

Fig. 22 shows the breakdown of the credit portfolio by asset class.

FIG. 22 – BANK SECTOR: LENDING VOLUME, BY ASSET CLASS

	Bank sector		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Entities within the cooperative financial network	123.6	115.1	123.2	114.6
Financials	40.6	40.3	30.2	30.9
Corporates	67.1	65.2	61.8	60.0
Asset-based lending/project finance	11.9	13.5	10.4	9.7
Public sector	43.5	51.7	10.4	15.0
Real estate (commercial and retail customers)	117.9	111.7	-	0.6
Retail business (excluding real estate customers)	16.7	15.8	-	-
ABSs[1] and ABCPs	7.4	7.5	7.1	7.2
Other	1.9	1.7	0.8	0.9
Total	**430.7**	**422.6**	**244.0**	**238.8**

1 Asset-backed securities.

As at December 31, 2021, a significant proportion (63 percent) of **DZ BANK's** lending volume was also concentrated in the **financials** asset class (December 31, 2020: 61 percent). The composition of this asset class is the same both at DZ BANK and in the Bank sector.

8.6.4 Geographical structure of the credit portfolio

Fig. 23 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. The relevant country is the one in which the economic risk arises.

FIG. 23 – BANK SECTOR: LENDING VOLUME, BY COUNTRY GROUP

	Bank sector		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Germany	362.4	351.6	194.8	189.1
Other industrialized countries	53.9	57.4	36.3	38.2
of which: USA	8.5	8.7	7.6	7.4
of which: France	6.5	7.1	4.0	4.9
of which: Austria	5.2	4.7	2.8	2.6
Advanced economies	2.5	2.2	2.1	1.7
Emerging markets	9.0	8.3	8.6	7.6
Supranational institutions	2.9	3.0	2.2	2.2
Total	**430.7**	**422.6**	**244.0**	**238.8**

As at December 31, 2021, 97 percent of the total lending in the Bank sector and 95 percent of the total lending by DZ BANK (unchanged year on year in both cases) was concentrated in Germany and other industrialized countries.

8.6.5 Residual maturity structure of the credit portfolio

The breakdown of the credit portfolio by residual maturity as at December 31, 2021 presented in Fig. 24 shows that the lending volume had increased by €1.3 billion in the **short-term maturity band** compared with December 31, 2020. This was attributable to BSH and DZ HYP.

There was an increase of €10.8 billion in the **medium-term maturity band**, which was mainly attributable to BSH and DZ BANK.

By contrast, the lending volume in the **long-term maturity band** declined by €4.0 billion, which was mainly accounted for by BSH and DZ BANK.

FIG. 24 – BANK SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

	Bank sector		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
≤ 1 year	103.0	101.7	82.6	83.4
> 1 year to ≤ 5 years	114.6	103.8	65.6	64.0
> 5 years	213.1	217.2	95.9	91.4
Total	**430.7**	**422.6**	**244.0**	**238.8**

8.6.6 Rating structure of the credit portfolio

Fig. 25 shows the lending volume in the Bank sector and at DZ BANK by rating class according to the VR credit rating master scale.

FIG. 25 – BANK SECTOR: LENDING VOLUME, BY RATING CLASS

€ billion		Bank sector		DZ BANK	
		Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Investment grade	1A	32.7	39.8	11.5	16.3
	1B	7.6	5.3	4.1	2.8
	1C	135.8	127.2	127.3	119.6
	1D	13.4	12.7	6.7	6.6
	1E	14.4	15.9	3.4	4.8
	2A	16.7	15.3	7.0	5.9
	2B	25.7	24.2	9.5	9.0
	2C	23.3	17.6	10.0	9.3
	2D	30.8	21.1	10.9	10.4
	2E	39.7	27.5	14.4	13.5
	3A	25.8	27.3	9.8	10.9
Non-investment grade	3B	17.4	25.4	7.5	7.6
	3C	14.7	22.2	5.8	5.0
	3D	9.6	14.5	5.3	6.1
	3E	6.2	7.4	2.5	2.9
	4A	2.9	4.6	1.0	2.1
	4B	3.5	3.5	2.1	1.5
	4C	1.2	1.5	0.5	0.5
	4D	1.7	0.7	1.4	0.3
	4E	1.6	1.8	0.6	0.5
Default		3.4	4.4	1.8	2.1
Not rated		2.6	2.7	1.0	1.3
Total		**430.7**	**422.6**	**244.0**	**238.8**

In the **Bank sector**, the proportion of the total lending volume accounted for by rating classes 1A to 3A (investment grade) was 85 percent as at December 31, 2021 (December 31, 2020: 79 percent). Rating classes 3B to 4E (non-investment grade) represented 14 percent as at the reporting date (December 31, 2020: 19 percent). Defaults, represented by rating classes 5A to 5E, accounted for less than 1 percent of the total lending volume in the Bank sector as at December 31, 2021 (December 31, 2020: 1.0 percent).

The increase in the investment-grade proportion of the lending volume was mainly due to updates to the rating systems at BSH. The methodology change resulted in a reduction in default rates and thus an improvement in the credit ratings in BSH's credit portfolio. There was a countervailing effect as a result of updates to the model used by BSH to determine loss given default (LGD) that led to an increase in the LGD. The two effects largely offset each other at the level of the expected loss.

Rating classes 1A to 3A (investment grade) also dominated lending at **DZ BANK**, where they accounted for 88 percent of the total lending volume (December 31, 2020: 88 percent). Rating classes 3B to 4E (non-investment grade) represented 11 percent as at the reporting date (December 31, 2020: 11 percent). As at the end of the previous year, defaults (rating classes 5A to 5E) accounted for less than 1 percent of the total lending volume as at December 31, 2021.

In the analysis of individual concentrations in the **Bank sector**, the **ten counterparties associated with the largest lending volumes** accounted for 5 percent of total lending as at December 31, 2021 (December 31, 2020: 6 percent). The equivalent proportion for **DZ BANK** was 6 percent, which was unchanged compared with the figure at the end of the previous year. These counterparties largely comprised borrowers from the public sector domiciled in Germany and from the financial sector (including the cooperative banks) with investment-grade ratings.

8.6.7 Securitization portfolio

Securitization exposure in the Bank sector has been reduced significantly since the beginning of the 2007 financial crisis. The volume of securitizations as at December 31, 2007 stood at €31.2 billion (fair value), whereas the exposure as at December 31, 2021 amounted to €2.1 billion (nominal amount). The vast majority of the remaining exposures are investment grade, as a result of which the extent of the monitoring was brought back down to a normal level in the reporting year. Correspondingly, the internal reporting system no longer includes a separate analysis of the securitization portfolio. In view of these changes, this risk report no longer contains the securitization portfolio disclosures previously included as standard. The securitization exposure is included in the disclosures on overall lending volume (see section 8.6).

8.6.8 Collateralized lending volume

Fig. 26 shows the breakdown of the collateralized lending volume at overall portfolio level by type of collateral.

FIG. 26 – BANK SECTOR: COLLATERAL VALUE, BY TYPE OF COLLATERAL

	Bank sector		DZ BANK	
€ billion	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Guarantees, indemnities, risk subparticipation	7.3	7.4	1.9	1.9
Credit insurance	4.9	4.2	4.9	4.2
Land charges, mortgages, registered ship and aircraft mortgages	116.0	111.4	2.1	2.7
Pledged loans and advances, assignments, other pledged assets	2.3	2.8	1.4	1.8
Financial collateral	1.8	1.9	1.1	1.3
Other collateral	0.2	0.3	0.2	0.2
Total collateral	**132.6**	**128.0**	**11.5**	**12.1**
Lending volume	355.3	339.6	201.7	191.2
Uncollateralized lending volume	**222.7**	**211.6**	**190.2**	**179.1**
Collateralization rate (%)	**37.3**	**37.7**	**5.7**	**6.3**

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 collateral already taken into account. For this reason, securities business is not included in the presentation of the collateralized lending volume.

Total collateral value in the **Bank sector** rose from €128.0 billion as at December 31, 2020 to €132.6 billion as at December 31, 2021. The collateralization rate was 37.3 percent as at the reporting date (December 31, 2020: 37.7 percent).

At €11.5 billion, **DZ BANK's** total collateral value as at December 31, 2021 was down year on year (December 31, 2020: €12.1 billion). The collateralization rate had declined to 5.7 percent as at the reporting date (December 31, 2020: 6.3 percent).

8.6.9 Volume of closely monitored and non-performing loans

Closely monitored loans and forborne exposure

Fig. 27 shows the volume of loans on the three monitoring lists – yellow list, watchlist, and default list – and the forborne exposure also included in these lists. A further item in the table shows the exposure managed as forborne but not subject to intensified loan management, i.e. not included in the lists.

FIG. 27 – BANK SECTOR: CLOSELY MONITORED LENDING VOLUME AND FORBORNE EXPOSURE

	Bank sector		DZ BANK	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Yellow list lending volume	**3,348**	4,456	**2,558**	3,418
of which: forborne exposure	120	116	78	61
Watchlist lending volume	**4,397**	3,780	**3,032**	2,261
of which: forborne exposure	753	430	662	265
Default list lending volume	**3,363**	4,284	**1,827**	2,078
of which: forborne exposure	1,878	2,381	972	1,086
Total lending volume on monitoring lists	**11,109**	12,519	**7,416**	7,757
of which: forborne exposure	2,751	2,928	1,712	1,413
Off-monitoring-list forborne exposure	**461**	496	-	6
Total forborne exposure[1]	**3,213**	3,424	**1,712**	1,419

1 Both on and off the monitoring lists.

The closely monitored lending in the **Bank sector** declined by 11 percent from December 31, 2020 to December 31, 2021. The decrease was primarily attributable to DVB's reduction of its portfolio as part of its run-off strategy. This was also accompanied by a decrease of 6 percent in the closely monitored forborne exposure. Including the off-monitoring-list forborne exposure, the overall fall in the forborne exposure was also 6 percent. At **DZ BANK**, the closely monitored lending volume went down by 4 percent. The decrease was spread across a range of borrowers.

Non-performing loans

As at December 31, 2021, the volume of non-performing loans in the **Bank sector** had fallen to €3.4 billion from €4.4 billion as at December 31, 2020. The year-on-year decrease, which was mainly attributable to the reduction in the portfolio at DVB, was accompanied by a fall in the NPL ratio from 1.0 percent to 0.8 percent.

Non-performing loans at **DZ BANK** amounted to €1.8 billion as at December 31, 2021 (December 31, 2020: €2.1 billion). Combined with a rise in the total lending volume from €238.8 billion to €244.0 billion, this resulted in a lower NPL ratio of 0.7 percent (December 31, 2020: 0.9 percent).

Fig. 28 shows key figures relating to the volume of non-performing loans.

FIG. 28 – BANK SECTOR: KEY FIGURES FOR NON-PERFORMING LOANS

	Bank sector		DZ BANK	
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Total lending volume (€ billion)	430.7	422.6	244.0	238.8
Volume of non-performing loans (€ billion)[1]	3.4	4.4	1.8	2.1
Balance of loss allowances (€ billion)[2]	1.5	2.0	0.8	1.0
Coverage ratio (%)[3]	75.7	81.3	67.6	76.2
NPL ratio (%)[4]	0.8	1.0	0.7	0.9

1 Volume of non-performing loans excluding collateral.
2 IFRS specific loan loss allowances at stage 3, including provisions.
3 Loss allowances as specified in footnote 2, plus collateral, as a proportion of the volume of non-performing loans.
4 Volume of non-performing loans as a proportion of total lending volume.

8.7 Credit portfolios particularly affected by the COVID-19 pandemic

The following sections describe credit portfolios in which the effects of the COVID-19 pandemic were more noticeable than in the rest of the credit portfolios. However, no significantly heightened risk was as yet evident in connection with the exposures in the affected portfolios as at the reporting date. They are described solely for reasons of transparency. The figures presented below are included in the disclosures for the lending volume as a whole (see section 8.6).

The **automotive sector** is in a state of upheaval and faced with a number of issues, notably low margins and huge capital requirements. The COVID-19 pandemic is amplifying the pressure created by the transformation process. Supply shortages in many plants are currently resulting in production outages. DZ BANK's automotive finance portfolio, which is assigned to the corporates segment, is still deemed to be stable with a good credit quality despite pandemic-related rating downgrades for a few counterparties and a comparatively high NPL ratio of 5.9 percent as at December 31, 2021 (DZ BANK as a whole: 0.7 percent). This was also attributable to the stabilization resulting from government support and buyers' incentives for individual segments of the automotive industry and to the general recovery of demand. As at December 31, 2021, the lending volume in DZ BANK's automotive finance portfolio stood at €4.5 billion, which was unchanged compared with the end of the previous year.

DZ HYP's lending business with corporates includes financing for **hotels, department stores, and shopping malls**. In the reporting year, these asset classes were identified as being subject to a heightened degree of uncertainty in view of the ongoing COVID-19 pandemic, government-imposed safeguards, and potential long-term structural changes. Overall, however, the quality of the hotel, department store, and shopping mall financing portfolio of DZ HYP remains stable. To date, no risks of note have materialized in connection with any individual exposures. As at December 31, 2021, the volume of corporate loans extended by DZ HYP amounted to €47.6 billion (December 31, 2020: €46.4 billion). Of this total, €2.7 billion (December 31, 2020: €2.8 billion) related to hotel financing, €0.7 billion (December 31, 2020: €0.6 billion) to department store financing, and €2.9 billion (December 31, 2020: €3.5 billion) to shopping mall financing.

The **cruise ship industry**, for which **DZ BANK** provides funding (comprising cruise ship finance and the financing of cruise ship building), was also significantly impacted by the COVID-19 pandemic. However, unlike the portfolios previously referred to, the financing provided for the cruise ship industry has been assigned to the credit portfolios with increased risk content (see section 8.8.3).

The improvement in the pandemic situation in the reporting year meant that the volume of **liquidity support** fell sharply, to the extent that there is no longer any need to publish disclosures in this regard here.

8.8 Credit portfolios with increased risk content

8.8.1 Reporting method and changes to reporting

The credit portfolios with increased risk content are analyzed separately because of their significance for the risk position. The figures presented below are included in the above analyses of the total lending volume (see section 8.6).

The classification of credit portfolios as subject to heightened risk is based on the credit risk factors of material importance to individual credit portfolios described in section 8.3.2 '**Credit risk factors of material importance to** individual credit portfolios' as follows:

– The risk factor 'economic divergence in the eurozone' is relevant to the loans and advances to borrowers in the eurozone periphery countries.
– The risk factor 'COVID-19 pandemic' is significant for cruise ship finance and the financing of cruise ship building.

The situation in **shipping markets** eased during the reporting year because of the recovery of freight and charter rates and the rise in the price of oil. In view of this trend, the shipping market situation is no longer considered a credit risk factor for the Bank sector in the DZ BANK Group. At the same time, DVB continued to scale back its shipping finance exposure as part of its run-off strategy, which provides for an orderly reduction of the entire shipping finance portfolio as exposures mature. DZ BANK's shipping finance portfolio also contracted slightly, while at the same time the rating structure improved overall. This meant that shipping finance was no longer considered a credit portfolio with increased risk content. The economic situation in **offshore markets** continues to be challenging. However, the volume of offshore finance at DVB is now no longer of any significance because of the reduction in the size of the portfolio under the run-off strategy and this portfolio has thus also ceased to be subject to heightened credit risk. As a consequence of the above, disclosures on shipping finance and the offshore portfolio have been discontinued in this risk report, although these disclosures were still present in the 2020 risk report.

8.8.2 Loans and advances to borrowers in eurozone periphery countries

As at December 31, 2021, 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 €6,465 million (December 31, 2020: €7,276 million) and €2,057 million (December 31, 2020: €1,956 million) respectively. This mainly consisted of securities business. The decrease in the Bank sector was mainly due to reductions in fair value and to disposals and maturities at DZ HYP.

Fig. 29 shows the borrower structures for the lending volume in the eurozone periphery countries.

FIG. 29 – BANK SECTOR: LOANS AND ADVANCES TO BORROWERS IN EUROZONE PERIPHERY COUNTRIES[1]

	Bank sector		DZ BANK	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Portugal	**917**	1,150	**153**	144
of which: public sector	827	1,057	76	67
of which: non-public sector	90	93	77	77
of which: financial sector	-	-	-	-
Italy	**3,002**	3,181	**856**	888
of which: public sector	2,548	2,929	415	649
of which: non-public sector	454	252	441	239
of which: financial sector	144	100	144	100
Spain	**2,547**	2,945	**1,049**	923
of which: public sector	1,625	2,022	272	323
of which: non-public sector	922	922	777	601
of which: financial sector	273	321	242	140
Total	**6,465**	7,276	**2,057**	1,956
of which: public sector	4,999	6,008	764	1,039
of which: non-public sector	1,466	1,268	1,294	917
of which: financial sector	417	421	386	240

1 Unlike the other presentations of lending volume, traditional lending business in this case includes long-term equity investments.

8.8.3 Finance for cruise ships and cruise ship building

Cruise ship finance

Cruise ship finance in the Bank sector is brought together under **DZ BANK**. Because global cruise ship operations remained at an almost total standstill as a result of the COVID-19 pandemic, borrowers' credit quality continued to deteriorate during 2021 and their credit ratings were again downgraded. In an industry-wide memorandum, the suspension of loan repayments covered by export credit insurance was extended until March 2022, having originally been due to expire in March 2021. The industry's prospects slowly began to brighten in the third and fourth quarters of the reporting year thanks to the increased containment of the pandemic as a result of vaccination programs. The rise in the number of infections and the spread of the Omicron variant are now jeopardizing the recovery of cruise operations and threatening to prolong the crisis in the industry for some time.

Cruise ship finance is predominantly covered by export credit insurance. The remaining risk arises mainly from working capital facilities and the underwriting provided for one acquisition finance transaction.

As at December 31, 2021, the volume of cruise ship finance amounted to €1,099 million (December 31, 2020: €1,099 million). Of this total, €678 million was covered by export credit insurance as at December 31, 2021 (December 31, 2020: €645 million). The proportion of the lending volume that was not covered predominantly consisted of working capital facilities and support for an acquisition finance transaction.

Finance for cruise ship building

A distinction is made between cruise ship finance and the financing of cruise ship building. This segment, which likewise only affects **DZ BANK** in the Bank sector, is currently undergoing consolidation. In consultation with the parties ordering cruise ships, the order book has been stretched out, thereby ensuring a basic level of capacity utilization in the next few years. However, the shipyards that build cruise ships face the challenge of significantly reducing their production capacity and workforce capacity. Customers' credit quality is expected to remain under pressure in the coming financial year, which is why the subportfolio is classified as a portfolio with increased risk content. The lending volume related to the financing of cruise ship building stood at €341 million as at

December 31, 2021 (December 31, 2020: €410 million). The decrease was due to the fall in traditional lending business.

8.9 Risk position

8.9.1 Risks in the entire credit portfolio

The risk capital requirement for credit risk is based on a number of factors, including the size of single-borrower exposures, individual ratings, collateral, and the industry sector of each exposure.

As at December 31, 2021, the credit value-at-risk in the **Bank sector** was €5,037 million (December 31, 2020: €5,496 million) with a limit of €7,188 million (December 31, 2020: €6,978 million). The decrease was mainly attributable to the ongoing reduction of the portfolio at DVB.

DZ BANK's credit value-at-risk as at December 31, 2021 amounted to €2,134 million (December 31, 2020: €2,227 million). The year-on-year decline was largely explained by upgrades to the methodology used in the modeling of credit risk. The corresponding limit was €2,750 million (December 31, 2020: €2,730 million).

Fig. 30 shows the credit value-at-risk together with the average probability of default and expected loss.

FIG. 30 – 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, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Traditional lending business	0.5	0.5	0.2	0.2	432	430	166	142	2,448	2,547	1,150	1,118
Securities business	0.2	0.2	0.2	0.2	44	48	28	30	1,498	1,757	268	331
Derivatives and money market business	0.2	0.2	0.2	0.2	13	14	12	13	238	262	158	192
Total					489	492	206	185	4,184	4,565	1,576	1,641
Average	0.4	0.4	0.2	0.2								

Not relevant

1 As it is not possible to show the risk capital requirement including the capital buffer requirement in the analysis of credit-risk-bearing instruments, the risk capital requirement is presented without the decentralized capital buffer requirement.

8.9.2 Risks in the credit portfolios with increased risk content

The risk capital required in the **Bank sector** and at **DZ BANK** for credit portfolios exposed to increased credit risk is shown in Fig. 31.

FIG. 31 – BANK SECTOR: CREDIT VALUE-AT-RISK[1] FOR CREDIT PORTFOLIOS WITH INCREASED RISK CONTENT

	Bank sector		DZ BANK	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Eurozone periphery countries	1,109	1,255	12	22
Cruise ship finance	13	15	13	15
Finance for cruise ship building	4	2	4	2

1 Excluding decentralized capital buffer requirement.

The decline in the credit value-at-risk for the Bank sector entities' exposure in the **peripheral countries of the eurozone** was in line with the change in the loans and advances to borrowers in these countries.

As at December 31, 2021, the credit value-at-risk in respect of **cruise ship** finance and the financing of **cruise ship building** amounted to €13 million (December 31, 2020: €15 million) and €4 million (December 31, 2020: €2 million) respectively and was attributable in full to DZ BANK. The credit value-at-risk relating to cruise ship building went up following a deterioration in borrower credit ratings.

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. Equity investment risk also includes the risk of losses arising from negative changes in the fair value of the real estate portfolio caused by a deterioration in the general real estate situation or specific factors relating to individual properties (such as a vacancy period, tenant default, loss of use).

In the Bank sector, equity investment risk arises primarily at DZ BANK, BSH, and UMH.

The entities in the Bank sector hold long-term equity investments largely for strategic reasons, especially to cover markets, market segments, or parts of the value chain in which they 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, responsibility, and reporting

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 the risk remains below the existing 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 Group Finance 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 Financial Controlling division. At UMH, the investments are mainly the responsibility of the Central Services department.

Equity investment risk in the Bank sector is **measured and monitored** by DZ BANK. The Board of Managing Directors is kept up to date through the overall risk reports.

9.3 Risk factors

Key factors when determining equity investment risk are the equity investment's industry sector, the location of its registered office, and the nominal amount of the investment. The possibility cannot be ruled out that a future impairment test on the long-term equity investments held by the entities in the Bank sector could lead to a significant reduction in the carrying amounts of these investments reported on the balance sheet. In the case of non-controlling interests, there is also 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 and this could result in a need to recognize impairment losses.

9.4 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** 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.

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.

9.5 Carrying amounts of long-term equity investments and risk position

The **carrying amounts of long-term equity investments** in the **Bank sector** relevant for the measurement of equity investment risk amounted to €2,953 million as at December 31, 2021 (December 31, 2020: €2,893 million). As at December 31, 2021, the carrying amounts of the long-term equity investments of **DZ BANK** came to €1,815 million (December 31, 2020: €1,930 million).

The **risk capital requirement** for equity investment risk in the **Bank sector** was calculated to be €996 million as at the reporting date (December 31, 2020: €936 million). The limit was €1,220 million (December 31, 2020: €1,090 million). The corresponding figure for **DZ BANK** as at December 31, 2021 came to €636 million (December 31, 2020: €634 million). The limit as at December 31, 2021 was €700 million (December 31, 2020: €725 million).

The rise in the risk capital requirement was largely attributable to the increase in the carrying amount and risk capital requirement in respect of SCHUFA Holding AG.

10 Market risk

10.1 Definition

Market risk in the Bank sector comprises market risk in the narrow sense of the term, and market liquidity risk.

Market risk in the narrow sense of the term – referred to below as market risk – is the risk of loss arising from adverse movements in market prices or in the parameters that influence prices. Market risk encompasses a number of risk subtypes, including interest-rate risk (interest-rate risk in the banking book, interest-rate risk in the trading book), spread risk (constantly monitored component) and migration risk (as intermittent spread risk), currency risk, equity risk, fund price risk, commodity risk, and asset-management risk. Parameters that determine market risk also include a category of risk factors referred to as 'opaque'. These risk factors are parameters that are relevant to measurement but cannot be directly observed and must therefore be derived from quoted market prices using models. For the purposes of measuring and managing risk, market risk is broken down into spread and migration risk, asset-management risk, and general market risk, the last of which encompasses all the other risk subtypes.

Market liquidity risk is the risk of losses that could arise from adverse changes in market liquidity – for example, because of market disruption or a reduction in market depth – such 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.

10.2 Business background and risk strategy

10.2.1 Business background

The DZ BANK Group is exposed to considerable market risk in the Bank sector. Market risk arises mainly in connection with BSH, DZ HYP, and UMH in addition to DZ BANK. The assumption of market risk by these entities in the Bank sector is primarily attributable to the DZ BANK Group's strategic focus on the cooperative financial network. This strategy means that each entity in the DZ BANK Group specializes in certain types of product with a corresponding impact on the respective entity's risk profile.

Market risk arises in the Bank sector mainly as a consequence of the following business activities:
- **DZ BANK**: own trading activities; traditional lending business with non-retail customers
- **BSH**: traditional lending business; building society operations aimed at financing privately owned real estate; securities portfolios
- **DZ HYP**: financing for real estate and local authorities; portfolios of securities held to manage liquidity and cover assets
- **UMH**: own-account investing activities; guarantee obligations to customers contained in Riester fund-linked savings plans and guarantee funds.

Liabilities and – where present in a group entity – assets related to direct pension commitments are a further source of market risk. Market liquidity risk arises primarily in connection with securities already held in the portfolio as well as funding and money market business.

10.2.2 Risk strategy

The following principles for managing market risk apply to the entities in the **Bank sector**:
- 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.
- 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.

The entities in the Bank sector pursue the following strategies in relation to the individual **types of market risk**:
- Spread and migration risk is assumed.
- Interest-rate risk associated with the original business purpose of the management units is kept within defined limits.
- In contrast, interest-rate risk from pension obligations is accepted and included in the calculation of risk-bearing capacity.
- Virtually all currency risk is eliminated.
- Commodity risk is assumed only to a very small degree.

Market liquidity risk is consciously assumed following an analysis that takes into account the prevailing liquidity.

10.3 Risk factors

10.3.1 General market risk factors

Interest-rate risk, spread and migration risk, equity risk, fund price risk, and currency risk are caused by changes in the **yield curve**, **credit spreads**, **exchange rates**, and **share prices**. Credit spreads are the key risk factor for all the market risk in the Bank sector.

Spread risk, including migration risk, is the most significant type of market risk for the entities in the Bank sector. A proportion of the spread and migration risk is attributable to securities issued by southern eurozone periphery countries and held by the entities in the Bank sector. **Wider credit spreads** are an indication that markets believe credit quality has deteriorated. If credit spreads were to widen, this would therefore lead to a fall in the fair value of the government and corporate bonds affected. Fair value losses of this nature could have a temporary or permanent adverse impact on capital.

10.3.2 Specific market risk factors

Because of the long period of **low interest rates**, the challenge faced by the 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, or has to inject fresh capital, so that it can meet its guarantee commitments, this could have a substantial detrimental impact on the financial performance of the DZ BANK Group. Information on the economic background to this risk factor can be found in chapter V.1.5 in the outlook.

The widening of credit spreads can be triggered by macroeconomic risk factors. These factors are the **risks to the global economy** from the COVID-19 pandemic, international trade disputes, and the military confrontation between Russia and Ukraine (see chapters V.1.1 to V.1.4 in the outlook).

10.4 Organization, responsibility, and reporting

Market risk in the **Bank sector** is managed on a decentralized basis by the individual management units within the centrally specified limits for the capital requirement for market risk. Each unit bears responsibility for the risk and performance associated with each portfolio. Responsibility for managing risk within a management unit is normally brought together under a local treasury unit.

One exception is **DZ BANK**, where portfolios are managed at the level of subordinate organizational units (group, department, division). In this case, the relevant traders bear direct responsibility for risk and performance. The organizational units are structured in such a way that the responsibility for the marketing of certain types of product is assigned in each case to a trading division with product responsibility.

Key figures for market risk are reported at sector level and for DZ BANK to the **Group Risk and Finance Committee** in the quarterly overall risk report.

10.5 Management of market risk

10.5.1 Central market risk measurement

Central market risk measurement in the overall portfolio

Various components are used to quantify market risk in the Bank sector from a present value perspective. These components are combined to determine the aggregate risk capital requirement for market risk, taking into account the effects of concentration and diversification. The risks arising in connection with the assets and liabilities associated with direct pension commitments are also factored in. The models are operated centrally by DZ BANK and are fed with input data provided by the management units on each trading day. Sector-wide standards and rules are in place to ensure that the modeling is appropriate.

The first component of the measurement approach creates a spread and migration risk model based on a **Monte Carlo simulation**. It determines the combined spread and migration risk over a longer-term (strategic) horizon of one year with a confidence level of 99.9 percent. Whereas spread risk quantifies credit-risk-related losses from financial instruments in a short-term view of value-at-risk, this becomes the combined spread and migration risk in the risk capital requirement over a longer-term perspective. For this reason, migration risk is not shown in the table of values-at-risk in Fig. 32.

The second component is a value-at-risk model based on a **historical simulation** in which the general market risk is determined from a short-term (operational) perspective over 1 day and with a unilateral confidence level of 99.0 percent. The model calculated day by day is based on a historical observation period of 250 trading days and includes a number of risk factors. The most important risk factor groups include yield curves, basis and credit spreads, share prices, exchange rates, and commodity prices. The model also includes implied volatility in the risk measurement. Drawing on the results of the value-at-risk measurement, a transformation model turns the operational key risk indicators (also taking account of stress events) into a strategic perspective in which a one-year holding period and a confidence level of 99.9 percent are assumed.

In the last step, the results from the spread and migration risk model and from the transformation model are then combined to give the **aggregate risk capital requirement** for market risk.

Central market risk measurement for interest-rate risk in the banking book

For internal sector-wide management purposes, the banking book and trading book are treated in the same way in terms of the models used, key risk indicators, frequency of risk measurement, and main risk measurement parameters. To supplement this risk management approach in which the banking and trading books are analyzed holistically, interest-rate risk in the banking books of the entities in the Bank sector and at DZ BANK from a regulatory perspective is managed separately using a present-value approach.

On behalf of the other management units in the Bank sector, DZ BANK also operates a partially centralized model for quantifying periodic interest-rate risk. Overall, these methods are used to record the impact from changes in interest rates, both from an economic perspective (based on present value) and from the angle of net interest income.

Concentrations of market risk

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.

10.5.2 Decentralized market risk measurement

Decentralized measurement of general market risk and spread risk

In addition to the models specified in section 10.5.1, the main **management units** operate their own risk models to satisfy ICAAP requirements from the perspective of the individual institution. With the exception of asset-management risk at UMH, the results from these models are not used to manage market risk on a present value basis in the Bank sector and therefore do not form part of this risk report.

Decentralized measurement of asset-management risk

The risk capital requirement for asset-management risk is determined locally by **UMH** and then added to the risk capital requirement for general market risk and spread risk calculated centrally for the Bank sector. Following the approach used for the central measurement of market risk, the risk capital requirement for asset-management risk is calculated using a one-year holding period and a confidence level of 99.9 percent. The risk calculation makes a distinction between guarantee fund and Riester pension products. In the case of the Riester pension product, which is the most significant product in terms of risk capital requirement, the measurement of the risk is based on a Monte Carlo simulation, taking into account the specific investment selections made in the customer investment account.

10.5.3 Backtesting and stress tests

The central value-at-risk model is subject to **backtesting**, the purpose of which is to verify the predictive quality of the model. 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.

10.5.4 Management of limits for market risk

The starting point for limiting market risk is a limit for the capital requirement for market risk in the **Bank sector** specified as part of operational planning. This limit is broken down into an individual limit for the market risk capital requirement in each management unit.

Within **DZ BANK**, this limit is then further subdivided into a system of limits for the divisions, departments, and groups to appropriately reflect the decentralized portfolio responsibility assigned to these units and the nature of the bank from a regulatory perspective as a trading book institution. Limits are monitored on every trading day.

10.5.5 Mitigating market risk

The entities in the Bank sector use various approaches to mitigate market risk. For example, some market risk from the assets-side business (such as traditional lending business) or from the liabilities-side business (such as home savings deposits) is offset by suitable countervailing liability or asset transactions (such as own issues or securities). These activities are carried out as part of asset/liability management. In other cases, financial derivatives are used for hedging purposes.

As the measurement of market risk is based on the inclusion of the individual items subject to market risk, there is no need to monitor the economic effectiveness of hedges.

10.5.6 Managing the different types of market risk

Management of spread risk and migration risk

Most of the spread and migration risk in the **Bank sector** arises from non-trading portfolios and is consciously assumed within the established limits in accordance with the associated long-term investment strategy. Hedging instruments are also used in carefully selected trading book portfolios. The central measurement of this risk means that the level of the risk on every trading day is transparent. If there is any indication that the ability to bear the spread and migration risk is in jeopardy, Group Treasury at DZ BANK will initiate corrective measures across the sector.

Management of interest-rate risk

Interest-rate risk arising from operating activities at **DZ BANK** and **DZ HYP** is mitigated primarily by means of hedging using interest-rate derivatives, on the basis of either individual transactions or portfolios. At **BSH**, an asset/liability management approach based on the maturities of the securities in the investment portfolio is the predominant method used to manage interest-rate risk arising from the collective building society operations and the traditional lending business, including the interest-rate risk associated with direct pension commitments. Interest-rate derivatives are of minor significance.

DZ BANK is notably exposed to significant **interest-rate risk from direct pension commitments** in addition to the interest-rate risk arising from operating activities. This risk is consciously assumed within the existing limits.

Management of equity risk and fund price risk

Equity risk and fund price risk from the non-trading portfolios are managed first and foremost by directly changing the underlying exposure. Derivative products are also used within the trading portfolio to keep the type of risk involved within the allocated limits. Some funds are broken down into their constituent parts for the purposes of measuring the risk. In such cases, the risk is not treated as part of fund price risk, but is managed within the type of market risk determined for the constituent part concerned.

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 from these guarantee products are managed mainly by using asset allocation. Asset-management risk is reported using a separate internal system and is monitored regularly by UMH.

10.6 Management of market liquidity risk

The calculation of general market risk in the Bank sector using the transformation model and the spread and migration risk model takes market liquidity risk into account.

Within the transformation model, stress events are expressly integrated into the analysis when market risk is transferred from an operating perspective to a strategic perspective. The change in risk factors in these events is based on the assumption that it is not possible to make changes to the exposures in the portfolio of the Bank sector over a specified period.

The spread and migration risk model implicitly factors in phases of diminishing market liquidity via the calibration of the credit spread volatility included in the model. The estimation of volatility based on market data from the recent past also uses a lower limit determined from longer-term data. This prevents any low level of credit spread volatility in a calm market environment with normal liquidity from being transferred directly into the model parameters.

10.7 Risk position

10.7.1 Value-at-risk

Fig. 32 shows the average, maximum, and minimum values-at-risk measured for the **Bank sector** and **DZ BANK** over the reporting year, including a further breakdown by type of market risk. In addition, Fig. 33 shows the change in market risk for the **Bank sector** by trading day in the reporting period. In both figures, the value-at-risk relates to the trading and banking books for regulatory purposes.

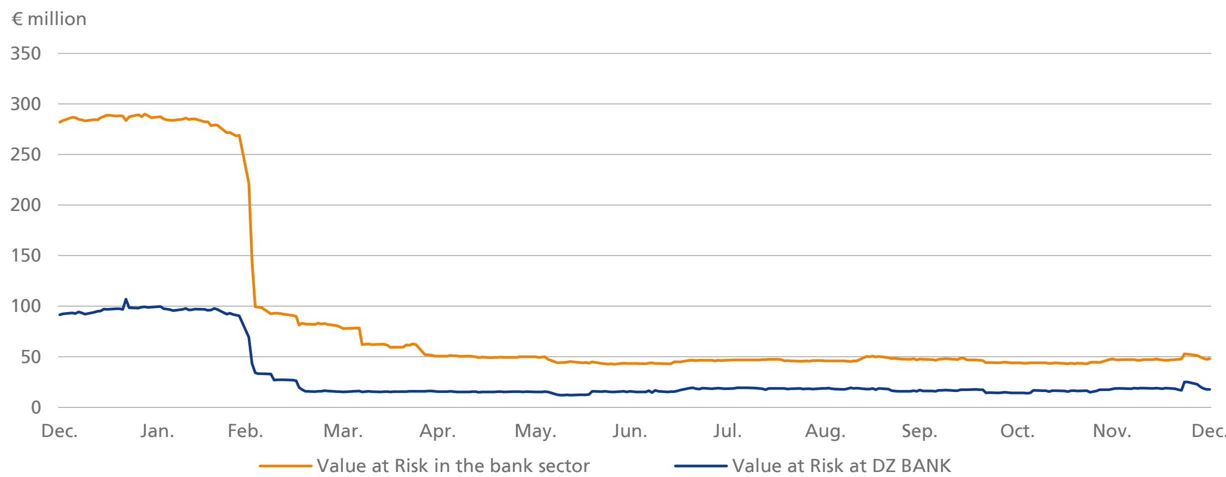
FIG. 32 – BANK SECTOR: CHANGE IN MARKET RISK BY RISK SUBTYPE[1, 2]

	Interest rate risk		Spread risk		Equity risk[3]		Currency risk		Commodity risk		Diversification effect[4, 5]		Aggregate risk	
€ million	Bank sector	DZ BANK	Bank sector	DZ BANK	Bank sector	DZ BANK	Bank sector	DZ BANK	Bank sector	DZ BANK	Bank sector	DZ BANK	Bank sector	DZ BANK
Dec. 31, 2021	**10**	**10**	**43**	**14**	**14**	**4**	**2**	**2**	**2**	**1**	**-22**	**-13**	**48**	**18**
Average	11	9	89	28	13	3	3	2	2	1	-28	-13	90	30
Maximum	20	13	291	103	32	13	4	4	3	2			290	107
Minimum	7	6	41	10	7	2	1	1	2	2			43	12
Dec. 31, 2020	**17**	**12**	**283**	**93**	**29**	**4**	**3**	**2**	**3**	**2**	**-52**	**-21**	**282**	**92**

Not relevant

1 The disclosures relate to general market risk and spread risk. Asset-management risk is not included.
2 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.
3 Including funds, if not broken down into constituent parts.
4 Total effects of diversification between the types of market risk for all consolidated management units.
5 The minimum and maximum amounts for the different subcategories of market risk may stem from different points in time during the reporting period. Consequently, they cannot be aggregated to produce the minimum or maximum aggregate risk due to the diversification effect.

FIG. 33 – BANK SECTOR: CHANGE IN MARKET RISK BY TRADING DAY[1]



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.

As at December 31, 2021, the value-at-risk for the **interest-rate risk in the banking book for regulatory purposes** was as follows (prior-year figures in parentheses):

– **Bank sector**: €10 million (€19 million)
– **DZ BANK**: €10 million (€12 million).

The value-at-risk for interest-rate risk in all of the portfolios (comprising the trading and non-trading books presented in Fig. 32) and the value-at-risk for interest-rate risk in the banking book for regulatory purposes are calculated using identical risk models. Variations in risk values are attributable directly to differences in the calculation bases used for the various portfolios. Rounding of the key figures reported in this risk report meant that both value-at-risk figures for interest-rate risk were identical as at the reporting date.

Market risk declined primarily because the market scenarios that materialized in spring 2020 in the context of the COVID-19 pandemic were no longer included in the historical observation period used in the calculation of risk.

10.7.2 Risk capital requirement

As at December 31, 2021, the **risk capital requirement** for market risk in the **Bank sector** and at **DZ BANK** amounted to €3,713 million (December 31, 2020: €4,310 million) and €1,517 million (December 31, 2020: €1,908 million) respectively, with **limits** of €5,725 million (December 31, 2020: €5,725 million) and €2,400 million (December 31, 2020: €2,600 million) respectively. In this case too, the decline in market risk was because the market scenarios that materialized in spring 2020 in the context of the COVID-19 pandemic were no longer included in the historical observation period used in the calculation of risk.

The Bank sector's risk capital requirement encompasses the **asset-management risk of UMH**. The asset-management risk of the Bank sector as at December 31, 2021 amounted to €347 million (December 31, 2020: €319 million). The increase in risk was primarily attributable to a change to the calculation of risk. DZ BANK is not exposed to any asset-management risk.

11 Technical risk of a home savings and loan company

11.1 Definition

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.

BSH's business risk and reputational risk are included within the technical risk of a home savings and loan company.

11.2 Business background and risk strategy

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 (which may be subsidized under statutory arrangements) 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 long maturity.

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.

11.3 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 lead to a fall in earnings and therefore to a decline in capital.

11.4 Responsibility, reporting, and risk 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**.

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** on a quarterly basis. 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. **Concentrations** of this risk are most likely to arise from new business risks.

Technical risk of a home savings and loan company 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.

11.5 Risk position

As at December 31, 2021, the **capital requirement** for the technical risk of a home savings and loan company amounted to €639 million (December 31, 2020: €545 million) with a **limit** of €706 million (December 31, 2020: €550 million). The increase in risk was mainly attributable to a change to the calculation of risk.

12 Business risk

12.1 Definition and business background

Business risk refers to the risk that financial performance is not in line with expectations, and this is not covered by other types of risk. In particular, this comprises the risk that, as a result of changes in material circumstances (for example, economic conditions, product environment, customer behavior, market competitors) or inadequate strategic positioning, corrective action cannot be taken to prevent losses.

Business risk mainly affects DZ BANK and DVB. DZ BANK's core functions as a **central institution and 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.

12.2 Risk strategy

The objective of the business risk strategy is to specify how business risk is to be managed, taking into account the relevant **business drivers**, and thus contribute to achieving the targets set out in the business strategy. The focus is on preventing both an unplanned increase in risk and potential losses arising from a slump in income or from increases in staff expenses or operating costs.

The following **instruments** are used to support the attainment of targets:
- Forward-looking assessment of success factors and specification of targets as part of the strategic planning process
- Groupwide coordination of risk management, capital allocation, and corporate strategy, together with the leveraging of synergies
- Setting of limits and monitoring.

12.3 Risk factors

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 **regulatory legislative initiatives**.

Fiercer **competition in retail and corporate banking based on pricing and terms** could give rise to margins that are economically unattractive for the entities in the Bank sector or that do not adequately cover the risk arising from the corresponding transactions.

12.4 Organization, responsibility, and reporting

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 Finance division supports the Board of Managing Directors as part of its role in supervising the activities of the subsidiaries. Details of the committee structure and the supervision of subsidiaries can be found in chapter I.2.2 in 'DZ BANK Group fundamentals' in this (group) management report.

Business risk is **reported** to the Board of Managing Directors quarterly as part of the overall risk report. The Board of Managing Directors is also updated monthly about the income situation from an HGB perspective.

12.5 Risk management

The management of business risk is closely linked with 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. The strategic planning process is described in chapter I.2.4 in 'DZ BANK Group fundamentals' in this (group) management report.

To identify regulatory initiatives with a material impact on the DZ BANK Group and its entities, 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 the other management units, and organizes regular bank-wide and groupwide dialog on identified and new strategic regulatory initiatives. It also uses a 'regulatory map' to report to the relevant steering committees, the Board of Managing Directors, and the Supervisory Board of DZ BANK.

Business risk in the Bank sector is **quantified** using a risk model operated by DZ BANK and centralized data at the level of the DZ BANK Group. The risk model is based on an earnings-at-risk approach with due regard to the definition of economic available internal capital. A Monte Carlo simulation is used to model a probability distribution for the earnings relevant to business risk, which comprise selected income and expense items from the IFRS income statement, with an analysis period of one year. This distribution produces the risk capital requirement in the amount of the actual loss.

The broad diversification and sustainability of the business models used by the entities in the Bank sector are intended to prevent excessive **concentrations of income**. As part of a groupwide risk concentration analysis, which itself forms part of the risk inventory check, a review is carried out annually, and on an ad hoc basis as required, to identify concentrations of income and assess their materiality. This aims to ensure that income concentrations are appropriately taken into account in risk-bearing capacity.

12.6 Risk position

As at December 31, 2021, the **risk capital requirement** for business risk in the **Bank sector** and at **DZ BANK** amounted to €407 million (December 31, 2020: €382 million) and €295 million (December 31, 2020: €356 million) respectively. The **limits** as at the reporting date were €640 million (December 31, 2020: €550 million) and €445 million (December 31, 2020: €500 million) respectively. Reputational risk is included in the figures shown. The increase in risk and the higher limit were predominantly due to DVB's risk being transferred from the centralized to the decentralized capital buffer requirement.

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 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. Reputational risk can arise either as an independent risk (primary reputational risk) or as an indirect or direct consequence of other types of risk (secondary reputational risk).

Reputational risk can arise in connection with any of the business activities in the entities within the Bank sector.

13.2 Risk strategy

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 (potential) 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.

13.3 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.

If the social and corporate governance risks assessed in connection with ESG risk factors were to materialize, this could give rise to heightened reputational risk. These risk factors are described in section 5.3.3.

13.4 Responsibility and risk management

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 the management units. 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.

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. The management units follow a stakeholder-based approach in which reputational risk is identified and evaluated from a qualitative perspective depending on the stakeholder concerned.

14 Operational risk

14.1 Definition
Operational risk refers to the risk of losses from human behavior, technological failure, weaknesses in process or project management, or external events.

In the reporting year, the following subtypes of operational risk were material for the Bank sector:
– Compliance risk including conduct risk
– Legal risk
– Information risk including ICT risk
– Security risk
– Outsourcing risk
– Project risk.

Other subtypes of operational risk that are not material when viewed in isolation are brought together under 'Other operational risk'. This category is used to cover operational risks that cannot be allocated to the other subtypes of operational risk and – measured on the basis of risk profile – are of lesser importance.

14.2 Business background and risk strategy
Operational risk can arise in any division of the entities in the Bank sector. DZ BANK as well as DZ HYP, DZ PRIVATBANK, and UMH are particularly subject to operational risk.

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
– Manage operational risk on a decentralized basis but within the limits set out in the framework for operational risk
– Ensure that the impact of corporate policy decisions on operational risk is taken into account.

14.3 Organization, responsibility, and reporting
Each management unit is responsible for managing its operational risk. The principle of **decentralized** responsibility applies equally within the management units.

One of the purposes of the **framework for operational risk** is to harmonize risk management 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.

A **DZ BANK** organizational 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. This organizational unit ensures that operational risk is monitored independently and is responsible for central reporting on operational risk in the Bank sector and at DZ BANK. Similar organizational units are also in place at the other main entities in the **Bank sector**.

Specialist divisions with central risk management functions also manage some operational risk tasks. As part of their overarching responsibility, these specialist divisions also perform an advisory and guiding function for the matters within their remit in the relevant entities of the Bank sector.

Because operational risk can affect all divisions in the management units, **local operational risk coordinators** are located in each division and they liaise with Central Risk Controlling.

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 with the aim of facilitating effective management of operational risk on a timely basis.

14.4 Central risk management

14.4.1 Identifying operational risk

The main tools used to manage and control operational risk in the DZ BANK Group's Bank sector are described below.

Loss database

The 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. In particular, data is recorded for operational risk that materializes and results in a gross loss of €1,000 or more.

Risk self-assessment

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 event 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.

14.4.2 Measurement of operational risk

An **internal portfolio model** that takes into account loss data and the results from the risk self-assessments is used to determine the risk capital requirement for operational risk in the Bank sector. Within the portfolio model, the distributions of loss frequency and amount are brought together in a Monte Carlo simulation. This determines potential losses that could arise over a period of one year. The results from the model, combined with the tools used to identify risk, are used to manage operational risk centrally. Alongside the economic risk capital requirement, the model also calculates specific risk contributions for each management unit.

In addition, **risk concentrations** are identified by using separate model-based analyses, taking into account event categories and areas of business specified by regulatory requirements. These risk concentrations could occur in the different areas of business within the entities of the Bank sector.

In addition, a simplified procedure based on the allocation mechanism in the capital model is used to identify

risk drivers. The risk driver analysis is carried out for all standard scenarios. The list of standard scenarios is maintained for use throughout the group and contains a list of general scenario descriptions that are relevant to operational risk in the Bank sector entities.

14.4.3 Limiting operational risk

The limits for operational risk are 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 limits for each management unit.

14.4.4 Mitigating and avoiding operational risk

Continual 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.

14.5 Operational risk subtypes

14.5.1 Compliance risk including conduct risk

Risk factors

Compliance risk could arise if the compliance and risk management systems implemented in the Bank sector entities prove insufficient to completely prevent or detect breaches of obligations to third parties. Such obligations include legal requirements (laws, regulations) as well as both internal and external agreements. Examples are misuse of confidential information, failure to comply with sanctions or embargoes, data protection infringements, or support for money laundering, terrorist financing, or other criminal offenses. Wrongdoing by employees (conduct risk) forms part of compliance risk.

Effects if risk materializes

Violations of internal rules or legal provisions could render contracts null and void or have legal implications for the entity concerned, for the members of its decision-making bodies, or for its employees. They may give rise, for example, to fines, penalties, retrospective tax payments, or claims for damages by third parties. The reputation of individual entities in the Bank sector and the DZ BANK Group as a whole could also suffer as a result. These effects could reduce the Bank sector entities' appeal as partners in business transactions and consequently lead to losses in value.

Risk management

The basic principles for managing compliance risk applicable to the entities in the DZ BANK Group are described in section 4.5.5. The data protection measures in place and the code of conduct are also explained in the same section. Measures such as the strict separation of functions, the requirement for verification by second person, restrictions on IT and building access authorizations, and a sustainability-oriented remuneration system aim to contain risk, in particular the risk of internal fraud.

14.5.2 Legal risk

Risk factors

Legal risk can arise from legal violations or incorrect application of legal provisions. Legal risk can also arise from changes to the legal position (laws or judgments by the courts) relating to transactions completed in the past.

Effects if risk materializes

If legal risk were to materialize, this could result in official sanctions or the need to pay damages. It is also possible that existing contractual rights could be lost retrospectively or could otherwise not be enforced for legal reasons. These effects could lead to losses and reduce the Bank sector entities' appeal as partners in business transactions.

Risk management

The entities in the Bank sector pursue a strategy of avoiding legal risk. Identified risks are limited and mitigated by means of legal or procedural organizational measures. If the legal position is uncertain, the management units generally adopt a defensive approach.

In the entities of the Bank sector, responsibility for managing legal disputes normally lies with their organizational units responsible for dealing with legal issues. These units continuously monitor proposed legislation and regulatory requirements that are legally relevant, as well as developments in decisions by the courts. In the Bank sector entities, 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.

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 for risk

If identified legal risks cannot be excluded, the potential associated losses are accounted for by the recognition of provisions in the financial statements. The relevant (consolidated) financial reporting requirements apply. Disclosures covering the provisions recognized for risks arising from ongoing legal disputes, in particular in connection with capital market and credit products, and for risks arising from general banking operations are included in note 69 of the notes to the consolidated financial statements under 'Other provisions'.

14.5.3 Information risk including ICT risk

Risk factors

Information risk arises from a failure to maintain the confidentiality, integrity, availability, or authenticity of data. If the risk is in connection with the use of information or communication technology (data media), it is referred to as ICT risk. This also includes cyber risk.

Effects if risk materializes

If information risk materializes, the damage to, or loss of, confidentiality, integrity, availability, or authenticity of data could lead to the malfunction, breakdown, misuse, or manipulative use of IT systems (including hacker attacks and the installation of malware). This could impair the processes necessary to conduct operating activities. Furthermore, such malfunctions or breakdowns could lead to the temporary or permanent loss of data or to unauthorized data access, modification, or publication. In such cases, this could also potentially lead to restrictions on business operations, which in turn could inflict reputational damage.

Risk management

The basic principles for managing information security applicable to the entities in the DZ BANK Group are described in section 4.5.6. The nature of these principles is described below.

The entities in the Bank sector use computers and IT systems to carry out their operating activities. Practically all business transactions and activities are processed electronically using appropriate IT systems. The supporting IT 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 information 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.

Further details on information security management can be found in section 4.5.6.

DZ BANK’s risk assessment methodology for information risk is made available centrally by information security management and applied locally by the managers responsible for the various IT systems using tool-supported control processes. All variances identified in these processes are assessed from the perspective of the associated risks. All information risks classified as material are included in regular information security reports to the Board of Managing Directors.

14.5.4 Security risk

Risk factors

Security risk can arise from inadequate protection of individuals, premises, assets, or time-critical processes. Examples are epidemics or pandemics resulting from the spread of pathogens over a huge area, restrictions on access to workplaces caused by natural disasters or demonstrations, or limitations on the use of resources because of a power outage or other interruption to energy supply. Climate change could lead to more frequent and more severe natural disasters.

Effects if risk materializes

If security risk were to materialize, this could lead to a range of problems from staff shortages to restrictions, or even the loss, of the use of buildings and resources such as IT systems and third-party services. In such eventualities, it is possible that mission-critical processes could not be carried out or could not be carried out on time, which could lead to loss of business and/or compensation claims from customers. Furthermore, such scenarios could also have a negative impact on reputation.

Risk management

The relevant organizational units in the management units prepare requirements for the protection of time-critical business processes, people, premises, and other assets. These requirements are implemented by the departments responsible in each case. In all relevant management units, a comprehensive business continuity management system (with business continuity plans covering time-critical activities and processes) has been established to ensure the continuation of business in the event of process disruption or IT system breakdown. These business continuity plans are regularly reviewed and tested to ensure they are fully functional.

Further details on business continuity management can be found in section 4.5.6.

14.5.5 Outsourcing risk

Risk factors

The entities in the Bank sector have outsourced activities and processes to third-party service providers to a considerable extent. Outsourcing risk can arise if the service provider fails to comply with the strategic principles established by the management units or the related operational requirements when carrying out the outsourced activities.

The reasons may be as follows:
- The relevant service provider fails to comply with regulatory requirements
- Lack of transparency regarding the delivery of the services and little opportunity for control over outsourcing outside the home market
- Highly complex outsourced processes that are far from a standard service
- Need to outsource core competencies or knowledge processes because of a potential loss of expertise
- Defective performance caused by service provider failures or the loss of service provider
- Inadequate management or monitoring of service providers, in particular as a result of a lack of transparency regarding service delivery.

Effects if risk materializes

If these risk factors were to materialize, they could lead to a loss of business and to claims for damages from customers. They could also result in a negative impact on reputation.

Risk management

The basic principles for managing outsourcing applicable to the entities in the DZ BANK Group are described in section 4.5.7.

The process of assessing the risk and determining the degree to which an outsourcing arrangement is material is carried out as part of the analysis of outsourcing risk by the division responsible for the outsourcing with the involvement of a number of corporate and reviewing units, including compliance, legal affairs, information security, and business continuity management, and in consultation with the local coordinators for operational risk. Internal audit is also involved as part of its auditing activities.

At DZ BANK, external service providers are managed by the department responsible for the outsourcing in accordance with the currently applicable policy for external procurement management. 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 external service providers submit annual audit reports in which they evaluate and confirm the effectiveness of the general controls and procedures.

Business continuity plans, specific contractual liability provisions, and exit strategies are some of the approaches used to reduce outsourcing risk.

14.5.6 Project risk

Risk factors

Project risk refers to the risk that project requirements will not be completed on schedule. Project risk could arise, for example, from the inadequate clarification of project targets or orders, from deficiencies in subsequent implementation, from communication shortcomings both inside and outside the project, or from unexpected changes in the general parameters applicable to a project.

Effects if risk materializes

If project risk were to materialize, this could mean that the implementation of the project could require exceptional additional funds in excess of the budget (primary project risk). It could also give rise to further costs attributable to the failure to complete project requirements on schedule (secondary project risk). Examples of such costs are additional costs in the line organization, impairment losses on capital investment related to the project, and penalty payments.

Risk management

In accordance with the statutory requirements that need to be observed, the project organization serves as the framework for implementing projects. The projects as a whole are broken down into portfolios with shared characteristics to enable the projects to be managed in a focused, efficient manner. A committee structure with defined roles and responsibilities is designed to look after the detailed management of the portfolios and the projects assigned to them.

The management of project risk is an ongoing process over the lifecycle of a project and is a component of project portfolio management. Accepting a project risk is a valid option if the project customer believes that the measures to eliminate, reduce, or mitigate the risk are not reasonable in relation to their expected benefit.

14.6 Losses

Losses from operational risk do not follow a consistent pattern. 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. Over the course of time, regular fluctuations are evident 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 four quarters and on the basis of the date on which the expense is recognized in the income statement.

Fig. 34 shows the net losses from loss events reported in the last four quarters, i.e. in the period from January 1 to December 31, 2021, classified by operational risk subtype, accompanied by a comparison against the corresponding long-term mean.

FIG. 34 – BANK SECTOR: NET LOSSES BY OPERATIONAL RISK SUBTYPE

	Bank sector		DZ BANK	
Proportion of total net losses (%)	**Jan. 1, 2021–Dec. 31, 2021**	Long-term mean[1]	**Jan. 1, 2021–Dec. 31, 2021**	Long-term mean[1]
Compliance risk	39.8	44.9	42.0	46.7
Legal risk	43.4	37.1	44.3	39.9
Information risk including ICT risk	1.9	5.6	2.4	4.3
Security risk	0.9	1.9	1.0	0.9
Outsourcing risk	1.8	0.6	3.9	0.5
Project risk	6.0	0.8	0.4	0.5
Other operational risk	6.2	9.2	6.0	7.0

1 The long-term mean is derived from loss data recorded since 2006.

In the past four quarters, which is the relevant observation period for the analysis of net losses, internal losses in the **Bank sector** were dominated by **compliance risk** and **legal risk**. While the internal losses in these risk subtypes were still well below the respective annual averages as at December 31, 2020, provisions recognized in connection with general banking operations meant that the internal losses related to compliance risk and legal risk went up in the reporting year to the extent that, in the case of legal risk, the long-term mean as at December 31, 2021 was exceeded.

Net losses related to **project risk** rose compared with the figure as at December 31, 2020 and were also higher than the long-term mean calculated as at December 31, 2021. The increase was mainly attributable to losses in large-scale projects.

Although the net losses for the **other risk subtypes** as at December 31, 2021 were on a par with the end of 2020, the proportion of the total internal net losses attributable to these risk subtypes declined owing to the increase in losses attributable to compliance risk and legal risk.

At **DZ BANK**, net losses in the last four quarters were likewise concentrated in **legal risk** (44.3 percent), followed by **compliance risk** (42.0 percent) and **other operational risk** (6.0 percent).

Losses did not reach a critical level relative to the expected loss from operational risk at any point during 2021, either in the Bank sector or at DZ BANK.

14.7 Risk position

As at December 31, 2021, the capital requirement for operational risk at **Bank sector** level was calculated at €941 million (December 31, 2020: €844 million) with a limit of €1,102 million (December 31, 2020: €1,020 million).

As at December 31, 2021, the corresponding requirement at **DZ BANK** was €515 million (December 31, 2020: €467 million). The limit as at December 31, 2021 was €596 million (December 31, 2020: €547 million).

Fig. 35 shows the structure of the risk profile for operational risk in the Bank sector and at DZ BANK based on **risk subtypes**.

FIG. 35 – BANK SECTOR: DISTRIBUTION OF RISK CAPITAL REQUIREMENT FOR OPERATIONAL RISK, BY RISK SUBTYPE

	Bank sector[1]		DZ BANK[2]	
%	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Compliance risk	32.5	32.4	15.1	15.2
Legal risk	20.6	19.2	9.5	10.4
Information risk including ICT risk	14.3	14.4	4.8	5.5
Security risk	5.5	5.7	1.6	1.5
Outsourcing risk	6.5	6.9	2.1	2.3
Project risk	7.4	7.8	2.8	3.0
Other operational risk	13.3	13.6	6.8	6.2

1 Proportion of the Bank sector's risk capital requirement attributable to each risk subtype.
2 Proportion of the Bank sector's risk capital requirement attributable to DZ BANK, broken down by risk subtype.

The distribution of the risk capital requirement among the operational risk subtypes in the Bank sector and at DZ BANK remained largely unchanged as at December 31, 2021 compared with the end of the previous year. In 2021, **compliance risk** and **legal risk** accounted for the most significant proportions of the risk capital requirement, both in the Bank sector and at DZ BANK. The proportions of the risk capital requirement for these two risk subtypes were determined by the recorded losses and the hypothetical risk scenarios arising in connection with risks from capital market and credit products and risks from general banking operations. The third-largest proportion was accounted for by **information risk including ICT risk**, the risk contribution for the Bank sector and DZ BANK in this case being determined to a large degree by hacker-attack scenarios. The proportions of risk capital accounted for by other operational risk (which mainly consists of HR risk, financial reporting risk, and model risk), project risk, outsourcing risk, and security risk were also shaped by hypothetical risk scenarios.

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, which is closely interlinked with the business strategy. Under its risk strategy, R+V aims to assume risk on a conscious, calculated basis within the constraints of the specified risk appetite.

Life actuarial risk is managed with the objectives of holding a broadly diversified product portfolio and of developing existing products while designing new ones. Pension, endowment and risk insurance, working life and semi-retirement products, index-linked products, and unit-linked products are underwritten in order to diversify the life insurance and pension provision portfolios.

The objectives of managing **health actuarial risk** are a risk-conscious underwriting policy, cost/benefit management, the development of existing products, and the design of new products.

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.

In **inward non-life reinsurance business**, R+V also aims to achieve a broad balance of risk across all sectors, diversify geographically around the globe, and optimize the portfolio from a risk/reward perspective.

The management of **market risk** is connected with the following fundamental objectives of risk policy: ensuring required returns on investments taking into account individual risk-bearing capacities, achieving defined minimum investment returns in stress scenarios, and securing a certain hidden asset level to ensure consistent earnings. The aim is also to guarantee that there is a sufficient proportion of fungible investments.

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 image of the R+V brand with due regard to the need for transparency and credibility.

15.2 Organization, responsibility, and reporting

As specified in the own risk and solvency assessment (ORSA), the risk management process encompasses all the steps involved in identifying, analyzing, assessing, managing, monitoring, reporting, and communicating risk. 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 assessed and, where necessary, 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.

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 at R+V, both quarterly 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. The following subtypes of life actuarial risk are material for R+V:

– **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.

– **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. The following subtypes of non-life actuarial risk are material for R+V:

– **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.

16.1.2 Business background

In the DZ BANK Group, considerable actuarial risk arises from the business activities of R+V. The risk arises from the direct life insurance and health insurance business, the direct non-life insurance business, and the inward reinsurance business.

16.2 Risk factors

In the case of long-term products, which constitute the bulk of R+V's **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. If the actual trends in life expectancy, disability-morbidity, and costs vary from the calculation assumptions, there is a risk over the medium to long term that the gross profit generated from life insurance will decline.

In **health insurance** at R+V, 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. Subject to certain legal requirements, there is a possibility of adjusting the premiums in the health insurance business, a process in which all actuarial assumptions can be reviewed and modified. Significant premium adjustments could have a negative impact on future new business if rate scales lose their appeal because of high premiums. The number of lapses in the portfolio could also increase as a result.

Environmental pollution and climate change represent additional risk factors in respect of **life and health actuarial risks** because they could have a negative impact on the health of policyholders and increase the number of claim events.

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. As a result, in any one year, the actual impact from the size and frequency of losses could 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.

Cyber risk is becoming increasingly significant within the underwriting business as a consequence of ongoing digitalization. There is a risk that cyber risk may not be comprehensively set out, or may not be mentioned at all, in insurance terms and conditions, or that it may not be expressly included or excluded (referred to as silent cyber risk).

16.3 Management of life actuarial risk

16.3.1 Risk measurement

The risk for insurance contracts subject to **mortality risk** is modeled with the assumption of a 15 percent permanent increase in mortality.

The risk for insurance contracts subject to **longevity risk** is modeled with the assumption of a 20 percent permanent increase in longevity.

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.

16.3.2 Risk management in direct life insurance business

Actuarial risk is taken into account by carrying out a prudent cost calculation while products are still in development. This applies to the development of existing products as well as the design of new types of insurance. Safety margins are included in the actuarial assumptions to achieve this. The assumptions are structured in such a way that they not only withstand the current risk situation, but should also accommodate potential changes in the risk position. Actuarial control systems are used 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 risk**. In general, risk is only assumed in compliance with fixed underwriting guidelines. High levels of individual or cumulative risk are limited by reinsurance.

Generally speaking, the risk is mitigated if the insured risks are diversified. 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.

Cost control tools are used to manage **life expense risk**.

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. Appropriate design of policyholder participation and, in particular, the final bonus also counteracts lapse risk.

In addition, advance notice of **policyholder participation** in the form of declarations of future bonuses is also a key instrument with which to reduce actuarial risk relating to life insurance.

16.4 Management of health actuarial risk

16.4.1 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 (section 16.3) and non-life actuarial risk (section 16.5) 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.

16.4.2 Risk management in health and casualty insurance

Risk management in health insurance business

In the health insurance business, the Insurance sector aims to manage actuarial risk by means of an **underwriting policy**, the features of which are underwriting guidelines and selection of risk, and management of benefits and costs. The risk exposure in the case of large individual risks may be limited by taking out appropriate reinsurance. In many of the health insurance rate scales, deductibles are 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. All actuarial assumptions are reviewed and specified in consultation with an independent trustee. A safety margin factored into premiums is also intended to ensure 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 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, 2021, R+V used the new PKV mortality table valid for 2021 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 review also forms part of the underwriting policy in the case of casualty insurance. Premiums are reviewed on an ongoing basis to ensure that they remain appropriate. Claims are assessed on a case-by-case basis.

16.5 Management of non-life actuarial risk

16.5.1 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 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 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 parameters for the analyzed distributions are set using historical portfolio data and related planning data. They are therefore intended to reflect the actual risk position of the entity concerned.

In the case of catastrophe risk in connection with the direct insurance business, 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. This approach uses catastrophe claims 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 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.

16.5.2 Risk management in direct non-life insurance business

Premium and reserve risk is managed through 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 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 calculation that uses mathematical/statistical modeling.

The measurement of the overall solvency requirement for **natural catastrophe risk** is supplemented by 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.

R+V uses a prospective limit system to verify whether prescribed limits for the risk from natural disasters will be adhered to. The risk exposure reached on the basis of projected business growth is compared against a limit determined from the allocated internal risk capital.

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 reviewed as part of the reinsurance decision-making process. This is used as the basis for reinsurance structures and liability layers.

16.5.3 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. The risk is managed on the basis of an 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. Cyber and pandemic exclusions were added to policy terms and conditions in the reporting year. R+V takes account of economic capital costs when underwriting risk. Compliance with these requirements is 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.

Limits are set to support central management and limitation of cumulative risks arising from individual natural hazards. One of the 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. In the second half of the reporting year, it also purchased retrocession cover to minimize the risk arising in connection with hurricanes in the US.

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.

16.6 Claims rate trend in non-life insurance

In the **direct non-life insurance** business, a number of storms meant that the budget for the year allocated to natural disasters was exceeded. Gross claims arising from natural disaster events amounted to €1,088 million, of which €730 million was accounted for by **Storm Bernd** alone. It was possible to limit the impact on net insurance gains and losses by making use of existing reinsurance arrangements for natural disasters. The net charge caused by natural disasters was offset by positive effects from the **motor vehicle insurance** division as a consequence of the pandemic. Beyond the impact from natural disasters and the COVID-19 pandemic, other major claims remained at normal levels and within budget. Taking into account the settlements relating to the provisions for claims outstanding carried over from the previous year, the net claims rate (based on figures recognized in the financial statements) rose from 73.3 percent at the end of the previous year to 74.0 percent at the end of 2021, which was within the forecast range.

The budget for major and natural disaster claims was also exceeded in **inward reinsurance** because of the impact from several storms. **Storm Bernd** in Europe, the extreme onset of winter that affected a number of states in the US Midwest (**Texas Freeze**), and other natural disasters gave rise to gross claims totaling €453 million. Multiple reinsurance arrangements to reduce the risk from natural disasters meant that the negative financial impact for R+V was limited. Taking into account the settlements relating to the provisions for claims outstanding carried over from the previous year, the net claims rate (based on figures recognized in the financial statements) fell from 83.2 percent as at December 31, 2020 to 73.5 percent as at the reporting date.

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.

FIG. 36 – INSURANCE SECTOR: CLAIMS RATE AND SETTLEMENTS (NET OF REINSURANCE)[1]

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Claims rate (net) as percentage of premiums earned										
Including major/natural disaster claims	73.8	76.5	76.3	76.2	76.6	76.1	76.2	75.5	78.2	75.6
Excluding major/natural disaster claims	68.0	70.4	72.7	71.1	72.8	72.3	74.0	73.8	69.1	72.7
Settlements (net) as percentage of provision for incoming claims										
Non-life	2.9	1.9	0.6	1.1	3.1	3.6	1.6	2.1	0.5	0.3

1 Direct non-life insurance business and inward non-life reinsurance.

16.7 Risk position

As at December 31, 2021, the overall solvency requirement for **life actuarial risk** amounted to €328 million (December 31, 2020: €1,070 million) with a limit of €600 million (December 31, 2020: €1,400 million).

As at December 31, 2021, the overall solvency requirement for **health actuarial risk** was €240 million (December 31, 2020: €293 million) with a limit of €350 million (December 31, 2020: €700 million).

The decrease in the risk associated with the above categories of actuarial risk resulted from the greater potential for risk mitigation from the higher policyholder participation anticipated in the future. The rise in policyholder participation was attributable to the merger of R+V Luxembourg S.A., Luxembourg-Strassen, with R+V Lebensversicherung AG during the reporting year.

The overall solvency requirement for **non-life actuarial risk** amounted to €1,762 million as at December 31, 2021 (December 31, 2020: €3,780 million) with a limit of €4,600 million (December 31, 2020: €4,500 million). This decline in risk was largely due to the introduction of internal modeling for premium and reserve risk in the inward reinsurance business and to a modification of the reinsurance structure.

17 Market risk

17.1 Definition and business background

17.1.1 Definition

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 reflects the structural mismatch between assets and liabilities, in particular with respect to their maturities. In accordance with the breakdown specified in Solvency II, 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.

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.

17.1.2 Business background

Market risk arises in the insurance business as a result of investing activities. It is caused by the timing difference between the payment of premiums by the policyholder and the payments for claims and benefits by the insurance company, and by endowment-type business in personal insurance.

17.2 Risk factors

R+V could face additional challenges in respect of the requirement to generate guaranteed returns in the life insurance business because income from new investments will be lower if **interest rates remain low over the long term** or turn negative and **credit spreads on investments are narrow**. Whereas the low interest rates are largely caused by the ECB's expansionary monetary policy, lower spreads could reflect a number of factors, including a view in the markets that the credit quality of the issuers of investments has improved. Information on the anticipated trend in interest rates in 2022 can be found in chapter V.1.5 in the outlook.

On the other hand, if **interest rates were to rise sharply and rapidly** or **risk premiums on bonds widen**, this would lead to a substantial fall in the fair values of R+V's investments. The widening of spreads could be triggered by macroeconomic risk factors. These factors are the **risks to the global economy** from the COVID-19 pandemic, international trade disputes, and the military confrontation between Russia and Ukraine (see chapters V.1.1 to V.1.4 in the outlook). Falls in fair value caused by a rapid rise in interest rates or the widening of spreads could have a temporary impact on operating profit at R+V, or a permanent impact if investments have to be sold. A negative change in the fair values of investments associated with a widening of spreads in isolation could also have an adverse impact on R+V's solvency situation.

Other risk factors associated with investing activities could arise from **sustainability risk**. For example, action by policymakers, decisions by the courts, or the withdrawal of licenses could have an adverse effect on the price of corporate bonds or on the share prices of equities held in the R+V portfolio and exposed to transition risk. The value of the portfolio could also be hit by rising inflation as a consequence of higher energy and carbon prices. Furthermore, R+V is exposed to a risk of reputational damage if it invests in businesses that are responsible for environmental pollution, fail to adhere to social norms, neglect their data protection responsibilities, or inadequately implement measures to prevent corruption, fraud, or tax evasion.

17.3 Risk management

17.3.1 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. It also includes a capital buffer that takes into account changes in the direction of interest-rate trends.

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.

17.3.2 Principles of market risk management

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). R+V aims to ensure compliance with the internal provisions in the risk management guidelines for investment risk and with other regulatory investment principles and regulations by means of investment management, internal control procedures, a forward-looking investment policy, and organizational measures. The management of risk encompasses both economic and accounting aspects.

R+V counters investment risk by observing the principle of achieving the greatest possible security and profitability while safeguarding liquidity. By maintaining a mix and diversification of investments, R+V’s investment policy aims to take into account the objective of mitigating risk.

In addition to diversification via maturity dates, issuers, countries, counterparties, and asset classes, limits are also applied in order to mitigate risk.

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, reviews are 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.

17.3.3 Management of individual market risk categories

In the management of **interest-rate risk**, R+V adheres to the principle of a mix 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 42 in section 17.4.2). 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 internal rules that help to limit default risk.

Equity risk is mitigated by diversifying holdings across different equity asset classes and regions. 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 the 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.

Concentration risk is reduced by mixing and diversifying investments. This is particularly apparent from the granular structure of the issuers in the portfolio.

R+V's investment portfolio is regularly evaluated on the basis of **key sustainability figures** (including ESG score, controversy reports). The related key figures are obtained from third-party data providers. If ESG controversies arise at certain issuers, R+V can initiate processes to engage with such issuers in order to mitigate ESG risks.

17.3.4 Management of risk concentrations

R+V's investment approach focuses on avoiding risk concentrations in the portfolio and optimizing its risk profile by broadly diversifying investments. To achieve this, it applies the principle of an appropriate mix and diversification of investments and complies with the quantitative limits specified through the internal rules in the risk management guidelines for investment risk.

Risk concentrations are analyzed at least annually to assess whether they are material or not. Potential risk concentrations arise from the combination of analyzed risk type and type of concentration (e.g. individual exposure, sector, country, or region). The analysis pays particular attention to the risk-adjusted view, i.e. risk remaining after the risk-mitigating effects of insurance liabilities have been taken into account. Items currently of particular note in this regard are the portfolios of Italian government bonds combined with the shares held in the Italian Assimoco companies for business-policy reasons and the long-term interest-rate risks arising from pension products in force for a long period of time. These risks are consciously assumed.

17.3.5 Distinctive features of managing market risk in personal insurance business

Due to the persistently low level of interest rates, there is a 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. Chapter V.1.5 in the outlook describes the anticipated trend in interest rates in 2022.

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 2021, R+V added a total of €750 million to these supplementary reserves in its life insurance business, bringing the overall amount to €5,408 million. The addition to these reserves for casualty insurance with premium refund was €3 million, bringing the total to €43 million.

Policyholder participation in the form of future declarations of bonuses is also a key instrument used 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. 37.

FIG. 37 – INSURANCE SECTOR: BENEFIT RESERVES BY DISCOUNT RATE FOR THE MAIN INSURANCE PORTFOLIOS[1]

Discount rate	Proportion of total benefit reserve in 2021[2]		Proportion of total benefit reserve in 2020[2]	
	€ million	%	€ million	%
0.00%	6,897	9.3	6,254	8.9
0.01%	98	0.1	-	-
0.08%	5	-	4	-
0.10%	21	-	46	0.1
0.25%	1,453	2.0	928	1.3
0.30%	159	0.2	159	0.2
0.35%	956	1.3	308	0.4
0.40%	44	0.1	18	-
0.50%	213	0.3	163	0.2
0.75%	-	-	8	-
0.90%	8,545	11.5	7,555	10.7
1.00%	121	0.2	116	0.2
1.10%	225	0.3	59	0.1
1.25%	2,721	3.7	2,589	3.7
1.50%	12	-	31	-
1.55%	14	-	22	-
1.75%	6,403	8.6	5,999	8.5
1.80%	1,054	1.4	361	0.5
2.00%	610	0.8	765	1.1
2.25%	11,640	15.7	11,791	16.7
2.50%	96	0.1	92	0.1
2.75%	8,962	12.1	8,675	12.3
3.00%	1,974	2.7	2,004	2.8
3.25%	7,159	9.6	7,310	10.4
3.50%	3,108	4.2	3,321	4.7
3.75%	3	-	182	0.3
4.00%	7,102	9.6	7,233	10.3

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 actuarial assumptions 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 2021 for observation units with a premium adjustment effective January 1, 2021.

17.3.6 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. The plan assets at R+V are assets in reinsured pension schemes and funds, and are subject to interest-rate risk. The strategy adopted for the pension assets is predominantly driven by the defined benefit obligations.

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 rating class, industry sector, and country group.

Fig. 38 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.

FIG. 38 – INSURANCE SECTOR: RECONCILIATION OF THE LENDING VOLUME

€ billion		Reconciliation						Lending volume for the consolidated financial statements		
Lending volume for internal management accounts		Scope of consolidation		Definition of the lending volume		Carrying amount and measurement				
Dec. 31, 2021	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Investments held by insurance companies (note 57 to the consolidated financial statements)**
								13.0	10.9	of which: mortgage loans
								7.2	7.0	of which: promissory notes and loans
								8.5	9.1	of which: registered bonds
								1.0	0.9	of which: other loans
								13.7	11.6	of which: variable-yield securities
								61.4	61.5	of which: fixed-income securities
								0.2	0.6	of which: derivatives (positive fair values)
								0.5	0.6	of which: deposits with ceding insurers
104.5	103.0	-1.4	-1.2	-0.3	0.5	2.8	-0.1	105.6	102.2	Total
				Balance as at Dec. 31, 2021				1.1	1.1%	
				Balance as at Dec. 31, 2020				-0.8	-0.8%	

Not relevant

17.4.2 Change in lending volume

As at December 31, 2021, the **total lending volume** of R+V had increased by 1 percent to €104.5 billion (December 31, 2020: €103.0 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 €13.1 billion as at December 31, 2021 (December 31, 2020: €11.9 billion). Of this amount, 87 percent (December 31, 2020: 88 percent) was accounted for by loans for less than 60 percent of the value of the property.

The volume of home finance was broken down by finance type as at the reporting date as follows (figures as at December 31, 2020 shown in parentheses):
– Consumer home finance: €11.9 billion (€10.8 billion)
– Commercial home finance: €0.1 billion (€0.1 billion)
– Commercial finance: €1.1 billion (€1.0 billion).

In the case of home finance, the entire volume disbursed is backed by traditional loan collateral.

The financial sector and the public sector, which are the dominant **asset classes**, together accounted for 67 percent of the total lending volume as at December 31, 2021 (December 31, 2020: 69 percent). The explanation of the asset class concept in the Bank sector (see section 8.6.3) applies analogously to the Insurance sector. Fig. 39 shows the breakdown of the lending volume by asset class.

FIG. 39 – INSURANCE SECTOR: LENDING VOLUME, BY ASSET CLASS

€ billion	Dec. 31, 2021	Dec. 31, 2020
Financials	46.7	47.1
Corporates	16.3	15.7
Public sector	22.9	23.7
Real estate (commercial and retail customers)	16.3	15.1
ABSs and ABCPs	1.5	1.4
Other	0.8	-
Total	**104.5**	**103.0**

An analysis of the **geographical breakdown** of the lending volume in Fig. 40 reveals that Germany and other industrialized countries accounted for the lion’s share – 90 percent – of the lending volume as at the reporting date (December 31, 2020: 91 percent).

FIG. 40 – INSURANCE SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Dec. 31, 2021	Dec. 31, 2020
Germany	37.8	37.8
Other industrialized countries	56.6	55.5
of which: France	12.6	12.6
of which: USA	7.5	6.6
of which: Netherlands	6.0	5.3
Advanced economies	1.3	1.3
Emerging markets	5.2	5.1
Supranational institutions	3.7	3.3
Total	**104.5**	**103.0**

Obligations in connection with the life insurance business require investments with longer maturities. This is also reflected in the breakdown of **residual maturities** shown in Fig. 41. As at December 31, 2021, 86 percent (December 31, 2020: 84 percent) of the total lending volume had a residual maturity of more than five years. The percentage of the total lending volume due to mature within one year was 3 percent as at the reporting date. This figure was unchanged year on year.

FIG. 41 – INSURANCE SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Dec. 31, 2021	Dec. 31, 2020
≤ 1 year	2.6	2.7
> 1 year to ≤ 5 years	12.3	13.5
> 5 years	89.5	86.8
Total	**104.5**	**103.0**

The **rating structure** of the lending volume in the Insurance sector is shown in Fig 42. Of the total lending volume as at December 31, 2021, 79 percent was attributable to investment-grade borrowers (December 31, 2020: 80 percent). The lending volume that is not rated, which remained unchanged compared with the end of 2020 at 19 percent of the total lending volume, essentially comprised consumer home finance for which external ratings were not available. The unrated lending volume is deemed to be low-risk because the lending is based on a selective approach and the mortgageable value of the assets is limited.

FIG 42 – INSURANCE SECTOR: LENDING VOLUME, BY RATING CLASS

€ billion		Dec. 31, 2021	Dec. 31, 2020
Investment grade	1A	27.0	27.4
	1B	11.7	14.8
	1C	-	-
	1D	12.6	10.2
	1E	-	-
	2A	11.1	9.2
	2B	6.2	7.3
	2C	7.3	6.5
	2D	3.2	3.2
	2E	-	-
	3A	3.5	3.7
Non-investment grade	3B	0.3	0.4
	3C	0.5	0.3
	3D	-	-
	3E	0.2	0.4
	4A	0.1	0.1
	4B	0.5	0.3
	4C	0.1	0.1
	4D	-	-
	4E	-	-
Default		-	-
Not rated		20.2	19.1
Total		**104.5**	**103.0**

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. 20 (section 8.5.1).

As at December 31, 2021, the **ten counterparties associated with the largest lending volumes** accounted for 18 percent of R+V's total lending volume. This was the same as the figure at the prior-year reporting date.

17.4.3 Credit portfolios with increased risk content

R+V's exposure in credit portfolios with increased risk content is analyzed separately because of its significance for the risk position in the Insurance sector. The figures presented here are included in the above analyses of the total lending volume.

Investments in **eurozone periphery countries** totaled €5,822 million as at December 31, 2021 (December 31, 2020: €6,328 million). This constituted a decrease of 8 percent, which was attributable to a fall in fair values and disposals.

Fig. 43 shows the country breakdown of the exposure.

FIG. 43 – INSURANCE SECTOR: EXPOSURE IN EUROZONE PERIPHERY COUNTRIES

€ million	Dec. 31, 2021	Dec. 31, 2020
Portugal	**49**	46
of which: public sector	40	42
of which: non-public sector	9	4
of which: financial sector	4	4
Italy	**2,844**	3,190
of which: public sector	1,866	2,104
of which: non-public sector	978	1,086
of which: financial sector	838	826
Spain	**2,929**	3,092
of which: public sector	1,607	1,562
of which: non-public sector	1,322	1,529
of which: financial sector	1,080	1,295
Total	**5,822**	**6,328**
of which: public sector	3,513	3,708
of which: non-public sector	2,309	2,620
of which: financial sector	1,922	2,125

17.5 Risk position

As at December 31, 2021, the **overall solvency requirement** for market risk amounted to €3,127 million (December 31, 2020: €3,511 million) with a **limit** of €4,400 million (December 31, 2020: €5,750 million). The decline in risk was due to the merger effects described in section 16.7 and to effects from a rise in interest rates.

Fig. 44 shows the overall solvency requirement for the various types of market risk.

FIG. 44 – INSURANCE SECTOR: OVERALL SOLVENCY REQUIREMENT FOR MARKET RISK, BY RISK SUBTYPE

€ million	Dec. 31, 2021	Dec. 31, 2020
Interest-rate risk	1,218	951
Spread risk	1,388	1,622
Equity risk	1,258	1,561
Currency risk	354	277
Real-estate risk	432	442
Total (after diversification)	**3,127**	**3,511**

The overall solvency requirement for market risk includes a **decentralized capital buffer requirement**. This capital buffer requirement covers the spread and migration risk arising from sub-portfolios of Italian government bonds while also taking account of the increase in market risk that could arise from refinement of the modeling used for equity risk.

As at December 31, 2021, the decentralized capital buffer requirement for market risk totaled €212 million (December 31, 2020: €127 million). This uplift resulted from the recognition of a new capital buffer requirement for equity risk.

18 Counterparty default risk

18.1 Definition and business background

Counterparty default risk reflects losses that could arise from 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.

18.2 Risk factors

Counterparty default risk can arise as a result of unexpected default or deterioration in the credit standing of mortgage loan borrowers, counterparties of derivatives, reinsurance counterparties or policyholders, or insurance brokers.

18.3 Risk management

18.3.1 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.

Volume and counterparty limits apply to transactions involving derivatives. The various risks are monitored and transparently presented as part of the reporting system. 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 checks on limit utilization and compliance with investment guidelines.

18.3.2 Mitigating counterparty default risk
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, which are calculated on the basis of past experience. The average ratio of defaults to gross premiums written over the past three years was 0.1 percent, which was unchanged on the figure as at December 31, 2020.

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.

18.4 Risk position
Receivables arising from ceded reinsurance amounted to €121 million as at December 31, 2021 (December 31, 2020: €19 million). Almost 100 percent of this amount (December 31, 2020: 95 percent) was accounted for by entities with an external rating of A or better. As at the prior-year reporting date, receivables from entities with an external rating of BBB or worse made up less than 1 percent of the total volume. The remaining receivables related to entities without a rating.

Overdue receivables from policyholders and insurance brokers more than 90 days past due as at the reporting date amounted to €149 million as at December 31, 2021 (December 31, 2020: €174 million).

As at December 31, 2021, the **overall solvency requirement** for counterparty default risk was €222 million (December 31, 2020: €178 million) with a **limit** of €350 million (December 31, 2020: €220 million). This increase was attributable to higher amounts past due and greater reinsurance cover.

19 Reputational risk

19.1 Definition and business background
Reputational risk is defined as the risk of losses that could arise from 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).

19.2 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 R+V's adverse reputation is then transferred to the entities in the Bank sector and it may no longer be possible to guarantee the backing of stakeholders, such as network partners and employees, necessary to conduct business operations.

If the social and corporate governance risks assessed in connection with ESG risk factors were to materialize, this could give rise to heightened reputational risk. These risk factors are described in section 5.3.3.

19.3 Risk management
R+V's corporate communications are coordinated centrally so that any inaccurate presentation of circumstances can be countered. Media reports about the insurance industry in general and R+V in particular are monitored and continuously analyzed across all R+V departments.

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 Operational risk

20.1 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.

Operational risk in the Insurance sector is broken down into the following components:
- Legal and compliance risk
- Information risk including IT risk
- Security risk
- Outsourcing risk
- Project risk.

Operational risk could arise in any division of R+V.

Sustainability risk in the form of environmental, social, or corporate governance risk could be a risk factor that gives rise to operational risk. Risk factors are described under the relevant component of operational risk.

20.2 Central 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 are intended to 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.

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 department and reviews of the use and effectiveness of the internal control system carried out by Group Audit at R+V aim to 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, are also used. Manual payments are approved by a second member of staff.

20.3 Operational risk components

20.3.1 Legal and compliance risk

Risk factors

Legal risk may arise from changes in the legal environment, including changes in the way that the authorities or the courts interpret legal provisions. In particular, there is a risk that the implemented compliance and risk management systems could be inadequate for completely preventing or uncovering violations of legal provisions, for identifying and assessing all relevant risks, or for initiating appropriate corrective measures. Examples of relevant situations are notifiable infringements of data protection regulations, breaches of reporting or notification requirements to supervisory or tax authorities, and violations of sanctions or embargoes.

Effects if risk materializes

Violations of legal provisions may have legal implications for R+V, for the members of its decision-making bodies, or for its employees. They may give rise, for example, to fines, penalties, retrospective tax payments, or claims for damages by third parties. These effects could reduce R+V's appeal as a partner in business transactions and lead to losses in value.

Risk management

The basic principles for managing compliance risk applicable to the entities in the DZ BANK Group are described in section 4.5.5. The data protection measures in place and the code of conduct are also explained in the same section.

At R+V, 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. 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. The compliance function has also implemented systems, processes, and controls in order to counter compliance risks.

20.3.2 Information risk including IT risk

Risk factors

Information risk can arise from a failure to uphold the confidentiality, integrity, availability, or authenticity of information or data. If the risk is in connection with the use of information or communication technology (data media), it is referred to as IT risk. This also includes cyber risk.

Effects if risk materializes

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. This could restrict operating activities and have a negative impact on reputation.

Risk management

The basic principles for managing information security applicable to the entities in the DZ BANK Group are described in section 4.5.6.

A core focus of R+V's IT risk strategy is to ensure that the operation of the information and communications infrastructures and application systems is stable, secure, and efficient. This is achieved through a high degree of inhouse input into the development and operation of IT solutions, systematic identification of protection requirements, appropriate security strategies based on defined IT security standards, and business continuity planning.

Quality assurance in IT follows best practice. A daily meeting is held to discuss current topics and assign people to work on them. In addition, measures relating to adherence to service level agreements (e.g. system availability) are decided upon at monthly meetings attended by the IT divisional managers.

Physical and logical precautionary measures have been established for the purpose of data and application security and to 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. 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 different buildings. Furthermore, data is mirrored to a tape library at a remote, off-site location.

Various IT security management procedures are used to identify, assess, and document cyber risks and then to systematically allocate these risks for processing. The processing status and risk treatment are tracked and reported centrally each month.

20.3.3 Security risk

Risk factors
Security risk can arise from inadequate protection of individuals, premises, assets, or time-critical processes. Examples are epidemics or pandemics resulting from the spread of pathogens over a huge area, or limitations on the use of resources because of a power outage, other interruption to energy supply, or natural disaster. Climate change could lead to more frequent and more severe natural disasters.

Effects if risk materializes
Business interruptions could mean that processes and workflows are disrupted over several days. Moreover, sensitive internal and external interfaces could be jeopardized by long-term business interruptions. Furthermore, such scenarios could also have a negative impact on reputation.

Risk management
To ensure that it is operational at all times, R+V has a business continuity management (BCM) system. This also includes the contingency and crisis management system and is documented in internal corporate guidelines. The R+V security and BCM conference with representatives from all divisions and sites provides strategic and functional support and is intended to ensure that activities within the R+V subgroup are coordinated. Reports on significant findings relevant to risk and on any exercises and tests that have been carried out are also submitted to the R+V Risk Committee.

The purpose of the BCM system is to ensure 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 reviewed. Special organizational structures, such as the R+V crisis management team and situation room, and the individual business continuity teams in the divisions and sites, have also been set up to deal with emergency and crisis situations.
Further details on business continuity management can be found in section 4.5.6.

20.3.4 Outsourcing risk

Risk factors

R+V aims to provide high-quality services at competitive terms and conditions based on efficient internal organization of its business activities. In this context, the outsourcing of activities to third-party service providers can bring benefits in terms of quality and costs. Outsourcing risk can arise if the service provider fails to comply with the strategic principles established by R+V or the related operational requirements when carrying out the outsourced activities. If a service provider is not suitable for the task or does not have the requisite financial stability, this could lead to defective performance or even loss of the service. Moreover, inappropriate management of operational risk by the service provider could have an adverse impact on business operations.

Effects if risk materializes

If the risk factors were to materialize, they could lead to a loss of business and to claims for damages from customers. They could also result in a negative impact on reputation.

Risk management

The basic principles for managing outsourcing applicable to the entities in the DZ BANK Group are described in section 4.5.7.

Using these principles as a starting point, R+V has put in place the following measures to protect against potential outsourcing risk:
- Structured categorization of outsourcing arrangements
- Identification of potential risk factors as part of the risk analysis
- Requirements for the mitigation of risk, including standard provisions that must be contractually agreed and integrated into business continuity management.

20.3.5 Project risk

Risk factors

Project risk could arise from the inadequate clarification of project targets or orders, from deficiencies in subsequent implementation, from communication shortcomings both inside and outside the project, or from unexpected changes in the general parameters applicable to a project.

Effects if risk materializes

If project risk were to materialize, this could mean that the implementation of the project could require additional funds in excess of the budget. It could also give rise to further costs attributable to the failure to complete project requirements on schedule. Examples of such costs are additional costs in the line organization and impairment losses on capital investment related to the project.

Risk management

To provide a regulating framework for secure, efficient execution of projects, R+V has set up a Capital Investment Committee, which submits proposals for decision or approval and provides support for large-scale projects. After projects have been approved, project managers of all large-scale projects must report to the Capital Investment Committee. This ensures that projects are then subject to independent, close monitoring and control. The Capital Investment Committee is kept informed of adjustments to project targets and can intervene to provide guidance by becoming involved in discussions on targets.

20.4 Risk position

As at December 31, 2021, the **overall solvency requirement** determined for operational risk amounted to €715 million (December 31, 2020: €694 million). The rise compared with the prior year resulted first and foremost from business growth. The **limit** was €1,000 million as at the reporting date (December 31, 2020: €800 million).

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.
At R+V, the entities in other financial sectors mainly consist of pension funds and occupational pension schemes. Their **risk factors** generally correspond to the risk factors for risks backed by capital pursuant to Solvency II.

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 by applying a factor to 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 (see section 16.3.2), market risk (see section 17.3), counterparty default risk (see section 18.3), and operational risk (see section 20.2). R+V Pensionskasse AG largely stopped taking on new business on January 1, 2021. It is continuing to manage existing contracts as before.

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. R+V aims to ensure that 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, 2021, the **overall solvency requirement** for risks in connection with non-controlling interests in insurance companies and entities in other financial sectors stood at €124 million (December 31, 2020: €126 million) with a **limit** of €180 million (December 31, 2020: €140 million).

Consolidated financial statements

Income statement for the period January 1 to December 31, 2021

€ million	(Note)	2021	2020
Net interest income	(34)	2,785	2,686
Interest income		4,174	4,978
Interest income calculated using the effective interest method		4,362	4,795
Interest income not calculated using the effective interest method		-189	183
Current income and expense		62	82
Interest expense		-1,451	-2,373
Net fee and commission income	(35)	2,935	2,121
Fee and commission income		5,521	4,267
Fee and commission expenses		-2,586	-2,146
Gains and losses on trading activities	(36)	152	693
Gains and losses on investments	(37)	245	166
Other gains and losses on valuation of financial instruments	(38)	242	-62
Gains and losses from the derecognition of financial assets measured at amortized cost	(39)	-	-2
Premiums earned	(40)	18,994	18,741
Gains and losses on investments held by insurance companies and other insurance company gains and losses	(41)	5,251	2,047
of which interest income calculated using the effective interest method		1,515	1,474
Insurance benefit payments	(42)	-20,356	-17,499
Insurance business operating expenses	(43)	-3,047	-2,922
Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	(44)	-	-20
Loss allowances	(45)	120	-678
Administrative expenses	(46)	-4,265	-4,036
Other net operating income	(47)	41	210
Profit before taxes		3,096	1,445
Income taxes	(48)	-920	-472
Net profit		**2,176**	**973**
Attributable to:			
Shareholders of DZ BANK		1,996	865
Non-controlling interests		180	108

APPROPRIATION OF PROFITS

€ million	2021	2020
Net profit	2,176	973
Non-controlling interests	-180	-108
Appropriation to retained earnings	-1,632	-293
Unappropriated earnings	**364**	**572**

Statement of comprehensive income for the period January 1 to December 31, 2021

€ million	(Note)	2021	2020
Net profit		2,176	973
Other comprehensive income/loss		-400	521
Items that may be reclassified to the income statement		**-941**	**748**
Gains and losses on debt instruments measured at fair value through other comprehensive income	(49)	-1,389	1,143
Exchange differences on currency translation of foreign operations	(49)	-16	-32
Gains and losses on hedges of net investments in foreign operations	(49)	5	3
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	(49)	15	-6
Income taxes	(50)	445	-360
Items that will not be reclassified to the income statement		**541**	**-227**
Gains and losses on equity instruments for which the fair value OCI option has been exercised		473	-97
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk		39	-60
Gains and losses arising from remeasurement of defined benefit plans		90	-119
Income taxes	(50)	-62	49
Total comprehensive income		**1,776**	**1,494**
Attributable to:			
Shareholders of DZ BANK		1,629	1,339
Non-controlling interests		148	155

Balance sheet as at December 31, 2021

ASSETS

€ million	(Note)	Dec. 31, 2021	Dec. 31, 2020
Cash and cash equivalents	(14, 51)	86,029	68,354
Loans and advances to banks	(15, 52)	107,659	103,020
Loans and advances to customers	(15, 53)	195,665	190,294
Hedging instruments (positive fair values)	(16, 54)	389	161
Financial assets held for trading	(17, 55)	47,321	42,788
Investments	(18, 56)	52,440	60,232
Investments held by insurance companies	(57, 62)	129,131	121,668
Property, plant and equipment, investment property, and right-of-use assets	(19, 58, 62)	1,881	1,744
Income tax assets	(20, 59)	1,141	898
Other assets	(21, 60, 62)	6,490	5,516
Loss allowances	(22, 61)	-1,956	-2,320
Non-current assets and disposal groups classified as held for sale	(23, 63)	164	199
Fair value changes of the hedged items in portfolio hedges of interest-rate risk		920	1,980
Total assets		**627,273**	**594,535**

EQUITY AND LIABILITIES

€ million	(Note)	Dec. 31, 2021	Dec. 31, 2020
Deposits from banks	(24, 64)	196,562	177,852
Deposits from customers	(24, 65)	138,975	133,925
Debt certificates issued including bonds	(25, 66)	79,652	70,500
Hedging instruments (negative fair values)	(16, 67)	1,678	2,638
Financial liabilities held for trading	(17, 68)	43,411	50,410
Provisions	(26, 69)	3,992	4,003
Insurance liabilities	(11, 70)	118,863	111,213
Income tax liabilities	(20, 59)	1,456	1,229
Other liabilities	(21, 71)	10,797	10,243
Subordinated capital	(27, 72)	3,074	3,090
Liabilities included in disposal groups classified as held for sale	(23, 63)	2	2
Fair value changes of the hedged items in portfolio hedges of interest-rate risk		150	315
Equity	(73)	28,661	29,116
Shareholders' equity		26,860	26,024
Subscribed capital		4,926	4,926
Capital reserve		5,551	5,551
Retained earnings		12,217	10,517
Reserve from other comprehensive income		1,651	2,212
Additional equity components		2,150	2,245
Unappropriated earnings		364	572
Non-controlling interests		1,801	3,093
Total equity and liabilities		**627,273**	**594,535**

Statement of changes in equity

€ million	Subscribed capital	Capital reserve	Equity earned by the group	Reserve from other comprehensive income	Additional equity components	**Shareholders' equity**	Non-controlling interests	**Total equity**
Equity as at Jan. 1, 2020	4,926	5,551	10,379	1,686	2,245	24,787	3,009	27,796
Restatements according to IAS 8	-	-	-36	-	-	-36	-	-36
Equity restated as at Jan. 1, 2020	4,926	5,551	10,343	1,686	2,245	24,751	3,009	27,760
Net profit	-	-	865	-	-	865	108	973
Other comprehensive income/loss	-	-	-95	569	-	474	47	521
Total comprehensive income/loss	**-**	**-**	**770**	**569**	**-**	**1,339**	**155**	**1,494**
Capital increase/capital repaid	-	-	-	-	-	-	-22	-22
Changes in scope of consolidation	-	-	-	-	-	-	5	5
Acquisition/disposal of non-controlling interests	-	-	3	-1	-	2	-12	-10
Reclassifications within equity	-	-	42	-42	-	-	-	-
Dividends paid	-	-	-	-	-	-	-42	-42
Distribution of dividend on additional equity components	-	-	-69	-	-	-69	-	-69
Equity as at Dec. 31, 2020	4,926	5,551	11,089	2,212	2,245	26,024	3,093	29,116
Net profit	-	-	1,996	-	-	1,996	180	2,176
Other comprehensive income/loss	-	-	70	-438	-	-368	-32	-400
Total comprehensive income/loss	**-**	**-**	**2,067**	**-438**	**-**	**1,629**	**148**	**1,776**
Capital increase/capital repaid	-	-	-29	-	-95	-124	-1,363	-1,487
Changes in scope of consolidation	-	-	1	-	-	1	-2	-1
Acquisition/disposal of non-controlling interests	-	-	6	-2	-	4	-25	-21
Change due to merger	-	-	-20	-	-	-20	-	-20
Reclassifications within equity	-	-	122	-122	-	-	-	-
Dividends paid	-	-	-573	-	-	-573	-47	-621
Distribution of dividend on additional equity components	-	-	-81	-	-	-81	-	-81
Equity as at Dec. 31, 2021	**4,926**	**5,551**	**12,581**	**1,651**	**2,150**	**26,860**	**1,801**	**28,661**

Further information on equity is presented in note 73.

Statement of cash flows

€ million	2021	2020
Net profit	**2,176**	973
Non-cash items included in net profit and reconciliation to cash flows from operating activities		
Depreciation, amortization, impairment losses, reversals of impairment losses on assets, and other non-cash changes in financial assets and liabilities	-3,738	823
Non-cash changes in provisions	640	633
Changes in insurance liabilities	8,681	6,612
Other non-cash income and expenses	287	784
Gains and losses on the disposal of assets and liabilities	-116	-419
Other adjustments (net)	-3,510	-2,039
Subtotal	4,420	7,367
Cash changes in assets and liabilities arising from operating activities		
Loans and advances to banks	-4,649	-5,487
Loans and advances to customers	-6,202	-4,677
Other assets from operating activities	-2,393	1,341
Hedging instruments (positive and negative fair values)	995	-1,342
Financial assets and financial liabilities held for trading	-11,208	2,085
Deposits from banks	18,904	36,768
Deposits from customers	5,469	2,525
Debt certificates issued including bonds	9,431	-14,701
Other liabilities from operating activities	-1,000	717
Interest, dividends, and operating lease payments received	5,336	5,775
Interest paid	-2,082	-2,444
Income taxes paid	-373	-394
Cash flows from operating activities	**16,648**	**27,533**
Proceeds from the sale of investments	17,784	9,949
Proceeds from the sale of investments held by insurance companies	23,571	21,297
Proceeds from the sale of property, plant and equipment, and investment property (excluding assets subject to operating leases)	1	37
Proceeds from the sale of intangible non-current assets	-	3
Payments for the acquisition of investments	-10,151	-13,188
Payments for the acquisition of investments held by insurance companies	-27,815	-30,044
Payments for the acquisition of property, plant and equipment, and investment property (excluding assets subject to operating leases)	-78	-88
Payments for the acquisition of intangible non-current assets	-131	-316
Changes in scope of consolidation	70	-85
of which proceeds from the sale of investments in consolidated subsidiaries net of cash divested	70	-
of which payments for the acquisition of investments in consolidated subsidiaries net of cash acquired	-	-85
Cash flows from investing activities	**3,251**	**-12,435**
Dividends paid to shareholders of DZ BANK	-573	-
Dividends paid to non-controlling interests	-47	-42
Distribution of dividend on additional equity components	-81	-69
Other payments to shareholders of DZ BANK	-124	-
Other payments to non-controlling interests	-1,363	-22
Net change in cash and cash equivalents from other financing activities (including subordinated capital)	-36	844
Cash flows from financing activities	**-2,224**	**711**

€ million	2021	2020
Cash and cash equivalents as at January 1	68,354	52,545
Cash flows from operating activities	16,648	27,533
Cash flows from investing activities	3,251	-12,435
Cash flows from financing activities	-2,224	711
Cash and cash equivalents as at December 31	**86,029**	**68,354**

The statement of cash flows shows the changes in cash and cash equivalents during the financial year. Cash and cash equivalents consist of cash on hand and balances with central banks. The cash and cash equivalents do not include any financial investments with maturities of more than 3 months at the date of acquisition. Changes in cash and cash equivalents are broken down into operating, investing, and financing activities.

Cash flows from operating activities comprise cash flows mainly arising in connection with the revenue-producing activities of the group and other activities that cannot be classified as investing or financing activities. Cash flows related to the acquisition and disposal of non-current assets are allocated to investing activities. Cash flows from financing activities include cash flows arising from transactions with equity owners and from other borrowing to finance business activities, in particular from subordinated capital.

Cash payments from lessees in repayment of lease liabilities, which are included in cash flows from financing activities, amounted to €109 million (2020: €99 million).

As had also been the case in the previous year, there were no cash inflows as a result of the first-time consolidation of subsidiaries in 2021.

Notes

A General disclosures

» 01 Basis of preparation

Pursuant to *Regulation (EC) 1606/2002 of the European Parliament and of the Council of July 19, 2002*, the consolidated financial statements of DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, (DZ BANK) for the 2021 financial year have been prepared in accordance with the provisions of the International Financial Reporting Standards (IFRS), as adopted by the European Union (EU).

The provisions specified in section 315e (1) of the German Commercial Code (HGB) for companies whose securities are admitted to trading on a regulated market in the EU have also been applied in the consolidated financial statements of DZ BANK. In addition, further standards adopted by Deutsches Rechnungslegungs Standards Committee e.V. [German Accounting Standards Committee] have generally been taken into account where such standards have been published in the German Federal Gazette by the Bundesministerium der Justiz und für Verbraucherschutz [Federal Ministry of Justice and Consumer Protection] pursuant to section 342 (2) HGB.

DZ BANK is entered in the commercial register at the Frankfurt am Main local court under the number HRB 45651.

The DZ BANK Group's financial year is the same as the calendar year. In the interest of clarity, some items on the income statement, the statement of comprehensive income, and the balance sheet have been aggregated and are explained by additional disclosures in the notes. Unless stated otherwise, all amounts are shown in millions of euros (€ million). This may result in very small discrepancies in the calculation of totals and percentages.

The consolidated financial statements of DZ BANK have been released for publication by the Board of Managing Directors following approval by the Supervisory Board on March 24, 2022.

» 02 Accounting policies and estimates

Changes in accounting policies

First-time application in 2021 of changes in IFRS
The following amendments to IFRS are applied for the first time in DZ BANK's consolidated financial statements for the 2021 financial year:

– *Interest Rate Benchmark Reform – Phase 2* (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4, and IFRS 16),
– *Extension of the Temporary Exemption from Applying IFRS 9* (Amendments to IFRS 4 Insurance Contracts),
– *COVID-19-Related Rent Concessions* (Amendment to IFRS 16 Leases).

Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4, and IFRS 16) follows on from the amendments in 2019 and apply if, because of the reform, a reporting entity replaces an interest-rate benchmark with an alternative, nearly risk-free interest rate. The amendments provide a practical expedient in the event of contract modifications or cash flow modifications that are required as a direct consequence of the IBOR reform and made on an economically equivalent basis. Under these circumstances, the modification required as a result of the IBOR reform has to be accounted for as a modification of a variable interest rate in accordance with IFRS 9.B5.4.5 and not recognized in the modification gain or loss. Instead, application of IFRS 9.B5.4.5 permits subsequent measurement on the basis of the updated effective interest rate and thus recognition of the effect of the economically equivalent modification over the remaining term. For all other modifications made at the same time but not as a direct consequence of the IBOR reform, the effect of derecognizing the modifications has to be analyzed. Derecognition is required in the event of substantial modifications. Where modifications are not substantial, the updated effective interest rate is used to recalculate the carrying amount of the financial instrument and the change is recognized in the modification gain or loss.

In addition, temporary relief is offered that enables the continuation of hedge accounting after transition to the new interest-rate benchmarks if the modifications are made solely as a result of the benchmark interest-rate reform. Relief is also offered where there are separately identifiable risk components. The amendments do not offer relief for hedge ineffectiveness caused by the IBOR reform, which has to be recognized in profit or loss in accordance with IFRS 9. Furthermore, the amendments contain minor changes to IFRS 16 and IFRS 4 and additional disclosure requirements in accordance with IFRS 7.

The DZ BANK Group only accounts for hedges of interest-rate risk (fair value hedges). In this accounting treatment, it applies the rules of IAS 39 to hedges using a portfolio approach. The hedging instruments reference interest rates of the Euribor and Libor group. Euribor will be retained in its current form as an interest-rate benchmark for the foreseeable future. Libor was essentially replaced with effect from January 1, 2022, although major USD Libor tenors (overnight, 1-month, 3-month, 6-month, and 12-month) are not likely to be replaced until June 2023. Further disclosures on the IBOR reform are presented in note 87.

The amendments must be applied retrospectively to financial years beginning on or after January 1, 2021. A hedge has to be reinstated if it was discontinued solely due to changes required by the interest-rate benchmark reform and would not have been discontinued if the phase 2 amendments had been applied at that time. There is no material impact on the consolidated financial statements.

The objective of *Extension of the Temporary Exemption from Applying IFRS 9* (Amendments to IFRS 4 Insurance Contracts) is to address temporary accounting consequences that arise because of the different effective dates of IFRS 9 Financial Instruments and the forthcoming IFRS 17 Insurance Contracts.

According to the EU regulation specifying adoption for financial years beginning on or after January 1, 2021, entities that predominantly undertake insurance activities – including the insurance divisions of financial conglomerates – can opt to be exempt from IFRS 9 until January 1, 2023. The insurance companies in the DZ BANK Group are not exercising this option.

On March 31, 2021, the IASB published an amendment that extends, by one year, the relief for lessees applying IFRS 16 that was introduced in connection with the COVID-19 pandemic. Entities are required to apply the amendments retrospectively from April 1, 2021 to financial years beginning on or after January 1, 2021. The DZ BANK Group is not making use of this relief.

Changes in IFRS endorsed by the EU but not adopted early

The DZ BANK Group has decided against voluntary early adoption of the following new financial reporting standards, the listed amendments to a number of financial reporting standards, and the listed improvements to IFRS:

– IFRS 17 *Insurance Contracts*,
– Amendments to IFRS 17 *Insurance Contracts*,

- Amendments to IFRS 3 *Business Combinations*,
- Amendments to IAS 16 *Property, Plant and Equipment*,
- Amendments to IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*,
- *Annual Improvements to IFRSs 2018–2020 Cycle*.

The IASB published IFRS 17 Insurance Contracts on May 18, 2017. The objective of the new standard is to ensure the consistent, principles-based accounting treatment of insurance contracts and requires insurance liabilities to be measured using the latest amount equating to the fulfillment cash flows. This results in more consistent measurement and presentation of all insurance contracts. IFRS 17 supersedes IFRS 4 Insurance Contracts.

Under IFRS 17, insurance contracts are measured either using the general model or using a simplified method, the premium allocation approach (PAA). The general model specifies that, upon initial recognition, an entity shall measure a group of insurance contracts at the total of (a) the fulfillment cash flows (FCF) and (b) the contractual service margin (CSM). The FCF comprises the probability-weighted estimate of future cash flows, an adjustment to reflect the time value of money and the financial risks associated with the future cash flows, and a risk adjustment for non-financial risk.

On subsequent measurement, the carrying amount of a group of insurance contracts at the end of each reporting period is the sum of the liability for future coverage and the liability for incurred claims. The liability for future coverage comprises the FCF related to future services and the CSM of the group at that date. The liability for incurred claims comprises the FCF related to past services that was allocated to the group at that date.

The measurement of a group of insurance contracts may be simplified using the PAA, provided that certain criteria are met. This simplification can be applied upon initial recognition of the group if an entity reasonably expects that use of the PPA will result in a measurement of the liability for future coverage that is not materially different from its measurement under the general model or if the coverage period of each contract in the group is one year or less.

IFRS 17 must be applied for financial years beginning on or after January 1, 2023. Early adoption of IFRS 17 is permitted if both IFRS 15 Revenue from Contracts with Customers and IFRS 9 Financial Instruments are also applied. The regulation endorsing IFRS 17 was announced on November 23, 2021 and the EU's endorsement process was thus finalized.

A project was set up in the R+V subgroup in order to implement the requirements of IFRS 17. The group companies are currently examining the impact of IFRS 17 on DZ BANK's consolidated financial statements.

The other changes and improvements to IFRS listed above are not expected to have a material impact on DZ BANK's consolidated financial statements.

Changes in IFRS that have not yet been endorsed by the EU

The following amendments to a number of accounting standards have not yet been endorsed by the EU:

– *Classification of Liabilities as Current or Non-current* (Amendments to IAS 1 Presentation of Financial Statements),
– *Disclosure of Accounting Policies* (Amendments to IAS 1 Presentation of Financial Statements and IFRS Practice Statement 2),
– *Definition of Accounting Estimates* (Amendments to IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors),
– *Deferred Tax related to Assets and Liabilities arising from a Single Transaction* (Amendments to IAS 12),
– *Initial Application of IFRS 17 and IFRS 9 – Comparative Information* (Amendment to IFRS 17 Insurance Contracts).

The amendment to IFRS 17 permits first-time adopters of the standard to present comparative information about a financial asset as if the classification and measurement requirements of IFRS 9 had been applied to that financial asset (classification overlay). The amendment can also be applied by preparers that had already applied IFRS 9 before the transition to IFRS 17. These entities can apply the classification overlay to financial assets derecognized in the comparative period, provided that they follow the rules in IFRS 17 concerning the reclassification of financial assets upon transition to IFRS 17. The group companies are currently examining the impact of the amendments to IFRS 17 on DZ BANK's consolidated financial statements.

The impact of the other aforementioned amendments to IFRS on DZ BANK's consolidated financial statements is also currently being examined.

The initial application dates for the issued amendments to IFRS are subject to the proviso that the amendments must first be incorporated into EU law.

Changes in presentation

From the 2021 financial year onward, amounts previously deemed non-material in the income statement and on the balance sheet arising from differences between the transaction price and fair value (day-one profit or loss) that were identified upon initial recognition of financial assets and financial liabilities – where such differences result from unobservable measurement parameters – will be deferred and recognized over the remaining term of the underlying transaction and no longer recognized immediately in profit or loss. The aim of this change is to provide reliable and more relevant information. This retrospective change resulted in the following adjustments to the income statement, balance sheet, and statement of cash flows. Furthermore, the net profit recognized under equity earned for the group in the statement of changes in equity was reduced by €7 million.

Income statement for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	**2020 after restatement**
(...)			
Gains and losses on trading activities	552	-10	**542**
(...)			
Profit before taxes	1,455	-10	1,445
Income taxes	-475	3	**-472**
Net profit	**980**	**-7**	**973**

Balance sheet as at January 1, 2020

ASSETS

€ million	Jan. 1, 2020 before restatement	Amount of restatement	Jan. 1, 2020 after restatement
(…)			
Financial assets held for trading	44,771	-49	44,722
(…)			
Income tax assets	1,018	16	1,034
(…)			
Total assets	**559,472**	**-33**	**559,439**

EQUITY AND LIABILITIES

€ million	Jan. 1, 2020 before restatement	Amount of restatement	Jan. 1, 2020 after restatement
(…)			
Financial liabilities held for trading	51,050	3	51,053
(…)			
Equity	27,796	-36	27,760
Shareholders' equity	24,787	-36	24,751
(…)			
Retained earnings	10,055	-36	10,019
(…)			
Total equity and liabilities	**559,472**	**-33**	**559,439**

Balance sheet as at December 31, 2020

ASSETS

€ million	Dec. 31, 2020 before restatement	Amount of restatement	Dec. 31, 2020 after restatement
(…)			
Financial assets held for trading	42,846	-57	42,788
(…)			
Income tax assets	879	19	898
(…)			
Total assets	**594,573**	**-38**	**594,535**

EQUITY AND LIABILITIES

€ million	Dec. 31, 2020 before restatement	Amount of restatement	Dec. 31, 2020 after restatement
(…)			
Financial liabilities held for trading	50,404	5	50,409
(…)			
Equity	29,159	-43	29,116
Shareholders' equity	26,066	-43	26,023
(…)			
Retained earnings	10,553	-36	10,517
(…)			
Unappropriated earnings	579	-7	572
(…)			
Total equity and liabilities	**594,573**	**-38**	**594,535**

Statement of cash flows for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Net profit	980	-7	973
Non-cash items included in net profit and reconciliation to cash flows from operating activities			
Depreciation, amortization, impairment losses, reversals of impairment losses on assets, and other non-cash changes in financial assets and liabilities	879	10	889
(…)			
Other non-cash income and expenses	837	-19	818
(…)			
Subtotal	6,933	-16	6,917
Cash changes in assets and liabilities arising from operating activities			
(…)			
Financial assets and financial liabilities held for trading	1,763	52	1,815
(…)			
Cash flows from operating activities	26,902	36	26,938
(…)			
Net change in cash and cash equivalents from other financing activities (including subordinated capital)	784	-36	748
Cash flows from financing activities	651	-36	615

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Cash and cash equivalents as at January 1	52,545	-	52,545
Cash flows from operating activities	26,902	36	26,938
Cash flows from investing activities	-11,744	-	-11,744
Cash flows from financing activities	651	-36	615
Cash and cash equivalents as at December 31	68,354	-	68,354

In order to provide reliable and more relevant information in connection with the elimination or significant reduction of measurement or recognition inconsistencies (accounting mismatches) by exercising the fair value option, credit rating effects resulting from the measurement of FVO hedged items are no longer recognized in gains and losses on trading activities from the 2021 financial year onward and are instead recognized in other gains and losses on valuation of financial instruments because the credit rating effects from the FVO hedged items are not matched by corresponding effects resulting from the hedging transactions. This retrospective change resulted in the following adjustments to the income statement and statement of cash flows.

Income statement for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
(…)			
Gains and losses on trading activities	552	40	592
(…)			
Other gains and losses on valuation of financial instruments	-22	-40	-62
(…)			
Profit before taxes	1,455	-	1,455
Income taxes	-475	-	-475
Net profit	980	-	980

Statement of cash flows for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Net profit	980	-	**980**
Non-cash items included in net profit and reconciliation to cash flows from operating activities			
(...)			
Subtotal	6,933	-	6,933
Cash changes in assets and liabilities arising from operating activities			
Loans and advances to banks	-5,389	-99	-5,488
Loans and advances to customers	-4,637	-37	-4,674
(...)			
Financial assets and financial liabilities held for trading	1,763	204	1,967
Deposits from banks	36,739	38	36,777
Deposits from customers	2,617	-106	2,511
Debt certificates issued including bonds	-14,732	2	-14,730
(...)			
Cash flows from operating activities	**26,902**	**2**	**26,904**
(...)			
Net change in cash and cash equivalents from other financing activities (including subordinated capital)	784	-2	782
Cash flows from financing activities	**651**	**-2**	**649**

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Cash and cash equivalents as at January 1	52,545	-	52,545
Cash flows from operating activities	26,902	2	26,904
Cash flows from investing activities	-11,744	-	-11,744
Cash flows from financing activities	651	-2	649
Cash and cash equivalents as at December 31	**68,354**	**-**	**68,354**

In accordance with the provisions of IAS 8.41 et seq., the determination of amounts to be reclassified from gains and losses on trading activities to net interest income in the income statement is adjusted from the 2021 financial year onward. This retrospective change resulted in the following adjustments to the income statement and statement of cash flows.

Income statement for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Net interest income	2,797	-111	2,686
Interest income	5,111	-133	4,978
Interest income calculated using the effective interest method	5,087	-292	4,795
Interest income not calculated using the effective interest method	24	159	183
(...)			
Interest expense	-2,396	23	-2,373
(...)			
Gains and losses on trading activities	552	111	663
(...)			
Profit before taxes	1,455	-	1,455
Income taxes	-475	-	-475
Net profit	**980**	**-**	**980**

Statement of cash flows for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Net profit	980	-	**980**
Non-cash items included in net profit and reconciliation to cash flows from operating activities			
Depreciation, amortization, impairment losses, reversals of impairment losses on assets, and other non-cash changes in financial assets and liabilities	879	-66	813
(…)			
Other adjustments (net)	-2,686	66	-2,620
Subtotal	6,933	-	6,933
Cash changes in assets and liabilities arising from operating activities			
(…)			
Financial assets and financial liabilities held for trading	1,763	66	1,829
(…)			
Interest, dividends, and operating lease payments received	5,864	-89	5,775
Interest paid	-2,578	23	-2,555
(…)			
Cash flows from operating activities	**26,902**	**-**	**26,902**

In accordance with the provisions of IAS 8.41 et seq., amounts previously recognized as cash changes in the statement of cash flows will now be reclassified as non-cash changes. The restated amounts are shown in the following table.

Statement of cash flows for the period January 1 to December 31, 2020

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Net profit	980	-	**980**
Non-cash items included in net profit and reconciliation to cash flows from operating activities			
(…)			
Non-cash changes in provisions	730	-97	633
(…)			
Other non-cash income and expenses	837	-34	803
Other adjustments (net)	-2,686	581	-2,105
(…)			
Subtotal	6,933	450	7,383
Cash changes in assets and liabilities arising from operating activities			
Loans and advances to banks	-5,389	1	-5,388
Loans and advances to customers	-4,637	-3	-4,640
(…)			
Deposits from banks	36,739	-9	36,730
Deposits from customers	2,617	14	2,631
Debt certificates issued including bonds	-14,732	29	-14,703
(…)			
Interest paid	-2,578	111	-2,467
(…)			
Cash flows from operating activities	**26,902**	**593**	**27,495**
Proceeds from the sale of investments	10,483	-534	9,949
Proceeds from the sale of investments held by insurance companies	21,454	-157	21,297
(…)			
Cash flows from investing activities	**-11,744**	**-691**	**-12,435**
(…)			
Net change in cash and cash equivalents from other financing activities (including subordinated capital)	784	98	882
Cash flows from financing activities	**651**	**98**	**749**

€ million	2020 before restatement	Amount of restatement	2020 after restatement
Cash and cash equivalents as at January 1	52,545	-	52,545
Cash flows from operating activities	26,902	593	27,495
Cash flows from investing activities	-11,744	-691	-12,435
Cash flows from financing activities	651	98	749
Cash and cash equivalents as at December 31	**68,354**	**-**	**68,354**

The aforementioned presentation changes result in related adjustments to the presentation of the associated disclosures in note 33 (Segment information), note 34 (Net interest income), note 36 (Gains and losses on trading activities), note 38 (Other gains and losses on valuation of financial instruments), note 48 (Income taxes), note 55 (Financial assets held for trading), note 59 (Income tax assets and liabilities), note 68 (Financial liabilities held for trading), note 74 (Classes, categories, and fair values of financial instruments), note 81 (Offsetting of financial assets and financial liabilities), note 84 (Items of income, expense, gains, and losses), note 85 (Derivatives), note 88 (Nature and extent of risks arising from financial instruments and insurance contracts) – specifically the disclosures on the maximum exposure to credit risk – and note 89 (Maturity analysis).

In note 92 (Financial guarantee contracts and loan commitments), the amounts within the breakdown of loan commitments by product type have been restated in order to provide reliable and more relevant information.

In accordance with the provisions of IAS 8.41 et seq., there are also presentation changes in the following notes.

In note 29 (Investments in subsidiaries), specifically the table showing the nature and extent of significant restrictions, the amounts from investments held by insurance companies have been restated. In note 57 (Investments held by insurance companies), the amount of the pledges and restrictions on disposal in respect of investment property has been restated. In note 60 (Other assets), specifically other assets held by insurance companies, the amount recognized under property, plant and equipment for land and buildings held by companies offering personal insurance, which are subject to restrictions pursuant to IAS 16.74 (a), is disclosed for the first time.

In note 65 (Deposits from customers), the amounts for money market deposits and for other deposits within the breakdown by type of business have been restated.

In note 77 (Assets and liabilities measured at fair value on the balance sheet), specifically the information on transfers, the transfers of investments from Level 1 to Level 2 and from Level 2 to Level 1 have been restated. And in the table showing the fair values within Level 3 of the fair value hierarchy, the amounts shown for the changes in investments held by insurance companies have been restated.

In note 87 (Reform of interest-rate benchmarks), the nominal amounts of the hedging instruments and weighted average maturity (years) have been restated in the table showing the Libor-related risk attaching to the hedges.

In note 88 (Nature and extent of risks arising from financial instruments and insurance contracts), specifically the disclosures on the maximum exposure to credit risk, the changes arising in the financial year and on a cumulative basis to the fair value of financial assets designated as at fair value through profit or loss, where such changes were due to changes in the credit risk, have been restated.

In note 88 (Nature and extent of risks arising from financial instruments and insurance contracts), specifically the disclosures on credit risk concentrations, the gross carrying amounts and nominal amounts for corporates, emerging markets, and the financial sector and in the geographical breakdown have been restated.

In note 102 (Share-based payment transactions), information about DVB has been added.

Sources of estimation uncertainty

It is sometimes necessary to make assumptions and estimates in accordance with the relevant financial reporting standards in order to determine the carrying amounts of assets, liabilities, income, and expenses recognized in the consolidated financial statements. These assumptions and estimates are based on historical experience, planning, and expectations or forecasts regarding future events.

Assumptions and estimates are used primarily in determining the fair value of financial assets and financial liabilities and in identifying any impairment of financial assets. Estimates also have a material impact on determining the impairment of goodwill or intangible assets acquired as part of business combinations. Furthermore, assumptions and estimates affect the measurement of right-of-use assets, insurance liabilities, provisions for employee benefits, provisions for share-based payment transactions, provisions relating to building society operations, and other provisions as well as the recognition and measurement of income tax assets and income tax liabilities.

Fair values of financial assets and financial liabilities

If there are no prices available for certain financial instruments from active markets, the fair values of such financial assets and financial liabilities have to be determined on the basis of estimates, resulting in some uncertainty. Uncertainties associated with estimates arise primarily if fair values are determined using valuation techniques involving significant valuation parameters that are not observable in the market. This affects both financial instruments measured at fair value and financial instruments measured at amortized cost whose fair values are disclosed in the notes. The measurement parameter assumptions and measurement methods used to determine fair values are described in the financial instruments disclosures in notes 77 and 78.

Impairment of financial assets

When an impairment test (as described in note 5) is carried out for financial assets that constitute debt instruments or for loan commitments and financial guarantee contracts, it is necessary to determine estimated future cash flows from interest payments and the repayment of principal as well as from any recovery of collateral. This requires estimates and assumptions regarding the amount and timing of future cash flows, in turn giving rise to some uncertainty. The factors influencing impairment that are defined on a discretionary basis include economic conditions, the financial performance of the counterparty, and the value of the collateral held. When an impairment test for portfolios is carried out, parameters such as probability of default, which are calculated with the help of statistical models, are used in the estimates and assumptions.

Goodwill and intangible assets

The recognition of goodwill is largely based on estimated future income, synergies, and non-recognizable intangible assets generated by business combinations or acquired as part of business combinations. The recoverability of the carrying amount is verified by means of budget accounts that are largely based on estimates. Identifiable intangible assets acquired as part of business combinations are recognized on the basis of their future economic benefits. These benefits are assessed by management using reasonable, well-founded assumptions. The estimates applied in the case of business combinations are described in note 94.

Right-of-use assets

The measurement of right-of-use assets (as described in note 12) involves the use of assumptions and estimates, especially in relation to estimated future cash flows, term, and discount rate. Estimates also have a material impact on determining the impairment of right-of-use assets.

Insurance liabilities

The measurement of insurance liabilities involves the exercise of discretion, estimates, and assumptions, especially in relation to mortality, rates of return on investment, cancellations, and costs. Actuarial calculation methods, statistical estimates, blanket estimates, and measurements based on past experience are used. The basic approaches used in the measurement of insurance liabilities are described in the insurance business disclosures in note 11.

Provisions for employee benefits, provisions for share-based payment transactions, and other provisions

Uncertainty associated with estimates in connection with provisions for employee benefits arises primarily from the measurement of defined benefit obligations, on which actuarial assumptions have a material effect. Actuarial assumptions are based on a large number of long-term, forward-looking factors, such as salary increases, annuity trends, and average life expectancy.

In the case of provisions for share-based payment transactions, estimation uncertainty arises from the way in which fair value is determined. This fair value is based on assumptions regarding the payout amount, which in turn depends on the performance of the variables specified in the underlying agreements.

In order to measure provisions relating to building society operations, building society simulations (collective simulations) that forecast home savings customers' future behavior are used that are available for evaluation of the options. These options available to home savings customers include, for example, drawing down the home savings loan, waiving the loan after allocation, or continuing with the home savings contract. Uncertainty in connection with the measurement of the provisions may arise depending on the extent to which the assumptions about future customer behavior – taking account of various interest-rate scenarios and management measures – that were forecast using collective simulation actually materialize in the future. The main inputs for the collective simulations are presented in note 26.

Actual cash outflows in the future related to items for which other provisions have been recognized may differ from the forecast utilization of the provisions.

The basis for measurement and the assumptions and estimates underlying the calculation of provisions are described in note 26.

Income tax assets and liabilities

The deferred tax assets and liabilities described in note 59 are calculated on the basis of estimates of future taxable income in taxable entities. In particular, these estimates have an effect on any assessment of the extent to which it will be possible to make use of deferred tax assets in the future. In addition, the calculation of current tax assets and liabilities for the purposes of preparing financial statements involves estimates of details relevant to income tax.

COVID-19 pandemic

The COVID-19 pandemic has not given rise to any additional estimation uncertainty with regard to the calculation of the carrying amounts of assets, liabilities, income, and expenses. The pandemic particularly affects the familiar assumptions and estimates used to calculate the fair value of loans and advances to customers, investments, investments held by insurance companies, financial assets held for trading, and financial liabilities held for trading and to calculate loss allowances and provisions. The impact of COVID-19 on the calculation of loss allowances and on the assumptions and estimates used in this calculation is described in note 88.

Climate-related matters

Climate-related matters impact on the familiar assumptions and estimates. No additional estimation uncertainty has arisen with regard to the calculation of the carrying amounts of assets and liabilities and the calculation of income and expenses. Estimation uncertainty and the related judgments in respect of climate-related matters primarily arise when determining the fair value of financial assets and financial liabilities, identifying any impairment of financial assets, and measuring insurance liabilities. Climate-related matters did not result in any explicit adjustments being made in the determination of the fair value of financial assets and financial liabilities or the identification of any impairment of financial assets in the year under review. To some extent, however, climate-related matters are factored into the pertinent models implicitly. When measuring insurance liabilities, climate-related matters are taken into account by making prudent additions to provisions for claims and maintaining an extensive reinsurance program that comes into effect when a defined claims threshold is exceeded and thus limits financial risk.

» 03 Scope of consolidation

In addition to DZ BANK as the parent, the consolidated financial statements for the year ended December 31, 2021 include 17 subsidiaries (2020: 26) and 6 subgroups (2020: 6) comprising a total of 128 subsidiaries (2020: 151).

The main change to the scope of consolidation in 2021 was the derecognition of the entities that had been established in order to increase own funds in accordance with section 10a of the German Banking Act (KWG). The bonds issued by DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey, and the non-cumulative trust preferred securities issued by DZ BANK Capital Funding Trust I, DZ BANK Capital Funding Trust II, and DZ BANK Capital Funding Trust III, all Delaware, USA, were called on January 12, 2021 and repaid in full during the reporting year. On the date on which the issued bonds and issued non-cumulative trust preferred securities were repaid in full, the aforementioned companies and the associated companies DZ BANK Capital Funding LLC I, DZ BANK Capital Funding LLC II, and DZ BANK Capital Funding LLC III, all Wilmington, Delaware, and DZ BANK Perpetual Funding (Jersey) Limited, St. Helier, Jersey, were deconsolidated.

The consolidated financial statements include 5 joint arrangements in the form of joint ventures with at least one other entity outside the group (2020: 6) and 24 associates (2020: 25) over which DZ BANK has significant influence. These entities are accounted for using the equity method. There are currently no joint arrangements classified as joint operations.

The shareholdings of the DZ BANK Group are listed in full in note 107.

» 04 Procedures of consolidation

Financial information in the consolidated financial statements contains data from the parent company, which incorporates data from its consolidated subsidiaries. The parent company and the consolidated subsidiaries are presented as a single economic entity.

An investee is included in the scope of consolidation as a subsidiary from the date on which DZ BANK obtains control over it. DZ BANK controls an investee when DZ BANK directly or indirectly has power over the investee, is therefore exposed to significant variable returns from its involvement with the investee, and has the ability to affect the variable returns from the investee through this power. Unless otherwise contractually agreed, DZ BANK controls an entity if it holds more than half of the voting rights, either directly or indirectly. The assessment of whether control exists also takes account of potential voting rights, provided they are considered substantial.

DZ BANK also considers itself to have control over an entity in cases where it does not hold the majority of the voting rights but does have the ability to unilaterally direct the relevant activities of the entity concerned. It is sometimes necessary to exercise discretion, taking all of the relevant facts and circumstances into consideration, when making such a determination. This is particularly applicable to principal/agent relationships, which require an assessment of whether DZ BANK or other parties with decision-making rights are acting as principal or as an agent. With regard to principal/agent relationships, a considerable amount of discretion has to be exercised in order to assess the appropriateness of contractually agreed remuneration and of the level of the variable returns received.

A review is carried out at least once every six months to decide which subsidiaries are to be consolidated.

The financial statements of the entities consolidated in the DZ BANK Group have been prepared using uniform accounting policies. When preparing the consolidated financial statements, uniform accounting policies are used for like transactions.

The consolidated subsidiaries prepared their financial statements on the basis of a financial year ended December 31, 2021. With 18 (2020: 20) exceptions, the separate financial statements of the entities accounted for using the equity method are prepared to the same balance sheet date as that of the parent company. There is no resulting material impact in respect of the subsidiaries and associates concerned, and therefore no interim financial statements have been prepared.

Intragroup assets and liabilities, as well as intragroup income and expenses, are eliminated in full. Intragroup profits or losses resulting from transactions within the group are also eliminated in full.

When a subsidiary is consolidated, the carrying amount of the investment in the subsidiary is offset against the proportionate equity of the subsidiary. Any share of a subsidiary's equity not attributable to the parent company is reported under equity as non-controlling interests.

Goodwill resulting from offsetting the acquisition cost of a subsidiary against the equity remeasured at fair value on the acquisition date is recognized as goodwill when the acquisition method is applied. It is recognized under other assets. Goodwill is tested for impairment at least once a year. Any negative goodwill is recognized in profit or loss on the acquisition date.

If DZ BANK loses control over a subsidiary, the assets and liabilities of this former subsidiary, together with the carrying amount of any non-controlling interests in the former subsidiary, are derecognized when control is lost. The fair value of any consideration received is recognized at the same time. The gain or loss arising in connection with the loss of control is recognized in profit or loss.

Entities under joint control with at least one other entity outside the group are accounted for as joint ventures in the consolidated financial statements. DZ BANK has joint control over an arrangement when there is a contractual agreement in place that requires decisions about the arrangement's relevant activities to be reached with the unanimous consent of all the parties sharing control.

DZ BANK has a significant influence over an investee if it can participate in the financial and operating policy decisions of the investee without having control or joint control over it. Unless it can be proved otherwise, this is assumed to be the case where between 20 and 50 percent of the voting shares are held.

Investments in joint ventures and associates are accounted for using the equity method and reported on the balance sheet under investments or investments held by insurance companies.

Under the equity method, the DZ BANK Group's investments in associates and joint ventures are initially recognized at cost. Subsequently, the carrying amount is increased or decreased to recognize the group's share of the profit/loss or other changes to the net assets of the associate or joint venture after the acquisition.

If significant influence over an associate or joint venture is lost, the gain or loss arising from the disposal of the long-term equity investment accounted for under the equity method is recognized in profit or loss.

» 05 Financial instruments

Categories of financial instruments

Financial assets measured at fair value through profit or loss (fair value PL)
Financial assets that are not measured at amortized cost or at fair value through other comprehensive income are classified as 'financial assets measured at fair value through profit or loss'. This category is broken down into the following subcategories:

Financial assets mandatorily measured at fair value through profit or loss
The subcategory 'financial assets mandatorily measured at fair value through profit or loss' covers financial assets that do not meet the IFRS 9 SPPI criterion or that were acquired for the purpose of selling them in the near term. To this end, these financial assets must be part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit-taking, or must be derivatives, except for derivatives that are designated hedging instruments.

Contingent considerations in a business combination
This subcategory covers contingent considerations that the acquirer has classified as financial assets in the context of a business combination.

Financial assets designated as at fair value through profit or loss (fair value option)
Financial assets may be assigned to the subcategory 'financial assets designated as at fair value through profit or loss' by exercising the fair value option, provided that the application of this option eliminates or significantly reduces measurement or recognition inconsistencies (accounting mismatches). The fair value option is applied to eliminate or significantly reduce accounting mismatches that arise if non-derivative financial instruments and related derivatives used to hedge such instruments are measured differently. Derivatives are measured at fair value through profit or loss, whereas non-derivative financial instruments are measured at amortized cost or changes in fair value may be recognized in other comprehensive income. If no hedge accounting takes place, this gives rise to accounting mismatches that can be significantly reduced by applying the fair value option. The fair value option is used in the context of financial assets to prevent accounting mismatches that could arise in connection with loans and advances to banks and customers and bearer bonds.

Financial assets measured at fair value through other comprehensive income (fair value OCI)
This category is broken down into the following subcategories:

Financial assets mandatorily measured at fair value through other comprehensive income
A financial asset is assigned to this subcategory if it is held in accordance with a business model aimed both at collecting contractual cash flows and at selling financial assets. Moreover, the contractual terms of the

financial asset must give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding (SPPI criterion).

Because of the SPPI criterion, these financial assets only comprise debt instruments. They are measured at fair value. Interest income, loss allowances, and currency translation effects must be recognized in profit or loss. Differences between the amortized cost and the fair value are recognized in other comprehensive income. The amounts recognized in other comprehensive income must be recycled to the income statement upon derecognition.

Financial assets designated as at fair value through other comprehensive income (fair value OCI option)

There is an irrevocable option to designate equity instruments as 'financial assets designated as at fair value through other comprehensive income' (fair value OCI option) upon initial recognition. Changes in fair value are recognized in other comprehensive income, except in the case of dividends that do not constitute repayment of capital. The cumulative other comprehensive income is not subsequently recycled to the income statement, e.g. due to derecognition of the instrument. After derecognition of these equity instruments, the cumulative other comprehensive income is reclassified to retained earnings. The fair value OCI option can generally only be exercised for equity instruments that are not held for trading and do not constitute contingent consideration recognized by the acquirer in a business combination pursuant to IFRS 3.

Financial assets measured at amortized cost (AC)

A financial asset is assigned to this category if it is held in accordance with a business model aimed at holding financial assets for the purpose of collecting contractual cash flows. The contractual terms of the financial asset must give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Because of the SPPI criterion, financial assets in this category only comprise debt instruments. They are measured at amortized cost using the effective interest method. Interest income, loss allowances, and currency translation effects must be recognized in profit or loss.

Financial liabilities measured at fair value through profit or loss (fair value PL)

Financial liabilities that are not measured at amortized cost are classified as 'financial liabilities measured at fair value through profit or loss'. This category is broken down into the following subcategories:

Financial liabilities mandatorily measured at fair value through profit or loss

The subcategory 'financial liabilities mandatorily measured at fair value through profit or loss' covers financial liabilities that are issued with the intention of repaying them in the near term. To this end, these financial liabilities must be part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit-taking, or must be derivatives, except for derivatives that are designated hedging instruments.

Contingent considerations in a business combination

This subcategory covers contingent considerations that the acquirer has classified as financial liabilities in the context of a business combination.

Financial liabilities designated as at fair value through profit or loss (fair value option)

Financial liabilities may be assigned to the 'financial instruments designated as at fair value through profit or loss' subcategory by exercising the fair value option, provided that the application of this option eliminates or significantly reduces measurement or recognition inconsistencies (accounting mismatches), the financial liabilities are managed as a portfolio on a fair value basis, or they include one or more embedded derivatives required to be separated from the host contract. In the case of financial liabilities, the fair value option is exercised to eliminate or significantly reduce accounting mismatches for loan liabilities to banks and customers, issued registered or bearer Pfandbriefe, other bonds and commercial paper, and registered or bearer subordinated liabilities. Some of the promissory notes and bonds are structured financial instruments containing derivatives (in the form of caps, floors, collars, or call options) for which bifurcation is not required. The derivative components of these instruments are subject to economic hedging that does not meet the criteria for the application of hedge accounting.

The fair value option is also applied to structured financial liabilities containing embedded derivatives requiring bifurcation, provided that the embedded derivatives cannot be measured separately and the financial liabilities are not designated as held for trading. The issued financial instruments in this case are primarily guarantee certificates, discount certificates, profit-participation certificates, variable-rate bonds, inflation-linked notes, collateralized loan obligations, and credit-linked notes.

As regards financial liabilities designated as at fair value through profit or loss, any gains/losses resulting from a change in the fair value of a financial liability that is attributable to a change in the liability's credit risk must be recognized in other comprehensive income. The rest of the change in the fair value of this liability is recognized in profit or loss. The amounts recognized in other comprehensive income are reclassified to retained earnings on derecognition of the relevant financial liability.

Financial liabilities measured at amortized cost (AC)

For measurement subsequent to initial recognition, financial liabilities are generally categorized as 'financial liabilities measured at amortized cost', except in the following cases: financial liabilities measured at fair value through profit or loss, financial liabilities that arise when a transfer of a financial asset does not satisfy the condition for derecognition or accounting treatment is based on a continuing involvement, financial guarantee contracts, loan commitments with an interest rate below the market interest rate, and contingent consideration recognized by the acquirer in a business combination pursuant to IFRS 3.

In accordance with IAS 32, shares in partnerships are normally categorized as debt instruments. Given their subordinated status compared with the liabilities of the partnerships concerned, non-controlling interests in partnerships are reported as subordinated capital. Profit attributable to non-controlling interests in partnerships that has not yet been distributed is recognized under other liabilities, provided that the resulting liability is not of a subordinated nature. The capital and profit of partnerships attributable to non-controlling interests in partnerships are classified as 'share capital repayable on demand' under subordinated capital and other liabilities and are assigned to the 'financial liabilities measured at amortized cost' category.

This category also includes liabilities under compensation payment obligations owed to non-controlling interests in consolidated subsidiaries. These liabilities arise if DZ BANK or some other entity controlled by DZ BANK has concluded a profit transfer agreement with a subsidiary in accordance with section 291 (1) of the German Stock Corporation Act (AktG) under which there are non-controlling interests. Liabilities under compensation payment obligations are recognized at the amount of the discounted obligation.

In addition, this category includes liabilities from capitalization transactions that are not designated as unit-linked insurance products. There is no significant transfer of insurance risk in these transactions and they do not therefore satisfy the criteria for an insurance contract under IFRS 4. As a consequence, such transactions need to be treated as financial instruments in accordance with IFRS 9.

Other financial instruments

Hedging instruments

The designation of derivative and non-derivative financial assets and liabilities as hedging instruments is governed by IFRS 9. The recognition and measurement of these hedging instruments is described in note 16.

Liabilities from financial guarantee contracts

Liabilities from financial guarantee contracts measured in accordance with IFRS 9 must be recognized as a liability at fair value by the issuer of the guarantee at the date of issue. The fair value is normally equivalent to the present value of the consideration received for issuing the financial guarantee contract. In any subsequent measurement, the obligation must be measured at the higher of the amount determined in accordance with the impairment model and the amount initially recognized less, where appropriate, the cumulative amount of income recognized in accordance with the principles of IFRS 15. In the presentation of financial guarantee contracts, the guarantee commission receivables due from the beneficiary to the DZ BANK Group as the issuer of the guarantee are offset against guarantee obligations (net method).

Finance lease receivables and lease liabilities

Finance lease receivables and lease liabilities fall within the scope of IFRS 16.

Financial assets and financial liabilities specific to insurance business

In addition to financial instruments that fall within the scope of IFRS 9, financial assets and financial liabilities arising from the insurance business are recognized and measured in accordance with the provisions of the HGB and other German accounting provisions applicable to insurance companies, as required by IFRS 4.25(c).

Deposits with ceding insurers are recognized at their nominal amounts. Receivables arising out of direct insurance operations and receivables arising out of reinsurance operations are recognized at their nominal amounts net of payments made. Impairment losses on receivables arising out of direct insurance operations and on receivables arising out of reinsurance operations are recognized directly in the carrying amounts. Assets related to unit-linked contracts are measured at fair value through profit or loss on the basis of the underlying investments.

Deposits received from reinsurers, payables arising out of direct insurance operations, and payables arising out of reinsurance operations are recognized at their nominal amounts.

Deposits with ceding insurers as well as assets related to unit-linked contracts are reported on the balance sheet under investments held by insurance companies. Deposits received from reinsurers, receivables and payables arising out of direct insurance operations, and receivables and payables arising out of reinsurance operations are recognized under other assets or other liabilities.

Initial recognition and derecognition of financial assets and financial liabilities

Derivatives are initially recognized and derecognized on the trade date. Regular way purchases and sales of non-derivative financial assets and liabilities are generally recognized and derecognized using settlement date accounting. In the case of consolidated investment funds and the issue of certain securities, the financial instruments are also recognized on the trade date. Changes in fair value between the trade date and settlement date are recognized in accordance with the category of the financial instrument.

All financial instruments are generally measured at fair value on initial recognition. In the case of financial assets or financial liabilities not subsequently measured at fair value through profit or loss, transaction costs directly attributable to the acquisition of the financial asset or issue of the financial liability concerned are added or deducted on initial recognition.

Differences between transaction prices and fair values are recognized in profit or loss on initial recognition if the fair values correspond to the price quoted in an active market for an identical asset or identical liability or are based on a valuation technique that only uses data from observable markets. If the fair value is derived from transaction prices at the time of acquisition and this value is then used as a basis for any subsequent measurement, any changes in fair value are only recognized in profit or loss if they can be attributed to a change in observable market data. Any differences not recognized at the time of initial recognition are allocated over the maturity of the financial instruments concerned and recognized in profit or loss accordingly.

Financial assets are derecognized if the contractual rights to the cash flows from the financial assets have expired or these rights have been transferred to third parties, and substantially no risks or rewards of ownership in the financial assets remain. If only some of the risks and rewards are transferred and control is partly retained, the financial asset is derecognized only up to the amount of the continuing involvement. If the criteria for derecognizing financial assets are not satisfied, the transfer to third parties is recognized as a secured loan. Financial liabilities are derecognized when the contractual obligations have been settled, extinguished or have expired.

Gains and losses from the derecognition of financial assets measured at amortized cost are reported as a separate line item in the income statement.

Loss allowances for financial assets

Under IFRS 9, loss allowances are recognized for those financial assets that constitute debt instruments and for loan commitments and financial guarantee contracts. Equity instruments do not fall within the scope of the IFRS 9 impairment model. Loss allowances are recognized in respect of the following financial assets:

- Financial assets in the IFRS 9 category ‘financial assets measured at amortized cost’,
- Financial assets (only debt instruments) in the IFRS 9 category ‘financial assets measured at fair value through other comprehensive income’,
- Undrawn loan commitments where there is a current legal obligation to grant credit (irrevocable loan commitments), provided they are not measured at fair value through profit or loss,
- Financial guarantee contracts, provided they are not measured at fair value through profit or loss,
- Lease receivables, and
- Trade receivables and contract assets that fall within the scope of IFRS 15.

Upon initial recognition, all financial assets are assigned to stage 1 with the exception of financial assets that are purchased or originated credit-impaired assets (POCI assets). Loss allowances for assets in stage 1 must be recognized in an amount equal to the 12-month expected credit loss. Loss allowances for financial assets measured at amortized cost are presented in the loss allowances line item on the assets side of the balance sheet. For financial assets measured at fair value through other comprehensive income, loss allowances are recognized in the reserve from other comprehensive income on the equity and liabilities side.

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. For these assets, the loss allowances are measured at the amount of the lifetime expected credit losses.

Trade receivables and contract assets that fall within the scope of IFRS 15 are allocated directly to stage 2 (simplified approach).

To simplify matters, it can be assumed that the credit risk of a financial instrument has not increased significantly since initial recognition if, on the basis of investment-grade credit ratings, the financial instrument has a low credit risk at the balance sheet date (low credit risk exemption). The low credit risk exemption is applied to securities, loans and advances, undrawn loan commitments, and financial guarantee contracts.

Financial assets deemed to be impaired on the basis of objective evidence are assigned to stage 3. For these assets, the loss allowances are measured at the amount of the lifetime expected credit losses.

Financial assets subject to the IFRS 9 impairment rules must be reviewed at every balance sheet date to ascertain whether one or more events have occurred with an adverse impact on the estimated future cash flows of these financial assets.

Financial assets that are purchased or originated credit-impaired assets (POCI assets) are initially recognized at their carrying amount less the lifetime expected credit losses and amortized using a risk-adjusted effective interest rate. At the balance sheet date, only the cumulative changes to the lifetime expected credit losses since initial recognition are recognized as a loss allowance. Stage allocation is not required for these assets. Please refer to note 88 for more detailed information on loss allowances for financial assets.

Embedded derivatives

An embedded derivative is a component of a hybrid contract that also includes a non-derivative financial instrument (host contract), with the effect that some of the cash flows of the combined financial instrument vary in a way similar to those of a standalone derivative. A derivative that is attached to a financial instrument but is contractually transferable independently of that instrument, or has a different counterparty, is not an embedded derivative, but a separate financial instrument.

If a hybrid contract contains a host contract that is a financial asset, the categorization rules for financial assets are applied to the entire hybrid contract.

If a hybrid contract contains a host contract that is a financial liability, an embedded derivative is separated from the host contract and accounted for separately if:

– the economic characteristics and risks of the derivative are not closely related to the economic characteristics and risks of the host contract,
– a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative, and
– the hybrid contract is not measured at fair value through profit or loss.

If the embedded derivative does not meet all of these conditions, it may not be separated from the host contract. When an embedded derivative is separated, the host contract is accounted for in accordance with the pertinent standards.

If a contract includes one or more embedded derivatives and the host contract is not a financial asset, the entire hybrid contract can be categorized as measured at fair value through profit or loss. This is not the case where embedded derivatives only have an insignificant impact on the contractually specified cash flows or, upon initial comparison with similar hybrid instruments, it is evident without – or with only minor – analysis that separation of the embedded derivative is not permitted.

Classes of financial instruments

For the purposes of the disclosures on the importance of financial instruments to financial position and financial performance, financial instruments falling within the scope of IFRS 7 are classified using the 7 classes of financial instruments described below.

Classes of financial assets

Financial assets measured at fair value

The class of financial assets measured at fair value comprises the following categories defined by IFRS 9:

– 'Financial assets measured at fair value through profit or loss' with the subcategories 'financial assets mandatorily measured at fair value through profit or loss', 'contingent considerations in a business combination' ('contingent considerations'), and 'financial assets designated as at fair value through profit or loss' (fair value option), and
– 'Financial assets measured at fair value through other comprehensive income' with the subcategories 'financial assets mandatorily measured at fair value through other comprehensive income' and 'financial assets designated as at fair value through other comprehensive income' (fair value OCI option).

In addition to the financial assets in the categories specified above, this class of financial assets measured at fair value includes derivatives used for hedging (positive fair values).

Financial assets measured at amortized cost

The 'financial assets measured at amortized cost' class includes, in particular, loans and advances to banks and customers measured at amortized cost and investments measured at amortized cost.

Finance leases

The 'finance leases' class comprises solely finance lease receivables.

Classes of financial liabilities

Financial liabilities measured at fair value

The 'financial liabilities measured at fair value' class comprises financial liabilities in the category 'financial liabilities measured at fair value through profit or loss' with the subcategories 'financial liabilities mandatorily measured at fair value through profit or loss', 'contingent considerations in a business combination' ('contingent considerations'), 'financial liabilities designated as at fair value through profit or loss' (fair value option), and derivatives used for hedging (negative fair values).

Financial liabilities measured at amortized cost

The class known as 'financial liabilities measured at amortized cost' is identical to the category of financial liabilities of the same name.

Leases

The 'leases' class comprises solely lease liabilities.

Financial guarantee contracts and loan commitments
Provisions for financial guarantee contracts and provisions for loan commitments within the scope of IAS 37 are aggregated in the class 'financial guarantee contracts and loan commitments'.

» 06 Hedge accounting

General information on hedge accounting

As an integral part of its risk management strategy, the DZ BANK Group hedges against risks arising in connection with financial instruments.

If the hedging of risk in connection with financial instruments gives rise to accounting mismatches between the hedged item and the 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. In exercise of the option available under IFRS 9.6.1.3, the DZ BANK Group continues to account for portfolio hedges in application of the rules under IAS 39.

Fair value hedges

A fair value hedge is intended to ensure that changes in the fair value of the hedged item are offset by countervailing changes in the fair value of the hedging instrument. Changes in the fair value of the hedged item attributable to the hedged risk and changes in the fair value of the hedging instrument are recognized in profit or loss. Where equity instruments are hedged whose changes in fair value are recognized in other comprehensive income, the changes in the fair value of the hedging instruments are also recognized in other comprehensive income. Risks may be hedged by designating hedges either on an individual or on a portfolio basis.

Hedged items categorized as 'financial assets measured at amortized cost' or 'financial liabilities measured at amortized cost' are measured in accordance with the general measurement principles for these financial instruments. The values are adjusted for the change in fair value attributable to the hedged risk. Hedged items categorized as 'financial assets measured at fair value through other comprehensive income' are measured at fair value, although only changes not attributable to the hedged changes in fair value are recognized in other comprehensive income. Interest income and interest expense arising from hedged items or hedging instruments are recognized under net interest income.

If the fair value is hedged against interest-rate risks on a portfolio basis, the cumulative changes in fair value attributable to the hedged risk are reported on the balance sheet under fair value changes of the hedged items in portfolio hedges of interest-rate risk, either under assets or liabilities depending on whether the portfolio comprises financial assets or financial liabilities.

In fully effective hedges, the changes in fair value (attributable to the hedged risk) recognized in profit or loss over the lifetime of the hedge completely cancel each other out. Any changes in fair value recognized in the carrying amount of the hedged items are amortized through profit or loss by the time the hedge has been terminated.

Cash flow hedges

The purpose of cash flow hedges is to ensure that changes in uncertain future cash flows from hedged items are offset by changes in cash flows from hedging instruments.

Hedging instruments are measured at fair value. Changes in fair value attributable to the effective portion of the hedge are recognized in other comprehensive income. Changes in fair value attributable to the ineffective portion of the hedge are recognized in profit or loss. Hedged items are recognized and measured in accordance with the general principles for the relevant measurement category. At the end of a hedging relationship, any changes in fair value recognized in other comprehensive income must be reclassified to profit or loss on the date on which the hedged items or transactions are also recognized in profit or loss.

Hedges of net investments in foreign operations

The purpose of hedges of net investments in foreign operations is to offset exchange differences resulting from net investments denominated in foreign currency.

Hedges of net investments in foreign operations are accounted for in the same way as cash flow hedges.

» 07 Currency translation

All monetary assets and liabilities, together with unsettled spot transactions, are translated at the closing rate into the relevant functional currency of the entities in the DZ BANK Group. Cash in foreign currency is translated using the buying rate for cash on the balance sheet date. The translation of non-monetary assets and liabilities depends on the way in which these assets and liabilities are measured. If non-monetary assets are measured at amortized cost, they are translated using the historical exchange rate. Non-monetary assets measured at fair value are translated at the closing rate. Income, expenses, gains, and losses are translated on the date they are recognized either in profit or loss or in other comprehensive income.

If the functional currency of subsidiaries consolidated in the DZ BANK Group is different from the group's reporting currency (euros), all assets and liabilities are translated at the closing rate. Equity (with the exception of the revaluation reserve) is translated at the historical rate. Income and expenses are translated at the spot rate on the transaction date or, in a simplified procedure, at the average rate. The closing rate can also be used if there is no material impact compared with the use of average rates. Any differences arising from currency translation are reported in the currency translation reserve. In most cases, the functional currency of the entities included in the consolidated financial statements is the euro, i.e. the group reporting currency.

» 08 Offsetting of financial assets and financial liabilities

Financial assets and financial liabilities are offset and reported as a net amount on the balance sheet if the group currently has a legally enforceable right to set off the amounts and intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

The legal right of set-off cannot be contingent on a future event and must be exercisable in the normal course of business, in the event of default, and in the event of insolvency of the entity or any of the counterparties.

» 09 Sale and repurchase agreements, securities lending

Sale and repurchase agreements (repos) are transactions in which the parties agree the sale and subsequent repurchase of securities at a fixed price and time. The risks and rewards of ownership of the sold securities remain in full with the original seller, provided that the buyer is under an obligation to sell back the securities. If the DZ BANK Group enters into repos as the original seller, the securities sold continue to be recognized on the balance sheet because the derecognition criteria in IFRS 9.3 et seq. are not satisfied. A liability corresponding to the amount of the purchase price received is recognized. If the group enters into reverse repos as a buyer, the securities purchased must not be recognized on the balance sheet. A receivable corresponding to the amount of the purchase price paid is recognized.

Securities lending transactions are transactions in which the lender provides the borrower with securities for use over a defined period of time. Securities lent as part of securities lending transactions remain on the balance sheet. Where collateral is received in this regard, and this collateral is in cash, a liability is recognized. Borrowed securities do not meet the recognition criteria set out in IFRS 9.1 et seq. and must therefore not be recognized on the balance sheet. Any cash collateral furnished in connection with borrowed securities is reported as a receivable.

Sale and repurchase agreements and securities lending transactions result in transfers in which the transferred assets remain on the balance sheet in their entirety. The DZ BANK Group is not involved in any transfers in which the transferred assets are recognized according to the extent of continuing involvement or transfers of financial assets with a continuing involvement that are fully derecognized.

» 10 Collateral

Receivables are recognized for assets pledged as collateral in the form of cash deposits. Other assets pledged as collateral continue to be reported on the balance sheet unchanged. Where collateral is received, and this collateral is in cash, a liability for a corresponding amount is recognized. Other financial or non-financial assets received as collateral are not recognized on the balance sheet unless the assets are obtained in connection with the recovery of collateral or a purchase of real estate that was previously held as collateral.

» 11 Insurance business

General information on the accounting treatment of insurance business

The DZ BANK Group's insurance business comprises insurance contracts, capitalization transactions (insurance contracts without assumption of significant risk), and service contracts. It also includes financial guarantee contracts with insured parties.

Insurance contracts govern the transfer of significant insurance risk from the insured party to the insurer and the payment of compensation if a future contingent event materializes and adversely impacts the insured party. Insurance contracts are recognized in accordance with the requirements of IFRS 4. Capitalization transactions comprise, in particular, fund-linked or index-linked life insurance contracts without policyholder participation, pension fund contracts based on defined benefit plans, and contracts to protect semi-retirement employment models. Capitalization transactions are classified as financial instruments within the scope of IFRS 9. Service contracts comprise, in particular, separable and transferable administrative components of insurance and capitalization contracts. Such service contracts are subject to the revenue recognition requirements specified in IFRS 15. Any financial guarantee contracts in connection with insurance business are recognized in accordance with the accounting requirements applicable to insurance contracts.

The insurance business of the DZ BANK Group is reported under specific insurance items on the income statement and balance sheet. Material components of the specific insurance items are described below.

Financial assets and financial liabilities

Financial assets and financial liabilities held or acquired as part of insurance business are accounted for in accordance with the accounting policies for financial instruments described in note 5. These financial assets and financial liabilities are reported under investments held by insurance companies, other assets held by insurance companies, and other liabilities of insurance companies. Any loss allowances related to financial assets reported under investments held by insurance companies or other assets held by insurance companies are recognized for the categories 'financial assets measured at amortized cost' and 'financial assets measured at fair value through other comprehensive income' and are applied as a deduction on the assets side of the balance sheet. Within the investments held by insurance companies and other assets held by insurance companies balance sheet items, carrying amounts are presented on a net basis. However, the loss allowances are shown separately (gross presentation) in the balance sheet disclosures.

Other liabilities of insurance companies include the benefit obligations under capitalization transactions for which no material insurance risk is assumed when the policy is concluded. They are reported under liabilities from capitalization transactions. The underlying financial instruments in these transactions are reported as part of assets related to unit-linked contracts under investments held by insurance companies.

Investment property

The investment property included in the investments held by insurance companies is measured at amortized cost in accordance with the cost model. In subsequent years, straight-line depreciation is applied over the asset's useful life on the basis of cost.

Any expenditure that increases value and extends the useful life of real estate or results in a significant improvement in the fabric of a building is capitalized. Maintenance and repair costs are expensed as incurred.

Recoverable amounts are determined for real estate so that this information can be used in impairment tests and provided in the disclosures required in the notes to the financial statements in accordance with the provisions of IFRS 13. For this purpose, standard valuation methods are generally used that are based on the requirements of the German Real Estate Valuation Guidelines (WertR 2006) and the German Building Code (BauGB). Accordingly, the current value of real estate is determined by using the sales comparison approach, income approach, or cost approach and taking into account the provisions of any relevant contracts.

Advantages gained from low-interest, non-interest-bearing, or forgivable loans, including development loans, are recognized in the same way as government grants. The amount of financial assistance or any government grant is deducted when the carrying amount of the asset is identified and is then recognized in profit or loss over the period covered by the assistance or grant by means of a reduced depreciation charge.

Insurance liabilities

Insurance companies are permitted to continue applying existing accounting policies to certain insurance-specific items during a transition period. Insurance liabilities are therefore recognized and measured in accordance with HGB and other German accounting provisions applicable to insurance companies. Insurance liabilities are shown before the deduction of the share of reinsurers, which is reported as an asset.

Provision for unearned premiums

The provision for unearned premiums represents premiums that have already been collected but that relate to future periods.

The provision for unearned premiums from direct non-life insurance operations is calculated from the gross premiums using the 360-day system. Non-transferable income components are taken into account appropriately.

Unearned premiums from life insurance are calculated taking into account the starting date and maturity date of each individual policy after deduction of non-transferable premium components. Non-transferable income components are taken into account appropriately.

The provision for unearned premiums in health insurance predominantly relates to international travel healthcare insurance business.

The proportion of the provision for unearned premiums relating to ceded insurance business is calculated as contractually agreed in the individual reinsurance treaties.

Benefit reserve

The purpose of the benefit reserve is to ensure that guaranteed entitlements to future insurance benefits can be satisfied on a permanent basis. Guaranteed entitlements for insured persons in respect of life insurance and casualty insurance with premium refund as well as the provision for increasing age in health insurance are reported under the benefit reserve.

The benefit reserve for life insurance and casualty insurance with premium refund is generally calculated in Germany on the basis of individual policies taking into account starting dates in accordance with approved business plans and the principles declared to the relevant regulatory authorities. The prospective method is used for life insurance (except for unit-linked insurance products and account management arrangements) and for casualty insurance (with the exception of premium-based policies that started prior to 1982). The retrospective method is used for other types of insurance. Negative benefit reserves on an individual policy basis are generally recognized with an amount of zero.

The assumptions used in calculations are determined in accordance with current recommendations issued by the Deutsche Aktuarvereinigung e.V., Cologne, (DAV) [German Actuarial Association] and the regulator and in accordance with other national statutory provisions and regulations. As a rule, calculation of the benefit reserve is based on interest rates of between 0.0 percent and 4.0 percent, as was the case in the previous year. These interest rates are generally determined by the legally prescribed maximum discount rates. The calculation assumptions apply from the date on which the policy is written until the policy expires.

For policies entered into before or in 2014, calculation of the benefit reserve is generally based on the Zillmer method. Following the introduction of the German Life Insurance Reform Act (LVRG), zillmerizing has not been applied to most new business entered into since 2015. In particular, zillmerizing is not applied to subsidized pension insurance policies under the German Personal Pension Plan Act (AVmG) or to pension insurance policies under reinsured pension plans.

The benefit reserve implicitly includes administrative expenses for contracts with ongoing payment of premiums. A provision for administrative costs has been recognized to cover premium-free years under insurance policies, fully paid-up insurance, and some legacy insurance commitments.

In health insurance, benefit reserves are computed prospectively on an individual policy basis using the technical parameters for calculating rates. Negative benefit reserves and positive benefit reserves are netted. The parameters for the computation of the reserves involve, in particular, assumptions regarding rates of return on investment, mortality, cancellations, and other costs. The company actuarial discount rate calculated in accordance with the procedure developed by the DAV 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. The discount rate was reduced for observation units with a premium adjustment effective January 1, 2020. The reason for this action is the persistently low level of interest rates. The group uses mortality tables issued by the Verband der Privaten Krankenversicherung e.V., Cologne, (PKV) [Association of German private healthcare insurers], entity-specific probability rates for policy cancellations, and profiles of benefit drawdown. These assumptions are regularly reviewed in accordance with actuarial principles and updated, where appropriate.

When the benefit reserves are prospectively calculated, the parameters used are generally retained throughout the term of the policy. If the actuarial analyses conducted once a year reveal that the level of cover offered is inadequate in terms of either biometric parameters or discount rate, appropriate adjustments are made. The biometric parameters used in such computations are based primarily on the mortality and invalidity tables published by the DAV.

In accordance with the German Regulation on the Principles Underlying the Calculation of the Premium Reserve (DeckRV), supplementary change-in-discount-rate reserves have been recognized for new policies with a discount rate in excess of the reference rate. With the approval of the Bundesanstalt für Finanzdienstleistungsaufsicht, Bonn, (BaFin) [German Federal Financial Supervisory Authority], the supplementary change-in-discount-rate reserve has been increased for existing policies. Entity-specific probabilities for cancellation and lump-sum payments are used for both new and existing policies.

Provision for claims outstanding

The provision for claims outstanding represents benefit obligations arising from claims in which it is not yet possible to reliably determine the amount and/or the timing of the payment. The provision is recognized for claims that have already been reported and also for insured events that have occurred but have not yet been reported. It includes both internal and external expenses as well as the cost of settling claims.

The provision for claims outstanding in direct non-life insurance business is determined on a case-by-case basis for all known claims. Recourse claims, excess proceeds, and claims under loss sharing agreements are netted. Based on the level of delayed claims reports observed in previous years, an additional claims provision is recognized for claims that occur or are caused before the balance sheet date but have not yet been reported by this date. Statistical estimates are used in this measurement. The provision for claims outstanding is not discounted, except in the case of the pension benefits reserve. The provisions for claims settlement expenses, which are also included in this item, are calculated appropriately, taking account of claims incurred but not reported (IBNR).

The provision for claims outstanding as regards life insurance and pension funds is determined on a case-by-case basis. The provision is recognized for claims that have already been incurred and reported by the balance sheet date, but have not yet been settled.

In health insurance, the provision for claims outstanding is determined on the basis of the costs paid out in the financial year in connection with claims during the year. The calculation is based on claims experience over the previous 3 financial years. Recourse claims are deducted from the provision for claims outstanding, as are reimbursements due under the German Act on the Reform of the Pharmaceuticals Market (AMNOG). The recognized provision includes the costs of settling claims. The reinsurers’ share of the provision is determined in accordance with reinsurance treaties. Where appropriate, provisions for claims outstanding are recognized on a case-by-case basis for claims relevant to reinsurance.

Provision for premium refunds

The provision for premium refunds represents obligations not yet due for settlement on the balance sheet date relating to premium refunds to insured parties. It includes amounts allocated to policyholders under statutory or contractual arrangements for bonuses and rebates. In addition, the provision for premium refunds includes provisions resulting from time-restricted cumulative recognition and measurement differences between items in the financial statements prepared in accordance with IFRS and those prepared in accordance with HGB. In the case of measurement differences recognized in other comprehensive income, such as unrealized gains and losses on financial assets measured at fair value through other comprehensive income, corresponding expenses for deferred premium refunds are recognized in other comprehensive income; otherwise, changes in the provision are recognized in profit or loss.

The expenses for deferred premium refunds in the non-life insurance business are recognized in an amount equivalent to 90 percent of the difference between the carrying amounts for items in the financial statements prepared in accordance with IFRS and those in the financial statements prepared in accordance with HGB net of deferred taxes.

The provision for premium refunds related to life insurance policies and pension funds is recognized to cover the entitlement of policyholders to profit-related premium refunds. Funds earmarked in this way are therefore made available for future allocation of bonuses to policyholders on an individual policy basis. Within the overall provision for premium refunds, a distinction is made between provisions attributable to bonuses already declared but not yet allocated (including participation in valuation reserves in accordance with HGB), the funding used to finance future terminal bonuses, and the free provision for premium refunds. Under section 140 of the German Act on the Supervision of Insurance Undertakings (VAG), that element of the provision for premium refunds not attributable to bonuses already declared but not yet allocated may be used to avert an imminent crisis and may therefore be seen as mitigating risk. Expenses for deferred premium refunds are recognized in an amount equivalent to 90 percent of the difference between the carrying amounts for items in the financial statements prepared in accordance with IFRS and those in the financial statements prepared in accordance with HGB net of deferred taxes.

The provision for premium refunds related to health insurance includes amounts allocated to policyholders under statutory or contractual arrangements for bonuses and rebates. Expenses for deferred premium refunds are recognized in an amount equivalent to 80 percent of the difference between the carrying amounts for items in the financial statements prepared in accordance with IFRS and those in the financial statements prepared in accordance with HGB net of deferred taxes.

Other insurance liabilities

Other insurance liabilities relating to non-life insurance include obligations arising from membership of the Verein Verkehrsopferhilfe e.V. (VOH) [road casualty support organization], Berlin, in line with the object of this organization and the provision for unearned premiums under dormant vehicle insurance policies, the provision being determined on an individual policy basis. The cancellation provision is calculated on the basis of past experience. The provision for onerous contracts is calculated on the basis of prior-year figures and a forecast of other insurance gains and losses, taking into account interest income and residual maturities.

Other insurance liabilities for life insurance are computed on the basis of individual policies from premiums that are already due but have yet to be paid and have not yet been included in the life insurance liability to the extent that the investment risk is borne by the policyholders.

Other insurance liabilities for health insurance contain a cancellation provision. Among other items, it contains the expected losses arising from the premature loss, not previously accounted for, of the negative portions of the provision for increasing age in health insurance.

Reinsurance business

In the case of reinsurance business, the insurance liabilities are recognized in accordance with the disclosures of the ceding insurers. If no such disclosures are available as at the balance sheet date, the provision for the financial year is estimated. The critical factors in estimating the provision are the contractual terms and conditions and the pattern of this business to date. In a few instances, loss provision details provided by ceding insurers are deemed to be too low in the experience of DZ BANK; in such cases, appropriate increases are applied, the increases having been determined in accordance with prudent business practice, past experience, and actuarial calculation methods.

Reserve for unit-linked insurance contracts

The reserve for unit-linked insurance contracts is an item largely corresponding to assets related to unit-linked contracts. This item is used to report policyholders' entitlements to their individual investment fund units where the related investments arise out of contracts to be reported in accordance with IFRS 4. The reserve is measured at fair value on the basis of the underlying investments. Gains and losses on the fund assets result in corresponding changes on the equity and liabilities side of the balance sheet.

Adequacy test for insurance liabilities

Insurance liabilities must be regularly reviewed and subjected to an adequacy test. The adequacy test determines, on the basis of a comparison with estimated future cash flows, whether the carrying amount of insurance liabilities needs to be increased.

To review the insurance liabilities in the health insurance companies, a regular comparison is made between the present values of estimated future insurance benefits and costs, on the one hand, and the present values of estimated future premium payments on the other. In the event of any deficits, the insurance company has the option of adjusting premiums.

» 12 Leases

DZ BANK Group as lessor

A lease is classified as a finance lease if substantially all the risks and rewards incidental to the ownership of an asset are transferred to the lessee. If the risks and rewards remain substantially with the lessor, the lease is an operating lease.

If a lease is classified as a finance lease, a receivable due from the lessee must be recognized. The receivable is measured at an amount equal to the net investment in the lease at the inception of the lease. Lease payments are apportioned into a payment of interest and repayment of principal. The interest portion based on the lessor's internal discount rate for a constant periodic rate of return is recognized as interest income, whereas the repayment of principal reduces the carrying amount of the receivable.

If a lease is classified as an operating lease, the entities in the DZ BANK Group retain beneficial ownership of the leased asset. These leased assets are reported as assets. The leased assets are measured at cost less depreciation and any impairment losses. Unless another systematic basis is more representative of the pattern of income over time, lease income is recognized in profit or loss on a straight-line basis over the term of the lease and is included in the current income from operating leases reported under net interest income. Gains on disposal, reversals of impairment losses, depreciation, losses on disposal, and impairment losses relating to the underlying leased assets are also included in the current income from operating leases.

DZ BANK Group as lessee

For every lease, the lessee recognizes a right-of-use asset for a leased asset as well as a corresponding lease liability. The only exceptions are short-term leases (term of less than one year from the commencement date) and leases for low-value assets (cost of new purchase of up to €5,000 net); in these cases, the lease payments are recognized as an expense.

The amount of the right-of-use asset initially corresponds to the amount of the lease liability. In subsequent periods, the right-of-use asset is measured at amortized cost. Depreciation is recognized on a straight-line basis over the entire lease term and reported as an administrative expense.

The lease liability is measured as the present value of the future lease payments and is shown under other liabilities. Lease payments must be broken down into an interest portion and a repayment portion. The interest portion based on the internal discount rate or the incremental borrowing rate of interest is recognized as interest expense, whereas the repayment of principal reduces the liability.

The DZ BANK Group uses the practical expedient that enables a lessee to elect not to separate non-lease components from lease components and instead account for all components as a lease.

» 13 Income

Interest and dividends received

Interest is recognized in the relevant period. If the effective interest method is used to calculate interest income, such income is reported under interest income calculated using the effective interest method.

The cash flows used to calculate the effective interest rate take into account contractual agreements in connection with the financial assets and financial liabilities concerned.

Premiums and discounts are allocated over the expected life of financial instruments using the effective interest method. Any additional costs incurred that are directly connected with the acquisition or sale of a financial asset or financial liability, and thus can be directly assigned to the transaction, are factored into the calculation of the effective interest rate. Such costs include sales charges directly associated with the origination of home savings contracts and commitment fees for loans.

Dividends are recognized as soon as a legal entitlement to the payment of such a dividend is established.

Interest income and interest expense arising in connection with derivatives that were not entered into for trading purposes are reported under net interest income. Interest income and interest expense arising in connection with derivatives that were entered into for trading purposes are reported under gains and losses on trading activities.

Recognition of fair value gains and losses when exercising the fair value option

If, to avoid accounting mismatches, hedged items are allocated to the category ‘financial assets designated as at fair value through profit or loss’ (FVO hedged items), the effects of changes in market prices are reported under other gains and losses on financial instruments unless the effects of changes in market prices relate to derivatives whose gains and losses are reported under gains and losses on trading activities. In this case, the effects of changes in the market prices of the affected financial instruments are reported under gains and losses on trading activities. Credit rating effects arising from FVO hedged items are generally reported under other gains and losses on valuation of financial instruments.

As a rule, fair value gains and losses on derivatives that are classified as FVO hedged items and not reported under gains and losses on trading activities are recognized as an element of other gains and losses on valuation of financial instruments under gains and losses on financial instruments designated as at fair value through profit or loss. Otherwise, the fair value gains and losses on derivatives that are classified as FVO hedged items are recognized under gains and losses on trading activities.

Revenue from contracts with customers

Revenue from contracts with customers is recognized when the underlying services have been performed, it is probable that the economic benefits will flow to the group, and the amount of the revenue can be reliably measured.

In the DZ BANK Group, revenue from contracts with customers primarily consists of fee and commission income. Revenue from contracts with customers is also included in gains and losses on investments held by insurance companies and other insurance company gains and losses as well as in other net operating income. The main components of fee and commission income are fee and commission income from securities business, fee and commission income from payments processing (including card processing), fee and commission income from lending and trust activities, and fee and commission income from asset management.

Fee and commission income from securities business is generated from funds business and brokerage, and also includes custody charges. The income is generally recognized as soon as the service has been performed. Fee and commission income from payments processing (including card processing) and fee and commission income from lending and trust activities is recognized immediately after the service has been provided.

Fees and commissions earned over the period in which a service is performed include certain types of fees for administration and safe custody as part of the securities business and asset management, and fees in connection with the furnishing of financial guarantees. In the case of performance-related management fees, income is recognized when the contractually agreed performance criteria have been satisfied. This is either when the service is contracted (brokering of life insurance or fund contracts, or brokering of home savings loans) or when the service is performed (fee and commission income from building society operations).

Fees and charges that form an integral part of the effective interest rate do not fall within the scope of IFRS 15 and are accounted for in accordance with IFRS 9 regardless of whether the financial assets are measured at fair value or at amortized cost.

The DZ BANK Group applies the following practical expedients as permitted by IFRS 15: it applies the standard to a portfolio of contracts, does not adjust the promised amount of consideration for the effects of a significant financing component, recognizes the incremental costs of obtaining a contract as an expense when incurred, and does not disclose certain information for some performance obligations.

Insurance business

For each insurance contract, gross premiums written are calculated pro rata for an exact number of days based on the actual start date of the insurance. These premiums comprise all amounts that become due in the financial year in connection with insurance premiums, premium installments, and single premiums for direct insurance and reinsurance business. Premiums for unit-linked life insurance, except capitalization transactions without policyholder participation, are also recognized as gross premiums written.

The components of premiums covering administration fees are reported pro rata as income in the income statement. In the case of index-linked policies and service contracts, additional administration charges, fees, and commissions from the service and brokerage business are deferred in accordance with IFRS 15 and apportioned over the relevant periods for the duration of the policy or contract concerned in line with the service performed.

» 14 Cash and cash equivalents

Cash and cash equivalents are cash on hand and balances with central banks.

Cash on hand comprises euros and foreign currencies. Cash in euros is measured at nominal value; foreign currency cash is translated at the buying rate. Balances with central banks are allocated to the 'financial assets measured at amortized cost' category. Interest income on cash and cash equivalents is recognized as interest income from lending and money market business.

» 15 Loans and advances to banks and customers

All receivables attributable to registered debtors that are categorized as 'financial assets measured at amortized cost', 'financial assets measured at fair value through profit or loss', or 'financial assets measured at fair value through other comprehensive income' are recognized as loans and advances to banks and customers. To eliminate or significantly reduce accounting mismatches, certain loans and advances are designated as at fair value through profit or loss. In addition to fixed-term receivables and receivables payable on demand in connection with lending, lease, and money market business, loans and advances to banks and to customers include promissory notes and registered bonds.

Loans and advances to banks and customers are measured predominantly at amortized cost using the effective interest method. In fair value hedges, the carrying amounts of hedged receivables are adjusted for the change in fair value attributable to the hedged risk. The resulting hedge adjustments are recognized within other gains and losses on valuation of financial instruments under gains and losses arising on hedging transactions. Finance lease receivables are recognized and measured in accordance with the requirements for the accounting treatment of leases.

Loss allowances for loans and advances to banks and customers are determined on the basis of the IFRS 9 requirements applicable to the relevant category of financial assets. Depending on these requirements, the loss allowances are reported as a separate line item deduction on the assets side of the balance sheet or in the reserve from other comprehensive income. Finance lease receivables are also subject to the IFRS 9 impairment requirements.

Interest income on loans and advances to banks and customers is recognized as interest income from lending and money market business. This also includes the amortization of hedge adjustments to carrying amounts due to fair value hedges. Realized gains and losses on loans and advances to banks and customers that are categorized as financial assets measured at amortized cost are included in the gains and losses from the derecognition of financial assets measured at amortized cost.

» 16 Hedging instruments (positive and negative fair values)

The carrying amounts of financial instruments designated as hedging instruments in effective and documented hedging relationships are reported under either hedging instruments (positive fair values) or hedging instruments (negative fair values).

These financial instruments are measured at fair value. Changes in the fair value of hedging instruments in the category 'financial assets measured at fair value through profit or loss' used in fair value hedges are recognized in the income statement as an element of other gains and losses on valuation of financial instruments under gains and losses from hedge accounting. If the hedged item is an equity instrument in which changes in fair value are recognized in other comprehensive income, the changes in the fair value of the hedging instruments are also recognized in other comprehensive income.

In the case of financial instruments used for cash flow hedges or hedges of net investments in foreign operations, changes in fair value attributable to the effective portion of the hedges are recognized in other comprehensive income. The cumulative amounts are recognized in the reserve from other comprehensive income as part of equity. Changes in fair value attributable to the ineffective portion of hedges are included in other gains and losses on valuation of financial instruments under gains and losses from hedge accounting.

» 17 Financial assets and financial liabilities held for trading

Financial assets and financial liabilities held for trading comprise solely financial assets and financial liabilities that are held for trading.

Derivatives with positive fair values are classified as financial assets held for trading if they were entered into for trading purposes or, despite being intended to be used as hedges, do not meet the requirements for an accounting treatment as hedging instruments. Financial assets held for trading also include bonds and other fixed-income securities, shares and other variable-yield securities, and receivables held for trading purposes.

Financial liabilities held for trading include short positions, bonds and other debt certificates issued, and liabilities held for trading purposes. The procedure for classifying derivatives with negative fair values as financial liabilities held for trading is the same as that used for financial assets held for trading.

Financial instruments reported as financial assets or financial liabilities held for trading are always measured at fair value through profit or loss. Gains and losses on valuation, interest income and expense, and dividends arising from financial assets and financial liabilities held for trading are recognized under gains and losses on trading activities, provided that there is an actual intent to trade the instruments concerned.

» 18 Investments

The following are recognized as investments: bearer bonds and other fixed-income securities, shares and other variable-yield securities, and other bearer or registered shareholdings in entities in which the DZ BANK Group has no significant influence, provided that these securities or shares are not held for trading purposes. Investments also include investments in subsidiaries, joint ventures, and associates.

Investments are initially recognized at fair value. Investments in joint ventures and associates that are accounted for using the equity method are initially recognized at cost. These investments are subsequently measured in accordance with the principles applicable to the relevant measurement category. In the case of investments in joint ventures and associates, the equity method is used for subsequent measurement.

Impairment losses on investments are determined on the basis of the IFRS 9 requirements applicable to the relevant category of financial assets or on the basis of accounting standards relevant to the financial assets concerned. They are generally reported as a separate line item on the assets side of the balance sheet or in the reserve from other comprehensive income.

Interest and any investment premiums or discounts amortized over the maturity of the investment using the effective interest method are recognized under net interest income. Dividends derived from equity instruments are recognized as current income under net interest income. Current income and expense arising from use of the equity method is also reported under net interest income.

Gains and losses realized on the sale of investments that are not categorized as financial assets measured at amortized cost, as well as impairment losses and reversals thereof on investments in associates and joint ventures that are accounted for using the equity method, are reported under gains and losses on investments. Realized gains and losses on investments that are categorized as financial assets measured at amortized cost are included in the gains and losses from the derecognition of financial assets measured at amortized cost.

Fair value gains and losses on investments that are mandatorily measured at fair value through profit or loss are reported under other gains and losses on valuation of financial instruments.

» 19 Property, plant and equipment, investment property, and right-of-use assets

Property, plant and equipment, investment property, and right-of-use assets comprises land and buildings as well as office furniture and equipment with an estimated useful life of more than one year used by the entities in the DZ BANK Group. This item also includes assets subject to operating leases and right-of-use assets arising from leases. Investment property is real estate held for the purposes of generating rental income or capital appreciation.

Property, plant and equipment, and investment property is measured at cost and subsequently at cost less cumulative depreciation and cumulative impairment losses. Depreciation is largely recognized on a straight-line basis over the useful life of the asset. In most cases, external valuations are used to measure recoverability.

Right-of-use assets arising from leases are measured in accordance with the lease accounting provisions and reduced by cumulative depreciation and cumulative impairment losses in subsequent financial years. Depreciation is largely recognized on a straight-line basis over the useful life of the asset.

If facts or circumstances give rise to indications that assets might be impaired, the recoverable amount is determined. An impairment loss is recognized if the recoverable amount is lower than the asset's carrying amount. The recoverable amount is the higher of fair value less costs to sell and value in use.

Borrowing costs directly assignable to property, plant and equipment, and investment property are capitalized as part of the asset cost, provided that the asset concerned is a qualifying asset.

Depreciation on property, plant and equipment, investment property, and right-of-use assets is reported as an administrative expense. Impairment losses and reversals of impairment losses are reported under other net operating income.

» 20 Income tax assets and liabilities

Current and deferred tax assets are shown under the income tax assets balance sheet item; current and deferred tax liabilities are reported under income tax liabilities. Current income tax assets and liabilities are recognized in the amount of any expected refund or future payment.

Deferred tax assets and liabilities are recognized for temporary differences between the IFRS carrying amounts of the assets or liabilities and their carrying amounts for tax purposes. Deferred tax assets are also recognized in respect of as yet unused tax loss carryforwards, provided that utilization of these loss carryforwards is sufficiently probable. Deferred tax assets are measured using the national and entity-specific tax rates expected to apply at the time of recovery. A uniform tax rate is applied in the case of group companies forming a tax group with DZ BANK.

Deferred tax assets and liabilities are not discounted. Where temporary differences arise in relation to items recognized in other comprehensive income, the resulting deferred tax assets and liabilities are also recognized in other comprehensive income. Current and deferred tax income and expense to be recognized through profit or loss are reported under income taxes in the income statement.

» 21 Other assets and other liabilities

The other assets and other liabilities line items are used to report assets and liabilities that cannot be allocated to any of the other asset or liability line items.

Other assets also include intangible assets and contract assets. Intangible assets are recognized at cost. In the subsequent measurement of software, acquired customer relationships, and other intangible assets with a finite useful life, carrying amounts are reduced by cumulative amortization and cumulative impairment losses. Goodwill and other intangible assets with an indefinite useful life are not amortized but are subject to an impairment test at least once during the financial year.

If the group has satisfied its performance obligation in respect of a customer, but the customer has not yet paid the consideration and payment of the consideration still depends on a condition other than simply a due date, then the group recognizes a contract asset on the balance sheet in place of a receivable. As soon as an unconditional right to the consideration arises, the contract asset is reclassified as a receivable. Contract assets are not amortized, but are included in the calculation of the loss allowances in accordance with IFRS 9.

Other liabilities include other liabilities of insurance companies, accrued expenses, and lease liabilities.

» 22 Loss allowances

Loss allowances for cash and cash equivalents, loans and advances to banks and customers, investments, and other assets that are measured at amortized cost or designated as finance leases are reported as a separate line item on the assets side of the balance sheet. Additions to loss allowances for these balance sheet items, and any reversals of such allowances, are recognized under loss allowances in the income statement.

Loss allowances for investments held by insurance companies and other assets held by insurance companies measured at amortized cost are netted with the carrying amounts of these assets within the investments held by insurance companies and other assets held by insurance companies line items on the balance sheet. Additions to loss allowances for these balance sheet items, and any reversals of such allowances, are recognized under gains and losses on investments held by insurance companies and other insurance company gains and losses in the income statement.

Loss allowances for loans and advances to banks and customers, for investments, and for investments held by insurance companies that are measured at fair value through other comprehensive income are not reported on the assets side of the balance sheet but instead in the reserve from other comprehensive income.

Any additions to, or reversals of, provisions for loan commitments and financial guarantee contracts and other provisions for loans and advances are also recognized in profit or loss under loss allowances.

» 23 Non-current assets and disposal groups classified as held for sale

The carrying amount of non-current assets or disposal groups for which a sale is planned is recovered principally through a sale transaction rather than through their continuing use. These assets and disposal groups therefore need to be classified as held for sale if the criteria set out below are satisfied.

To be classified as held for sale, the assets or disposal groups must be available for immediate sale in their present condition subject only to terms that are usual and customary for sales of such assets or disposal groups, and it must be highly probable that a sale will take place. A sale is deemed to be highly probable if there is a commitment to a plan to sell the asset or disposal group and an active program to locate a buyer and complete the plan has been initiated. In addition, the asset or disposal group must be actively marketed for sale at a price that is reasonable in relation to the current fair value. A sale must be expected to be completed within one year of the date on which the asset or disposal group is classified as held for sale.

Assets classified as held for sale are measured at the lower of carrying amount and fair value less costs to sell. The assets are no longer depreciated from the date on which they are classified as held for sale.

Assets and disposal groups classified as held for sale are shown separately on the balance sheet under non-current assets and disposal groups classified as held for sale and liabilities included in disposal groups classified as held for sale. Gains and losses arising on measurement as well as gains and losses on the sale of these assets or disposal groups that do not belong to a discontinued operation are recognized in the income statement under other net operating income. If the assets or disposal groups belong to discontinued operations, all gains and losses arising from these assets and disposal groups must be shown separately as 'profit/loss from discontinued operations, net of tax'.

» 24 Deposits from banks and customers

All liabilities attributable to registered creditors not classified as 'financial liabilities mandatorily measured at fair value through profit or loss' are recognized as deposits from banks and customers. In addition to fixed-maturity liabilities and liabilities repayable on demand arising from the deposit, home savings and loan, and money market businesses, these liabilities also include, in particular, registered bonds and promissory notes issued.

Deposits from banks and customers are measured at amortized cost using the effective interest method. Where deposits from banks and customers are designated as a hedged item in an effective fair value hedge, the carrying amount is adjusted for any change in the fair value attributable to the hedged risk. If, to eliminate or significantly reduce accounting mismatches, the fair value option is applied for deposits from banks and customers, the liabilities are measured at fair value as at the balance sheet date.

Interest expense on deposits from banks and customers is recognized separately under net interest income. Interest expense also includes gains and losses on early redemptions and the amortization of hedge adjustments to carrying amounts due to fair value hedges. Hedge adjustments to the carrying amount due to fair value hedges are reported within other gains and losses on valuation of financial instruments under gains and losses from hedge accounting.

» 25 Debt certificates issued including bonds

Debt certificates issued including bonds cover 'Pfandbriefe', other bonds, and commercial paper for which transferable bearer certificates have been issued.

Debt certificates issued including bonds are measured in the same way as deposits from banks and customers.

» 26 Provisions

Provisions for employee benefits

Pension plans agreed with the employees of the entities in the DZ BANK Group are based on various types of pension schemes that depend on the legal, economic, and tax situation in each country and include both defined contribution plans and defined benefit plans.

Where a commitment is made to defined contribution plans, fixed contributions are paid to external pension providers. The amount of the contributions and the income earned from the pension assets determine the amount of future pension benefits. The risks arising from the obligation to pay such benefits in the future lie with the pension provider. No provisions are recognized for these defined contribution pension commitments. The contributions paid are recognized as pension and other post-employment benefit expenses under administrative expenses.

Under a defined benefit plan, the employer promises a specific benefit and bears all the risks arising from this promise. Defined benefit obligations are measured on the basis of the projected unit credit method. The measurement depends on various actuarial assumptions. These include, in particular, assumptions about long-term salary and annuity trends and average life expectancy. Assumptions about the salary trend are based on past trends and take into account expectations regarding future changes in the labor market. Assumptions about the annuity trend are based on changes in the inflation rate. Generally accepted biometric tables (2018 G mortality tables published by Professor Dr. Klaus Heubeck) are used to estimate average life expectancy. The discount rate used to discount future payment obligations is an appropriate market interest rate for investment-grade fixed-income corporate bonds with a maturity equivalent to that of the defined benefit obligations. The discount rate depends on the obligation structure (duration) and is determined using a portfolio of high-quality corporate bonds that must satisfy certain quality criteria. One of the notable quality criteria is a credit rating of AA from at least one of the two rating agencies with the greatest coverage in the currency area in question. For the eurozone, these are Moody's Investors Service and Standard & Poor's, both New York. Bonds with existing call options in the form of embedded derivatives are not included in this process.

Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions regarding the defined benefit obligations, together with gains and losses arising from the remeasurement of plan assets and reimbursement rights, are recognized in other comprehensive income in the reporting period in which they occur.

In addition to the provisions for defined benefit pension plans, the provisions for employee benefits include provisions for other long-term employee benefits, provisions for termination benefits, and provisions for short-term employee benefits.

Provisions for other long-term employee benefits are recognized, in particular, to cover semi-retirement (Altersteilzeit) and long-service bonuses. Provisions for early retirement are included under the provisions for termination benefits.

Provisions for termination benefits linked with restructuring are reported separately from other restructuring provisions. The provisions for restructuring assigned to the provisions for employee benefits have been derived from a number of strategies, including DZ BANK's forward-looking 'Verbund First 4.0' initiative, VR Smart Finanz's strategy to transform itself into a digital provider of finance for the self-employed and small businesses, and the merger of DVB into DZ BANK AG, which was announced in April 2021.

Provisions for employee benefits are generally recognized as a charge to administrative expenses, although reversals of such provisions are reported under other net operating income. As an exception to the rule, provisions for restructuring are recognized under other net operating income.

Provisions for share-based payment transactions

The entities in the DZ BANK Group have entered into various agreements covering variable remuneration components to be paid to members of the Board of Managing Directors and certain other executives. The amount and timing of such remuneration depends on a number of factors, not least the performance of the entity concerned. These agreements are classified as cash-settled share-based payment transactions.

Provisions for share-based payment transactions are recognized (at fair value) if it is sufficiently probable that the remuneration will be paid out in the future. The timing of initial recognition is therefore before the grant date and before any payout in subsequent years. This results in discrepancies compared with the nominal amounts disclosed in note 102 for share-based payments granted but not yet paid out.

Provisions for share-based payment transactions are also subsequently measured at fair value. Any changes in fair value are recognized in profit or loss.

Other provisions

Provisions are liabilities in which the amounts or due dates are uncertain. Provisions are recognized for present obligations arising out of past events, in which it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and the amount of the obligation can be reliably estimated.

The provisions are recognized and measured using the best estimate of the present value of their anticipated utilization. This estimate takes account of future events as well as the risks and uncertainties relating to the issue concerned. The underlying assumptions and estimates used include figures based on past experience as well as expectations and forecasts relating to future trends and developments.

Provisions for irrevocable loan commitments and provisions for financial guarantee contracts are recognized with the same model used for financial assets and in the amount of the expected credit losses.

Other provisions for loans and advances factor in the usual sector-specific level of uncertainty.

Subject to various criteria being met, the building society's terms and conditions provide for bonuses for home savings customers in the form of a reimbursement of some of the sales charge or in the form of interest bonuses on deposits. The bonuses constitute independent payment obligations and are measured and recognized in accordance with IAS 37. In line with the building society's terms and conditions, the granting of bonuses to home savings customers is tied to various conditions, for example the selection of the interest bonus option by the home savings customer, adherence to a lock-up period that, after the option has been selected, starts on the valuation date on which the target valuation and a certain minimum volume of home savings deposits are reached, the achievement of a minimum term for the home savings contract, and a decision not to draw down the allocated home savings loan. In order to measure provisions relating to building society operations, building society simulations (collective simulations) that forecast home savings customers' future behavior are used to evaluate these options. The parameters for collective simulation, including the probabilities of the options being exercised by home savings customers, are set using the exercise rate determined by observing customer behavior in the past. The collective simulations form the basis for cash flow projections that are used to measure the provisions relating to building society operations. These cash flow projections are carried out at portfolio level for a projection period of 15 years. For validation purposes, an additional process is used and the results are compared against those obtained using the measurement method. Uncertainty in connection with the measurement of the provisions may arise depending on the extent to which the assumptions about future customer behavior – taking account of various interest-rate scenarios and management measures – that were forecast using collective simulation actually materialize in the future. Unconditional bonuses in the form of additional interest credit are recognized as part of the amortized cost of the home savings deposits in accordance with IFRS 9.5.3.1 in conjunction with IFRS 9.4.2.1.

Provisions are recognized for risks arising from ongoing legal disputes and cover the possible resulting losses. Such provisions are recognized when the reasons indicating that a legal dispute will result in a payment obligation for an entity in the DZ BANK Group are stronger than those indicating the opposite. Any concentration risk owing to similarities between individual cases is taken into consideration.

The amount in which provisions are recognized for risks arising from ongoing legal disputes is based on the information available at the time and is subject to assumptions and discretion in how a dispute is assessed. For example, this may be because the entity in the DZ BANK Group does not yet have at its disposal all the information required to make a final assessment of the legal dispute, particularly during the early stages of proceedings. Moreover, predictions made by entities in the DZ BANK Group in relation to changes to legal circumstances, changes to official interpretations, or – in the case of court cases – to procedural orders, decisions by the courts, or the arguments expected to be put forward by the opponent in the case may later turn out to be unfounded.

The expense incurred by the unwinding of the discount on provisions is recognized as interest expense under net interest income.

» 27 Subordinated capital

Subordinated capital comprises all registered or bearer debt instruments that, in the event of insolvency or liquidation, are repaid only after settlement of all unsubordinated liabilities but before distribution to shareholders of any proceeds from the insolvency or liquidation.

Subordinated liabilities largely comprise subordinated bearer bonds and promissory notes. Profit-sharing rights outstanding comprise registered and bearer profit-participation certificates in issue. Regulatory Tier 1 capital that does not meet IFRS equity criteria is recognized as other hybrid capital. The share capital repayable on demand comprises the non-controlling interests in partnerships controlled by entities in the DZ BANK Group. These non-controlling interests must be classified as subordinated.

Subordinated capital is measured in the same way as deposits from banks and customers.

» 28 Contingent liabilities

Contingent liabilities are possible obligations arising from past events. The existence of these obligations will only be confirmed by future events outside the control of the entities in the DZ BANK Group. Present obligations arising out of past events but not recognized as provisions because of the improbability of an outflow of resources embodying economic benefits or because the amount cannot be measured with sufficient reliability also constitute contingent liabilities.

The amount of contingent liabilities is disclosed in the notes unless the probability of an outflow of resources embodying economic benefits is remote. Contingent liabilities are measured at the best estimate of possible future outflows of resources embodying economic benefits.

Contingent liabilities in respect of litigation risk are reported when the reasons indicating that there is no current obligation are stronger than those indicating the opposite, but there is still a likelihood that a legal dispute will result in a payment obligation for an entity in the DZ BANK Group. Risks arising from legal disputes are assessed according to how likely they are to occur.

B Disclosure of interests in other entities

» 29 Investments in subsidiaries

Proportion of the DZ BANK Group's activities and cash flow attributable to non-controlling interests

In the DZ BANK Group, material non-controlling interests in the capital and profit exist in the following subsidiaries:

€ million	Dec. 31, 2021	Dec. 31, 2020
Bausparkasse Schwäbisch Hall subgroup	204	239
DZ PRIVATBANK	66	64
R+V Versicherung subgroup	1,304	1,237
Union Asset Management Holding subgroup	90	62
DZ BANK Capital Funding Trust I	-	285
DZ BANK Capital Funding Trust II	-	490
DZ BANK Capital Funding Trust III	-	348
DZ BANK Perpetual Funding Issuer (Jersey) Limited	-	240
Other	137	128
Total	**1,801**	**3,093**

Bausparkasse Schwäbisch Hall
Bausparkasse Schwäbisch Hall AG – Bausparkasse der Volksbanken und Raiffeisenbanken, Schwäbisch Hall, (BSH) is the parent company of the BSH subgroup. BSH is headquartered in Schwäbisch Hall. DZ BANK directly holds 97.6 percent of the shares in BSH (December 31, 2020: 97.1 percent). The share of voting rights is equal to the shareholding. Non-controlling interests account for 2.4 percent of the voting rights and shares (December 31, 2020: 2.9 percent). As was the case a year earlier, most of these non-controlling interests are held by local cooperative banks.

The net income for the year attributable to the non-controlling interests was €10 million (2020: €8 million). This included the net income for the year attributable to non-controlling interests in the BSH subgroup of €7 million (2020: €6 million). The carrying amount of the non-controlling interests in the DZ BANK Group was €204 million (December 31, 2020: €239 million). Of this amount, €81 million was attributable to non-controlling interests within the BSH subgroup (December 31, 2020: €74 million). DZ BANK has entered into a profit-transfer agreement with BSH. This guarantees a cash settlement of €6.97 per non-par-value share (after corporation tax and ancillary taxes) for the outside shareholders of BSH until the end of the 2025 financial year. After the end of the 2025 financial year, the profit transfer agreement will be extended automatically by one year at a time until December 31, 2030 at the latest, unless the agreement is terminated by giving notice no later than 6 months before it is due to end. Until the end of the 2020 financial year, there was a profit transfer agreement that guaranteed a cash settlement of €6.97 per non-par-value share (after corporation tax and ancillary taxes) for the outside shareholders of BSH. Guaranteed dividends of €1 million were paid to outside shareholders of BSH in 2021 (2020: €1 million). In the BSH subgroup, dividends of €0 million were paid to non-controlling interests (2020: €4 million).

Aggregated financial information for the BSH subgroup:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	85,371	81,673
Liabilities	79,653	75,608

€ million	2021	2020
Interest income and fee and commission income	1,530	1,606
Net profit	78	51
Other comprehensive income/loss	-425	318
Total comprehensive income/loss	-347	369
Cash flow	455	405

DZ PRIVATBANK

DZ PRIVATBANK S.A., Strassen, Luxembourg, (DZ PRIVATBANK S.A.), headquartered in Luxembourg, together with its wholly owned subsidiaries DZ PRIVATBANK (Schweiz) AG, Zurich, Switzerland, IPConcept (Luxemburg) S.A., Strassen, Luxembourg, and IPConcept (Schweiz) AG, Zurich, Switzerland, is the cooperative center of excellence for the private banking business of the local cooperative banks in Germany.

DZ BANK directly holds 91.8 percent (December 31, 2020: 91.7 percent) of the shares in DZ PRIVATBANK S.A. The share of voting rights is equal to the shareholding. The other shares are held by local cooperative banks and cooperative investors.

The net income for the year attributable to the non-controlling interests was €2 million (2020: €2 million). The carrying amount of the non-controlling interests was €66 million (December 31, 2020: €64 million). The dividend distributed to the non-controlling interests came to €1 million in 2021 (2020: €1 million).

Aggregated financial information for DZ PRIVATBANK:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	21,611	17,691
Liabilities	20,718	16,836

€ million	2021	2020
Interest income and fee and commission income	609	519
Net profit	32	28
Other comprehensive income/loss	17	-4
Total comprehensive income	49	24
Cash flow	4,038	-1,914

R+V Versicherung

The R+V Group is a subgroup of the DZ BANK Group that, with its individual companies, offers all types of insurance in all of the non-life, life, and health insurance sectors. It also takes on inward reinsurance business in the international market.

R+V Versicherung AG, Wiesbaden, (R+V) is the parent company of the R+V subgroup. R+V is headquartered in Wiesbaden. DZ BANK directly holds 92.2 percent of the shares in R+V (December 31, 2020: 92.2 percent).

The share of voting rights is equal to the shareholding. Non-controlling interests account for 7.8 percent of the voting rights and shares (December 31, 2020: 7.8 percent). Within this figure, local cooperative banks hold 6.0 percent (December 31, 2020: 6.0 percent). The other 1.8 percent (December 31, 2020: 1.8 percent) is held by other entities in the cooperative sector.

The net income for the year attributable to the non-controlling interests was €106 million (2020: €35 million). This included the net income for the year attributable to non-controlling interests in the R+V subgroup of €66 million (2020: €28 million). The carrying amount of the non-controlling interests in the DZ BANK Group was €1,304 million (December 31, 2020: €1,237 million). Of this amount, €673 million was attributable to non-controlling interests within the R+V subgroup (December 31, 2020: €631 million). DZ BANK has entered into a profit-transfer agreement with R+V. This guarantees an annual cash settlement of €6.30 per non-par-value share (after corporation tax and ancillary taxes) for the outside shareholders of R+V until the end of the 2021 financial year. Guaranteed dividends of €7 million were paid to outside shareholders of R+V in 2021 (2020: €7 million). In the R+V subgroup, dividends of €8 million were paid to non-controlling interests (2020: €8 million).

Aggregated financial information for the R+V subgroup:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	137,390	130,027
Liabilities	128,571	121,539

€ million	2021	2020
Premiums earned	18,994	18,741
Net profit	497	43
Other comprehensive income/loss	-143	241
Total comprehensive income	354	284

Union Asset Management Holding

Union Asset Management Holding AG, Frankfurt am Main, (UMH) is the parent company of the UMH subgroup. UMH is headquartered in Frankfurt am Main. Other major locations are Hamburg and Luxembourg. DZ BANK's aggregated shareholding in UMH is 96.6 percent (December 31, 2020: 96.6 percent). The share of voting rights is equal to the aggregated shareholding. Non-controlling interests account for 3.4 percent of the shares (December 31, 2020: 3.4 percent). Most of these non-controlling interests are held by local cooperative banks. The proportion held indirectly by DZ BANK is 95.8 percent (December 31, 2020: 95.8 percent).

The carrying amount of the non-controlling interests within the DZ BANK Group was €90 million (December 31, 2020: €62 million) and related to the multiplicative share of the capital of UMH. Of this amount, €34 million was attributable to non-controlling interests within the UMH subgroup (December 31, 2020: €31 million). The net income for the year attributable to the non-controlling interests was €41 million (2020: €24 million). This included the net income for the year attributable to non-controlling interests in the UMH subgroup of €10 million (2020: €9 million). The dividend distributed to the non-controlling interests totaled €13 million in 2021 (2020: €12 million). €7 million of this amount was paid as dividends to non-controlling interests in the UMH subgroup (2020: €7 million).

Aggregated financial information for the UMH subgroup:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	4,665	3,561
Liabilities	2,181	1,721

€ million	2021	2020
Interest income and fee and commission income	3,809	2,791
Net profit	859	460
Other comprehensive income/loss	26	-22
Total comprehensive income	884	438

DZ BANK Capital Funding Trust I, II, and III and DZ BANK Perpetual Funding Issuer (Jersey) Limited
DZ BANK had established companies in Delaware, USA, and Jersey, Channel Islands, in order to increase own funds in accordance with section 10a KWG. The business activities of these companies were limited to the issuance of open-ended equity instruments without redemption incentives. These equity instruments that had been issued were held by non-voting non-controlling interests in the DZ BANK Group. The companies in question were:

– DZ BANK Capital Funding Trust I, Wilmington, Delaware,
– DZ BANK Capital Funding Trust II, Wilmington, Delaware,
– DZ BANK Capital Funding Trust III, Wilmington, Delaware,
– DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey.

The bonds issued by DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey, and the non-cumulative trust preferred securities issued by DZ BANK Capital Funding Trust I, DZ BANK Capital Funding Trust II, and DZ BANK Capital Funding Trust III, all Delaware, USA, were called on January 12, 2021 and repaid in full during the reporting year.

The companies were established at their registered office. The Delaware companies were headquartered in New York, USA. The Channel Islands company was headquartered in Frankfurt am Main. Virtually 100 percent of the issued share capital of each of the companies was attributable to non-voting non-controlling interests, while the voting rights in the companies were attached to only an insignificant proportion of the shares. As a result, virtually all of the profits and losses of the companies were attributable to the non-controlling interests.

The companies’ net income for the year is shown in the following table:

€ million	2021	2020
DZ BANK Capital Funding Trust I	3	6
DZ BANK Capital Funding Trust II	1	6
DZ BANK Capital Funding Trust III	1	4
DZ BANK Perpetual Funding Issuer (Jersey) Limited	-	1

Distributions of dividends to the non-controlling interests generally took the form of a variable or fixed-rate coupon, the actual payment of which was not subject to any contractual obligation.

The dividends paid to the non-controlling interests in the financial year are shown in the following table:

€ million	2021	2020
DZ BANK Capital Funding Trust I	-	6
DZ BANK Capital Funding Trust II	-	6
DZ BANK Capital Funding Trust III	-	4
DZ BANK Perpetual Funding Issuer (Jersey) Limited	-	1

Aggregated financial information for the DZ BANK Capital Funding Trust companies and the DZ BANK Perpetual Funding Issuer company:

€ million	Dec. 31, 2021	Dec. 31, 2020
Non-current assets	-	1,410
Liabilities	-	-

€ million	2021	2020
Interest income and fee and commission income	6	17
Net profit	6	17
Total comprehensive income	6	17

Nature and extent of significant restrictions

National regulatory requirements, contractual provisions, and provisions of company law restrict the DZ BANK Group's ability to transfer assets within the group. Where these restrictions can be specifically assigned to individual line items on the balance sheet, the carrying amounts of the assets and liabilities subject to restrictions on the balance sheet date are shown in the following table:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	**108,619**	**100,934**
Loans and advances to banks	1,870	2,490
Loans and advances to customers	5,327	2,717
Investments	1,882	2,014
Investments held by insurance companies	99,074	93,204
Other assets	467	509
Liabilities	**162,897**	**156,385**
Deposits from banks	1,755	1,799
Deposits from customers	66,222	64,709
Provisions	1,398	1,443
Insurance liabilities	93,522	88,434

Nature of the risks associated with interests in consolidated structured entities

Risks arising from interests in consolidated structured entities largely result from loans to fully consolidated funds, some of which are extended in the form of junior loans.

» 30 Interests in joint arrangements and associates

Nature, extent, and financial effects of interests in joint arrangements

Prvá stavebná sporiteľňa

Prvá stavebná sporiteľňa a.s., Bratislava, Slovakia, (PSS) is a joint venture between BSH and its partners Raiffeisen Bausparkassen Holding GmbH, Vienna, Austria, Slovenská sporiteľňa a.s., Bratislava, Slovakia, and Erste Group Bank AG, Vienna, Austria. PSS is headquartered in Bratislava, Slovakia. PSS is the market leader for building society operations in Slovakia. BSH's shareholding in PSS was 32.5 percent on the balance sheet date, as it had been at December 31, 2020. In the DZ BANK Group, the interests in PSS are accounted for using the equity method. PSS did not pay any dividend to BSH in 2021 (2020: no dividend).

Aggregated financial information for PSS:

€ million	**Dec. 31, 2021**	Dec. 31, 2020
Current assets	**549**	570
of which cash and cash equivalents	**22**	76
Non-current assets	**2,399**	2,413
Current liabilities	**652**	664
of which financial liabilities	**637**	650
Non-current liabilities	**2,011**	2,053
of which financial liabilities	**1,985**	2,042

€ million	**2021**	2020
Interest income	**92**	95
Interest expense	**-28**	-33
Fee and commission income	**12**	13
Fee and commission expenses	**-1**	-1
Administrative expenses	**-40**	-36
Income taxes	**-5**	-3
Profit from continuing operations, net of tax	**17**	8
Total comprehensive income	**17**	8

Reconciliation from the aggregated financial information to the carrying amount of the interests in PSS:

€ million	**Dec. 31, 2021**	Dec. 31, 2020
Total net assets	**284**	266
Share of net assets	**92**	87
Cumulative impairment losses on the carrying amount of the investment	**-20**	-11
Carrying amount under the equity method	**72**	76

Zhong De Zuh Fang Chu Xu Yin Hang (Sino-German-Bausparkasse)

Zhong De Zuh Fang Chu Xu Yin Hang (Sino-German-Bausparkasse), Tianjin, China, (SGB) is a joint venture between BSH and China Construction Bank Corporation, Beijing, China. SGB is headquartered in Tianjin, China. Its business activities are concentrated in the regions of Tianjin (population of approx. 13 million) and Chongqing (population of approx. 30 million). BSH's shareholding in this Chinese building society was 24.9 percent on the balance sheet date, as it had been at December 31, 2020. In the DZ BANK Group, the interests in SGB are accounted for using the equity method. SGB did not pay a dividend in 2021, as had also been the case in the previous year.

Aggregated financial information for SGB:

€ million	Dec. 31, 2021	Dec. 31, 2020
Current assets	1,596	1,105
of which cash and cash equivalents	574	417
Non-current assets	2,747	2,017
Current liabilities	2,986	2,062
of which financial liabilities	2,775	1,883
Non-current liabilities	954	685
of which financial liabilities	954	680

€ million	2021	2020
Interest income	137	107
Interest expense	-67	-44
Fee and commission income	8	5
Fee and commission expenses	-17	-14
Administrative expenses	-43	-34
Income taxes	-4	-3
Profit from continuing operations, net of tax	13	8
Other comprehensive income/loss	42	-10
Total comprehensive income/loss	55	-2

Reconciliation from the aggregated financial information to the carrying amount of the interests in SGB:

€ million	Dec. 31, 2021	Dec. 31, 2020
Total net assets	**404**	**375**
Share of net assets	**101**	**93**
Cumulative impairment losses on the carrying amount of the investment	-59	-63
Carrying amount under the equity method	**42**	**30**

Deutsche WertpapierService Bank

Deutsche WertpapierService Bank AG, Frankfurt am Main, (dwpbank) is a joint venture of DZ BANK with Westfälisch-Lippische Sparkassen- und Giroverband, Münster, Rheinischer Sparkassen- und Giroverband, Düsseldorf, and 3 other banks in Germany and is accounted for in the DZ BANK Group's financial statements using the equity method. dwpbank is headquartered in Frankfurt am Main. Its capital is divided into 20,000,000 voting registered shares with transfer restrictions. DZ BANK holds a 50.0 percent stake in dwpbank, as it did at December 31, 2020. The equity method is applied to dwpbank on the basis of financial statements prepared in accordance with HGB because the difference compared with financial statements prepared in accordance with IFRS is not material.

The shares in dwpbank are not traded in an active market. dwpbank did not pay any dividend to DZ BANK in 2021 (2020: no dividend).

Aggregated financial information for dwpbank:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	682	693
Liabilities	392	423
of which financial liabilities	186	208

dwpbank only has a small amount of cash and cash equivalents.

€ million	2021	2020
Interest income	3	3
Interest expense	-3	-3
Fee and commission income	416	400
Fee and commission expenses	-101	-90
Administrative expenses	-252	-228
Income taxes	-28	-11
Profit from continuing operations, net of tax	20	60
Total comprehensive income	20	60

Reconciliation from the aggregated financial information to the carrying amount of the interests in dwpbank:

€ million	Dec. 31, 2021	Dec. 31, 2020
Total net assets	**290**	270
Share of net assets	**145**	135
Capitalization of goodwill	29	29
Carrying amount under the equity method	**174**	164

Other joint ventures

The carrying amount of the equity-accounted joint ventures that, individually, are not material totaled €61 million on the balance sheet date (December 31, 2020: €59 million).

Aggregated financial information for equity-accounted joint ventures that, individually, are not material:

€ million	2021	2020
Share of profit from continuing operations, net of tax	4	5
Share of other comprehensive income	-	8
Share of total comprehensive income	4	13

Nature, extent, and financial effects of investments in associates

Other associates

The carrying amount of the equity-accounted associates that, individually, are not material totaled €72 million on the balance sheet date (December 31, 2020: €112 million).

Aggregated financial information for equity-accounted associates that, individually, are not material:

€ million	2021	2020
Share of profit/loss from continuing operations, net of tax	-3	-2
Share of profit from discontinued operations, net of tax	-	1
Share of total comprehensive income/loss	-3	-1

» 31 Interests in unconsolidated structured entities

Structured entities are entities that have been designed so that voting rights or similar rights are not the dominant factor in deciding who controls the entity. The DZ BANK Group distinguishes between the following types of interests in unconsolidated structured entities, based on their design and the related risks:

- Interests in investment funds issued by the DZ BANK Group,
- Interests in investment funds not issued by the DZ BANK Group,
- Interests in securitization vehicles.

Interests in investment funds issued by the DZ BANK Group

The interests in the investment funds issued by the DZ BANK Group largely comprise investment funds issued by entities in the Union Investment Group in accordance with the contractual form model without voting rights and, to a lesser extent, those that are structured as a company with a separate legal personality. The number of unit/share types and volume of investment funds issued and managed by the UMH subgroup can be broken down as follows:

	Dec. 31, 2021		Dec. 31, 2020	
€ million	Volume	Number	Volume	Number
Mutual funds	238,934	339	198,732	341
of which guarantee funds	361	9	790	14
Special funds	144,554	494	125,070	426
Total	**383,488**	**833**	**323,802**	**767**

Furthermore, DVB Bank SE, Frankfurt am Main, (DVB) makes subordinated loans available to fully consolidated funds for the purpose of transport finance. In turn, these funds make subordinated loans or direct equity investments available to unconsolidated entities.

The maximum exposure of the investment funds issued and managed by the DZ BANK Group is shown in the following tables as a gross value, excluding deduction of available collateral:

AS AT DECEMBER 31, 2021

€ million	Mutual funds	of which guarantee funds	Special funds	**Total**
Assets	**2,448**	**-**	**5,778**	**8,226**
Loans and advances to customers	4	-	11	14
Investments	2,019	-	7	2,026
Investments held by insurance companies	162	-	5,726	5,887
Property, plant and equipment, investment property, and right-of-use assets	61	-	-	61
Other assets	203	-	26	229
Non-current assets and disposal groups classified as held for sale	-	-	8	8
Liabilities	**73**	**11**	**-**	**73**
Financial liabilities held for trading	11	11	-	11
Other liabilities	62	-	-	62
Net exposure recognized on the balance sheet	2,375	-11	5,778	8,153
Financial guarantee contracts, loan commitments and other obligations	**352**	**352**	**-**	**352**
Other obligations	352	352	-	352
Actual maximum exposure	**2,727**	**340**	**5,778**	**8,505**

AS AT DECEMBER 31, 2020

€ million	Mutual funds	of which guarantee funds	Special funds	**Total**
Assets	**2,077**	**-**	**5,241**	**7,318**
Loans and advances to customers	3	-	5	8
Investments	1,673	-	6	1,679
Investments held by insurance companies	136	-	5,128	5,264
Property, plant and equipment, investment property, and right-of-use assets	71	-	-	71
Other assets	155	-	22	177
Non-current assets and disposal groups classified as held for sale	39	-	80	119
Liabilities	**84**	**12**	**-**	**84**
Hedging instruments (negative fair values)	12	12	-	12
Other liabilities	72	-	-	72
Net exposure recognized on the balance sheet	1,993	-12	5,241	7,234
Financial guarantee contracts, loan commitments and other obligations	**745**	**745**	**-**	**745**
Other obligations	745	745	-	745
Actual maximum exposure	**2,738**	**733**	**5,241**	**7,979**

Regarding the disclosure of the maximum exposure, it must be noted that the 'Other obligations' line item in the table above includes market price guarantees in the amount of the nominal amounts of the guarantee commitments for guarantee funds of €363 million (December 31, 2020: €757 million), less negative fair values of €11 million (December 31, 2020: €12 million) recognized as a liability for the put options embedded in these products. The maximum exposure for market price guarantees for the guarantee funds does not represent the economic risk of this product type because the economic risk also has to reflect these guarantee funds' net assets (net asset value) of €361 million on the balance sheet date (December 31, 2020: €790 million) and the management model used with these products to safeguard the minimum payment commitments. The benefit under a market price guarantee is triggered if the fair value of the affected units does not reach the specified guaranteed level on particular dates. The put options embedded in the guarantee funds are reported as derivatives (negative fair values) under equity and liabilities on the balance sheet.

The interests in investment funds issued and managed by the DZ BANK Group resulted in losses of €24 million in 2021 (2020: losses of €66 million). Distributions in 2021 relating to each investment fund were offset in the calculation of the losses incurred in respect of each fund.

The revenue generated from investment funds issued by the DZ BANK Group was as follows:

2021

€ million	Mutual funds	of which guarantee funds	Special funds	**Total**
Interest income and current income and expense	3	-	1	4
Fee and commission income	3,231	3	252	3,483
Gains and losses on investments	2	-	-	2
Other gains and losses on valuation of financial instruments	7	-	-3	4
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-	-	34	34
Other operating income	-	-	14	14
Total	**3,243**	**2**	**298**	**3,541**

2020

€ million	Mutual funds	of which guarantee funds	Special funds	**Total**
Interest income and current income and expense	7	-	2	9
Fee and commission income	2,309	7	199	2,508
Gains and losses on investments	-5	-	-	-5
Other gains and losses on valuation of financial instruments	16	-	2	18
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-	-	29	29
Other operating income	-	-	2	2
Total	**2,327**	**7**	**234**	**2,561**

Income of €5 million was generated in 2021 and impacted on other comprehensive income (2020: €0 million).

Interests in investment funds not issued by the DZ BANK Group

The interests in the investment funds not issued by the DZ BANK Group above all comprise investment funds managed by entities in the Union Investment Group within the scope of their own decision-making powers that have been issued by entities outside the DZ BANK Group and parts of such investment funds. Their total volume amounted to €44,013 million (December 31, 2020: €39,836 million). The DZ BANK Group also extends loans to investment funds in order to generate interest income.

In addition, there were investment funds issued by entities outside the group in connection with unit-linked life insurance amounting to €13,678 million (December 31, 2020: €10,056 million) that, however, do not result in a maximum exposure.

The maximum exposure arising from the investment funds not issued by the DZ BANK Group is shown as a gross value, excluding deduction of available collateral. The following assets and liabilities have been recognized on the DZ BANK Group's balance sheet in connection with interests in investment funds not issued by the DZ BANK Group:

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	**7,358**	**7,051**
Loans and advances to customers	7,358	7,051
Net exposure recognized on the balance sheet	7,358	7,051
Financial guarantee contracts, loan commitments and other obligations	**488**	**267**
Financial guarantee contracts	37	37
Loan commitments	451	230
Maximum exposure	**7,846**	**7,318**

The revenue generated from interests in investment funds not issued by the DZ BANK Group was as follows:

€ million	2021	2020
Interest income and current income	110	117
Fee and commission income	85	78
Total	**195**	**195**

Interests in securitization vehicles

The interests in securitization vehicles are interests in vehicles where the DZ BANK Group's involvement goes beyond that of an investor. The assets and liabilities listed below have been recognized on the DZ BANK Group's balance sheet in connection with these interests. There is also an additional exposure from contingent liabilities and from financial guarantee contracts, loan commitments, and other obligations, which are shown at their nominal amounts. Only financial guarantee contracts, loan commitments, and other obligations for which no liability or contingent liability has been recognized are included. The maximum exposure is determined as a gross value, excluding deduction of available collateral.

€ million	Dec. 31, 2021	Dec. 31, 2020
Assets	**1,316**	**1,658**
Loans and advances to customers	1,208	1,498
Financial assets held for trading	23	86
Investments	85	74
Liabilities	**16**	**7**
Deposits from customers	5	4
Financial liabilities held for trading	8	1
Provisions	4	2
Net exposure recognized on the balance sheet	1,300	1,651
Financial guarantee contracts, loan commitments and other obligations	**3,609**	**2,932**
Financial guarantee contracts	20	-
Loan commitments	3,590	2,932
Maximum exposure	**4,909**	**4,583**

The revenue generated from interests in securitization vehicles was as follows:

€ million	2021	2020
Interest income	5	6
Fee and commission income	62	45
Gains and losses on trading activities	-7	8
Total	**60**	**59**

The material interests in securitization vehicles comprise the two multi-seller asset-backed commercial paper (ABCP) programs: CORAL and AUTOBAHN.

DZ BANK acts as sponsor and program agent for both programs. It is also the program administrator for AUTOBAHN. As sponsor, DZ BANK was involved in setting up the structured entities and provides various services for them. Under the CORAL program, customers of the bank sell assets to separate special-purpose entities. The assets purchased essentially consist of trade receivables, loans, and lease receivables. Under the AUTOBAHN program, assets of North American customers are sold to specially established special-purpose entities and funded through the issuing company by means of ABCP issues.

The special-purpose entities are unconsolidated structured entities. Owing to the cellular structure of the transactions, there are no investee companies to be assessed. DZ BANK does not have control over the individual silos because it acts as agent and not as principal.

The purchase of the assets is funded using liquidity lines and by issuing money market-linked ABCPs. DZ BANK is a liquidity agent for the program, which involves making liquidity facilities available.

In 2021, DZ BANK did not provide either of the programs with any non-contractual support. Moreover, it currently has no intention to provide financial or other support. Because the ABCP programs are fully supported programs, DZ BANK bears all the credit risk.

» 32 Sponsoring arrangements for unconsolidated structured entities

The DZ BANK Group sponsors an unconsolidated structured entity within the meaning of IFRS 12 if it was involved in establishing the structured entity or if the structured entity is linked by name to DZ BANK or a subsidiary within the DZ BANK Group and there are no interests, within the meaning of IFRS 12, in the structured entity.

Until the majority of the shares were acquired in October 2020, the DZ BANK Group acted as sponsor for an unconsolidated structured entity because it was linked with the structured entity by name and did not have any interests in the structured entity within the meaning of IFRS 12. The structured entity was an open-ended real estate fund for which the DZ BANK Group received a fee for sales and for services. In 2020, the fees had amounted to €24 million under net fee and commission income and €1 million under other net operating income.

C Disclosures relating to the income statement and the statement of comprehensive income

» 33 Segment information

Information on operating segments

2021

€ million	BSH	R+V	TeamBank	UMH
Net interest income	581	-	492	17
Net fee and commission income	12	-	-1	2,293
Gains and losses on trading activities	-	-	-	-
Gains and losses on investments	22	-	-	2
Other gains and losses on valuation of financial instruments	-	-	1	40
Gains and losses from the derecognition of financial assets measured at amortized cost	2	-	-	-
Premiums earned	-	18,994	-	-
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-	5,280	-	-
Insurance benefit payments	-	-20,356	-	-
Insurance business operating expenses	-	-3,183	-	-
Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	-	-	-	-
Loss allowances	-14	-	-57	-
Administrative expenses	-515	-	-289	-1,118
Other net operating income	42	37	5	-
Profit/loss before taxes	**130**	**772**	**151**	**1,233**
Cost/income ratio (%)	78.1	-	58.1	47.5
Regulatory RORAC (%)	10.0	7.7	26.1	>100.0
Average own funds/solvency requirement	1,298	9,978	581	547
Total assets/total equity and liabilities as at Dec. 31, 2021	85,371	137,390	10,022	4,665

	DZ BANK – CICB	DZ HYP	DZ PRIVAT-BANK	VR Smart Finanz	DVB	DZ BANK – holding function	Other/ Consolidation	**Total**
	1,026	721	59	125	-21	-32	-183	2,785
	471	18	212	-30	9	-	-49	2,935
	67	-6	21	-	5	-	65	152
	75	42	-	-	-	-	104	245
	58	63	-3	-	44	-	39	242
	29	-	-	-	-	-	-31	-
	-	-	-	-	-	-	-	18,994
	-	-	-	-	-	-	-29	5,251
	-	-	-	-	-	-	-	-20,356
	-	-	-	-	-	-	136	-3,047
	-	-	-	-	-	-	-	-
	89	-24	-	-14	140	-	-	120
	-1,292	-247	-251	-80	-118	-208	-147	-4,265
	-58	21	4	-9	-36	-	35	41
	465	**588**	**41**	**-9**	**23**	**-240**	**-58**	**3,096**
	77.5	28.8	85.7	93.0	>100.0	-	-	58.9
	8.8	41.6	12.1	-5.2	25.3	-	-	15.7
	5,287	1,412	341	181	93	-	-	19,716
	335,254	91,362	21,611	3,352	7,097	19,675	-88,526	627,273

2020

€ million	BSH	R+V	TeamBank	UMH
Net interest income	531	-	492	10
Net fee and commission income	-9	-	-30	1,566
Gains and losses on trading activities	-	-	-	-
Gains and losses on investments	56	-	-	44
Other gains and losses on valuation of financial instruments	5	-	-1	-83
Gains and losses from the derecognition of financial assets measured at amortized cost	15	-	-	-
Premiums earned	-	18,741	-	-
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-	2,091	-	-
Insurance benefit payments	-	-17,499	-	-
Insurance business operating expenses	-	-3,046	-	-
Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	-	-19	-	-
Loss allowances	-29	-	-59	-
Administrative expenses	-526	-	-256	-919
Other net operating income	38	9	8	31
Profit/loss before taxes	**81**	**277**	**154**	**649**
Cost/income ratio (%)	82.7	-	54.6	58.6
Regulatory RORAC (%)	6.6	2.6	27.0	>100.0
Average own funds/solvency requirement	1,216	10,473	569	432
Total assets/total equity and liabilities as at Dec. 31, 2020	81,673	130,027	9,285	3,561

	DZ BANK – CICB	DZ HYP	DZ PRIVAT-BANK	VR Smart Finanz	DVB	DZ BANK – holding function	Other/ Consolidation	**Total**
	832	714	69	138	30	-50	-80	2,686
	441	6	188	-24	25	-	-42	2,121
	518	9	17	-	26	-	123	693
	15	1	-	-	-1	-	51	166
	1	118	-2	-	-81	-	-19	-62
	-3	-	-	-	-	-	-14	-2
	-	-	-	-	-	-	-	18,741
	-	-	-	-	-	-	-44	2,047
	-	-	-	-	-	-	-	-17,499
	-	-	-	-	-	-	124	-2,922
	-	-	-	-	-	-	-1	-20
	-337	-47	-1	-49	-153	-	-3	-678
	-1,272	-237	-235	-102	-154	-188	-147	-4,036
	39	18	2	-8	23	-	50	210
	234	**582**	**38**	**-45**	**-285**	**-238**	**-2**	**1,445**
	69.0	27.4	85.8	96.2	>100.0	-	-	65.5
	4.4	36.7	10.8	-17.5	>-100.0	-	-	7.1
	5,298	1,586	352	255	154	-	-	20,336
	314,574	94,486	17,691	3,684	10,247	21,264	-91,957	594,535

General information on operating segments

The information on operating segments has been prepared using the management approach in accordance with IFRS 8. Under this standard, external reporting must include segment information that is used internally for the management of the entity and for the purposes of quantitative reporting to the chief operating decision-makers. The information on operating segments has therefore been prepared on the basis of the internal management reporting system.

Definition of operating segments

Segmentation is fundamentally based on the integrated risk and capital management system, the function of which is to create transparency, notably in respect of the risk structure and risk-bearing capacity of the individual management units. The segment information presents separate disclosures for the management units DZ HYP AG, Hamburg/Münster, (DZ HYP), TeamBank AG Nürnberg, Nuremberg, (TeamBank), DZ PRIVATBANK, and the BSH, DVB, R+V, UMH, and VR Smart Finanz subgroups. DZ BANK is broken down into the central institution and corporate bank (DZ BANK – CICB) and the group management function (DZ BANK – holding function) in line with the internal financial reporting structure. The DZ BANK – CICB operating segment comprises the cooperative central institution function, which supports the operating activities of the local cooperative banks, and the corporate bank function. DZ BANK – holding function is mainly used to pool tasks carried out on behalf of the DZ BANK Group in relation to commercial law, tax, and prudential supervision. The total assets of DZ BANK – holding function include the equity, plus a number of other items such as a notional carrying amount for the long-term equity investment in DZ BANK – CICB, together with the carrying amounts of the long-term equity investments in the other management units. The notional long-term equity investment in DZ BANK – CICB is measured in an amount equating to 11 percent of the risk-weighted assets of DZ BANK – CICB. DZ BANK – holding function does not constitute an operating segment within the meaning of IFRS 8.5 but is presented separately in line with the internal reporting structure. All other companies in the DZ BANK Group, which are not required to provide regular quantitative reports to the chief operating decision-makers, and the consolidations are reported on an aggregated basis under Other/Consolidation.

Presentation of operating segments

Interest income and associated interest expenses generated by the operating segments are offset and reported as net interest income in the information on operating segments because, from a group perspective, the operating segments are managed solely on the basis of the net figure.

Measurement

Internal reporting to the chief operating decision-makers is primarily based on the generally accepted accounting and measurement principles applicable to the DZ BANK Group.

Intragroup transactions between operating segments and internal transactions in the DZ BANK – CICB operating segment are carried out on an arm’s-length basis. These transactions are predominantly reported internally using the financial reporting standards applied to external financial reporting.

The key indicators for assessing the performance of the operating segments are profit/loss before taxes, the cost/income ratio, and the return on risk-adjusted capital (regulatory RORAC).

The cost/income ratio shows the ratio of administrative expenses to operating income and reflects the economic efficiency of the operating segment concerned.

Operating income comprises net interest income, net fee and commission income, gains and losses on trading activities, gains and losses on investments, other gains and losses on valuation of financial instruments, gains and losses from the derecognition of financial assets measured at amortized cost, net income from insurance business, and other net operating income.

Regulatory RORAC is a risk-adjusted performance measure. It reflects the relationship between profit before taxes and the average own funds for the year (calculated as an average of the figure for the four quarters) in accordance with the own funds/solvency requirements for the financial conglomerate. It therefore shows the return on the regulatory risk capital employed.

Other/Consolidation

The consolidation-related adjustments shown under Other/Consolidation to reconcile operating segment profit/loss before taxes to consolidated profit/loss before taxes are attributable to the elimination of intragroup transactions and to the fact that investments in joint ventures and associates were accounted for using the equity method. Differences between the figures in internal management reporting and those reported in the consolidated financial statements that arise from the recognition of internal transactions in the DZ BANK – CICB operating segment are also eliminated.

The adjustments to net interest income were primarily the result of the elimination of intragroup dividend payments and profit distributions in connection with intragroup liabilities to dormant partners and were also attributable to the early redemption of issued bonds and commercial paper that had been acquired by entities in the DZ BANK Group other than the issuer. Internal transactions in the DZ BANK – CICB operating segment were also eliminated in net interest income and with offsetting entries under gains and losses on trading activities.

The figure under Other/Consolidation for net fee and commission income largely relates to the fee and commission business of TeamBank and the BSH subgroup with the R+V subgroup.

The remaining adjustments are mostly also attributable to the consolidation of income and expenses.

DZ BANK Group-wide disclosures

Information about geographical areas

Operating income was generated in the following geographical areas:

€ million	2021	2020
Germany	6,394	5,320
Rest of Europe	837	786
Rest of World	192	206
Consolidation/reconciliation	-182	-153
Total	**7,241**	**6,159**

Information on geographical areas is presented according to the home countries of the companies included in the consolidated financial statements.

This information does not include the separate disclosure of certain non-current (largely tangible) assets because these assets are of minor significance in the DZ BANK Group's business model.

Information about products and services

Information on products and services is included in the income statement disclosures below.

» 34 Net interest income

€ million	2021	2020
INTEREST INCOME AND CURRENT INCOME AND EXPENSE	**4,236**	**5,059**
Interest income from	**4,174**	**4,978**
Lending and money market business	4,523	5,067
of which relating to mortgage loans	950	975
of which relating to home savings loans advanced by building society	1,064	1,067
of which relating to pass-through loans	565	608
of which relating to registered securities	254	310
of which relating to finance leases	33	47
Bonds and other fixed-income securities	341	519
Portfolio hedges of interest-rate risk	-381	-414
Financial assets with a negative effective interest rate	-308	-188
Other assets	-1	-7
Current income and expense from	**62**	**82**
Shares and other variable-yield securities	26	22
of which income from other shareholdings	16	13
Investments in subsidiaries	8	7
Investments in associates	1	1
Operating leases	-	-3
Entities accounted for using the equity method	19	49
of which relating to investments in joint ventures	28	39
of which relating to investments in associates	-9	10
Income from profit-pooling, profit-transfer and partial profit-transfer agreements	7	6
INTEREST EXPENSE ON	**-1,451**	**-2,373**
Deposits from banks and customers	-1,934	-2,251
of which relating to home savings deposits	-846	-984
Debt certificates issued including bonds	-209	-453
Subordinated capital	-71	-62
Portfolio hedges of interest-rate risk	50	45
Financial liabilities with a positive effective interest rate	717	357
Provisions and other liabilities	-5	-9
Total	**2,785**	**2,686**

The interest income from other assets included gains from non-credit-risk-related modifications of €3 million (2020: €0 million) and losses from non-credit-risk-related modifications of €4 million (2020: €7 million), such gains and losses resulting from financial assets. The interest expense on provisions and other liabilities included interest expense on lease liabilities of €3 million (2020: €3 million).

» 35 Net fee and commission income

€ million	2021	2020
Fee and commission income	**5,521**	**4,267**
Securities business	4,410	3,307
Asset management	394	287
Payments processing including card processing	295	281
Lending business and trust activities	128	125
Financial guarantee contracts and loan commitments	67	60
International business	12	12
Building society operations	43	39
Other	171	156
Fee and commission expenses	**-2,586**	**-2,146**
Securities business	-1,798	-1,456
Asset management	-280	-194
Payments processing including card processing	-144	-134
Lending business	-74	-85
Financial guarantee contracts and loan commitments	-10	-10
Building society operations	-66	-72
Other	-212	-195
Total	**2,935**	**2,121**

In the reporting period, fee and commission income included revenue from contracts with customers pursuant to IFRS 15 in an amount of €5,512 million (2020: €4,258 million); see note 96.

» 36 Gains and losses on trading activities

€ million	2021	2020
Gains and losses on non-derivative financial instruments and embedded derivatives	**-298**	**116**
of which gains and losses on financial instruments designated as at fair value through profit or loss that are related to derivatives held for trading purposes	326	204
Gains and losses on derivatives	**310**	**592**
Gains and losses on exchange differences	**141**	**-15**
Total	**152**	**693**

Gains and losses on exchange differences included currency translation gains of €44 million on financial instruments not measured at fair value through profit or loss (2020: losses of €44 million).

» 37 Gains and losses on investments

€ million	2021	2020
Gains and losses on the disposal of bonds and other fixed-income securities	**139**	71
Gains and losses on the disposal of shares and other variable-yield securities	**2**	-2
Gains and losses on the disposal of investments in subsidiaries	**-**	6
Gains and losses on investments in joint ventures	**-5**	6
Disposals	-	-1
Transitional accounting	-	7
Impairment losses	-9	-33
Reversals of impairment losses	4	33
Gains and losses on investments in associates	**109**	85
Disposals	128	37
Transitional accounting	-	48
Impairment losses	-20	-4
Reversals of impairment losses	-	4
Total	**245**	166

In 2020, further shares had been acquired in ZBI GmbH, Erlangen, (formerly ZBI Partnerschaftsholding GmbH, Erlangen) as part of a business combination achieved in stages. At that time, the company was accounted for using the equity method. It has been fully consolidated since control was obtained. The net gain resulting from transitional accounting amounted to €48 million. Further shares in GMS Holding GmbH, Paderborn, had also been acquired in 2020. The investment in the joint venture, which had been accounted for using the equity method at that time, has been measured at fair value through profit or loss since control was obtained. This led to a net gain resulting from transitional accounting of €7 million.

» 38 Other gains and losses on valuation of financial instruments

€ million	2021	2020
Gains and losses from fair value hedge accounting	**20**	41
Gains and losses on derivatives used for purposes other than trading	**58**	-173
Gains and losses on financial instruments designated as at fair value through profit or loss	**111**	70
Gains and losses on non-derivative financial instruments and embedded derivatives that are not related to derivatives held for trading purposes	136	30
Gains and losses on derivatives	-25	40
Gains and losses on financial assets mandatorily measured at fair value through profit or loss	**52**	-
Total	**242**	-62

Gains and losses on derivatives used for purposes other than trading result from the recognition and measurement of derivatives that are used for economic hedging but are not included in hedge accounting and/or are not related to financial instruments designated as at fair value through profit or loss.

» 39 Gains and losses from the derecognition of assets measured at amortized cost

€ million	2021	2020
Gains from the derecognition of financial assets measured at amortized cost	**16**	**12**
Loans and advances to banks and customers	4	5
Investments	11	7
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	1	-
Losses on derecognition of financial assets measured at amortized cost	**-16**	**-14**
Loans and advances to banks and customers	-2	-
Investments	-2	-2
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	-12	-12
Total	**-**	**-2**

The derecognition of financial assets measured at amortized cost was primarily attributable to the sale of impaired loans and advances to customers and early redemptions at the request of customers.

» 40 Premiums earned

€ million	2021	2020
Net premiums written	**18,982**	**18,754**
Gross premiums written	19,184	18,952
Reinsurance premiums ceded	-202	-198
Change in provision for unearned premiums	**11**	**-13**
Gross premiums	21	-14
Reinsurers' share	-10	1
Total	**18,994**	**18,741**

» 41 Gains and losses on investments held by insurance companies and other insurance company gains and losses

€ million	2021	2020
Income from investments held by insurance companies	**8,471**	**8,691**
Interest income and current income	2,266	2,270
Income from reversals of impairment losses and reversals of loss allowances, and unrealized gains	1,133	346
Gains on valuation through profit or loss of investments held by insurance companies	4,389	4,857
Gains on disposals	683	1,218
Expenses in connection with investments held by insurance companies	**-3,035**	**-6,962**
Administrative expenses	-203	-179
Depreciation/amortization expense, additions to loss allowances, and impairment losses and unrealized losses	-448	-1,252
Losses on valuation through profit or loss of investments held by insurance companies	-1,768	-4,310
Losses on disposals	-617	-1,220
Expenses from the transfer of losses	-	-1
Other gains and losses of insurance companies	**-184**	**318**
Other insurance gains and losses	355	296
Other non-insurance gains and losses	-539	22
Total	**5,251**	**2,047**

Other non-insurance gains and losses included interest expenses on lease liabilities amounting to €1 million (2020: €1 million).

Income from and expenses in connection with investments held by insurance companies and other gains and losses of insurance companies included currency translation losses of €206 million on financial instruments not measured at fair value through profit or loss (2020: gains of €139 million).

Income from and expenses in connection with investments held by insurance companies included additions to loss allowances of €69 million (2020: €82 million) and reversals of loss allowances of €77 million (2020: €23 million).

Around €8 million of the income from the reversal of loss allowances (2020: addition of €46 million) arose because the anticipated macroeconomic conditions in connection with the COVID-19 pandemic were included in the calculation, in particular by adjusting the model-based default probability profiles (referred to as shift factors), and thus taken into account when determining the expected losses. In the event of an extreme weighting of 100 percent for both the baseline scenario and the risk scenario underlying the calculation of loss allowances, the reversal of loss allowances required because of the pandemic would increase by approximately 5 percent (2020: reduction of 0 percent in the additions to loss allowances required) and reduce by approximately 26 percent (2020: increase of 2 percent in the additions to loss allowances required) respectively.

» 42 Insurance benefit payments

€ million	2021	2020
EXPENSES FOR CLAIMS	**-12,412**	-12,122
Payments for claims	**-11,481**	-10,745
Gross payments for claims	-11,679	-10,807
Reinsurers' share	198	62
Change in the provision for claims outstanding	**-931**	-1,377
Gross change in the provision for claims outstanding	-1,576	-1,394
Reinsurers' share	645	17
CHANGE IN THE BENEFIT RESERVE AND IN OTHER INSURANCE LIABILITIES	**-7,291**	-5,107
Change in the benefit reserve	**-7,282**	-5,116
Gross change in the benefit reserve	-7,290	-5,130
Reinsurers' share	8	14
Change in other insurance liabilities	**-9**	9
EXPENSES FOR PREMIUM REFUNDS	**-653**	-270
Gross expenses for premium refunds	-588	-503
Expenses for deferred premium refunds	-64	233
Total	**-20,356**	**-17,499**

Net reinsurance income amounted to €670 million (2020: net expense of €78 million).

Claims rate trend for direct non-life insurance business including claim settlement costs

Gross claims provisions in direct business and payments made against the original provisions:

€ million	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
At the end of the year	5,782	4,845	4,716	4,551	4,276	4,173	3,856	3,634	3,901	3,345	3,341
1 year later		4,507	4,606	4,471	4,142	4,103	3,767	3,523	3,847	3,336	3,359
2 years later			4,519	4,405	4,067	4,046	3,682	3,457	3,769	3,247	3,279
3 years later				4,409	4,021	4,020	3,647	3,389	3,731	3,220	3,254
4 years later					4,017	3,980	3,625	3,382	3,696	3,189	3,241
5 years later						3,980	3,624	3,389	3,691	3,198	3,250
6 years later							3,549	3,329	3,626	3,126	3,183
7 years later								3,310	3,616	3,118	3,172
8 years later									3,603	3,108	3,165
9 years later										3,098	3,153
10 years later											3,144
Settlements	-	**338**	**197**	**142**	**259**	**193**	**307**	**324**	**298**	**247**	**197**

Net claims provisions in direct business and payments made against the original provisions:

€ million	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
At the end of the year	5,750	4,787	4,702	4,518	4,255	4,110	3,827	3,574	3,669	3,313	3,298
1 year later		4,455	4,589	4,438	4,118	4,050	3,736	3,460	3,613	3,300	3,317
2 years later			4,502	4,373	4,044	3,994	3,655	3,393	3,533	3,211	3,236
3 years later				4,376	3,999	3,965	3,624	3,331	3,490	3,180	3,208
4 years later					3,995	3,928	3,601	3,361	3,465	3,139	3,194
5 years later						3,929	3,602	3,369	3,670	3,166	3,191
6 years later							3,526	3,309	3,605	3,095	3,144
7 years later								3,290	3,594	3,087	3,134
8 years later									3,581	3,076	3,127
9 years later										3,066	3,115
10 years later											3,106
Settlements	-	**332**	**200**	**142**	**260**	**181**	**301**	**284**	**88**	**247**	**192**

Claims rate trend for inward reinsurance business

Gross claims provisions in inward reinsurance business and payments made against the original provisions:

€ million	**2021**	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Gross provisions for claims outstanding	**5,704**	**5,009**	**4,411**	**3,642**	**3,197**	**2,718**	**2,433**	**1,976**	**1,710**	**1,506**	**1,409**
Cumulative payments for the year concerned and prior years											
1 year later		1,240	1,082	955	852	569	622	464	481	385	463
2 years later			1,627	1,396	1,237	852	867	783	685	630	640
3 years later				1,674	1,482	1,062	1,022	919	897	764	345
4 years later					1,660	1,189	1,154	1,026	987	930	891
5 years later						1,294	1,249	1,117	1,051	996	1,029
6 years later							1,315	1,171	1,114	1,035	1,072
7 years later								1,214	1,155	1,085	1,103
8 years later									1,185	1,117	1,140
9 years later										1,139	1,161
10 years later											1,177
Gross provisions for claims outstanding and payments made against the original provision											
At the end of the year	**5,704**	5,009	4,411	3,642	3,197	2,718	2,433	1,976	1,710	1,506	1,409
1 year later		5,373	4,313	3,951	3,392	2,654	2,434	2,157	1,840	1,593	1,536
2 years later			4,373	3,651	3,315	2,561	2,271	2,004	1,859	1,569	1,472
3 years later				3,733	3,131	2,486	2,224	1,915	1,779	1,628	1,014
4 years later					3,166	2,361	2,179	1,887	1,720	1,580	1,528
5 years later						2,363	2,088	1,848	1,699	1,550	1,501
6 years later							2,096	1,779	1,677	1,536	1,486
7 years later								1,794	1,627	1,526	1,481
8 years later									1,636	1,490	1,468
9 years later										1,499	1,444
10 years later											1,452
Settlements	-	**-364**	**38**	**-91**	**31**	**355**	**337**	**182**	**74**	**7**	**-43**

Net claims provisions in inward reinsurance business and payments made against the original provisions:

€ million	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Net provisions for claims outstanding	**5,587**	5,001	4,408	3,639	3,193	2,710	2,428	1,970	1,695	1,491	1,389
Cumulative payments for the year concerned and prior years											
1 year later		1,235	1,082	955	851	567	622	464	473	383	461
2 years later			1,626	1,396	1,236	849	866	782	677	620	636
3 years later				1,674	1,480	1,058	1,020	918	888	754	333
4 years later					1,658	1,186	1,153	1,025	978	919	878
5 years later						1,290	1,247	1,115	1,042	985	1,016
6 years later							1,313	1,170	1,105	1,024	1,059
7 years later								1,212	1,146	1,074	1,090
8 years later									1,175	1,105	1,126
9 years later										1,128	1,147
10 years later											1,163
Net provisions for claims outstanding and payments made against the original provision											
At the end of the year	5,587	5,001	4,408	3,639	3,193	2,710	2,428	1,970	1,695	1,491	1,389
1 year later		5,365	4,310	3,950	3,388	2,648	2,429	2,152	1,827	1,576	1,519
2 years later			4,370	3,649	3,312	2,555	2,267	1,999	1,845	1,554	1,454
3 years later				3,732	3,129	2,482	2,219	1,911	1,766	1,612	997
4 years later					3,163	2,356	2,176	1,883	1,708	1,566	1,510
5 years later						2,358	2,086	1,845	1,687	1,536	1,484
6 years later							2,093	1,777	1,666	1,522	1,470
7 years later								1,791	1,616	1,513	1,464
8 years later									1,625	1,477	1,453
9 years later										1,486	1,429
10 years later											1,437
Settlements	**-**	**-364**	**38**	**-93**	**30**	**352**	**335**	**179**	**70**	**5**	**-48**

» 43 Insurance business operating expenses

€ million	2021	2020
Gross expenses	-3,079	-2,945
Reinsurers' share	32	23
Total	**-3,047**	**-2,922**

» 44 Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business

The derecognition of financial assets measured at amortized cost in the insurance business gave rise to gains of €2 million (2020: €8 million) and losses of €2 million (2020: €28 million).

» 45 Loss allowances

€ million	2021	2020
Loss allowances for cash and cash equivalents	**-**	1
Additions	-	-8
Reversals	-	9
Loss allowances for loans and advances to banks	**22**	-12
Additions	-32	-30
Reversals	31	18
Recoveries on loans and advances to banks previously impaired	23	-
Loss allowances for loans and advances to customers	**71**	-610
Additions	-2,110	-2,419
Reversals	2,087	1,756
Directly recognized impairment losses	-38	-41
Recoveries on loans and advances to customers previously impaired	83	68
Other	49	26
Loss allowances for investments	**25**	-2
Additions	-26	-38
Reversals	50	36
Loss allowances for other assets	**1**	-2
Additions	-	-1
Directly recognized impairment losses	-	-1
Recoveries on other assets previously impaired	1	-
Other loss allowances for loans and advances	**1**	-53
Additions to and reversals of provisions for loan commitments	-18	-36
Additions to and reversals of provisions for financial guarantee contracts	19	-4
Additions to and reversals of other provisions for loans and advances	-	-13
Total	**120**	-678

Gains and losses from credit-risk-related modifications and other gains and losses on POCI assets are reported under the 'Other' line item. Other gains and losses on POCI assets consist of the changes in the loss allowances for these assets within the reporting period.

As a result of the quantitative transfer criterion being changed to the maximum value of 200 percent for assets whose credit risk has significantly increased since initial recognition (transfer from stage 1 to stage 2), but there being no objective evidence of impairment, an amount of €25 million was added to loss allowances.

Within the loss allowances for loans and advances to customers, there was an addition of €19 million owing to changes to the estimates for the risk parameters for measuring the probability of default and the loss given default in respect of loans in building society operations.

Also within the loss allowances for loans and advances to customers, there was a reversal of €105 million in respect of the consumer finance business due to changes to the estimates for the loss given default.

Of the net reversals of loss allowances for loans and advances to banks and customers, investments, and other lending business of €120 million (2020: net addition of €678 million), €10 million (2020: addition of €220 million) arose because the anticipated macroeconomic conditions in connection with the COVID-19 pandemic were included in the calculation, in particular by adjusting the model-based default probability profiles (referred to as shift factors), and thus taken into account when determining the expected losses. In the event of an extreme weighting of 100 percent for both the baseline scenario and the risk scenario underlying the calculation of loss allowances, the reversal of loss allowances required because of the pandemic would increase by approximately 2 percent (2020: reduction of approximately 3 percent in the additions to loss allowances required) and reduce by approximately 7 percent (2020: increase of approximately 11 percent in the additions to loss allowances required) respectively.

» 46 Administrative expenses

€ million	2021	2020
Staff expenses	**-2,021**	**-1,910**
Wages and salaries	-1,692	-1,590
Social security contributions	-217	-201
Pension and other post-employment benefit expenses	-101	-108
Expenses for share-based payment transactions	-10	-11
General and administrative expenses	**-1,941**	**-1,838**
Expenses for temporary staff	-24	-22
Contributions and fees	-288	-212
of which contributions to the resolution fund for CRR credit institutions	-134	-68
Consultancy	-439	-465
Office expenses	-163	-166
IT expenses	-552	-523
Property and occupancy costs	-103	-113
Information procurement	-88	-85
Public relations and marketing	-165	-143
Other general and administrative expenses	-115	-104
Expenses for administrative bodies	-5	-5
Depreciation and amortization	**-303**	**-288**
Property, plant and equipment, and investment property	-86	-85
Right-of-use assets	-84	-76
Other assets	-134	-127
Total	**-4,265**	**-4,036**

» 47 Other net operating income

€ million	2021	2020
Income from the reversal of provisions and accruals	86	116
Restructuring expenses	-78	-27
Gains and losses on non-current assets and disposal groups classified as held for sale	70	49
Expenses for other taxes	-20	-5
Impairment losses on goodwill	-2	-
Residual other net operating income	-15	77
Total	**42**	**210**

Gains and losses on non-current assets and disposal groups classified as held for sale included realized gains of €83 million on disposals (2020: €104 million), impairment losses of €14 million (2020: €81 million), and no reversals of impairment losses (2020: €26 million).

Restructuring expenses included additions of €36 million to provisions for termination benefits linked with restructuring (2020: €13 million).

Residual other net operating income included rental income from investment property of €10 million (2020: €13 million) and directly assignable expenses of €3 million for the management of investment property (2020: €3 million).

» 48 Income taxes

€ million	2021	2020
Current tax expense	-894	-529
Deferred tax income/expense	-26	57
Total	**-920**	**-472**

The total for current taxes includes income of €2 million (2020: €20 million) attributable to previous years. Deferred taxes include expenses of €29 million (2020: income of €86 million) related to temporary differences and their reversal.

Current taxes in relation to the German limited companies in the group are calculated using an effective corporation tax rate of 15.825 percent based on a corporation tax rate of 15.0 percent plus the solidarity surcharge. The tax rate applied in 2021 was unchanged from the rate used in 2020. The effective rate of trade tax for DZ BANK and subsidiaries that are members of its tax group was unchanged on the previous year at 15.435 percent.

Deferred taxes must be calculated using tax rates expected to apply when the tax asset is recovered or liability settled. The tax rates used are therefore those that are valid or have been announced for the periods in question as at the balance sheet date.

The following table shows a reconciliation from expected income taxes to recognized income taxes based on application of the current tax law in Germany:

€ million	2021	2020
Profit before taxes	**3,096**	**1,445**
Group income tax rate	31.260%	31.260%
Expected income taxes	**-968**	**-452**
Income tax effects	**48**	**-20**
Impact of tax-exempt income and non-deductible expenses	4	-6
Adjustments resulting from other types of income tax, other trade tax multipliers, and changes in tax rates	11	20
Tax rate differences on income subject to taxation in other countries	13	-1
Current and deferred taxes relating to prior years	-6	19
Change in impairment losses on deferred tax assets	42	-30
Other effects	-17	-22
Recognized income taxes	**-920**	**-472**

» 49 Items reclassified to the income statement

The following amounts were recognized in other comprehensive income/loss or reclassified from other comprehensive income/loss to the income statement in the reporting period:

€ million	2021	2020
Gains and losses on debt instruments measured at fair value through other comprehensive income	**-1,389**	1,143
Gains (+)/losses (-) arising during the reporting period	-1,175	1,391
Gains (-)/losses (+) reclassified to the income statement during the reporting period	-213	-248
Exchange differences on currency translation of foreign operations	**-16**	-32
Gains (+)/losses (-) arising during the reporting period	15	-32
Gains (-)/losses (+) reclassified to the income statement during the reporting period	-30	-
Gains and losses on hedges of net investments in foreign operations	**5**	3
Gains (+)/losses (-) arising during the reporting period	-	3
Gains (-)/losses (+) reclassified to the income statement during the reporting period	5	-
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	**15**	-6
Gains (+)/losses (-) arising during the reporting period	15	-6

» 50 Income taxes relating to components of other comprehensive income

The table below shows the income taxes on the various components of other comprehensive income:

	2021			2020		
€ million	Amount before taxes	Income taxes	Amount after taxes	Amount before taxes	Income taxes	Amount after taxes
Items that may be reclassified to the income statement	**-1,385**	**445**	**-941**	1,108	-360	748
Gains and losses on debt instruments measured at fair value through other comprehensive income	-1,389	448	-941	1,143	-362	781
Exchange differences on currency translation of foreign operations	-16	-3	-19	-32	3	-29
Gains and losses on hedges of net investments in foreign operations	5	-	5	3	-1	2
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	15	-	15	-6	-	-6
Items that will not be reclassified to the income statement	**603**	**-62**	**541**	-276	49	-227
Gains and losses on equity instruments for which the fair value OCI option has been exercised	473	-33	440	-97	9	-88
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	39	-12	27	-60	18	-42
Gains and losses arising from remeasurement of defined benefit plans	90	-17	73	-119	22	-97
Total	**-782**	**382**	**-400**	**832**	**-311**	**521**

D Balance sheet disclosures

» 51 Cash and cash equivalents

€ million	Dec. 31, 2021	Dec. 31, 2020
Cash on hand	266	206
Balances with central banks	85,763	68,148
Total	86,029	68,354

The average target minimum reserve for 2021 was €3,869 million (2020: €3,829 million).

» 52 Loans and advances to banks

	Repayable on demand		Other loans and advances		Total	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Domestic banks	3,310	4,488	96,627	89,789	99,937	94,277
Affiliated banks	1,506	1,667	92,528	84,711	94,034	86,378
Other banks	1,804	2,821	4,099	5,078	5,903	7,899
Foreign banks	3,973	5,290	3,750	3,453	7,723	8,743
Total	7,284	9,778	100,375	93,242	107,659	103,020

The following table shows the breakdown of loans and advances to banks by type of business:

€ million	Dec. 31, 2021	Dec. 31, 2020
Mortgage loans	126	131
Finance leases	1	-
Registered securities	9,649	9,094
Pass-through loans	65,690	58,733
Other bank loans	17,450	16,103
Money market placements	11,156	15,413
Current account debit balances	2,905	2,896
Other loans and advances	684	650
Total	107,659	103,020

» 53 Loans and advances to customers

€ million	Dec. 31, 2021	Dec. 31, 2020
Loans and advances to domestic customers	169,717	164,071
Loans and advances to foreign customers	25,948	26,223
Total	195,665	190,294

The following table shows the breakdown of loans and advances to customers by type of business:

€ million	Dec. 31, 2021	Dec. 31, 2020
Mortgage loans	56,192	53,784
Ship mortgage loans	54	341
Home savings loans advanced by building society	60,439	55,698
Finance leases	751	1,096
Registered securities	8,319	9,604
Pass-through loans	7,532	7,147
Other bank loans	43,032	43,307
Money market placements	4,431	3,439
Current account debit balances	5,259	4,703
Other loans and advances	9,655	11,175
Total	**195,665**	**190,294**

» 54 Hedging instruments (positive fair values)

Hedging instruments (positive fair values) amounted to €389 million (December 31, 2020: €161 million) and, as had been the case a year earlier, resulted solely from derivatives used as fair value hedges.

» 55 Financial assets held for trading

€ million	Dec. 31, 2021	Dec. 31, 2020
DERIVATIVES (POSITIVE FAIR VALUES)	**16,188**	**22,246**
Interest-linked contracts	13,478	19,431
Currency-linked contracts	1,481	1,758
Share-/index-linked contracts	847	719
Other contracts	2	1
Credit derivatives	380	337
BONDS AND OTHER FIXED-INCOME SECURITIES	**10,964**	**10,488**
Money market instruments	140	373
Bonds	10,824	10,115
SHARES AND OTHER VARIABLE-YIELD SECURITIES	**1,752**	**1,444**
Shares	1,750	1,444
Investment fund units	2	-
RECEIVABLES	**18,417**	**8,611**
of which from affiliated banks	24	152
of which from other banks	17,325	7,821
Money market placements	**17,127**	**7,412**
with banks	16,575	7,197
with customers	553	215
Promissory notes and registered bonds	**1,290**	**1,199**
from banks	774	776
from customers	516	423
Total	**47,321**	**42,788**

» 56 Investments

€ million	Dec. 31, 2021	Dec. 31, 2020
Bonds and other fixed-income securities	**49,125**	**57,423**
Money market instruments	488	519
Bonds	48,637	56,904
Shares and other variable-yield securities	**2,587**	**2,071**
Shares and other shareholdings	494	324
Investment fund units	2,080	1,735
Other variable-yield securities	13	12
Investments in subsidiaries	**305**	**297**
Investments in joint ventures	**349**	**329**
Investments in associates	**75**	**112**
Total	**52,440**	**60,232**

The carrying amount of investments in joint ventures accounted for using the equity method totaled €349 million (December 31, 2020: €329 million). €72 million of the investments in associates has been accounted for using the equity method (December 31, 2020: €112 million).

» 57 Investments held by insurance companies

€ million	Dec. 31, 2021	Dec. 31, 2020
Investment property	3,813	3,835
Investments in subsidiaries	901	831
Investments in joint ventures	21	19
Investments in associates	1	-
Mortgage loans	13,005	10,882
Promissory notes and loans	7,202	7,050
Registered bonds	8,510	9,081
Other loans	968	863
Variable-yield securities	13,742	11,639
Fixed-income securities	61,445	61,540
Derivatives (positive fair values)	199	553
Loss allowances	-	-23
Deposits with ceding insurers and other investments	594	578
Assets related to unit-linked contracts	18,730	14,820
Total	**129,131**	**121,668**

The fair value of investment property was €5,342 million as at the balance sheet date (December 31, 2020: €5,178 million).

Some investment property has been pledged as collateral and is subject to restrictions on disposal, the total furnished collateral value of the property being €1,397 million (December 31, 2020: €1,438 million). The group also has capital expenditure commitments amounting to €87 million (December 31, 2020: €119 million). A total of €35 million was spent on the repair and maintenance of investment property in 2021 (2020: €38 million). Vacant property resulted in repair and maintenance expenses of €3 million (2020: €2 million).

The table below shows the changes in loss allowances for investments held by insurance companies in the financial year.

€ million	Investments held by insurance companies			Total
	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2020	2	-	1	3
Additions	19	4	-	23
Reversals	-3	-	-	-3
Other changes	1	-1	-	-
Balance as at Dec. 31, 2020	19	3	1	23
Reversals	-20	-3	-	-23
Balance as at Dec. 31, 2021	-	-	-	-

» 58 Property, plant and equipment, investment property, and right-of-use assets

€ million	Dec. 31, 2021	Dec. 31, 2020
Land and buildings	888	884
Office furniture and equipment	178	179
Investment property	279	235
Right-of-use assets	537	446
Total	**1,881**	**1,744**

The fair value of investment property was €346 million as at the balance sheet date (December 31, 2020: €302 million). Payments in advance are allocated to the relevant item of property, plant and equipment.

» 59 Income tax assets and liabilities

€ million	Dec. 31, 2021	Dec. 31, 2020
Income tax assets	**1,141**	**898**
Current income tax assets	361	368
Deferred tax assets	780	531
Income tax liabilities	**1,456**	**1,229**
Current income tax liabilities	645	308
Deferred tax liabilities	811	921

In addition to deferred tax assets recognized for tax loss carryforwards, deferred tax assets and liabilities are also recognized for temporary differences in respect of the items shown below:

	Deferred tax assets		Deferred tax liabilities	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Tax loss carryforwards	17	14		
Loans and advances to banks and customers	74	86	816	965
Financial assets and liabilities held for trading, hedging instruments (positive and negative fair values)	719	809	4	89
Investments	12	15	666	1,150
Loss allowances	205	229	-	2
Investments held by insurance companies	140	109	1,086	1,248
Property, plant and equipment, investment property, and right-of-use assets	14	24	213	197
Deposits from banks and customers	669	917	136	158
Debt certificates issued including bonds	80	210	23	-
Provisions for employee benefits and for share-based payment transactions	722	727	61	70
Other provisions	220	202	31	29
Insurance liabilities	83	74	52	49
Other balance sheet items	271	291	167	140
Total (gross)	3,224	3,707	3,255	4,098
Netting of deferred tax assets and deferred tax liabilities	-2,444	-3,177	-2,444	-3,177
Total (net)	**780**	**531**	**811**	**921**

Deferred tax assets for temporary differences and tax loss carryforwards are only recognized if it is sufficiently probable that the asset can be recovered in the future. No deferred tax assets have been recognized for corporation tax loss carryforwards amounting to €261 million (December 31, 2020: €332 million), which can be carried forward indefinitely, or for trade tax loss carryforwards amounting to €211 million (December 31, 2020: €211 million). There remained foreign loss carryforwards of €672 million (December 31, 2020: €1,043 million) for which no deferred tax assets are recognized. Of this total, €320 million will expire by 2031 and €352 million can be used indefinitely.

Overall, there was a net deferred tax liability recognized through other comprehensive income of €337 million (December 31, 2020: €717 million).

Deferred tax assets of €243 million (December 31, 2020: €254 million) and deferred tax liabilities of €254 million (December 31, 2020: €487 million) are expected to be realized only after a period of 12 months.

As at December 31, 2021, no deferred tax liabilities were recognized for temporary differences of €243 million (December 31, 2020: €307 million) relating to long-term equity investments in subsidiaries.

» 60 Other assets

€ million	Dec. 31, 2021	Dec. 31, 2020
Other assets held by insurance companies	4,481	3,416
Goodwill	155	140
Other intangible assets	522	546
of which software	419	442
of which acquired customer relationships	63	65
Other loans and advances	459	360
Residual other assets	874	1,054
Total	**6,490**	**5,516**

Other intangible assets include internally generated intangible assets amounting to €23 million (December 31, 2020: €14 million).

The breakdown of other assets held by insurance companies is as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Intangible assets	**151**	**157**
Reinsurers' share of insurance liabilities	**782**	**149**
Provision for unearned premiums	2	12
Benefit reserve	37	39
Provision for claims outstanding	743	98
Receivables	**1,703**	**1,604**
Receivables arising out of direct insurance operations	467	428
Receivables arising out of reinsurance operations	384	294
Other receivables	851	882
Credit balances with banks, checks and cash on hand	**702**	**357**
Property, plant and equipment	**408**	**427**
Land and buildings	277	297
Office furniture and equipment	62	64
Right-of-use assets held by insurance companies	69	66
Residual other assets	**736**	**724**
Prepaid expenses	64	82
Remaining assets held by insurance companies	673	642
Loss allowances	**-2**	**-2**
Total	**4,481**	**3,416**

The intangible assets in the other assets held by insurance companies include internally generated intangible assets amounting to €16 million (December 31, 2020: €8 million).

Trustee's blocking notes have been entered in the land register for land and buildings held by companies offering personal insurance of €153 million (December 31, 2020: €165 million).

The following tables show the reinsurers' share of the changes in insurance liabilities:

REINSURERS' SHARE OF THE CHANGES IN THE PROVISION FOR UNEARNED PREMIUMS

€ million	2021	2020
Balance as at Jan. 1	12	11
Additions	9	18
Utilizations/reversals	-19	-17
Balance as at Dec. 31	**2**	**12**

REINSURERS' SHARE OF THE CHANGES IN THE BENEFIT RESERVE

€ million	2021	2020
Balance as at Jan. 1	39	38
Additions	2	2
Utilizations/reversals	-4	-1
Balance as at Dec. 31	**37**	**39**

REINSURERS' SHARE OF THE CHANGES IN THE PROVISION FOR CLAIMS OUTSTANDING

€ million	2021	2020
Balance as at Jan. 1	98	81
Claims expenses	833	72
less payments	-188	-55
Balance as at Dec. 31	**743**	**98**

The breakdown of maturities for the reinsurers' share of insurance liabilities is shown in the following tables:

AS AT DECEMBER 31, 2021

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	1	-	1	-
Benefit reserve	-	2	15	20
Provision for claims outstanding	156	478	109	-
Total	**157**	**480**	**125**	**20**

AS AT DECEMBER 31, 2020

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	8	2	2	-
Benefit reserve	-	2	13	24
Provision for claims outstanding	40	28	30	-
Total	**48**	**32**	**45**	**24**

» 61 Loss allowances

Loss allowances for loans and advances to banks and for loans and advances to customers also comprise the loss allowances recognized for finance lease receivables.

The following table shows the changes in loss allowances, which are reported on the assets side of the balance sheet, broken down by individual balance sheet item:

	Cash and cash equivalents	Loans and advances to banks			Loans and advances to customers			
€ million	Stage 1	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	POCI assets
Balance as at Jan. 1, 2020	1	7	-	5	202	203	1,807	1
Additions	8	22	5	3	314	732	1,355	16
Utilizations	-	-	-	-	-	-1	-604	-1
Reversals	-9	-15	-1	-2	-412	-350	-977	-16
Other changes	-	-	-1	-	142	-248	80	7
Balance as at Dec. 31, 2020	-	14	3	6	246	336	1,661	7
Additions	-	24	1	7	281	697	1,113	19
Utilizations	-	-	-	-	-	-1	-438	-
Reversals	-	-24	-3	-5	-455	-413	-1,202	-16
Other changes	-	-	-	-	192	-254	134	3
Balance as at Dec. 31, 2021	**-**	**14**	**2**	**8**	**264**	**364**	**1,267**	**13**

	Investments			Other assets	Total
€ million	Stage 1	Stage 2	Stage 3	Stage 1	
Balance as at Jan. 1, 2020	6	26	18	1	2,277
Additions	4	21	4	1	2,485
Utilizations	-	-	-	-	-606
Reversals	-15	-12	-5	-	-1,814
Other changes	11	-13	-	-	-22
Balance as at Dec. 31, 2020	6	22	17	2	2,320
Additions	6	14	-	-	2,162
Utilizations	-	-	-1	-	-440
Reversals	-24	-8	-12	-	-2,162
Other changes	14	-14	1	-	76
Balance as at Dec. 31, 2021	**4**	**13**	**5**	**2**	**1,956**

» 62 Changes in non-current assets

The following table shows the changes in investment property included in the investments held by insurance companies, the changes in property, plant and equipment, and investment property, and the changes in intangible assets included in other assets:

€ million	**Investments held by insurance companies** Investment property
Carrying amounts as at Jan. 1, 2020	3,558
Cost as at Jan. 1, 2020	4,124
Additions	393
Additions in respect of borrowing costs eligible for capitalization	1
Reclassifications	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-9
Disposals	-3
Changes attributable to currency translation	-
Changes in scope of consolidation	-
Cost as at Dec. 31, 2020	**4,506**
Reversals of impairment losses as at Jan. 1, 2020	26
Additions	1
Disposals	-
Reversals of impairment losses as at Dec. 31, 2020	**27**
Depreciation/amortization and impairment losses as at Jan. 1, 2020	-592
Depreciation/amortization expense for the year	-78
Impairment losses for the year	-29
Reclassifications	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-
Disposals	1
Changes attributable to currency translation	-
Changes in scope of consolidation	-
Depreciation/amortization and impairment losses as at Dec. 31, 2020	**-698**
Carrying amounts as at Dec. 31, 2020	3,835
Cost as at Jan. 1, 2021	4,506
Additions	63
Additions in respect of borrowing costs eligible for capitalization	1
Reclassifications	4
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-
Disposals	-3
Changes attributable to currency translation	-
Changes in scope of consolidation	-
Cost as at Dec. 31, 2021	**4,571**
Reversals of impairment losses as at Jan. 1, 2021	27
Additions	-
Disposals	-
Reversals of impairment losses as at Dec. 31, 2021	**27**
Depreciation/amortization and impairment losses as at Jan. 1, 2021	-698
Depreciation/amortization expense for the year	-85
Impairment losses for the year	-
Reclassifications	-3
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-
Disposals	1
Changes attributable to currency translation	-
Changes in scope of consolidation	-
Depreciation/amortization and impairment losses as at Dec. 31, 2021	**-785**
Carrying amounts as at Dec. 31, 2021	**3,813**

	Property, plant and equipment, and investment property				Other assets	
	Land and buildings	Office furniture and equipment	Assets subject to operating leases	Investment property	Goodwill	Other intangible assets
	917	182	17	238	41	462
	1,326	539	74	266	269	1,811
	31	56	-	2	-	151
	-	-	-	-	-	-
	1	-	-	-1	-	-
	-72	-3	-	-	-	-
	-6	-46	-61	-	-	-15
	-	-2	3	-	-	-3
	-	4	-	-	99	66
	1,280	**548**	**16**	**267**	**368**	**2,010**
	13	-	81	5	-	5
	-	-	-	-	-	1
	-	-	-	-	-	-5
	13	**-**	**81**	**5**	**-**	**1**
	-422	-357	-138	-33	-228	-1,354
	-24	-56	-5	-4	-	-127
	-	-	-1	-	-	-
	-	-	-	-	-	-
	31	2	-	-	-	-
	6	43	49	-	-	16
	-	1	-2	-	-	1
	-	-2	-	-	-	-1
	-409	**-369**	**-97**	**-37**	**-228**	**-1,465**
	884	179	-	235	140	546
	1,280	548	16	267	368	2,010
	27	57	-	52	-	112
	-	-	-	-	-	-
	1	-	-	-	-	-
	-	-	-	-	-	-
	-3	-33	-	-	-	-46
	-	-	-	-	-	-
	-	-1	-	-	17	2
	1,305	**571**	**16**	**319**	**385**	**2,078**
	13	-	81	5	-	1
	-	-	-	-	-	3
	-	-	-	-	-	-
	13	**-**	**81**	**5**	**-**	**4**
	-409	-369	-97	-37	-228	-1,465
	-25	-56	-	-5	-	-137
	-	-	-	-2	-2	-1
	1	-	-	-1	-	-
	-	-	-	-	-	-
	3	31	-	-	-	44
	-	-	-	-	-	-1
	-	1	-	-	-	-
	-430	**-393**	**-97**	**-45**	**-230**	**-1,560**
	888	**178**	**-**	**279**	**155**	**522**

€ million	Other assets of which other assets held by insurance companies Land and buildings	 Office furniture and equipment	 Intangible assets
Carrying amounts as at Jan. 1, 2020	308	61	157
Cost as at Jan. 1, 2020	523	183	675
Additions	1	24	45
Additions in respect of borrowing costs eligible for capitalization	-	-	-
Reclassifications	-	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-	-	-
Disposals	-	-10	-3
Changes attributable to currency translation	-	-	-
Changes in scope of consolidation	-	-	-
Cost as at Dec. 31, 2020	**523**	**196**	**717**
Reversals of impairment losses as at Jan. 1, 2020	10	-	-
Additions	-	-	-
Disposals	-	-	-
Reversals of impairment losses as at Dec. 31, 2020	**10**	**-**	**-**
Depreciation/amortization and impairment losses as at Jan. 1, 2020	-225	-122	-518
Depreciation/amortization expense for the year	-11	-20	-44
Impairment losses for the year	-	-	-
Reclassifications	-	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-	-	-
Disposals	-	10	2
Changes attributable to currency translation	-	-	-
Changes in scope of consolidation	-	-	-
Depreciation/amortization and impairment losses as at Dec. 31, 2020	**-236**	**-132**	**-560**
Carrying amounts as at Dec. 31, 2020	297	64	157
Cost as at Jan. 1, 2021	523	196	717
Additions	3	19	38
Additions in respect of borrowing costs eligible for capitalization	-	-	-
Reclassifications	-4	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-22	-	-
Disposals	-	-6	-21
Changes attributable to currency translation	-	-	-
Changes in scope of consolidation	-	-	-
Cost as at Dec. 31, 2021	**500**	**209**	**734**
Reversals of impairment losses as at Jan. 1, 2021	10	-	-
Additions	-	-	-
Disposals	-	-	-
Reversals of impairment losses as at Dec. 31, 2021	**10**	**-**	**-**
Depreciation/amortization and impairment losses as at Jan. 1, 2021	-236	-132	-560
Depreciation/amortization expense for the year	-11	-21	-44
Impairment losses for the year	-	-	-
Reclassifications	3	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	12	-	-
Disposals	-	5	21
Changes attributable to currency translation	-	-	-
Changes in scope of consolidation	-	-	-
Depreciation/amortization and impairment losses as at Dec. 31, 2021	**-233**	**-148**	**-583**
Carrying amounts as at Dec. 31, 2021	**277**	**62**	**151**

In 2021, the useful life of the assets ranged from 4 to 59 years for buildings (2020: 2 to 60 years) and from 1 to 25 years for office furniture and equipment (2020: 1 to 25 years). The useful life for investment property was 2 to 80 years (2020: 3 to 80 years). Software included in other intangible assets was amortized over a useful life of 1 to 12 years (2020: 1 to 12 years) while acquired customer relationships were amortized over 10 to 20 years (2020: 10 to 20 years). Depreciation and amortization are recognized on a straight-line basis over the useful life of the asset.

The assets subject to an operating lease comprised office furniture and equipment.

Payments in advance are allocated to the relevant item of property, plant and equipment.

In 2021, borrowing costs relating to investment property held by insurance companies were capitalized in an amount of €1 million (2020: €1 million). The capitalization rate used for borrowing costs was 1.06 percent for investment property held by insurance companies (2020: 1.33 percent).

Disclosures regarding the changes in goodwill are included in note 94.

Other intangible assets include acquired customer relationships amounting to €63 million (December 31, 2020: €65 million). The associated amortization expense came to €4 million (2020: €1 million).

The changes in right-of-use assets are described in note 95.

» 63 Non-current assets and disposal groups classified as held for sale

The non-current assets and disposal groups classified as held for sale include assets and liabilities from disposal groups not qualifying as discontinued operations, as described below. Gains and losses arising from the classification of assets and disposal groups as held for sale are reported under other net operating income.

At the level of the DVB subgroup, minor parts of the credit portfolio of the aviation finance business, which had previously constituted a disposal group not qualifying as a discontinued operation, were sold in 2021. The disposal gave rise to a net gain of €15 million, which was recognized under other net operating income. The impairment loss requirement of €5 million identified for this disposal group was also recognized under other net operating income. As at December 31, 2021, assets of €8 million were still recognized in this disposal group. The disposal of the remaining assets is expected to take place in 2022.

In addition, a previously fully consolidated subsidiary was classified as a disposal group not qualifying as a discontinued operation in 2021. Assets of €131 million and liabilities of €2 million are recognized in this disposal group. The sale of this disposal group is expected to take place in 2022.

The disposal group not qualifying as a discontinued operation, which had been classified as such since 2019, and consisted of associates, joint ventures, and fully consolidated subsidiaries of the DVB subgroup, was sold in 2021. The disposal gave rise to a net gain of €13 million, which was recognized under other net operating income.

Furthermore, a receivable that had been recognized as an individual asset classified as held for sale in the DVB subgroup as at December 31, 2020 was sold. The gain on disposal of €6 million was reported under other net operating income.

Another disposal group not qualifying as a discontinued operation contains receivables and an associate. The sale of this disposal group is expected to take place in 2022.

The individual non-current assets classified as held for sale as at December 31, 2020 were sold in 2021. The resulting gain of €49 million was reported under other net operating income.

» 64 Deposits from banks

	Repayable on demand		With agreed maturity or notice period		Total	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Domestic banks	**56,372**	59,958	**131,426**	109,573	**187,798**	169,531
Affiliated banks	52,196	56,001	22,254	21,285	74,450	77,286
Other banks	4,176	3,957	109,172	88,288	113,348	92,245
Foreign banks	**3,290**	2,974	**5,474**	5,347	**8,764**	8,321
Total	**59,662**	**62,932**	**136,900**	**114,920**	**196,562**	**177,852**

The following table shows the breakdown of deposits from banks by type of business:

€ million	Dec. 31, 2021	Dec. 31, 2020
Home savings deposits	1,567	1,576
Money market deposits	49,072	34,140
Other deposits	145,923	142,136
Total	**196,562**	**177,852**

» 65 Deposits from customers

	Repayable on demand		With agreed maturity or notice period		Total	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Domestic customers	24,628	21,522	91,030	94,680	115,658	116,202
Foreign customers	13,262	11,563	10,055	6,160	23,317	17,723
Total	**37,889**	**33,085**	**101,086**	**100,840**	**138,975**	**133,925**

The following table shows the breakdown of deposits from customers by type of business:

€ million	Dec. 31, 2021	Dec. 31, 2020
Home savings deposits	66,194	64,673
Money market deposits	14,886	13,407
Other deposits	57,895	55,845
Total	**138,975**	**133,925**

» 66 Debt certificates issued including bonds

€ million	Dec. 31, 2021	Dec. 31, 2020
Bonds issued	**67,086**	**62,838**
Mortgage Pfandbriefe	27,472	25,364
Public-sector Pfandbriefe	1,657	1,764
Other bonds	37,957	35,710
Other debt certificates issued	**12,566**	**7,662**
Total	**79,652**	**70,500**

As was the case a year earlier, all other debt certificates issued are commercial paper.

» 67 Hedging instruments (negative fair values)

Hedging instruments (negative fair values) amounted to €1,678 million (December 31, 2020: €2,638 million) and, as had been the case a year earlier, resulted solely from derivatives used as fair value hedges.

» 68 Financial liabilities held for trading

€ million	Dec. 31, 2021	Dec. 31, 2020
DERIVATIVES (NEGATIVE FAIR VALUES)	**15,402**	**20,144**
Interest-linked contracts	11,911	16,506
Currency-linked contracts	1,682	1,806
Share-/index-linked contracts	1,577	1,550
Other contracts	150	188
Credit derivatives	82	94
SHORT POSITIONS	**1,548**	**604**
BONDS ISSUED	**22,245**	**22,224**
DEPOSITS	**4,216**	**7,438**
of which from affiliated banks	3,412	3,660
of which from other banks	613	3,516
Money market deposits	**4,031**	**7,279**
from banks	3,934	7,078
from customers	97	201
Promissory notes and registered bonds issued	**185**	**159**
to banks	91	98
to customers	94	61
Total	**43,411**	**50,410**

As was the case a year earlier, bonds issued mainly comprise share certificates and index-linked certificates.

» 69 Provisions

€ million	Dec. 31, 2021	Dec. 31, 2020
Provisions for employee benefits	**1,772**	**1,835**
Provisions for defined benefit plans	1,251	1,321
Provisions for other long-term employee benefits	206	186
of which for semi-retirement schemes	59	43
Provisions for termination benefits	276	295
of which for early retirement schemes	27	19
of which for restructuring	201	224
Provisions for short-term employee benefits	38	33
Provisions for share-based payment transactions	**42**	**46**
Other provisions	**2,178**	**2,122**
Provisions for onerous contracts	25	10
Provisions for restructuring	41	14
Provisions for loan commitments	125	107
Provisions for financial guarantee contracts	88	123
Other provisions for loans and advances	38	37
Provisions relating to building society operations	1,398	1,444
Residual provisions	462	387
Total	**3,992**	**4,003**

Provisions for defined benefit plans

The provisions for defined benefit plans predominantly result from pension plans that no further employees can join (closed plans). There are also defined benefit pension plans for members of boards of managing directors. Until now, new employees in Germany were predominantly offered defined contribution pension plans, for which it is not generally necessary to recognize a provision. After December 31, 2021, the majority of pension plans will be defined benefit pension plans, for which a provision has to be recognized. Outside Germany, there continue to be both defined contribution and defined benefit plans that are open to new employees. The proportion of the group's total obligations accounted for by obligations outside Germany is not material. The expense for defined contribution pension plans came to €21 million in 2021 (2020: €20 million).

As part of the cooperative financial network, group companies also manage pension commitments under occupational pensions through R+V Pensionsversicherung a.G. and other pension providers. R+V Pensionsversicherung a.G., which is not included in the consolidated financial statements, constitutes a related party pursuant to IAS 24.9.b.v.

With interest rates remaining low, R+V Pensionsversicherung a.G. has set up an extended initial fund pursuant to section 178 (5) VAG in which companies of the DZ BANK Group and other companies are involved. For the pension commitments treated as a defined contribution plan pursuant to IAS 19.46, the probability of drawdown by the pension providers on the basis of their subsidiary liability has been reassessed in view of the phase of low interest rates and the related granting of the initial fund loan. This probability is no longer regarded as remote, which means that the pension commitments are now accounted for as defined benefit plans and, in accordance with IDW AcP HFA 50 – IAS 19 – M1, were recognized in other comprehensive income as at December 31, 2021.

R+V Pensionsversicherung a.G. also has plan assets that are netted with the present value of the defined benefit obligations in accordance with IAS 19.57 (a) (iii). The plan assets include assets with a total fair value of €2,136 million, which exceeds the present value of the defined benefit obligations by €141 million. Because the plan assets generally cannot flow back to the extended initial fund's sponsor entities and the accounting treatment of the performance obligation involves uncertainties, the notional surplus is not recognized as an asset and instead is limited to €0 as part of the asset ceiling. Initial recognition as a defined benefit plan therefore had no impact on equity.

A pro rata present value of the defined benefit obligations of €325 million and plan assets of €348 million, of which €23 million is limited, is attributable to the group companies excluding R+V. A pro rata present value of the defined benefit obligations of €1,670 million and plan assets of €1,788 million, of which €118 million is limited, is attributable to the R+V subgroup.

Disclosures on the provisions for defined benefit plans of the companies in the R+V subgroup can be found in note 71.

Present value of defined benefit obligations

The present value of the defined benefit obligations is broken down by risk category as follows:

	Germany		Other countries		Total	
€ million	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Final-salary-dependent plans	2,676	2,792	136	129	2,812	2,921
Defined benefit contributory plans	966	605	262	256	1,228	861
Accessorial plans	77	74	-	-	77	74
Total	**3,719**	**3,471**	**398**	**385**	**4,117**	**3,856**

The change in the present value of the defined benefit obligations in the risk category of defined benefit contributory plans in Germany was essentially due to the initial recognition of the pension commitments managed through R+V Pensionsversicherung a.G. as defined benefit pension plans.

The level of market interest rates for investment-grade fixed-income corporate bonds is a significant risk factor for all plans of the group entities because the discount rate determined from these rates affects the amount of the obligations.

Final-salary-dependent plans are pension obligations to employees, the amount of which depends on the employee's final salary before the pension trigger event occurs and that, for the most part, can be assumed to constitute a life-long payment obligation. Section 16 (1) of the German Occupational Pensions Act (BetrAVG) requires employers in Germany to review every 3 years whether the pension amount needs to be adjusted to reflect the change in consumer prices or net wages (adjustment review obligation). The main risk factors in the measurement of final-salary-dependent pension plans are longevity, changes in salary, inflation risk, and the discount rate. Longevity, changes in salary, and inflation risk affect the amount of benefits.

The majority of defined benefit contributory plans comprise obligations to pay fixed capital amounts or amounts at fixed interest rates. An annuitization option exists for around half of the obligations. As a result, there may be lifelong payment obligations as well as lump-sum payments and installments. For most obligations, the contributions are linked to remuneration. The majority of these plans are closed.

Accessorial plans are when the employer commits to a benefit that essentially corresponds to the benefit that is provided when an insured event occurs if the contributions are invested in a financial product of a third-party pension provider or insurer. The amount of the pension benefits therefore depends on the pension plan of the third-party pension provider, which is directly exposed to the risk factors longevity, changes in salary, and market interest-rate risk. Provided that economic conditions remain favorable, accessorial plans are almost risk free for the employer.

The pension plans agreed in Germany are not subject to minimum funding requirements. Minimum funding is required for some pension plans outside Germany owing to local regulations.

The changes in the present value of the defined benefit obligations were as follows:

€ million	2021	2020
Present value of defined benefit obligations as at Jan. 1	3,856	3,663
Current service cost	65	63
Interest expense	29	37
Employee contributions	6	6
Pension benefits paid including plan settlements	-123	-123
of which relating to plan settlements	-4	-7
Past service cost	-1	2
Actuarial gains (-)/losses (+)	268	207
of which due to changes in demographic assumptions	-3	40
of which due to changes in financial assumptions	205	153
of which experience-based	66	14
Plan takeovers	4	6
Changes attributable to currency translation	12	-5
Present value of defined benefit obligations as at Dec. 31	**4,117**	**3,856**

Of the actuarial losses from the change in financial assumptions, €325 million resulted from the initial recognition of the pension commitments managed through R+V Pensionsversicherung a.G. as defined benefit pension plans and around €69 million resulted from adjustment of the annuity trend. The actuarial losses were partly offset by actuarial gains of €190 million resulting from the increase in the underlying discount rate from 0.75 percent as at December 31, 2020 to 1.10 percent as at December 31, 2021.

Since June 30, 2021, the discount rate used to measure the defined benefit obligations has been rounded to 10 basis points instead of 25 basis points as was previously the case. If the original rounding method had been used, the discount rate would have been 0.1 percentage points lower at 1.00 percent. The provisions for defined benefit plans would therefore have been approximately €62 million higher as at December 31, 2021. Furthermore, all German companies in the group that do not calculate a different annuity trend themselves, adjusted the annuity trend from 1.60 percent as at December 31, 2020 to 1.80 percent as at December 31, 2021.

In addition to the 2018 G mortality tables published by Professor Dr. Klaus Heubeck, which are used to estimate average life expectancy, the following actuarial assumptions are used to measure the defined benefit obligations:

%	Dec. 31, 2021	Dec. 31, 2020
Discount rate	1.10	0.75
Weighted salary increases	2.03	1.98
Weighted pension increases	1.84	1.67

Sensitivity analysis

The following table shows the sensitivity of the present value of the defined benefit obligations to changes in the actuarial parameters. The effects shown are based on an isolated change to one parameter, with the other parameters remaining constant. Correlation effects between individual parameters are not considered.

	Dec. 31, 2021		Dec. 31, 2020	
	€ million	%	€ million	%
Change in the present value of defined benefit obligations as at balance sheet date if				
the discount rate were 50 basis points higher	-278	-6.75	-270	-7.00
the discount rate were 50 basis points lower	319	7.75	305	7.91
the future salary increase were 50 basis points higher	35	0.85	39	1.01
the future salary increase were 50 basis points lower	-33	-0.80	-38	-0.99
the future pension increase were 25 basis points higher	88	2.14	89	2.31
the future pension increase were 25 basis points lower	-84	-2.04	-87	-2.26
the life expectancy of a 65-year-old man were 1 year higher	152	3.69	158	4.10
the life expectancy of a 65-year-old man were 1 year lower	-147	-3.57	-150	-3.89

The duration of the defined benefit obligations as at December 31, 2021 was 15.11 years (December 31, 2020: 15.50 years).

Plan assets

Defined benefit obligations are offset by plan assets. €1,886 million of the plan assets (December 31, 2020: €1,952 million) are attributable to contractual trust arrangements (CTAs) at DZ BANK and BSH, and are managed as trust assets by DZ BANK Pension Trust e.V., Frankfurt am Main. The relevant CTA investment committee defines the investment policy and strategy for the asset management company. Plan assets relating to obligations in the United States and United Kingdom are also managed by independent trusts. In Luxembourg, the assets were transferred to a pension fund and, in Switzerland, to a foundation. Trustees/administrators are responsible for the administration and management of the pension plans and for compliance with regulatory requirements.

The increase in plan assets is essentially related to the initial recognition of the pension commitments managed through R+V Pensionsversicherung a.G. as defined benefit pension plans. The plan assets include assets with a fair value of €348 million, which exceeds the present value of the defined benefit obligations by €23 million. The notional surplus is not recognized as an asset and instead is limited to €0 as part of the asset ceiling.

The changes in the funding status of the defined benefit obligations were as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Present value of defined benefit obligations funded by plan assets	3,469	3,188
Present value of defined benefit obligations not funded by plan assets	647	668
Present value of defined benefit obligations	**4,117**	**3,856**
less fair value of plan assets	-2,891	-2,535
Asset ceiling	23	-
Defined benefit obligations (net)	1,248	1,321
Recognized surplus	3	-
Provisions for defined benefit plans	**1,251**	**1,321**
Reimbursement rights recognized as assets	4	3

The asset ceiling affects the plan assets resulting from the initial recognition of the pension commitments managed through R+V Pensionsversicherung a.G. as defined benefit pension plans. Application of the asset ceiling resulted in actuarial losses of €23 million.

The following table shows the changes in plan assets:

€ million	2021	2020
Fair value of plan assets as at Jan. 1	2,535	2,466
Interest income	19	25
Return on (+)/expenses from (-) plan assets (excluding interest income)	369	95
Contributions to plan assets	30	23
of which contributions by employer	24	17
of which employee contributions	6	6
Pension benefits paid	-75	-73
Changes attributable to the takeover of defined benefit obligations	3	6
Changes attributable to currency translation	10	-7
Reclassifications	1	-
Fair value of plan assets as at Dec. 31	**2,891**	**2,535**

The remeasurement effects recognized in other comprehensive income that are attributable to plan assets are shown under return on/expenses from plan assets (excluding interest income). Of this total amount, €348 million relates to gains to be recognized in other comprehensive income resulting from the initial recognition of the pension commitments managed through R+V Pensionsversicherung a.G. as defined benefit pension plans.

Contributions to plan assets of €72 million are expected for 2022 (2021: €21 million).

The fair value of the plan assets is broken down by asset class as follows:

€ million	Dec. 31, 2021 With quoted market price in an active market	Dec. 31, 2021 Without quoted market price in an active market	Dec. 31, 2021 Total	Dec. 31, 2020 With quoted market price in an active market	Dec. 31, 2020 Without quoted market price in an active market	Dec. 31, 2020 Total
Cash and money market investments	-	46	46	-	47	47
Bonds and other fixed-income securities	1,466	-	1,466	1,563	-	1,563
Shares	183	-	183	158	-	158
Investment fund units	237	291	528	210	250	460
Other shareholdings	-	28	28	-	29	29
Derivatives	-1	-	-1	1	-	1
Land and buildings	-	5	5	-	5	5
Entitlements arising from insurance policies	-	162	162	-	160	160
Other assets	-	474	474	-	112	112
Total	**1,885**	**1,006**	**2,891**	**1,932**	**603**	**2,535**

The additions to plan assets of €348 million resulting from the initial recognition of R+V Pensionsversicherung a.G. are shown under other assets. They are predominantly fixed-income assets.

Of the total plan assets, 51 percent were accounted for by bonds and other fixed-income securities (December 31, 2020: 62 percent). If market interest rates rise, the prices of the fixed-income assets fall; if the interest rates fall, the prices of the fixed-income assets fall. This reflects the direction of interest-rate sensitivity of the defined benefit obligations and reduces risk to a certain extent. The fixed-income investments in the form of Pfandbriefe, government bonds, and corporate bonds are generally of high quality. A small proportion of non-investment-grade corporate bonds are held. The bulk of the investments (particularly Pfandbriefe and government bonds) are of prime quality (AAA to AA). The defined benefit obligations and the plan assets are largely in the euro, US dollar, and pound sterling currency areas. If the defined benefit obligations and the plan assets are in different currencies, derivative hedges are entered into in order to hedge the currency risk. As at December 31, 2021, the plan assets included €227 million of the group’s own, transferable financial instruments (December 31, 2020: €248 million). The real estate and other assets contained in the plan assets are not used by the companies themselves. The other investments are predominantly floating-rate securities (equities and investment fund units) from around the world, plus entitlements arising from insurance policies, short-term investments, and real estate assets.

Obligations under defined benefit plans (net)

The following table shows the changes in the obligations under defined benefit plans (net), comprising the present value of the defined benefit obligations, plan assets, and changes in the asset ceiling:

€ million	2021	2020
Obligations under defined benefit plans (net) as at Jan. 1	1,321	1,197
Current service cost	65	63
Net interest expense	10	12
Past service cost	-1	2
less return on/expenses from plan assets (excluding interest income)	-369	-95
Actuarial gains (-)/losses (+)	268	207
Changes in the asset ceiling	23	-
Employee contributions	6	6
Contributions to plan assets	-30	-23
Pension benefits paid	-48	-50
Plan takeovers	1	-
Changes attributable to currency translation	2	2
Reclassifications	-1	-
Obligations under defined benefit plans (net) as at Dec. 31	**1,248**	**1,321**

Multi-employer plans

Along with other financial institutions in Germany, group entities are members of BVV Versicherungsverein des Bankgewerbes a.G., Berlin, (BVV), BVV Versorgungskasse des Bankgewerbes e.V., Berlin, (BVVeV), and Versorgungskasse genossenschaftlich orientierter Unternehmen VGU e.V., Wiesbaden, (VGUeV). These pension providers provide retirement benefits to eligible employees in Germany. These include plans into which both employers and employees make regular contributions that are usually calculated by applying a contribution rate (as a percentage) to the monthly gross income of the active employees. The tariffs of the pension providers cover both fixed annuity payments with policyholder participation and capital payments. The assets in question and the defined benefit obligations relating to current and former employees are not allocated to the individual member companies. This is mainly because the pension providers do not fully allocate their investments to either the beneficiaries or the member companies. The group entities therefore classify these plans as multi-employer defined benefit plans but treat them as defined contribution plans for accounting purposes.

Other provisions

The following table shows the changes in other provisions in 2021:

€ million	Provisions for onerous contracts	Provisions for restruc-turing	Provisions for loan commit-ments	Provisions for financial guarantee contracts	Other provisions for loans and advances	Provisions relating to building society operations	Residual provisions	**Total**
Balance as at Jan. 1, 2021	10	14	107	123	37	1,444	387	2,122
Additions	18	43	414	79	26	210	382	1,173
Utilizations	-	-14	-	-	-	-254	-277	-546
Reversals	-2	-4	-396	-98	-26	-1	-35	-563
Interest expense/changes in discount rate	-	-	-	1	1	-	-	1
Other changes	-	1	-	-16	-	-	4	-11
Balance as at Dec. 31, 2021	**25**	**41**	**125**	**88**	**38**	**1,398**	**462**	**2,178**

The residual provisions include provisions totaling €71 million for litigation risk (December 31, 2020: €28 million). These relate to capital market and lending products and to general banking operations, for example legal action in connection with services in these areas of business (total amount in dispute of less than €0.3 billion). The plaintiffs claim that obligations resulting from the underlying legal relationships have been breached. It is assumed that the DZ BANK Group can largely defend itself against the claims raised. The other disclosures that would normally be required under IAS 37 are not provided because it is likely that such disclosures would seriously harm the outcome of the legal disputes.

The expected maturities of other provisions are shown in the tables below.

AS AT DECEMBER 31, 2021

€ million	≤ 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provisions for onerous contracts	-	-	-	25	-
Provisions for restructuring	-	5	37	-	-
Provisions for loan commitments	13	14	69	24	6
Provisions for financial guarantee contracts	10	15	53	10	-
Other provisions for loans and advances	-	31	5	1	-
Provisions relating to building society operations	6	331	551	510	-
Residual provisions	78	205	102	68	9
Total	**107**	**601**	**816**	**639**	**15**

AS AT DECEMBER 31, 2020

€ million	≤ 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provisions for onerous contracts	-	-	-	10	-
Provisions for restructuring	-	5	9	-	-
Provisions for loan commitments	5	14	63	22	3
Provisions for financial guarantee contracts	24	7	80	12	-
Other provisions for loans and advances	-	34	1	2	-
Provisions relating to building society operations	5	950	426	63	-
Residual provisions	51	150	65	108	13
Total	**85**	**1,160**	**644**	**217**	**16**

The changes in loss allowances recognized under provisions for loan commitments and provisions for financial guarantee contracts were as follows:

	Loss allowances for loan commitments				Loss allowances for financial guarantee contracts			Total
€ million	Stage 1	Stage 2	Stage 3	POCI assets	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2020	40	8	23	-	5	2	117	195
Additions	119	68	66	4	15	11	61	344
Reversals	-105	-48	-65	-3	-9	-3	-71	-304
Other changes	-	-2	2	-	-2	1	-4	-5
Balance as at Dec. 31, 2020	54	26	26	1	9	11	103	230
Additions	159	201	52	2	10	11	57	492
Reversals	-179	-173	-41	-3	-12	-12	-74	-494
Other changes	23	-24	1	-	-	-2	-14	-16
Balance as at Dec. 31, 2021	**56**	**31**	**38**	**1**	**7**	**9**	**72**	**213**

» 70 Insurance liabilities

€ million	Dec. 31, 2021	Dec. 31, 2020
Provision for unearned premiums	1,179	1,194
Benefit reserve	74,167	70,470
Provision for claims outstanding	16,429	14,627
Provision for premium refunds	11,237	12,569
Other insurance liabilities	53	50
Reserve for unit-linked insurance contracts	15,799	12,303
Total	**118,863**	**111,213**

CHANGES IN THE PROVISION FOR UNEARNED PREMIUMS

€ million	2021	2020
Balance as at Jan. 1	1,194	1,188
Additions	1,238	1,253
Utilizations/reversals	-1,259	-1,239
Changes attributable to currency translation	6	-8
Balance as at Dec. 31	**1,179**	**1,194**

CHANGES IN THE BENEFIT RESERVE

€ million	2021	2020
Balance as at Jan. 1	70,470	65,502
Additions	7,268	8,093
Interest component	918	982
Utilizations/reversals	-4,516	-4,106
Other changes in measurement	6	-
Changes attributable to currency translation	1	-1
Changes in scope of consolidation	20	-
Balance as at Dec. 31	**74,167**	**70,470**

Supplementary change-in-discount-rate reserves totaling €5,451 million have been recognized for policies with a discount rate in excess of the reference rate specified in the DeckRV (December 31, 2020: €4,698 million).

CHANGES IN THE PROVISION FOR CLAIMS OUTSTANDING

€ million	2021	2020
Balance as at Jan. 1	14,627	13,415
Claims expenses	8,424	7,821
less payments	-6,847	-6,427
Changes attributable to currency translation	225	-182
Balance as at Dec. 31	**16,429**	**14,627**

CHANGES IN THE PROVISION FOR PREMIUM REFUNDS

€ million	2021	2020
Balance as at Jan. 1	12,569	12,149
Additions	599	516
Utilizations/reversals	-820	-759
Other changes in measurement	1,767	-
Changes resulting from unrealized gains and losses on investments (through other comprehensive income)	-2,947	919
Changes resulting from other remeasurements (through profit or loss)	49	-233
Changes attributable to currency translation	20	-23
Balance as at Dec. 31	**11,237**	**12,569**

The breakdown of maturities for insurance liabilities is shown in the following tables:

AS AT DECEMBER 31, 2021

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	967	164	48	-
Benefit reserve	1,624	5,144	13,366	54,033
Provision for claims outstanding	5,986	6,378	4,065	-
Provision for premium refunds	911	686	637	9,003
Other insurance liabilities	26	10	14	3
Total	**9,514**	**12,382**	**18,130**	**63,039**

AS AT DECEMBER 31, 2020

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	967	182	45	-
Benefit reserve	2,040	5,205	13,917	49,308
Provision for claims outstanding	5,262	5,437	3,928	-
Provision for premium refunds	857	664	649	10,399
Other insurance liabilities	29	6	11	4
Total	**9,155**	**11,494**	**18,550**	**59,711**

In connection with the COVID-19 pandemic, €2 million was added to the provisions for claims outstanding in respect of the direct insurance companies in the non-life insurance division (December 31, 2020: €215 million). All of this amount was attributable to claims already reported (December 31, 2020: €52 million). Of the provision of €163 million recognized as at December 31, 2020 for claims incurred but not reported (IBNR), €50 million was retained as loss allowances as at the reporting date. There are also partial provisions of €20 million for known claims.

In the reinsurance business, COVID-19 had no impact on earnings in 2021 because the COVID-19-related expenses arising in the reporting year were adequately covered by provisions recognized in 2020. As at December 31, 2021, the proportion of provisions for claims outstanding attributable to claims incurred in connection with the COVID-19 pandemic totaled €270 million.

» 71 Other liabilities

€ million	Dec. 31, 2021	Dec. 31, 2020
Other liabilities of insurance companies	7,796	7,472
Accruals	1,526	1,279
Other payables	170	226
Lease liabilities	547	454
Residual other liabilities	758	812
Total	**10,797**	**10,243**

The table below gives a breakdown of insurance companies' other liabilities.

€ million	Dec. 31, 2021	Dec. 31, 2020
Other provisions	**426**	**436**
Provisions for employee benefits	391	403
of which provisions for defined benefit plans	203	226
Provisions for share-based payment transactions	3	3
Other provisions	31	30
Payables and residual other liabilities	**7,371**	**7,036**
Subordinated capital	80	75
Deposits received from reinsurers	36	41
Payables arising out of direct insurance operations	1,398	1,525
Payables arising out of reinsurance operations	597	566
Debt certificates issued including bonds	31	31
Deposits from banks	563	606
Derivatives (negative fair values)	103	23
Liabilities from capitalization transactions	3,592	3,053
Insurance lease liabilities	86	68
Other payables	318	293
Residual other liabilities	567	755
Total	**7,796**	**7,472**

Provisions for defined benefit plans

The following table shows the provisions for defined benefit plans shown in other liabilities of insurance companies.

Changes in the provisions for defined benefit pension plans

€ million	2021	2020
Balance as at Jan. 1	226	231
Actuarial gains (-)/losses (+)	-13	7
of which return on plan assets	-2	-1
of which due to changes in demographic assumptions	-	10
of which due to changes in financial assumptions	-11	-2
Interest expense (+) and income (-)	2	2
Additions to provisions for pensions and other post-employment benefits less additions to plan assets	-3	-5
Payments made from the plan	-9	-9
Balance as at Dec. 31	**203**	**226**

Present value of vested entitlements under defined benefit pension plans

€ million	2021	2020
Balance as at Jan. 1	443	444
Transition due to reassessment of a defined benefit plan previously treated as a defined contribution plan	1,670	-
Actuarial gains (-)/losses (+)	-11	8
of which due to changes in demographic assumptions	-	10
of which due to changes in financial assumptions	-11	-2
Current service cost	6	6
Interest expense	3	5
Employee contributions to the pension plan	1	1
Payments made from the plan	-21	-21
Balance as at Dec. 31	**2,091**	**443**

The weighted average maturity of the performance obligations was 14 years (December 31, 2020: 15 years).

Maturities of vested entitlements under defined benefit pension plans

€ million	2021	2020
Residual maturity of 1–5 years	259	10
Residual maturity of 5 years or more	1,773	371
Total	**2,032**	**381**

The maturity disclosures relate only to employer-funded pension commitments.

Sensitivity analysis for defined benefit pension plans

€ million	2021	2020
Discount rate - 0.50%	2,216	409
Discount rate + 0.50%	1,871	356
Expected salary trend - 0.25%	2,031	380
Expected salary trend + 0.25%	2,033	382
Expected annuity trend - 0.25%	2,022	370
Expected annuity trend + 0.25%	2,042	392

The amounts disclosed here show the total present values of the vested entitlements under defined benefit, employer-funded pension plans and pension plans managed through R+V Pensionsversicherung a.G.

The same methods and assumptions are used for the calculation of the sensitivities as for the calculation of the present value of the vested entitlements under defined benefit pension plans.

The discount rate used to measure the defined benefit obligations has been rounded to 10 basis points instead of 25 basis points as was previously the case. If the discount rate was 1.0 percent instead of 1.1 percent, the provision would be €22 million higher.

Plan assets for defined benefit pension plans

€ million	2021	2020
Balance as at Jan. 1	217	213
Transition due to reassessment of a defined benefit plan previously treated as a defined contribution plan	1,670*	-
Actuarial gains (-)/losses (+)	2	2
Interest income	1	2
Employee contributions to the pension plan	10	12
Payments made from the plan	-12	-12
Balance as at Dec. 31	1,888	217
Present value of vested entitlements less plan assets	203	226
Carrying amount of provisions for pensions and other post-employment benefits as at Dec. 31	**203**	**226**

* after asset ceiling.

The actual return on plan assets is the balance of interest income and the actuarial gains and losses.

The planned additions to plan assets within the following reporting period amounted to €6 million (December 31, 2020: €5 million).

The plan assets consist of assets at pension providers and in reinsured pension schemes.

The plan assets of R+V Pensionsversicherung a.G. to be netted with the present value of the defined benefit obligations primarily consist of fixed-income securities.

As was the case a year earlier, reimbursement rights for defined benefit pension plans amounted to €3 million.

Funded status of defined benefit pension plans

€ million	2021	2020
1. Pension commitments funded with plan assets		
Present value of vested pension entitlements	2,031	381
Fair value of plan assets	-1,888	-217
Recognized net liability	143	164
2. Pension commitments funded with reimbursement rights		
Fair value of reimbursement rights	3	3
Funded status	140	161
3. Pension commitments not funded with external assets		
Present value of vested pension entitlements	60	62
Recognized net liability	60	62
of which total recognized net liability	**203**	**226**
Total	**200**	**223**

Amounts under defined benefit pension plans recognized in profit or loss in the financial year

€ million	2021	2020
Current service cost	-6	-6
Interest expense	-3	-5
Interest income from plan assets	1	2
Total	**-8**	**-9**

The disclosed amounts recognized in profit or loss are part of staff expenses and are thus included in the following items in the income statement: insurance business operating expenses, claims expenses, expenses in connection with investments held by insurance companies, and other expenses.

Actuarial assumptions

	2021	2020
Discount rate	1.10%	0.75%
Expected return on plan assets	1.10%	0.75%
Expected return on reimbursement rights	1.10%	0.75%
Expected changes in salary	2.25%	2.50%
Expected rate of increase in benefits (after benefits are initially drawn)	1.80%	1.60%
Projected employee turnover	0.00%	0.70%

Mortality and invalidity assumptions for the German group companies' defined benefit obligations are derived from the 2018 G mortality tables published by Professor Dr. Klaus Heubeck.

The expected return on plan assets and on reimbursement rights was calculated in accordance with IAS 19.125 by multiplying the fair value of the assets by the discount rate used.

Cumulative actuarial gains and losses amounted to a loss of €151 million (December 31, 2020: loss of €164 million). The year-on-year change was due to actuarial gains and losses during the reporting year.

Defined contribution pension plans

In the case of the defined contribution pension plans, R+V pays contributions to VGUeV and Condor Versorgungs- und Unterstützungskasse e.V. on the basis of contractual provisions and on a voluntary basis. An expense of €17 million was recognized in 2021 (2020: €25 million). Contributions of €9 million (2020: €10 million) were also paid to R+V Pensionsversicherung a.G. over the course of the year. However, this plan is accounted for as a defined benefit plan following a reassessment as at December 31, 2021 (see 'Accounting policies'). By paying the contributions to the pension providers and pension schemes, R+V has no other obligations.

The employer contributions to statutory pension insurance amounted to €88 million in 2021 (2020: €85 million).

Disclosures on the provisions for defined benefit plans of the other companies in the DZ BANK Group can be found in note 69.

» 72 Subordinated capital

€ million	Dec. 31, 2021	Dec. 31, 2020
Subordinated liabilities	3,062	3,077
Share capital repayable on demand	12	13
Total	**3,074**	**3,090**

» 73 Equity

Subscribed capital

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.

For the 2020 financial year, DZ BANK paid a dividend of €0.16 per share in 2021 on the basis of a resolution of the Annual General Meeting on May 19, 2021. This resolution was based on the ECB's recommendations that applied at that time regarding the limiting of dividend distributions during the COVID-19 pandemic. In a statement dated July 23, 2021, the ECB said that the banks under its supervision would be free to decide on their distribution policy as they see fit – taking account of their specific situation – from October 1, 2021 onward. Consequently, an Extraordinary General Meeting held on November 4, 2021 approved a resolution to distribute an additional dividend, also of €0.16. No dividend had been distributed in 2020. A dividend of €0.20 per share for 2021 will be proposed to the Annual General Meeting.

Authorized capital

The Board of Managing Directors of DZ BANK is authorized, subject to the approval of the Supervisory Board, to increase the share capital by June 30, 2026 on one or more occasions by up to a total of €200 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

- issuing new shares to employees of the corporation (employee shares),

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 June 30, 2026 on one or more occasions by up to a total of €600 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 2021.

Contingent capital

Under article 5b of the Articles of Association of DZ BANK AG, the share capital can 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 served 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 registered bond with a conversion right that was issued with a nominal value of €128 million was repaid on December 3, 2021. The conversion right was not exercised.

Disclosures on shareholders

At the end of 2021, 99.5 percent of shares were held by cooperative enterprises (December 31, 2020: 99.5 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.

Capital reserve

The capital reserve comprises the amounts from the issue of DZ BANK shares in excess of the imputed par value of the shares.

Retained earnings

Retained earnings comprise earned, undistributed consolidated profit together with gains and losses arising from remeasurement of defined benefit plans after taking into account deferred taxes. Cumulative gains and losses arising from remeasurement of defined benefit plans amounted to a loss of €707 million (December 31, 2020: loss of €777 million).

Reserve from other comprehensive income

Reserve from equity instruments for which the fair value OCI option has been exercised

The reserve from equity instruments for which the fair value OCI option has been applied is used to report the changes in the fair value of equity instruments measured at fair value through other comprehensive income after taking into account deferred taxes. If the equity instruments are sold, the related reserve is reclassified to retained earnings.

At the end of 2021, no amount was attributable to the reserve from non-current assets and disposal groups classified as held for sale (December 31, 2020: €10 million).

Reserve from gains and losses on financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk

The portion of the changes in fair value of financial liabilities designated as at fair value through profit or loss attributable to changes in the DZ BANK Group's own credit risk is also recognized in the reserve from other comprehensive income. If the liabilities are derecognized, the cumulative gains and losses recognized through other comprehensive income are reclassified to retained earnings.

Reserve from debt instruments measured at fair value through other comprehensive income

The reserve from debt instruments measured at fair value through other comprehensive income is used to report the changes in fair value after taking into account deferred taxes. In the case of debt instruments, gains and losses are only recognized in profit or loss when the relevant asset is sold. Loss allowances are recognized for these assets in accordance with IFRS 9.

Currency translation reserve

The currency translation reserve is the result of the translation of financial statements of subsidiaries denominated in foreign currency into euros (the group reporting currency). It also includes the gains and losses on hedges of net investments in foreign operations and the change in the currency translation reserve for entities accounted for using the equity method.

Additional equity components

Additional Tier 1 notes

In previous years, DZ BANK had issued tranches of additional Tier 1 notes (AT1 bonds) in 2 placements with a total volume of €2,150 million. In both placements, the AT1 bonds are split into 4 types depending on their interest-rate arrangements (types A to D). All interest is payable annually; the date for the payment of interest has been specified as August 1 each year in both placements. Under the terms and conditions of the bonds, interest payments are 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 competent supervisory authority. Interest payments are not cumulative; canceled or reduced payments will not be made up in subsequent periods.

The bonds do not have any maturity date and are subject to the terms and conditions set out in the relevant prospectus. Among other things, the terms and conditions specify that DZ BANK may only call the bonds in their entirety, and not in part, provided that there are certain regulatory or tax reasons for doing so. In all instances, DZ BANK must obtain the consent of the competent supervisory authority in order to call the bonds.

The tranches of AT1 bonds issued are shown in the 'Additional equity components' sub-item. According to the provisions of IAS 32, the AT1 bonds have characteristics of equity. The AT1 bonds are unsecured, subordinated bearer bonds of DZ BANK.

Other hybrid capital

As a result of the merger of DZ BANK with WGZ BANK, the convertible bond issued by WGZ BANK was taken over by DZ BANK as the legal successor. Upon initial recognition when the convertible bond was taken over, the components had to be defined as a financial liability or an equity instrument. The portion of the convertible bond that was not classified as a component of equity was recognized under subordinated capital. The equity component of €95 million was included as an additional equity component within the equity of the DZ BANK Group and was repaid on December 3, 2021 because the conversion right was not exercised.

Non-controlling interests

Non-controlling interests comprise the equity of subsidiaries not attributable to DZ BANK.

There was a decrease in non-controlling interests in 2021, primarily due to the call and subsequent repayment in full of the bonds and the non-cumulative trust preferred securities issued by the entities that had been established in order to increase own funds in accordance with section 10a KWG.

Breakdown of changes in equity by component of other comprehensive income

2021

€ million	Equity earned by the group	Reserve from other compre-hensive income	Non-controlling interests
Gains and losses on debt instruments measured at fair value through other comprehensive income	-	-863	-78
Exchange differences on currency translation of foreign operations	-	-19	-
Gains and losses on hedges of net investments in foreign operations	-	5	-
Gains and losses on equity instruments for which the fair value OCI option has been exercised	-	398	42
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	-	27	-
Gains and losses arising from remeasurement of defined benefit plans	70	-	3
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	-	14	-
Other comprehensive income/loss	**70**	**-438**	**-32**

2020

€ million	Equity earned by the group	Reserve from other compre-hensive income	Non-controlling interests
Gains and losses on debt instruments measured at fair value through other comprehensive income	-	710	71
Exchange differences on currency translation of foreign operations	-	-22	-7
Gains and losses on hedges of net investments in foreign operations	-	2	-
Gains and losses on equity instruments for which the fair value OCI option has been exercised	-	-73	-15
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	-	-42	-
Gains and losses arising from remeasurement of defined benefit plans	-95	-	-2
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	-	-6	-
Other comprehensive income/loss	**-95**	**569**	**47**

The table below shows a breakdown of the reserve from other comprehensive income:

€ million	Items not reclassified to the income statement: Reserve from equity instruments for which the fair value OCI option has been exercised	Items not reclassified to the income statement: Reserve from gains and losses on financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	Items reclassified to the income statement: Reserve from debt instruments measured at fair value through other compre-hensive income	Items reclassified to the income statement: Currency translation reserve
Equity as at Jan. 1, 2020	463	-42	1,180	85
Other comprehensive income/loss	-73	-42	710	-26
Total comprehensive income/loss	**-73**	**-42**	**710**	**-26**
Acquisition/disposal of non-controlling interests	-	-	-1	-
Reclassifications within equity	-50	8	-	-
Equity as at Dec. 31, 2020	340	-76	1,889	59
Other comprehensive income/loss	398	27	-863	-
Total comprehensive income/loss	**398**	**27**	**-863**	**-**
Acquisition/disposal of non-controlling interests	-	-	-1	-1
Reclassifications within equity	-117	-5	-	-
Equity as at Dec. 31, 2021	**621**	**-54**	**1,025**	**58**

The changes in loss allowances included in the reserve from other comprehensive income, broken down by individual balance sheet item, were as follows:

	Loans and advances to customers			Investments		
€ million	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Balance as at Jan. 1, 2020	1	-	-	4	1	30
Additions	1	1	-	9	-	-
Utilizations	-	-	-	-1	-	-8
Reversals	-	-1	-	-3	-1	-
Other changes	-	-	-	-1	-	2
Balance as at Dec. 31, 2020	2	-	-	8	-	24
Additions	-	-	-	5	-	-
Utilizations	-	-	-	-	-	-
Reversals	-1	-1	-	-6	-	-
Other changes	-	-	-	-	-	-
Balance as at Dec. 31, 2021	**-**	**-**	**-**	**7**	**-**	**24**

	Investments held by insurance companies			Total
€ million	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2020	4	-	-	40
Additions	9	3	-	23
Utilizations	-	-	-	-9
Reversals	-4	-	-	-9
Other changes	1	-1	-	1
Balance as at Dec. 31, 2020	10	2	-	46
Additions	57	7	2	71
Utilizations	-	-	-1	-1
Reversals	-50	-2	-	-60
Other changes	1	-5	-	-4
Balance as at Dec. 31, 2021	**19**	**2**	**1**	**53**

Information on regulatory capital

The information on regulatory capital and on capital management pursuant to IAS 1.134-136, which also forms part of these IFRS consolidated financial statements, can be found in the group management report in chapter VII 'DZ BANK Group and DZ BANK risk report', section 7 'Capital adequacy'.

E Financial instruments and fair value disclosures

» 74 Classes, categories, and fair values of financial instruments

The following tables show the breakdown of net carrying amounts and fair values of financial assets and financial liabilities by class (in accordance with IFRS 7) and by category of financial instrument (in accordance with IFRS 9):

€ million	Dec. 31, 2021 Carrying amount	Dec. 31, 2021 Fair value	Dec. 31, 2020 Carrying amount	Dec. 31, 2020 Fair value
FINANCIAL ASSETS MEASURED AT FAIR VALUE	**218,618**	**218,674**	**196,447**	**196,505**
Financial assets measured at fair value through profit or loss	**89,650**	**89,706**	**83,415**	**83,473**
Financial assets mandatorily measured at fair value through profit or loss	***80,935***	***80,991***	***73,945***	***74,003***
Loans and advances to customers	168	168	241	241
Hedging instruments (positive fair values)	389	389	161	161
Financial assets held for trading	47,321	47,378	42,788	42,846
Investments	3,129	3,129	2,720	2,720
Investments held by insurance companies	29,928	29,928	28,035	28,035
Financial assets designated as at fair value through profit or loss	***8,715***	***8,715***	***9,470***	***9,470***
Loans and advances to banks	1,854	1,854	1,967	1,967
Loans and advances to customers	1,033	1,033	1,213	1,213
Investments	5,829	5,829	6,290	6,290
Financial assets measured at fair value through other comprehensive income	**128,805**	**128,805**	**112,857**	**112,857**
Financial assets mandatorily measured at fair value through other comprehensive income	***122,068***	***122,068***	***106,935***	***106,935***
Loans and advances to banks	68	68	116	116
Loans and advances to customers	2,781	2,781	3,436	3,436
Investments	30,779	30,779	35,450	35,450
Investments held by insurance companies	88,439	88,439	67,933	67,933
Financial assets designated as at fair value through other comprehensive income	***6,737***	***6,737***	***5,922***	***5,922***
Investments	528	528	393	393
Investments held by insurance companies	6,209	6,209	5,529	5,529
Non-current assets and disposal groups classified as held for sale	**163**	**163**	**175**	**175**
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	**395,328**	**398,831**	**385,370**	**394,481**
Cash and cash equivalents	85,763	85,763	68,148	68,148
Loans and advances to banks	105,713	107,307	100,913	104,646
Loans and advances to customers	189,044	191,230	182,079	185,968
Investments	11,733	12,387	14,894	15,838
Investments held by insurance companies	147	135	15,757	18,282
Other assets	2,009	2,009	1,595	1,595
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	920		1,980	
Non-current assets and disposal groups classified as held for sale	-	-	4	4
FINANCE LEASES	**731**	**736**	**1,076**	**1,091**
Loans and advances to banks	1	1	-	-
Loans and advances to customers	730	735	1,076	1,091

€ million	Dec. 31, 2021 Carrying amount	Dec. 31, 2021 Fair value	Dec. 31, 2020 Carrying amount	Dec. 31, 2020 Fair value
FINANCIAL LIABILITIES MEASURED AT FAIR VALUE	**74,519**	**74,505**	**84,974**	**84,968**
Financial liabilities mandatorily measured at fair value through profit or loss	**45,192**	**45,178**	**53,071**	**53,065**
Hedging instruments (negative fair values)	1,678	1,678	2,638	2,638
Financial liabilities held for trading	43,411	43,397	50,410	50,404
Other liabilities	103	103	23	23
Financial liabilities designated as at fair value through profit or loss	**29,327**	**29,327**	**31,903**	**31,903**
Deposits from banks	3,953	3,953	4,564	4,564
Deposits from customers	8,259	8,259	9,511	9,511
Debt certificates issued including bonds	16,975	16,975	17,589	17,589
Subordinated capital	140	140	239	239
FINANCIAL LIABILITIES MEASURED AT AMORTIZED COST	**391,013**	**394,457**	**355,644**	**363,304**
Deposits from banks	192,609	194,467	173,288	177,515
Deposits from customers	130,716	132,062	124,413	126,803
Debt certificates issued including bonds	62,677	62,995	52,911	54,117
Other liabilities	1,926	1,927	1,865	1,867
Subordinated capital	2,934	3,006	2,851	3,001
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	150		315	
Liabilities included in disposal groups classified as held for sale	-	-	1	1
LEASES	**632**	**632**	**522**	**522**
Other liabilities	632	632	522	522
FINANCIAL GUARANTEE CONTRACTS AND LOAN COMMITMENTS	**213**	**213**	**230**	**230**
Financial guarantee contracts	**88**	**88**	**123**	**123**
Provisions	88	88	123	123
Loan commitments	**125**	**125**	**107**	**107**
Provisions	125	125	107	107

Given the complex structure of home savings contracts and the multitude of scales of rates and charges, there is currently no suitable method for calculating the fair value of an individual contract as at the balance sheet date. Consequently, the fair value pursuant to IFRS 7.25 cannot be determined using either comparable market prices or suitable option pricing models. The fair values of financial assets and financial liabilities resulting from building society operations are therefore shown in simplified form at their carrying amounts. On the basis of the models used for building society management, which comprise both collective and non-collective business including deposits, the overall amount for building society operations during the reporting period was positive.

The fair values of the investments held by insurance companies comprise both the proportion of the fair values that is attributable to the policyholders and the proportion attributable to the shareholders of the DZ BANK Group. The fair value attributable to the shareholders of the DZ BANK Group of investments held by insurance companies measured at amortized cost was €105 million (December 31, 2020: €16,505 million).

The differences between the carrying amount and the fair value of financial assets held for trading in the 'financial assets measured at fair value' class and of financial liabilities held for trading in the 'financial liabilities measured at fair value' class are due to the deferral of day-one profit or loss, which is based on unobservable measurement parameters.

A changed estimate resulting from a model adjustment meant that the fair value of loans and advances to customers measured at amortized cost decreased by €416 million.

» 75 Differences not recognized at the time of initial recognition

Differences that are not recognized at the time of initial recognition of financial instruments (day-one profit or loss) arise in the DZ BANK Group if the fair value of a financial instrument differs from its transaction price at the time of initial recognition and the calculation of the fair value is not substantiated by a price quoted in an active market for an identical asset or identical liability or is not based on a valuation technique that only uses data from observable markets. Such transactions are recognized at fair value on the balance sheet, adjusted for the deferred day-one profit or loss. The unrecognized difference is recognized in profit or loss over the term of the transaction. The following table shows the deferred, unrecognized differences in the DZ BANK Group, broken down by class pursuant to IFRS 7.

	Measured at fair value	
€ million	Financial assets	Financial liabilities
Balance as at Jan. 1, 2020	-	-
Restatements according to IAS 8	49	3
Additions as a result of transactions	13	2
Differences amortized to profit or loss	-5	-
Balance as at Dec. 31, 2020	57	5
Additions as a result of transactions	12	4
Differences amortized to profit or loss	-6	-1
Reclassifications	-7	7
Balance as at Dec. 31, 2021	**57**	**14**

» 76 Equity instruments designated as at fair value through other comprehensive income

Investments and investments held by insurance companies include shares and other variable-yield securities and investments in subsidiaries, joint ventures, and associates that the DZ BANK Group has elected to measure at fair value through other comprehensive income. These investments and investments held by insurance companies are not held for trading or to generate returns. The DZ BANK Group believes that it would be inappropriate to report gains and losses in profit or loss in this case.

€ million	Dec. 31, 2021	Dec. 31, 2020
Investments	**528**	**393**
Shares and other variable-yield securities	409	262
Investments in subsidiaries	116	131
Investments in associates	3	-
Investments held by insurance companies	**6,209**	**5,529**
Shares and other variable-yield securities	5,779	5,109
Investments in subsidiaries	408	402
Investments in joint ventures	21	18
Investments in associates	1	-
Total	**6,737**	**5,922**

Dividends of €83 million (2020: €74 million) were recognized in 2021 in respect of investments and investments held by insurance companies as at the reporting date for which the option of recognition at fair value through other comprehensive income has been exercised.

Investments and investments held by insurance companies with a carrying amount of €1,538 million, for which the option of recognition at fair value through other comprehensive income had been exercised, were derecognized in 2021 (2020: €576 million). The derecognition of these investments was attributable to capital repayments, liquidations, and disposals. No further current gains or losses are expected from these assets. These derecognitions resulted in cumulative net gains of €248 million (2020: €54 million), which were reclassified to retained earnings or the provision for premium refunds in the reporting year. In 2021, dividends of €109 million (2020: €80 million) were recognized in respect of investments and investments held by insurance companies that have been sold.

In addition, non-current assets and disposal groups classified as held for sale with a carrying amount of €60 million, which had been designated as at fair value through other comprehensive income, were sold in 2021 (2020: €0 million). Cumulative gains and losses amounting to a gain of €23 million (2020: €0 million) were reclassified to retained earnings.

» 77 Assets and liabilities measured at fair value on the balance sheet

Fair value hierarchy

The fair value measurements are assigned to the levels of the fair value hierarchy as follows:

	Level 1		Level 2		Level 3	
€ million	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020
Assets	**92,040**	89,438	**101,882**	97,616	**24,753**	9,451
Loans and advances to banks	-	-	1,922	2,083	-	-
Loans and advances to customers	-	-	3,303	4,029	679	861
Hedging instruments (positive fair values)	-	-	389	161	-	-
Financial assets held for trading	2,477	2,032	44,256	40,045	645	769
Investments	19,466	20,421	18,898	22,726	1,900	1,705
Investments held by insurance companies	70,097	66,935	33,114	28,532	21,365	6,030
Non-current assets and disposal groups classified as held for sale	-	50	-	39	163	86
of which non-recurring measurement	-	50	-	-	7	2
Liabilities	**4,510**	4,451	**88,027**	94,466	**595**	774
Deposits from banks	-	-	3,953	4,564	-	-
Deposits from customers	-	-	8,259	9,511	-	-
Debt certificates issued including bonds	3,331	3,416	13,218	13,691	427	482
Hedging instruments (negative fair values)	-	-	1,678	2,638	-	-
Financial liabilities held for trading	1,178	1,032	42,071	49,101	148	271
Financial liabilities arising from unit-linked insurance products	-	-	18,627	14,722	-	-
Other liabilities	2	3	101	20	-	-
Subordinated capital	-	-	120	219	20	20

The investments held by insurance companies measured at fair value include assets related to unit-linked contracts. These are offset on the equity and liabilities side of the balance sheet by financial liabilities measured at fair value arising from unit-linked insurance products, which consist of the reserve for unit-linked insurance contracts and liabilities from capitalization transactions allocated to unit-linked life insurance.

Transfers

Assets and liabilities held at the balance sheet date and measured at fair value on a recurring basis were transferred as follows between Levels 1 and 2 of the fair value hierarchy:

	Transfers from Level 1 to Level 2		Transfers from Level 2 to Level 1	
€ million	**2021**	2020	**2021**	2020
Financial assets measured at fair value	**1,000**	603	**922**	1,947
Investments held by insurance companies	1,000	603	922	1,947

Transfers from Level 1 to Level 2 were due to quoted prices no longer being obtainable in active markets for identical assets or liabilities. Transfers from Level 2 to Level 1 were due to the availability of quoted prices in active markets that had previously not existed.

In the DZ BANK Group, transfers between Levels 1 and 2 take place when there is a change in the inputs that is relevant to categorization in the fair value hierarchy.

Fair value measurements within Levels 2 and 3

Fair value measurements within Level 2 of the fair value hierarchy either use prices available in active markets for similar, but not identical, financial instruments or use valuation techniques largely based on observable market data. If valuation techniques are used that include a significant valuation input that is not observable in the market, the relevant fair value measurements are categorized within Level 3 of the fair value hierarchy.

Generally, the discounted cash flow (DCF) method is 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. The fair values of structured products can be measured by breaking these products into their constituent parts, which are then measured using the valuation methods described below.

The basis for measurement is the selection of an adequate yield curve for each specific instrument. The measurement is carried out by selecting appropriate tenor-specific forward curves for projecting variable cash flows. The nature and collateralization of the transactions determines how they are discounted using yield curves that can be adjusted on the basis of relevant spreads.

The DZ BANK Group uses prices in active markets (provided these prices are available) for the fair value measurement of loans and advances as well as unstructured bonds. Otherwise, it mainly uses the DCF method. Discounting is based on yield curves that are adjusted for liquidity-related and credit rating-related costs using spreads. Product-dependent funding spreads are added to the yield curve for liabilities attributable to registered creditors, debt certificates issued including bonds, and subordinated capital. Debt instruments held are adjusted using issuer-specific spreads or spreads derived from the issuer's internal and external credit rating, sector, and risk category. Customer-appropriate spreads and collateralization rates are taken into account for the measurement of loans when the DCF method is used. If significant unobservable inputs are used for measurement and there are no indications that the transaction price is not identical to the fair value at the time of first-time recognition on the balance sheet, the valuation method is calibrated in such a way that the model price at the time of acquisition corresponds to the transaction price. In exceptional cases, the nominal amount of the debt instrument in question provides the best evidence of fair value.

The fair value measurements of shares and other variable-yield securities and of long-term equity investments accounted for in accordance with IFRS 9 are determined by applying income capitalization approaches and observing transaction prices. The best indicator of fair value is deemed to be the transaction prices for recent transactions involving the relevant financial instruments, provided there have been any such transactions. Otherwise, the fair value is measured using income capitalization approaches in which future income and dividends – calculated on the basis of forecasts and estimates – are discounted, taking risk parameters into account.

The fair value measurements of investment fund units are determined using the pro rata net asset value. This is adjusted for any outstanding performance-related remuneration entitlements of fund managers; risk adjustments are also taken into account. Some long-term equity investments in real estate companies are also measured at net asset value. In this case, the liabilities are subtracted from the fair values of the real estate tied up in the company and the result is multiplied by the percentage of shareholding. The prices of units in real estate funds that are not managed by the DZ BANK Group are provided by the asset management company that manages these funds. These units are measured regularly at net asset value. Fair value measurements are also based on valuations, current values, and prices in recent transactions.

The fair value measurement of standardized derivatives traded in liquid markets is based on observable market prices and/or industry-standard models using observable inputs. To discount the cash flows of derivatives, a distinction is made between non-collateralized and collateralized transactions when using yield curves in order to take into account the specific funding costs. Moreover, calculation of the model prices for products on which options exist mostly requires the input of additional market data (e.g. volatilities, correlations, repo rates). As far as possible, this data is derived implicitly from quoted market prices that are available. If observable quoted market prices are not available, or only available to a limited extent, the DZ BANK Group uses customary interpolation and extrapolation mechanisms, historical time series analyses, and fundamentals analyses of economic variables to generate the required inputs. It also uses expert assessments on a small scale.

The fair value measurement of OTC financial derivatives applies the option in IFRS 13.48, which enables the total net amount to be measured. In the first step, credit risk is not taken into account. Counterparty-specific credit risk arising from derivatives is recognized after the total net amount has been determined. Credit valuation adjustments (CVAs) are recognized to take into account counterparty credit risk and debt valuation adjustments (DVAs) are recognized to take into account the group's own credit risk. Their measurement also takes account of collateral and uses market-implied parameters with matching maturities or internal parameters with matching maturities for the probability of default and loss given default.

The measurement of financial instruments also involves carrying out measurement adjustments to a suitable degree. These include, among other things, model reserves that enable uncertainties regarding model selection, model parameters, and model configuration to be taken into account. The DZ BANK Group measures financial instruments at the price at which these financial instruments can be realized in the market. If this differs from the measurement of the individual instruments (e.g. measurement at middle rates), the bid/ask adjustments (close-out reserves) are determined on a net basis applying the option in IFRS 13.48. Measurement takes account of the group's funding structure.

The following table shows the valuation techniques, the unobservable inputs, and the spreads of the unobservable inputs used for the fair value measurements at Level 3 of the fair value hierarchy as at December 31, 2021.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs	Spread of unobservable inputs (%)
Loans and advances to customers	Loans	455	DCF method	BVAL price adjustment	-4.0 to 5.3
		56	DCF method	Credit spread	0.0 to 0.2
	Profit-participation certificates	26	DCF method	Internal credit ratings	3.8 to 11.6
	Shareholders' loans	81	DCF method	Internal credit ratings	3.8 to 11.6
	Initial fund loans	13	DCF method	Probability of default	0.8
	Receivables arising from silent partnerships	48	DCF method	Internal credit ratings	3.8 to 11.6
Financial assets held for trading	ABSs	3	DCF method	Credit spread	6.7
	Equity/commodity basket products	2	Local volatility model	Correlation of the risk factors considered	17.3 to 91.0
	Loans and advances to issuers in default	3	DCF method	Recovery rate	-
	Collateralized loan obligations	104	Gaussian copula model	Liquidity spread	1.3 to 3.7
	Bearer securities	315	DCF method	BVAL price adjustment	0.2 to 1.5
	Registered securities	217	DCF method	BVAL price adjustment	-4.0 to 5.3
	Option in connection with acquisition of long-term equity investments	1	Black-Scholes model	Earnings indicators	-
Investments	ABSs	67	DCF method	Credit spread	0.5 to 7.9
	Other variable-yield securities	10	DCF method	Assumptions for measurement of risk parameters	10.0 to 12.5
	Investments in associates	3	Income capitalization approach	Future income	-
	Investments in subsidiaries	83	DCF method	Assumptions for measurement of risk parameters	10.0 to 12.5
		221	Income capitalization approach, net asset value method	Future income	-
	Collateralized loan obligations	1	Gaussian copula model	Liquidity spread	1.7 to 2.4
	Loans and advances to issuers in default	6	DCF method	Recovery rate	-
	Bearer securities	308	DCF method	BVAL price adjustment	-0.5 to 134.1
	Investment fund units	15	Net asset value	-	-
	Mortgage-backed securities	251	DCF method	Duration	-
		16	DCF method	Recovery rate	0.0 to 73.0
	Other shareholdings	249	DCF method	Capitalization rate, growth factor	1.5 to 12.5
		243	Income capitalization approach, net asset value method	Future income	-
	VR Circle	427	DCF method	Multiple-year default probabilities	0.0 to 100.0

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs	Spread of unobservable inputs (%)
Investments held by insurance companies	ABSs	1,533	Third-party pricing information	-	-
	Investments in subsidiaries, associates, and joint ventures, real estate funds, profit-participation certificates, and other long-term equity investments	3,975	Net asset value	-	-
	Investments in subsidiaries, associates, and joint ventures, other long-term equity investments, and shares in cooperatives	312	Income capitalization approach	Future income	7.6 to 7.8
	Fixed-income securities, convertible bonds, shares, investment fund units, and shares in cooperatives	755	Third-party pricing information	-	-
	Profit-participation certificates and promissory notes	14,708	DCF method	Credit spread	0.6 to 11.4
	Initial fund loans	69	DCF method	Probability of default	0.8
	Other shareholdings	13	Approximation	-	-
Non-current assets and disposal groups classified as held for sale	Loans	163	DCF method	Credit spread	0.0 to 23.9
Debt certificates issued including bonds	VR Circle	427	DCF method	Multiple-year default probabilities	0.0 to 100.0
Financial liabilities held for trading	Equity/commodity basket products	139	Local volatility model	Correlation of the risk factors considered	15.9 to 91.0
	Products with commodity volatility derived from comparable instruments	9	Local volatility model	Volatility	7.0 to 73.6
Subordinated capital	Loans	20	DCF method	Credit spread	0.3 to 0.6

The following table shows the valuation techniques, the unobservable inputs, and the spreads of the unobservable inputs used for the fair value measurements at Level 3 of the fair value hierarchy as at December 31, 2020.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs	Spread of unobservable inputs (%)
Loans and advances to customers	Loans	580	DCF method	BVAL price adjustment	-4.0 to 4.9
		79	DCF method	Credit spread	0.1 to 8.3
	Profit-participation certificates	28	DCF method	Internal credit ratings	4.0 to 24.2
	Shareholders' loans	112	DCF method	Internal credit ratings	4.0 to 24.2
	Receivables arising from silent partnerships	62	DCF method	Internal credit ratings	4.0 to 24.2
Financial assets held for trading	ABSs	4	DCF method	Credit spread	7.7
	Equity/commodity basket products	3	Local volatility model	Correlation of the risk factors considered	9.9 to 85.3
	Loans and advances to issuers in default	6	DCF method	Recovery rate	-
	Collateralized loan obligations	121	Gaussian copula model	Liquidity spread	1.6 to 3.3
	Bearer securities	235	DCF method	BVAL price adjustment	0.2 to 2.6
	Registered securities	400	DCF method	BVAL price adjustment	-4.0 to 4.9
Investments	ABSs	93	DCF method	Credit spread	0.6 to 7.0
	Other variable-yield securities	10	DCF method	Assumptions for measurement of risk parameters	11.4 to 14.5
	Investments in subsidiaries	66	DCF method	Assumptions for measurement of risk parameters	11.4 to 14.5
		231	Income capitalization approach, net asset value method	Future income	-
	Collateralized loan obligations	3	Gaussian copula model	Liquidity spread	0.0 to 2.1
	Loans and advances to issuers in default	6	DCF method	Recovery rate	-
	Bearer securities	164	DCF method	BVAL price adjustment	0.2 to 132.7
	Investment fund units	13	Net asset value	-	-
	Mortgage-backed securities	276	DCF method	Duration	-
		37	DCF method	Recovery rate	0.0 to 94.3
	Other shareholdings	88	DCF method	Capitalization rate, growth factor	1.0 to 10.3
		235	Income capitalization approach, net asset value method	Future income	-
	VR Circle	483	DCF method	Multiple-year default probabilities	0.0 to 100.0

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs	Spread of unobservable inputs (%)
Investments held by insurance companies	ABSs	1,379	Third-party pricing information	-	-
	Investments in subsidiaries, associates, and joint ventures, real estate funds, profit-participation certificates, and other long-term equity investments	2,923	Net asset value	-	-
	Investments in subsidiaries, associates, and joint ventures, other long-term equity investments, and shares in cooperatives	309	Income capitalization approach	Future income	6.5 to 9.4
	Fixed-income securities, convertible bonds, shares, investment fund units, and shares in cooperatives	959	Third-party pricing information	-	-
	Profit-participation certificates and promissory notes	451	DCF method	Credit spread	5.0 to 6.8
	Other shareholdings	9	Approximation	-	-
Non-current assets and disposal groups classified as held for sale	Investments in corporations	29	Income capitalization approach	Future income	0.0 to 10.8
	Loans	57	DCF method	Credit spread	0.1 to 8.3
Debt certificates issued including bonds	VR Circle	482	DCF method	Multiple-year default probabilities	0.0 to 100.0
Financial liabilities held for trading	Equity/commodity basket products	254	Local volatility model	Correlation of the risk factors considered	9.9 to 85.3
	Products with commodity volatility derived from comparable instruments	17	Local volatility model	Volatility	7.0 to 72.1
Subordinated capital	Loans	20	DCF method	Credit spread	0.3 to 3.2

Fair value measurements within Level 3 of the fair value hierarchy

The table below shows the changes in the fair value measurements of assets within Level 3 of the fair value hierarchy:

€ million	Loans and advances to customers	Financial assets held for trading	Investments	Investments held by insurance companies	Non-current assets and disposal groups classified as held for sale
Balance as at Jan. 1, 2020	907	791	1,969	5,091	175
Additions (purchases)	71	762	101	1,216	-
Transfers	-	376	-150	85	-
from Level 3 to Levels 1 and 2	-	-106	-442	-201	-
from Levels 1 and 2 to Level 3	-	482	292	286	-
Disposals (sales)	-102	-1,155	-296	-292	-141
Changes resulting from measurement at fair value	-25	-7	32	-44	-27
through profit or loss	-29	-7	-10	-131	-27
through other comprehensive income	4	-	42	87	-
Other changes	9	2	49	-26	79
Balance as at Dec. 31, 2020	861	769	1,705	6,030	86
Additions (purchases)	67	288	99	4,343	-
Transfers	-11	445	128	-177	-
from Level 3 to Levels 1 and 2	-11	-67	-150	-264	-
from Levels 1 and 2 to Level 3	-	512	278	87	-
Disposals (sales)	-176	-845	-251	-2,157	-123
Changes resulting from measurement at fair value	-32	-14	207	-539	40
through profit or loss	-24	-14	52	276	40
through other comprehensive income	-8	-	155	-815	-
Other changes	-30	2	13	13,865	160
Balance as at Dec. 31, 2021	**679**	**645**	**1,900**	**21,365**	**163**

The table below shows the changes in the fair value measurements of liabilities within Level 3 of the fair value hierarchy:

€ million	Debt certificates issued including bonds	Financial liabilities held for trading	Other liabilities	Subordinated capital
Balance as at Jan. 1, 2020	608	515	5	44
Additions (issues)	-	86	-	-
Transfers	-101	-192	-	-
from Level 3 to Level 2	-101	-396	-	-
from Level 2 to Level 3	-	204	-	-
Disposals (settlements)	-18	-140	-5	-21
Changes resulting from measurement at fair value	-6	3	-	-2
through profit or loss	-5	3	-	-2
through other comprehensive income	-1	-	-	-
Other changes	-	-	-	-1
Balance as at Dec. 31, 2020	482	271	-	20
Additions (issues)	-	86	-	-
Transfers	-	-109	-	-
from Level 3 to Level 2	-	-164	-	-
from Level 2 to Level 3	-	55	-	-
Disposals (settlements)	-55	-104	-	-4
Changes resulting from measurement at fair value	-1	3	-	4
through profit or loss	-1	3	-	5
through other comprehensive income	-	-	-	-1
Balance as at Dec. 31, 2021	**427**	**148**	**-**	**20**

As part of the processes for fair value measurement, the DZ BANK Group reviews whether the valuation methods used for the measurement are typical and whether the valuation inputs used in the valuation methods are observable in the market. This review takes place at every balance sheet date, i.e. at least every 6 months. On the basis of this review, the fair value measurements are assigned to the levels of the fair value hierarchy. In the DZ BANK Group, transfers between the levels generally take place as soon as there is a change in the inputs that is relevant to categorization in the fair value hierarchy.

In each step of these processes, both the distinctive features of the particular product type and the distinctive features of the business models of the group entities are taken into consideration.

Transfers of fair values from Levels 1 and 2 to Level 3 of the fair value hierarchy during the financial year are largely attributable to a revised estimate of the market observability of the valuation inputs used in the valuation methods. Transfers from Level 3 to Levels 1 or 2 are essentially due to the availability of a price listed in an active market and to the inclusion in the valuation method of material valuation inputs observable in the market.

The amount of gains or losses recognized in profit or loss resulting from the recurring fair value measurements within Level 3 of assets and liabilities held at the balance sheet date constituted a net gain of €555 million during the year under review (2020: net loss of €149 million). The gains or losses are included in the line items net interest income, gains and losses on trading activities, other gains and losses on valuation of financial instruments, gains and losses on investments held by insurance companies and other insurance company gains and losses, loss allowances, and other net operating income.

For the fair values of investments held by insurance companies reported within Level 3, a rise in the interest rate of 1 percent would lead to the recognition of a €34 million loss in the income statement (2020: loss of €37 million) and a loss of €1,409 million under other comprehensive income/loss (2020: loss of €1 million). The year-on-year change is due to reclassification of financial assets and a related rise in the fair values reported within Level 3.

Credit rating sensitivities were calculated separately for the fair values of investments held by insurance companies for the first time as at the reporting date. For these fair values, a worsening in the credit rating of 1 percent would lead to the recognition of a €40 million loss in the income statement and a €1,438 million loss under other comprehensive income/loss.
In the case of the fair values of loans and advances to customers, a worsening in the credit rating or a rise in the interest rate of 1 percent would lead to the recognition of a €6 million loss in the income statement (2020: loss of €11 million). For the fair values of investments, there would be a €56 million loss under other comprehensive income/loss (2020: loss of €19 million) and a €31 million loss in the income statement (2020: loss of €20 million). The fair values of non-current assets and disposal groups classified as held for sale would decrease by €1 million, the decrease being recognized in the income statement. There would have been no changes in 2020.

The fair values of bonds without liquid markets that are reported within financial assets held for trading, investments, and loans and advances to customers are given an individual adjustment spread or are measured using Bloomberg Valuation Service prices, which are observable in the market. All other things being equal, an increase in the pertinent measurement assumptions of 1 percent would lead to the recognition of a €13 million loss in the income statement (2020: loss of €24 million) and a loss of €12 million under other comprehensive income/loss (2020: loss of €16 million). Historical spreads are used for bonds recognized under subordinated capital whose spread components are no longer observable in the market. All other things being equal, an increase in the spread of 1 percent would not lead to any material change in fair value. In 2020, there would have been a €1 million increase in fair value that would have been recognized in the income statement.

An alternative assumption about the credit spreads used could lead to a significant change in the fair values of some of the ABSs reported under financial assets held for trading and under investments. All other things being equal, an increase of 1 percent in these spreads would lead to the recognition of a €1 million loss under other comprehensive income/loss (2020: loss of €2 million). A loss of €1 million would also have been recognized in the income statement in 2020.

An alternative assumption about the liquidity spreads used could lead to a significant change in respect of collateralized loan obligations reported under investments and under financial assets held for trading. All other things being equal, a rise in the liquidity spread assumptions by 1 percent would lead to a €4 million decrease in the fair values of these financial assets that would be recognized in the income statement (2020: decrease of €4 million).

Sensitivity analysis is used to calculate the aforementioned changes in the fair value measurements. Non-performing exposures, strategically held investments in subsidiaries and other shareholdings, and long-term equity investments in real estate funds whose fair values are calculated using an income capitalization approach or the net asset value are not included in the sensitivity analysis.

Exercise of option pursuant to IFRS 13.48

The option offered by IFRS 13.48 of measuring a net risk position for financial assets and financial liabilities is used for portfolios whose components are recognized under the balance sheet items loans and advances to banks, loans and advances to customers, financial assets held for trading, investments, and financial liabilities held for trading. If allocation of the portfolio-based valuation adjustments to the assets and liabilities is required, it is generally carried out in proportion to the nominal amounts of the financial instruments in question.

» 78 Assets and liabilities not measured at fair value on the balance sheet

Fair value hierarchy

Fair value measurements of assets and liabilities that are not recognized at fair value on the balance sheet, but whose fair value must be disclosed, are assigned to the levels of the fair value hierarchy as follows:

	Level 1		Level 2		Level 3	
€ million	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020
Assets	**280**	486	**240,953**	226,890	**163,286**	172,600
Cash and cash equivalents	-	-	85,763	68,148	-	-
Loans and advances to banks	-	-	103,797	100,553	3,510	4,093
Loans and advances to customers	-	-	38,943	38,347	152,287	147,620
Investments	279	486	11,781	14,959	327	393
Investments held by insurance companies	-	-	60	4,369	5,416	19,091
Property, plant and equipment, investment property, and right-of-use assets	-	-	152	154	194	148
Other assets	-	-	458	359	1,552	1,236
Non-current assets and disposal groups classified as held for sale	-	-	-	-	-	19
Liabilities	**22,129**	20,443	**299,580**	271,567	**72,961**	71,523
Deposits from banks	-	-	192,871	175,854	1,596	1,661
Deposits from customers	-	-	65,535	61,727	66,527	65,076
Debt certificates issued including bonds	22,129	20,443	40,866	33,674	-	-
Provisions	-	-	37	39	177	191
Other liabilities	-	-	226	215	1,702	1,652
Subordinated capital	-	-	46	58	2,960	2,943
Liabilities included in disposal groups classified as held for sale	-	-	-	1	-	-

Fair value measurements within Levels 2 and 3

The fair value measurements of assets and liabilities that are not recognized at fair value on the balance sheet largely correspond to the fair value measurements of assets and liabilities that are recognized at fair value on the balance sheet.

The following table shows the valuation techniques and the unobservable inputs used in these techniques for the fair value measurements at Level 3 of the fair value hierarchy as at December 31, 2021.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs
Loans and advances to banks	Loans	3,510	DCF method	Credit spread, recovery rate
Loans and advances to customers	Building loans	60,412	Amortized cost	-
	Loans	91,875	DCF method	Credit spread, recovery rate, internal spread
Investments	ABSs	45	DCF method	Credit spread
	Bonds with adjustment spread	282	DCF method	BVAL price adjustment
Investments held by insurance companies		73	Cost	Nominal amounts
	Investment property	5,269	DCF method	Future rent, reference prices in the market
	Loans and bank accounts	6	DCF method	Yield curves, credit spread
	Loans	68	Cost	Nominal amounts
Property, plant and equipment	Investment property	194	Valuation reports	-
Other assets	Credit balances with banks	702	Cost	Nominal amounts
	Other receivables	850	Cost	Nominal amounts
Deposits from banks	Home savings deposits	1,567	Cost	-
	Loans	29	DCF method	Credit spread
Deposits from customers	Home savings deposits	66,184	Cost	-
	Loans	321	DCF method	Credit spread
	Overpayments on consumer finance loans	22	Cost	-
Provisions	Provisions for loan commitments	177	Settlement amount	-
Other liabilities	Loans	564	Cost	Nominal amounts
	Non-controlling interests in special funds	178	Cost	Nominal amounts
	Subordinated liabilities	22	DCF method	Yield curves, credit spread
	Registered securities	31	Cost	Nominal amounts
	Other payables	140	Cost	Nominal amounts
	Liabilities arising from rented software	4	Carrying amount	Assumptions regarding the exercise of extension or termination options
	Liabilities from capitalization transactions	763	Cost	Nominal amounts
Subordinated capital	Bonds with adjustment spread	2,960	DCF method	Credit spread

The following table shows the valuation techniques and the unobservable inputs used in these techniques for the fair value measurements at Level 3 of the fair value hierarchy as at December 31, 2020.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs
Loans and advances to banks	Loans	4,093	DCF method	Credit spread, recovery rate
Loans and advances to customers	Building loans	55,517	Amortized cost	-
	Loans	92,103	DCF method	Credit spread, recovery rate, internal spread
Investments	ABSs	94	DCF method	Credit spread
	Bonds with adjustment spread	299	DCF method	BVAL price adjustment
Investments held by insurance companies		160	Cost	Nominal amounts
	Investment property	5,018	DCF method	Future rent, reference prices in the market
	Loans and bank accounts	13,848	DCF method	Yield curves, credit spread
	Loans	65	Cost	Nominal amounts
Property, plant and equipment	Investment property	148	Valuation reports	-
Other assets	Credit balances with banks	356	Cost	Nominal amounts
	Other receivables	880	Cost	Nominal amounts
Non-current assets and disposal groups classified as held for sale	Loans	4	DCF method	Credit spread
	Property, plant and equipment, investment property, and right-of-use assets	15	Cost	Nominal amounts
Deposits from banks	Home savings deposits	1,576	Cost	-
	Loans	85	DCF method	Credit spread
Deposits from customers	Home savings deposits	64,673	Cost	-
	Loans	365	DCF method	Credit spread
	Overpayments on consumer finance loans	15	Cost	-
	Other deposits	23	Cost	-
Provisions	Provisions for loan commitments	191	Settlement amount	-
Other liabilities	Bonds with adjustment spread	68	DCF method	Credit spread
	Loans	605	Cost	Nominal amounts
	Non-controlling interests in special funds	153	Cost	Nominal amounts
	Subordinated liabilities	14	DCF method	Yield curves, credit spread
	Registered securities	31	Cost	Nominal amounts
	Other payables	141	Cost	Nominal amounts
	Liabilities arising from rented software	6	Carrying amount	Assumptions regarding the exercise of extension or termination options
	Liabilities from capitalization transactions	634	Cost	Nominal amounts
Subordinated capital	Bonds with adjustment spread	2,943	DCF method	Credit spread

» 79 Financial liabilities designated as at fair value through profit or loss

A residual value method is used to determine changes in fair value attributable to changes in the DZ BANK Group’s own credit risk. In this method, the measurement effect caused by changes in own credit risk is determined by deducting the measurement effect caused by factors other than the change in own credit risk from the overall change in fair value. The cumulative changes in fair value resulting from changes in own credit risk amounted to a loss of €73 million in 2021 (2020: loss of €109 million). The use of this method ensures that the changes in fair value attributable to changes in own credit risk are not distorted by other effects caused by changes in market risk.

The following overview compares fair values with the amounts contractually required to be paid at maturity to the creditors concerned for liabilities designated as at fair value through profit or loss, but whose changes in fair value attributable to own credit risk are reported in other comprehensive income:

€ million	Fair value Dec. 31, 2021	Fair value Dec. 31, 2020	Repayment amount Dec. 31, 2021	Repayment amount Dec. 31, 2020
Deposits from banks	3,953	4,564	3,891	4,441
Deposits from customers	8,259	9,511	7,892	8,965
Debt certificates issued including bonds	16,975	17,589	16,912	17,161
Subordinated capital	140	239	134	230
Total	**29,327**	**31,903**	**28,829**	**30,797**

In the course of the year under review, a gain of €5 million – previously reported in other comprehensive income/loss – was realized upon derecognition of financial liabilities as a result of measurement effects in connection with changes in the DZ BANK Group's own credit risk (2020: loss of €3 million). This amount was reclassified to retained earnings within equity once the financial liabilities had been derecognized. In 2020, a loss of €8 million had been reclassified to retained earnings.

» 80 Reclassification

On January 1, 2021, financial assets categorized as 'financial assets measured at amortized cost' and 'financial assets measured at fair value through profit or loss' were reclassified prospectively as 'financial assets measured at fair value through other comprehensive income' due to a change to the business model.

The change to the business model was attributable to the R+V-wide strategic program known as 'Wachstum durch Wandel' (growth through change), the key pillars of which include profitable growth. To achieve this objective, R+V decided to realign and optimize its strategic asset allocation, resulting in a comprehensive change to the management of its investments. Under the changes that have been introduced, the strategy and management used for the investment of financial instruments have been realigned, which means that they will be assigned to the 'hold to collect and sell' business model in future and no longer to the 'hold to collect' and 'other' business models.

When the financial assets measured at amortized cost of €15,606 million were reclassified, hidden reserves of €2,524 million were identified for the first time and recognized in the reserve from debt instruments measured at fair value through other comprehensive income. The loss allowances of €23 million previously recognized for these holdings were also reclassified to this reserve.

Furthermore, assets of €3,139 million that were previously categorized as 'measured at fair value through profit or loss' were reclassified to 'financial assets measured at fair value through other comprehensive income'. Loss allowances of €26 million were recognized for the affected assets for the first time in the reserve from debt instruments measured at fair value through other comprehensive income. At the time of reclassification, the reclassified assets had an average effective interest rate of 2.25 percent. As at December 31, 2021, the fair value of the reclassified assets still held was €2,079 million. In 2021, interest income of €91 million was attributable to these assets. If the assets had not been reclassified, decreases in fair value of €116 million would have been recognized in the income statement.

» 81 Offsetting of financial assets and financial liabilities

Financial assets and financial liabilities reference standard master agreements, such as ISDA Master Agreements and German Master Agreements for Financial Futures. However, these standard master agreements do not generally satisfy the offsetting criteria in IAS 32.42 because the legal right to set off the amounts under these agreements is contingent on the occurrence of a future event.

The following tables show financial assets that were offset or that were subject to a legally enforceable global netting agreement or a similar arrangement:

AS AT DECEMBER 31, 2021

€ million	Gross amount of financial assets before offsetting	Gross amount of offset financial liabilities	Net amount of financial assets (carrying amount)	Associated amounts not offset on the balance sheet		Net amount
				Financial instruments	Cash collateral received	
Derivatives	35,047	17,788	17,259	11,859	2,992	2,408
Reverse repos/securities borrowing	18,191	-	18,191	18,104	-	87
Total	**53,238**	**17,788**	**35,450**	**29,963**	**2,992**	**2,495**

AS AT DECEMBER 31, 2020

€ million	Gross amount of financial assets before offsetting	Gross amount of offset financial liabilities	Net amount of financial assets (carrying amount)	Associated amounts not offset on the balance sheet		Net amount
				Financial instruments	Cash collateral received	
Derivatives	49,889	26,358	23,531	15,617	4,267	3,647
Reverse repos/securities borrowing	8,453	-	8,453	8,424	-	29
Total	**58,342**	**26,358**	**31,984**	**24,041**	**4,267**	**3,676**

The following tables show financial liabilities that were offset or that were subject to a legally enforceable global netting agreement or a similar arrangement:

AS AT DECEMBER 31, 2021

€ million	Gross amount of financial liabilities before offsetting	Gross amount of offset financial assets	Net amount of financial liabilities (carrying amount)	Associated amounts not offset on the balance sheet		Net amount
				Financial instruments	Cash collateral furnished	
Derivatives	36,123	19,389	16,734	11,478	4,786	470
Repos/securities lending	977	-	977	795	28	154
Other financial instruments	209	209	-	-	-	-
Total	**37,309**	**19,598**	**17,711**	**12,273**	**4,814**	**624**

AS AT DECEMBER 31, 2020

€ million	Gross amount of financial liabilities before offsetting	Gross amount of offset financial assets	Net amount of financial liabilities (carrying amount)	Associated amounts not offset on the balance sheet		Net amount
				Financial instruments	Cash collateral furnished	
Derivatives	51,897	29,906	21,991	14,633	7,045	313
Repos/securities lending	4,198	-	4,198	4,176	8	14
Other financial instruments	143	143	-	-	-	-
Total	**56,238**	**30,049**	**26,189**	**18,809**	**7,053**	**327**

» 82 Sale and repurchase agreements, securities lending

Transfers of financial assets

In 2021, the only transfers carried out by the DZ BANK Group in which the transferred assets remained on the balance sheet in their entirety were transfers under sale and repurchase agreements (repos), in which the DZ BANK Group was the original seller, and transfers as part of securities lending transactions.

Sale and repurchase agreements

The entities in the DZ BANK Group enter into sale and repurchase agreements using standard banking industry master agreements, notably the Global Master Repurchase Agreement (GMRA) and the master agreement provided by the International Securities Market Association (ISMA). Under these agreements, the buyer of the securities is permitted to make use of the securities without restriction (with no requirement for a prior counterparty default) and return securities of the same type. If the fair value of the securities received or transferred in such transactions increases or decreases, the entity concerned may be required to furnish additional collateral or may demand additional collateral.

As at the balance sheet date, the sale and repurchase agreements entered into by companies in the DZ BANK Group were exclusively genuine sale and repurchase agreements, i.e. the buyer is obliged to sell back the securities.

Sale and repurchase agreements in which DZ BANK acts as a seller (repos)

Under sale and repurchase agreements, bonds and other fixed-income securities classified as financial assets measured at fair value and financial assets measured at amortized cost are temporarily transferred to another party. As at the balance sheet date, the carrying amounts of securities subject to such sale and repurchase agreements were:

€ million	Dec. 31, 2021	Dec. 31, 2020
FINANCIAL ASSETS MEASURED AT FAIR VALUE	**100**	**544**
Financial assets measured at fair value through profit or loss	**100**	**400**
Financial assets mandatorily measured at fair value through profit or loss	***100***	***400***
Financial assets held for trading	100	400
Financial assets measured at fair value through other comprehensive income	**-**	**144**
Financial assets mandatorily measured at fair value through other comprehensive income	***-***	***52***
Investments	-	52
Financial assets designated as at fair value through other comprehensive income	***-***	***92***
Investments	-	92
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	**772**	**1,266**
Investments	772	1,266
Total	**872**	**1,810**

As at the balance sheet date, additional collateral with a carrying amount of €262 million had been furnished in connection with repos (December 31, 2020: €70 million). This collateral is recognized under financial assets held for trading and may be sold or repledged by the recipient even if the provider is not in default.

The carrying amounts of liabilities arising from sale and repurchase agreements were as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
LIABILITIES ASSOCIATED WITH FINANCIAL ASSETS MEASURED AT FAIR VALUE	**100**	**538**
Liabilities associated with financial assets measured at fair value through profit or loss	**100**	**400**
Liabilities associated with financial assets mandatorily measured at fair value through profit or loss	***100***	***400***
Liabilities associated with financial assets held for trading	100	400
Liabilities associated with financial assets measured at fair value through other comprehensive income	**-**	**138**
Liabilities associated with financial assets mandatorily measured at fair value through other comprehensive income	***-***	***45***
Liabilities associated with investments	-	45
Liabilities associated with financial assets designated as at fair value through other comprehensive income	***-***	***93***
Liabilities associated with investments	-	93
LIABILITIES ASSOCIATED WITH FINANCIAL ASSETS MEASURED AT AMORTIZED COST	**791**	**1,273**
Liabilities associated with investments	791	1,273
Total	**891**	**1,811**

Sale and repurchase agreements in which DZ BANK acts as the buyer (reverse repos)

In reverse repo transactions, bonds and other fixed-income securities are bought on a temporary basis. As at December 31, 2021, the fair value of securities involved in such transactions was €18,165 million (December 31, 2020: €8,585 million).

The receivables arising from these reverse repo transactions and reported under financial assets held for trading and under loans and advances to banks amounted to €18,028 million as at the balance sheet date (December 31, 2020: €8,580 million). As part of the collateral management requirements, the original seller provides the DZ BANK Group with additional collateral for reverse repo transactions in which the fair value of the securities purchased is less than the amounts receivable from the seller.

Securities lending

Securities lending transactions are undertaken on the basis of the Global Master Securities Lending Agreement (GMSLA) or on the basis of individual contractual arrangements. Under these agreements, the borrower of the securities is permitted to make use of the securities without restriction and return securities of the same type. If the fair value of the securities received or transferred in such transactions increases or decreases, the entity concerned may be required to furnish additional collateral or may demand additional collateral.

Securities lending

In securities lending transactions, shares and other variable-yield securities and/or bonds and other fixed-income securities classified as financial assets measured at fair value are temporarily transferred to another party. As at the balance sheet date, the carrying amounts of securities lent under securities lending arrangements were as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
FINANCIAL ASSETS MEASURED AT FAIR VALUE	**3,812**	2,336
Financial assets measured at fair value through profit or loss	**1,178**	897
Financial assets mandatorily measured at fair value through profit or loss	***1,178***	*897*
Financial assets held for trading	1,178	897
Financial assets measured at fair value through other comprehensive income	**2,634**	1,439
Financial assets mandatorily measured at fair value through other comprehensive income	***2,634***	*1,439*
Investments held by insurance companies	2,634	1,439
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	**-**	3
Investments held by insurance companies	-	3
Total	**3,812**	2,339

Collateral is provided or received as part of collateral management arrangements in connection with financial assets held for trading and investments held by insurance companies that are lent under securities lending agreements. In this process, all positions with the counterparty concerned are netted to determine the collateral to be provided or received.

As at the balance sheet date, additional collateral with a carrying amount of €24 million had been furnished in connection with securities lending (December 31, 2020: €19 million). This collateral is recognized under financial assets held for trading and may be sold or repledged by the recipient even if the provider is not in default.

Securities borrowing

The fair value of borrowed securities as at the balance sheet date was as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Bonds and other fixed-income securities	2,305	1,916
Shares and other variable-yield securities	26	27
Total	**2,331**	**1,943**

In addition to securities subject to sale and repurchase agreements or that have been borrowed, bonds and other fixed-income securities and shares and other variable-yield securities are accepted as additional collateral. These may be sold or repledged as collateral by the recipient, even if there is no default. As at December 31, 2021, the fair value of the additional collateral received was €65 million (December 31, 2020: €36 million).

Securities subject to a sale and repurchase or lending agreement that the recipient may sell or repledge as collateral with no requirement for a prior counterparty default

All securities transferred to another party by entities in the DZ BANK Group under sale and repurchase agreements or securities lending agreements may be sold or repledged as collateral by the recipient without restriction.

The carrying amounts of the individual balance sheet items concerned are as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Financial assets held for trading	1,278	1,297
Investments	772	1,410
Investments held by insurance companies	2,634	1,442
Total	**4,684**	**4,149**

» 83 Collateral

The breakdown of the carrying amount of financial assets pledged as collateral for liabilities is as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Loans and advances to banks	73,156	65,692
Loans and advances to customers	189	247
Financial assets held for trading	9,543	14,811
Investments	29,175	14,851
Investments held by insurance companies	1,290	1,311
Total	**113,354**	**96,912**

Of the total financial assets pledged as collateral for liabilities, financial assets held for trading and investments with a carrying amount of €4,999 million (December 31, 2020: €5,229 million) may be sold or repledged as collateral by the recipient, even if the relevant entity in the DZ BANK Group is not in default.

Funds received from German federal and state development banks that are to be specifically used for the purposes of development program loans are mainly passed on to affiliated banks. The corresponding loans and advances to affiliated banks serve as collateral with the German federal and state development banks.

The loans and advances to customers pledged as collateral predominantly consist of building loans issued as part of KfW development program loans. The amounts due to Germany's KfW development bank are secured by assigning to KfW the receivables arising from the forwarding of the development loans together with the collateral furnished by the borrowers.

Securities and money market placements recognized as financial assets held for trading are pledged as collateral for exchange-traded forward transactions, non-exchange-traded derivatives and for forward forex transactions. These arrangements are governed by standard industry collateral agreements.

The investments pledged as collateral comprise securities furnished as collateral for open-market operations with Deutsche Bundesbank.

The investments held by insurance companies are predominantly securities pledged as collateral as part of the reinsurance business; this collateral may only be sold or pledged by the recipient in the event of default by the provider.

» 84 Items of income, expense, gains, and losses

Net gains and losses

The breakdown of net gains or net losses on financial instruments by IFRS 9 category for financial assets and financial liabilities is as follows:

€ million	2021	2020
Financial instruments measured at fair value through profit or loss	**492**	1,571
Financial instruments mandatorily measured at fair value through profit or loss	195	1,520
Financial instruments designated as at fair value through profit or loss	298	51
Financial assets measured at fair value through other comprehensive income	**1,862**	3,573
Financial assets mandatorily measured at fair value through other comprehensive income	1,194	3,517
of which gains and losses recognized in profit or loss	2,156	1,878
of which gains and losses recognized in other comprehensive income	-1,175	1,391
of which gains and losses reclassified on derecognition from cumulative other comprehensive income to profit or loss	213	248
Financial assets designated as at fair value through other comprehensive income	668	56
Financial assets measured at amortized cost	**4,287**	4,432
Financial liabilities measured at amortized cost	**-1,331**	-2,224

Net gains or net losses comprise gains and losses on fair value measurement, impairment losses and reversals of impairment losses, and gains and losses on the sale or early repayment of the financial instruments concerned. These items also include interest income and interest expense, current income, income from profit-pooling, profit-transfer agreements, partial profit-transfer agreements, and expenses from the transfer of losses.

In connection with financial liabilities designated as at fair value through profit or loss, a gain of €39 million (2020: loss of €60 million) was recognized in other comprehensive income/loss and a gain of €514 million (2020: loss of €475 million) in profit or loss.

Interest income and expense

The following total interest income and expense arose in connection with financial assets and financial liabilities that are not measured at fair value through profit or loss:

€ million	2021	2020
Interest income	**5,925**	6,413
From financial assets measured at amortized cost including finance leases	4,199	5,115
From financial assets measured at fair value through other comprehensive income	1,726	1,298
Interest expense	**-1,335**	-2,228

Fee and commission income and expenses

The table below shows the changes in fee and commission income and expenses:

€ million	2021	2020
Fee and commission income		
From financial assets and financial liabilities not at fair value through profit or loss	172	169
From trust and other fiduciary activities	4,834	3,618
Fee and commission expenses		
For financial assets and financial liabilities not at fair value through profit or loss	-219	-240
For trust and other fiduciary activities	-2,076	-1,647

» 85 Derivatives

Derivatives are used primarily to hedge against market risk as well as for trading purposes. As at the balance sheet date, the breakdown of the portfolio of derivatives was as follows:

	Nominal amount					Fair value			
	Time to maturity			Total amount		Positive		Negative	
€ million	≤ 1 year	> 1 year – 5 years	> 5 years	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020
INTEREST-LINKED CONTRACTS	222,062	438,962	636,466	**1,297,491**	1,110,340	**13,998**	19,986	**13,615**	19,146
OTC products									
Forward rate agreements	31,006	-	-	31,006	22,515	-	-	-	-
Interest-rate swaps	169,302	394,824	609,751	1,173,877	998,500	12,777	17,916	11,710	15,853
Interest-rate options – bought	6,504	17,708	11,333	35,546	38,758	844	1,462	86	77
Interest-rate options – written	6,455	24,502	15,383	46,339	45,170	251	234	1,794	3,214
Other interest-rate contracts	647	270	-	917	1,291	126	374	24	1
Exchange-traded products									
Interest-rate futures	8,141	1,658	-	9,800	4,105	-	-	-	-
Interest-rate options	6	-	-	6	-	-	-	-	-
CURRENCY-LINKED CONTRACTS	106,680	27,461	7,952	**142,093**	126,597	**1,495**	1,891	**1,757**	1,823
OTC products									
Cross-currency swaps (excl. portfolio hedging)	8,323	16,899	7,868	33,090	32,714	391	653	743	668
Forward forex transactions	84,886	9,160	59	94,105	75,657	1,011	1,024	944	1,003
Forex options – bought	5,803	170	-	5,973	8,144	27	68	19	42
Forex options – written	7,445	1,232	4	8,681	9,845	65	146	50	106
Exchange-traded products									
Forex futures	163	-	-	163	138	1	-	-	-
Forex options	60	-	22	81	100	-	-	1	4
SHARE-/INDEX-LINKED CONTRACTS	19,298	11,747	2,558	**33,603**	32,464	**900**	744	**1,578**	1,553
OTC products									
Share/index options – bought	2,983	26	-	3,009	3,309	44	29	-	-
Share/index options – written	345	193	-	538	319	-	-	22	18
Other share/index contracts	534	3,229	2,043	5,805	6,096	53	56	246	378
Exchange-traded products									
Share/index futures	1,164	92	1	1,257	2,016	-	-	-	-
Share/index options	14,272	8,208	514	22,994	20,724	802	660	1,311	1,157
OTHER CONTRACTS	2,885	3,144	11,712	**17,740**	17,099	**2**	1	**150**	188
OTC products									
Precious metal contracts (excl. gold derivatives)	-	1	-	1	-	-	-	-	-
Commodities contracts	-	-	-	-	9	-	-	-	1
Other contracts	2,704	3,136	11,681	17,521	16,870	1	-	141	180
Exchange-traded products									
Futures	80	1	-	81	108	1	-	1	-
Options	101	6	31	138	112	-	1	8	7
CREDIT DERIVATIVES	2,399	10,442	4,774	**17,614**	17,474	**380**	337	**82**	94
Protection buyer									
Credit default swaps	581	1,919	370	2,870	3,366	4	6	58	63
Protection seller									
Credit default swaps	1,807	8,499	4,397	14,702	14,069	377	331	23	28
Total return swaps	11	24	7	42	38	-	-	-	3
Total	**353,323**	**491,756**	**663,462**	**1,508,541**	**1,303,973**	**16,775**	**22,960**	**17,182**	**22,804**

The derivatives held at the balance sheet date involved the following counterparties:

	Fair value			
	Positive		Negative	
€ million	**Dec. 31, 2021**	Dec. 31, 2020	**Dec. 31, 2021**	Dec. 31, 2020
OECD central governments	**45**	60	**106**	13
OECD banks	**13,753**	19,282	**14,480**	18,900
OECD financial services institutions	**228**	392	**237**	917
Other companies, private individuals	**2,715**	3,170	**2,256**	2,864
Non-OECD banks	**33**	57	**103**	110
Total	**16,775**	**22,960**	**17,182**	**22,804**

The Union Investment Group has capital preservation commitments under section 1 (1) no. 3 of the German Personal Pension Plan Certification Act (AltZertG) amounting to €17,157 million (December 31, 2020: €16,113 million). These commitments are the total amount of the pension contributions paid by investors into the individual variants of the *UniProfiRente* and *UniProfiRente Select* products, which represent the minimum amount that must be made available at the start of the payout phase under statutory provisions, and the guaranteed payout amounts for existing contracts that are already in the portfolio payout phase. The group also has minimum payment commitments of €363 million (December 31, 2020: €757 million) in connection with genuine guarantee funds launched by fund management companies in the group.

» 86 Hedge accounting

Risk management strategy

Fair value hedges are used as part of the risk management strategy to eliminate or reduce accounting mismatches.

Hedged items

Fair value hedges are used in the hedging of interest-rate risk. In this context, interest-rate risk refers to the risk of an adverse change in the fair value of fixed-income financial instruments caused by a change in market interest rates. The hedged financial assets are loans and advances to banks, loans and advances to customers, and investments that are categorized as ‘financial assets measured at amortized cost’ or ‘financial assets measured at fair value through other comprehensive income’. Hedged financial liabilities are deposits from banks and customers, debt certificates issued including bonds, and subordinated liabilities, all of which are measured at amortized cost. Interest-rate risk portfolios under both assets and liabilities are identified and designated as hedged items in portfolio hedges.

Hedging instruments

Swaps and swaptions are designated as hedging instruments in fair value hedges of financial assets and financial liabilities. In the DZ BANK Group, hedging instruments are reported under hedging instruments (positive fair values) and hedging instruments (negative fair values).

Assessment of hedge effectiveness

The prerequisite for recognizing a hedge is that the hedge must be highly effective on both a prospective and retrospective basis. Highly effective in this case means that the changes in fair value of the hedged items must be almost fully offset by the changes in fair value of the hedging instruments. In the case of the individual hedges entered into by the DZ BANK Group, this is achieved by ensuring that the main features of hedged items that influence their value match those of the hedging instruments and that there is a hedging ratio of 100 percent (1:1 hedging). In portfolio hedges, there is no direct economic relationship between hedged item and hedging instrument. An individual hedging ratio based on the sensitivities of the hedged items and hedging instruments is used to ensure that the respective changes in fair value more or less balance each other out. Hedge effectiveness must be assessed and documented at every balance sheet date as a minimum.

For individual hedges accounted for in application of the rules under IFRS 9, any hedge ineffectiveness is quantified retrospectively and recognized in profit or loss. IFRS 9 does not define effectiveness in terms of a mandatory range of values. If a hedge no longer satisfies the effectiveness criterion in relation to the hedge ratio, the hedge ratio must be adjusted (recalibration). If it is no longer possible to adjust the hedge ratio or if the risk management objective for the hedge has changed, the hedge must be de-designated.

Portfolio hedges that continue to be accounted for in application of the rules under IAS 39 are deemed to be a highly effective if the changes in the fair value of the hedged items are offset by the changes in the fair value of the hedging instruments within the range of 80 percent to 125 percent specified by IAS 39. If this assessment identifies that a hedge has not achieved the required effectiveness, the hedge must be reversed retrospectively to the balance sheet date of the last assessment in which the hedge was found to be effective.

In the case of fair value hedges, prospective effectiveness is assessed by using sensitivity analyses (based on the basis point value method) and linear regression analysis; it is also assessed qualitatively with the critical-terms-match method. Retrospective effectiveness is assessed primarily by using the dollar offset method, a noise threshold value, and regression analysis. In these methods, the cumulative changes in the fair value of the hedged items attributable to the hedged risk are compared with the changes in the fair value of the hedging instruments.

Gains and losses and hedge ineffectiveness from hedge accounting

In hedge accounting, hedge ineffectiveness arises when the changes in the fair value of hedging instruments do not fully offset the changes in the fair value of the hedged items. The ineffective portions of hedges are recognized in profit or loss under other gains and losses on valuation of financial instruments.

Hedge ineffectiveness can arise in fair value hedges of interest-rate risk. Some of the ways in which this can occur are where the changes in the fair values of hedged items and hedging instruments do not balance each other out in full because of differences in maturities, cash flows, and/or discount rates.

Extent of risks managed by the use of hedges

The table below presents information on the volume of hedged items and hedging instruments designated as hedges for the purposes of hedging interest-rate risk:

AS AT DECEMBER 31, 2021

€ million	Carrying amount	Nominal amount of hedging instruments	Fair value hedge adjustments included in carrying amount of hedged items		Fair value changes as basis for measuring hedge ineffective-ness for the period
			Existing hedges	Terminated hedges	
Assets	**59,863**	**33,337**	**534**	**654**	**-1,139**
Loans and advances to banks	7		-	-	-
Loans and advances to customers	1,579		70	72	-106
Investments	2,521		12	18	-56
Portfolio hedges of interest-rate risk	55,367		452	564	-1,299
Hedging instruments (positive fair values)	389	33,337			322
Liabilities	**12,084**	**34,247**	**171**	**115**	**1,159**
Deposits from banks	356		11	8	12
Deposits from customers	2,320		96	13	80
Debt certificates issued including bonds	251		3	4	10
Subordinated capital	10		-	-	-
Portfolio hedges of interest-rate risk	7,468		60	90	117
Hedging instruments (negative fair values)	1,678	34,247			941

AS AT DECEMBER 31, 2020

€ million	Carrying amount	Nominal amount of hedging instruments	Fair value hedge adjustments included in carrying amount of hedged items		Fair value changes as basis for measuring hedge ineffective-ness for the period
			Existing hedges	Terminated hedges	
Assets	**53,390**	**8,628**	**2,079**	**917**	**1,552**
Loans and advances to banks	41		-	-	-1
Loans and advances to customers	1,855		176	80	105
Investments	2,485		71	30	14
Non-current assets and disposal groups classified as held for sale	4		-	-	-
Portfolio hedges of interest-rate risk	48,844		1,832	807	1,429
Hedging instruments (positive fair values)	161	8,628			5
Liabilities	**10,622**	**51,769**	**264**	**324**	**-1,511**
Deposits from banks	509		22	10	-4
Deposits from customers	3,351		171	14	31
Debt certificates issued including bonds	371		49	7	-10
Subordinated capital	10		-	-	-
Portfolio hedges of interest-rate risk	3,743		22	293	-122
Hedging instruments (negative fair values)	2,638	51,769			-1,406

Effects of hedging instruments on cash flows

The residual maturities of the hedging instruments entered into by the DZ BANK Group to hedge interest-rate risk are as follows:

AS AT DECEMBER 31, 2021

	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years
Nominal amount (€ million)	56	1,967	8,085	33,986	23,491
Average hedged interest rate (%)	0.62	-0.23	0.08	0.75	1.24

AS AT DECEMBER 31, 2020

	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years
Nominal amount (€ million)	170	354	3,567	28,913	27,391
Average hedged interest rate (%)	1.42	1.48	1.48	0.81	1.24

Reconciliation of hedge accounting effects to equity components by type of risk

The following table shows a reconciliation of the effects from hedge accounting to corresponding components of equity. The relevant effects were those from hedges of net investments in foreign operations. These types of hedge were used only in connection with hedging the exposure to currency risk.

€ million	**2021**	2020
Reserve from hedges of net investments in foreign operations as at Jan. 1	-4	-7
Gains arising during the reporting period	-	4
Gains reclassified to the income statement because the hedged item impacted the income statement	5	-
Income taxes	-	-1
Reserve from hedges of net investments in foreign operations as at Dec. 31	**-**	**-4**

Investments in foreign operations that were previously designated as hedges of net investments in foreign operations were sold in 2021. Consequently, the reserve from hedges of net investments in foreign operations that was still remaining after the hedging relationship ended was reclassified to the income statement. In 2020, the reserve had resulted solely from hedges that had expired.

» 87 Reform of interest-rate benchmarks

The German and European banking industry is currently working on the replacement of the existing interest-rate benchmarks with (virtually) risk-free interest-rate benchmarks in implementation of the EU Benchmark Regulation and in view of international market developments. Euribor has been reformed and will be retained in its current form as an interest-rate benchmark for the foreseeable future. EONIA and the Libor settings in Swiss francs, pound sterling, Japanese yen, and euros were published for the final time for December 31, 2021. The changeover for USD Libor is scheduled for June 30, 2023. Until then, it can be used for existing business.

As it did in 2020, the DZ BANK Group is applying the temporary exceptions provided for hedge accounting resulting from the provisions in phase 1 of the reform of interest-rate benchmarks. The first step in the projects carried out was an assessment of the extent to which fair value hedges of financial instruments were subject to uncertainties as a result of the reform of interest-rate benchmarks. These uncertainties stemmed from market participants’ expectations regarding implementation of the transition to the alternative interest-rate benchmarks. Over the course of 2021, the hedging instruments were switched over from the interest-rate benchmarks published for the final time at the end of 2021 to virtually risk-free interest-rate benchmarks. The hedging instruments that have not yet been switched over are pegged almost exclusively to USD Libor. They are due to mature after the likely date on which USD Libor will cease to apply, thereby creating uncertainty in respect of these hedges. The DZ BANK Group intends to switch over these financial instruments in the same way as used for the successful transition of the financial instruments that previously referenced GBP Libor and CHF Libor. The current assumption is that the USD Libor changeover will also not lead to dedesignation of existing hedges.

The Libor-related risk attaching to the hedges can be seen from the nominal amounts of the hedging instruments shown below:

AS AT DECEMBER 31, 2021

	CHF Libor 3M	CHF Libor 6M	USD Libor 3M	USD Libor 6M
Nominal amount (€ million)	97	-	1,985	-
Weighted average maturity (years)	0.5	-	6.5	-

AS AT DECEMBER 31, 2020

	CHF Libor 3M	CHF Libor 6M	USD Libor 3M	USD Libor 6M
Nominal amount (€ million)	93	10	2,841	19
Weighted average maturity (years)	1.5	7.0	7.3	3.8

Alongside the exceptions for phase 1, Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4, and IFRS 16) are applied from 2021 onward (an explanation of the amendments to the standards can be found in note 2). In the DZ BANK Group, the outstanding switch of USD Libor to SOFR is particularly significant, as was the switch (now completed) of the EONIA and Libor interest-rate benchmarks. The transition phase before the planned replacement of USD Libor involves numerous uncertainties and risks, concerning not only new market practices – some of which are still to be developed – and the establishment of the alternative interest-rate benchmarks in the markets but also the risks described below.

If the bilateral negotiations with counterparties do not reach a successful conclusion before USD Libor is discontinued, interest-rate basis risk may arise. There may be uncertainties about the interest-rate benchmark to be used that were not foreseeable at the time that the contracts were entered into. Litigation risk may occur if no agreement is reached on implementing the IBOR reform in existing contracts. This may potentially lead to legal disputes.

If IT system upgrades and the changeover of the relevant contracts are not completed by the specified deadlines, there is a risk that the available courses of action in respect of the transactions concerned may be restricted. This could give rise to business risks (such as withdrawal from profitable areas of business), legal risks (such as compensation claims), and reputational risks.

Further risks could arise if the transition from USD Libor to SOFR for certain contracts does not permit application of the exemptions introduced in phase 2. This could result in the discontinuation of hedges and thus lead to increased earnings volatility.

Strategies for minimizing interest-rate basis risk and litigation risk are the early initiation of contact with counterparties and achieving a fair balance between the interests of issuers and lenders in the course of the transition (based on the market standards that are becoming established). External legal support and efforts to reach agreement on contractual amendments in line with the phase 2 rules should also help to reduce the aforementioned risks.

Significant progress with switching over the interest-rate benchmarks was achieved in 2021. The transition from EONIA to €STR and the changeover of the Libor interest-rate benchmarks (with the exception of USD Libor and selected financial instruments) were implemented. In order to manage the scope and complexity of the transition and the resulting risks, the DZ BANK Group set up projects involving collaboration between different divisions in which the technical and process-related foundations were laid and the specific business changes were planned and implemented. These projects followed a risk-based approach so that any risks arising could be identified and resolved as quickly as possible. This was done, for example, by testing the affected IT systems, closely monitoring implementation progress, and rigorously applying mitigation strategies. All relevant stakeholders were kept up to date on progress. Detailed plans and processes continue to be drawn up to ensure that the transition of the USD Libor transactions is in line with official expectations and adheres to the milestones specified for the banking sector.

The DZ BANK Group is represented in currency-area-specific working groups so that it can support an orderly transition by the relevant deadlines. The group also applies the ISDA 2020 IBOR Fallbacks Protocol and the German Master Agreement for Financial Futures of the Bundesverband deutscher Banken (BdB) [Association of German Banks].

The aforementioned risks for the USD Libor transition and the measures taken to reduce them also applied to the financial instruments that have now been successfully switched up to the point at which they were switched.

The table below shows the carrying amounts of the non-derivative financial instruments and the nominal amounts of the derivatives for which the switch to alternative interest-rate benchmarks had not yet taken place as at the reporting date. Financial instruments that will expire before any potential transition are not included.

AS AT DECEMBER 31, 2021

€ million	Non-derivative financial assets	Non-derivative financial liabilities	Derivatives
USD Libor	5,442	761	86,748
GBP Libor	822	23	265
CHF Libor	4	-	228
Other Libor	60	-	-

The financial instruments that do not reference USD Libor primarily relate to existing business that is difficult to switch, known as the ‘tough legacy’. As a temporary solution for 2022, the Financial Conduct Authority has decided to publish a synthetic (non-representative) GBP Libor for existing business that references GBP Libor. The EU has introduced a transitional regulation for CHF Libor that specifies compounded SARON with different spread adjustments in the various tenors as a replacement interest rate. The ISDA 2020 IBOR Fallbacks Protocol applies to most of the derivatives held by the DZ BANK Group as at the balance sheet date that reference CHF Libor.

» 88 Nature and extent of risks arising from financial instruments and insurance contracts

With the exception of the qualitative and quantitative disclosures pursuant to IFRS 7.35F(a)-36(b), the disclosures on the nature and extent of risks arising from financial instruments (IFRS 7.31-42) and insurance contracts (IFRS 4.38-39A) are included in the group management report in chapter VII 'Risk report', sections 5 'Liquidity adequacy' and 7 'Credit risk', section 9 'Market risk' for the Bank sector, and sections 15 'Actuarial risk' and 16 'Market risk' for the Insurance sector. The disclosures pursuant to IFRS 7.35F(a)-36(b) can be found in this note in the notes to the consolidated financial statements. Disclosures on the maturity analysis in accordance with IFRS 7.39(a) and (b) and IFRS 4.39(d)(i), together with disclosures on the claims rate trend for direct non-life insurance business and for the inward reinsurance business in accordance with IFRS 4.39(c)(iii), can be found within the notes to the consolidated financial statements in notes 42 and 89.

Credit risk management practices

The rules for recognizing loss allowances are based on the calculation of expected losses in the lending business, on investments, on investments held by insurance companies, and on other assets. The impairment rules are applied only to those financial assets that are not measured at fair value through profit or loss. These are:

– Financial assets measured at amortized cost and
– Debt instruments held as financial assets measured at fair value through other comprehensive income.

The impairment rules are also applied to:

– Financial guarantee contracts and loan commitments that fall within the scope of IFRS 9 and are not recognized at fair value through profit or loss,
– Lease receivables, and
– Trade receivables and contract assets pursuant to IFRS 15.

In accordance with IFRS 9, the three-stage approach is used, additionally taking POCI assets into account, to determine the expected losses:

– Stage 1: For financial assets whose credit risk has not increased significantly since initial recognition that were not impaired upon initial recognition, the 12-month credit loss is recognized. Interest is recognized on the basis of the gross carrying amount.
– Stage 2: For financial assets whose credit risk has increased significantly since initial recognition, the loss allowances are determined in the amount of the assets' lifetime expected credit losses. Interest is recognized on the basis of the gross carrying amount.
– Stage 3: Financial assets are classified as impaired and thus assigned to stage 3 if they are deemed to be in default pursuant to article 178 of the Capital Requirements Regulation (CRR) as operationalized in the DZ BANK Group's definition of default. Because the indicators and events deemed to be stage 3 criteria under IFRS 9 cover the same scope and, at the same time, lead to default pursuant to article 178 CRR, there is a correlation between these two classifications. Therefore, if the financial assets are in default, they are also classified as impaired and assigned to stage 3. Here too, loss allowances are recognized in the amount of the lifetime expected credit losses. Interest income is calculated on the amortized cost after loss allowances using the effective interest method.
– POCI assets: Financial assets that are already deemed impaired upon initial recognition are not assigned to the 3-stage model and are reported separately. Credit-impaired financial assets are initially recognized at fair value rather than at their gross carrying amount. Consequently, interest is recognized for these assets using a risk-adjusted effective interest rate.

The review of whether the credit risk of financial assets, financial guarantee contracts, and loan commitments has increased significantly since initial recognition is carried out on an ongoing basis. The assessment is conducted both for individual financial assets and for portfolios of assets using quantitative and qualitative analysis. As a rule, quantitative analysis looks at the expected credit risk over the entire residual life of the financial instruments in question. Macroeconomic information is also factored in by transferring these inputs to shift factors for determining the default probability. For the quantitative transfer criterion, the credit risk as at the balance sheet date for the residual life is compared with the assets' credit risk over the same maturity period estimated at the time of initial recognition. The thresholds that indicate a significant increase in credit risk are determined for each portfolio separately relative to the portfolio's past migrations of default probability. Internal risk measurement systems, external credit ratings, and risk forecasts are also used to assess the credit risk of financial assets. In 2021, the quantitative transfer criterion was adjusted in order to set a maximum value for these thresholds of 200 percent of the increase in credit risk.

There are also 3 qualitative transfer criteria. Assets for which forbearance measures have been agreed, assets where the counterparty has been put on the watchlist for the early identification of risk, and assets where payments are more than 30 days past due also have significantly increased credit risk and are assigned to stage 2. Payments being more than 30 days past due is deemed a backstop criterion because, as a rule, the other transfer criteria mean that financial assets are allocated to stage 2 well before payments become more than 30 days past due.

Assets with low credit risk and/or an investment-grade credit rating are also monitored for increases in credit risk and for credit rating changes. If the quantitative transfer threshold is exceeded, however, these assets are not transferred to stage 2 due to the low credit risk exemption. The assets are transferred to stage 2 only if a non-investment-grade credit rating is awarded or if a qualitative transfer criterion applies. The scope of the low credit risk exemption was expanded in 2021 and now also applies to loans and advances, undrawn loan commitments, and financial guarantee contracts, having previously applied exclusively to securities.

If, on the balance sheet date, it is found that there is no longer a significant increase in credit risk compared with previous balance sheet dates, the financial assets in question are transferred back to stage 1 and the loss allowances are brought back down to the level of the 12-month expected credit loss. If a financial instrument in stage 3 recovers, the difference between the interest income determined for the period of credit impairment on the basis of amortized cost and the actual interest income recognized in respect of the financial instrument for the period concerned is reported as a reversal of an impairment loss or a reversal of loss allowances. A transfer back from stage 3 is carried out if there are no longer indicators of credit impairment. At the same time, the regulatory default status is revoked and specified cure periods are taken into account.

Expected losses are calculated as the probability-weighted present value of the expected defaults over the estimated residual life from default events within the next 12 months for assets assigned to stage 1 of the impairment model and from default events over the entire residual life for assets assigned to stage 2. The expected losses are discounted with their original effective interest rate. This calculation uses the regulatory model (probability of default, loss given default, and expected loan amount at the time of default), with adjustments to satisfy the requirements of IFRS 9. The estimated probability of default incorporates both historical and forward-looking default information. This is applied when loss allowances are determined, in the form of shifts in the default probabilities calculated using statistical methods (known as shift factors). Depending on the portfolio, the calculation of the expected loss for specific exposures in stage 3 also uses this type of parameter-based approach or draws on individual expert appraisals of the achievable cash flows and probability-weighted scenarios at individual transaction level.

Loss histories, adjusted to reflect forecast future defaults, serve as the basis for determining expected losses. As at the reporting date, 3 macroeconomic scenarios based on empirical estimates were factored in. These scenarios specifically look at future trends in the labor market, interest rates in the money market, changes in gross domestic product, inflation, and real estate prices. To ensure that the expected loss is not distorted, the

DZ BANK Group uses a number of scenarios when determining the risk parameters, which are then factored into the calculation of the level of the loss allowance with a probability weighting. The methods and assumptions, including the forecasts, are validated regularly.

For the purpose of calculating loss allowances for portfolios, the portfolios are grouped according to shared credit risk characteristics, e.g. credit rating, date of origination, residual life, industry and origin of the borrower, and type of asset.

Directly recognized impairment losses reduce the carrying amounts of assets directly. Unlike loss allowances, which are estimates, directly recognized impairment losses are specified in an exact amount if this is justified because the receivable is not collectible (e.g. as a result of the notification of an insolvency ratio). Impairment losses can be recognized directly by writing down the asset value and/or by using existing loss allowances. As a rule, asset values are written down directly after all recovery and enforcement measures have been completed. Directly recognized impairment losses are also applied to insignificant amounts.

For various input parameters in the loss allowance model, it is assumed that developments observable in the past are no longer representative of future developments. In the consumer finance business, post-model adjustments totaling €105 million were therefore carried out in addition to the adjustment of the model-driven default probability profiles (referred to as shift factors) as at the reporting date. This helps to ensure that expectations regarding customer behavior in the face of new legal requirements, the ongoing unique circumstances created by the COVID-19 pandemic, and a number of other risk drivers are reflected that are not yet factored into the models, including the shift factors. The intention is to factor the changes into the risk models directly as soon as meaningful data is available. Until then, the post-model adjustments will be validated regularly and, if necessary, adapted to changed circumstances.

Impact of COVID-19

During the COVID-19 pandemic, the established models and processes for calculating expected losses in accordance with IFRS 9 have generally been retained.

Current economic conditions against the backdrop of COVID-19 are mainly taken into consideration by updating the shift factors. On the basis of consultation with relevant experts, the shift factors determined using statistical methods were overridden in the case of portfolio segments affected by the pandemic. This was due to the unchanged macroeconomic uncertainties, which have not been seen on this scale before, and because of the extensive government support measures. This ensures that the shift factors used are in line both with experts' expectations and with the forecast changes in macroeconomic factors for the calculation of expected losses.

The expected macroeconomic conditions are thus taken into account, primarily by adjusting the model-based default probability profiles used in economic and regulatory risk management (known as shift factors). The shift factors are used to include current economic conditions (known as a point-in-time focus) and forecasts of future economic conditions for the years covered by the macroeconomic forecast period in the determination of loss allowances. These shift factors are derived from macroeconomic inputs for various levels of default probability using stress test models that already existed or that were developed for IFRS 9. The basis for the shift factors applied as at the balance sheet date are the macroeconomic forecasts provided by the internal Economic Roundtable in November 2021. As at the balance sheet date, 3 macroeconomic scenarios (baseline scenario, risk scenario I, and risk scenario II) were taken into account with a weighting of 65 percent (baseline scenario), 15 percent (risk scenario I), and 20 percent (risk scenario II).

The baseline scenario is based on the assumption of an increasingly rapid recovery in consumer spending, capital expenditure, and foreign trade. In subsequent years, it is assumed that national economies will return to their trend growth rates.

Risk scenario I ('resurgence of COVID-19 pandemic, global weakening of demand') is based on the assumption that the COVID-19 pandemic flares up again. In this scenario, new, more aggressive mutations of the virus are possible against which the existing vaccines are not effective. Once again, there is a sharp increase in case numbers and in hospital bed occupancy, even in countries with high vaccination rates. In this scenario, eurozone countries again have to impose very strict restrictions on public life. This causes a temporary slump in economic output in 2022. Concerns about the emergence of new virus variants again create sustained uncertainty among companies and consumers. There is a lasting decline in demand, which causes a marked slowdown in the global economic recovery in subsequent years. Inflation is noticeably lower than in the baseline scenario.

In risk scenario II ('overheating of the US economy, inflation becomes entrenched globally'), the economic recovery in the US causes the economy to overheat. A persistent, unexpectedly sharp rise in demand is triggered by the extensive fiscal programs or by households spending the savings they have accumulated during the pandemic. Companies try to satisfy the surge in demand by increasing capacity, but the labor market cannot keep up. This results in a considerable shortage of skilled workers, leading to large wage rises. A wage-price spiral sets in and the inflation rate rises rapidly. The overheating effect spills over to Europe. The rate of exports to the US increases sharply, commodity prices jump, and the euro/dollar exchange rate weakens significantly. Consequently, inflationary pressure grows markedly in Europe too. Unlike in the baseline scenario, however, the increase in inflation lasts longer in risk scenario II. Elevated inflation continues to become entrenched in subsequent years. The central banks initially assume that the increase in inflation is temporary, react too slowly to developments in the real economy, and then have to take more intensive measures. The key interest rates of the US Federal Reserve and the ECB are raised in unexpectedly large increments, with a much stronger increase in money market rates in the US. The financial markets are not ready for this, resulting in turmoil. This creates adverse effects in the financial markets. Yields on government bonds in the US and Europe rise sharply, and equity markets experience a brief slump.

The main macroeconomic forecasts for 2022 to 2025 used to calculate the expected loss as at the balance sheet date were as follows.

		2022			2023			2024			2025		
		Baseline	Risk I	Risk II	Baseline	Risk I	Risk II	Baseline	Risk I	Risk II	Baseline	Risk I	Risk II
DAX 30, Germany	Index	16,540	12,720	15,900	17,370	13,990	14,310	18,240	14,550	15,740	18,970	15,130	16,530
EURO STOXX 50, EU	Index	4,370	3,360	4,200	4,550	3,700	3,780	4,730	3,850	4,160	4,870	4,000	4,370
Unemployment rate, Germany	%	5.25	6.50	4.50	5.00	6.25	4.25	4.75	6.00	4.00	4.50	5.75	3.75
Harmonized unemployment rates, EU	%	6.75	8.50	6.50	6.50	7.75	6.00	6.25	7.25	5.75	6.00	7.00	5.50
Real GDP growth, Germany (seasonally and calendar-adjusted)	Compared with prior year (%)	4.50	0.00	5.00	1.75	1.50	3.00	1.25	2.00	2.50	1.00	1.50	1.00
Real GDP growth, EU (seasonally and calendar-adjusted)	Compared with prior year (%)	4.75	0.00	5.00	2.25	1.50	3.00	1.50	2.50	2.00	1.25	2.00	1.25

The need to override the shift factors was evaluated in consultation with experts. Different group entities are responsible for this task depending on the shift segment, which constitutes the aggregation of the rating segments. The need to override the shift factors for the shift segments particularly affected by the COVID-19 pandemic was ascertained in groupwide consultation because the models cannot fully take account of government support measures or the current market situation.

The methodology for the process of overriding the model shift factors at group level was unchanged compared with December 31, 2020.

To mitigate the impact of COVID-19, borrowers and the entities in the DZ BANK Group have been agreeing on individual support measures since the start of the pandemic, including the temporary deferral of capital repayments. Besides these individual measures, other measures were taken in the context of legislative and non-legislative moratoria on repayments. These measures in the context of moratoria on repayments had largely expired as at the balance sheet date, with the exception of the legislative moratoria in Hungary, which were extended on a smaller scale until June 30, 2022. In accordance with the EBA Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis in the event of financial difficulties on the part of borrowers, the general legislative and non-legislative moratoria were, as a rule, not classified as forbearance measures and therefore did not lead to a forbearance-related transfer between stages within the impairment model. A transfer between stages still took place if other transfer criteria were met.

No material deterioration in the value of collateral held in the form of mortgages on real estate is currently observable in connection with the COVID-19 pandemic. The COVID-19 pandemic is particularly affecting real estate in the hotel sector and the non-food segment of the retail sector, e.g. department stores and shopping malls, because they have been hit disproportionately hard by the pandemic as a result of having to close during the lockdowns. The impact of the pandemic on the value of the real estate held as collateral can currently be offset by, for example, low interest rates, low vacancy rates, and a conservative finance structure. Any potential write-down of the value of real estate held as collateral is monitored on an ongoing basis, taking account of how the pandemic continues to unfold. In addition, the pandemic has an impact on the collateral furnished in connection with shipping finance. The pandemic has also led to a significant shift in demand from services to goods. Demand for goods will be sustained due to the economic stimulus packages introduced in response to the crisis. At the same time, logistics processes are faced with considerable disruption, for example because ships are not permitted to dock if crew members have COVID-19 or because of outbreaks of the virus among port workers. Consequently, the general capacity utilization of ships is very high and charter rates have reached very elevated levels. The carrying amounts of the collateral are updated regularly using independent market data to ensure that the consequences of the pandemic have also been factored in. These updated collateral values were incorporated into the calculation of loss allowances for expected losses in the reporting period.

As was also the case in 2020, the COVID-19 pandemic resulted in transfers between the stages of the impairment model in the case of the gross carrying amounts of the financial instruments in the classes 'financial assets measured at fair value', 'financial assets measured at amortized cost', and 'finance leases' and in the case of the nominal amounts in the class 'financial guarantee contracts and loan commitments'. The transfers were largely the result of taking account of expected macroeconomic conditions, primarily by adjusting the model-based default probability profiles. A qualitative stage 2 transfer was also carried out at sectoral level. This affected commercial real estate finance transactions in which the main asset is in the shopping mall sector.

The reversal of loss allowances in 2021 for the classes 'financial assets measured at fair value', 'financial assets measured at amortized cost', 'finance leases', and 'financial guarantee contracts and loan commitments' in connection with the COVID-19 pandemic is the result of taking account of expected macroeconomic conditions, primarily by adjusting the model-based default probability profiles. This updating has a direct effect on the probability of default of the financial instruments, which affects both the transfer between stages and the reversal of loss allowances within the stages. In 2020, taking account of expected macroeconomic conditions in connection with the COVID-19 pandemic had resulted in an addition to loss allowances.

Loss allowances and gross carrying amounts

In the DZ BANK Group, loss allowances are recognized for the classes 'financial assets measured at fair value', 'financial assets measured at amortized cost', 'finance leases', and 'financial guarantee contracts and loan commitments' in the amount of the expected credit losses. Trade receivables and contract assets that fall within the scope of IFRS 15 are assigned to the 'financial assets measured at amortized cost' class.

Financial assets measured at fair value

€ million	Stage 1 Loss allowances	Stage 1 Fair value	Stage 2 Loss allowances	Stage 2 Fair value	Stage 3 Loss allowances	Stage 3 Fair value
Balance as at Jan. 1, 2020	9	95,779	1	59	30	19
Addition/increase in loan drawdowns	4	21,832	-	32	-	-
Change to financial assets due to transfer between stages	1	-641	-1	641	-	-
Transfer from stage 1	-	-759	-	759	-	-
Transfer from stage 2	1	118	-1	-118	-	-
Use of loss allowances/directly recognized impairment losses	-1	-	-	-	-8	-
Derecognitions and repayments	-2	-13,222	-	-45	-	-10
Changes to models/risk parameters	10	-	3	-	-	-
Additions	15	-	5	-	-	-
Reversals	-5	-	-2	-	-	-
Amortization, fair value changes, and other changes in measurement	-	2,546	-	14	-	9
Exchange differences and other changes	-	-78	-	-	-1	-
Deferred taxes	-2	-	-	-	3	-
Balance as at Dec. 31, 2020	19	106,216	3	701	24	18
Addition/increase in loan drawdowns	42	44,214	1	171	-	15
Change to financial assets due to transfer between stages	5	53	-5	-68	-	15
Transfer from stage 1	-	-404	-	401	-	3
Transfer from stage 2	5	457	-5	-471	-	14
Transfer from stage 3	-	-	-	2	-	-2
Use of loss allowances/directly recognized impairment losses	-	-	-	-	-1	-4
Derecognitions and repayments	-9	-23,324	-1	-120	-	-10
Changes to models/risk parameters	-27	-	5	-	2	-
Additions	21	-	7	-	2	-
Reversals	-48	-	-2	-	-	-
Amortization, fair value changes, and other changes in measurement	-	-5,937	-	-12	-	-1
Exchange differences and other changes	-	137	-	2	-	1
Deferred taxes	-4	-	-	-	-	-
Balance as at Dec. 31, 2021	**26**	**121,359**	**3**	**674**	**25**	**34**

Financial assets measured at amortized cost

	Stage 1		Stage 2		Stage 3		POCI assets	
€ million	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
Balance as at Jan. 1, 2020	218	348,217	224	8,229	1,823	3,885	1	31
Addition/increase in loan drawdowns	180	7,541,364	92	14,385	618	1,989	7	70
Change to financial assets due to transfer between stages	155	-7,833	-254	6,588	103	1,239	-	-
Transfer from stage 1	-71	-12,762	68	12,140	3	622	-	-
Transfer from stage 2	211	4,810	-357	-5,707	146	891	-	-
Transfer from stage 3	15	119	35	155	-46	-274	-	-
Use of loss allowances/directly recognized impairment losses	-	-1	-1	-	-604	-37	-1	-4
Reclassifications to non-current assets and disposal groups classified as held for sale	-	-51	-	-	-	-	-	-
Derecognitions and repayments	-141	-7,511,144	-120	-15,324	-557	-3,013	-11	-56
Changes to models/risk parameters	-122	-	423	-	309	-	4	-
Additions	185	-	656	-	729	-	9	-
Reversals	-307	-	-233	-	-420	-	-5	-
Modifications	-	-6	-1	-2	-	-	-	-
Modification losses	-	-6	-1	-2	-	-	-	-
Amortization, fair value changes, and other changes in measurement	-	-1,347	-	-92	-	-297	-	-
Positive change in fair value of POCI assets								26
Exchange differences and other changes	-4	-1,559	-4	430	-20	-19	7	2
Changes in the scope of consolidation	-	37	-	3	-	-	-	-
Addition of subsidiaries	1	186	-	3	5	5	-	-
Derecognition of subsidiaries	-1	-149	-	-	-5	-5	-	-
Balance as at Dec. 31, 2020	286	367,677	359	14,217	1,672	3,747	7	69
Addition/increase in loan drawdowns	170	15,652,720	81	29,831	696	2,234	1	71
Change to financial assets due to transfer between stages	205	-3,371	-272	2,870	71	501	-	-
Transfer from stage 1	-57	-10,526	55	10,450	2	76	-	-
Transfer from stage 2	249	7,087	-359	-7,785	110	698	-	-
Transfer from stage 3	13	68	32	205	-41	-273	-	-
Use of loss allowances/directly recognized impairment losses	-	-	-1	-	-440	-33	-	-5
Reclassifications to liabilities included in disposal groups classified as held for sale	-	-124	-	-	-	-15	-	-
Derecognitions and repayments	-186	-15,641,523	-159	-29,961	-829	-3,478	-10	-96
Changes to models/risk parameters	-193	-	363	-	27	-	12	-
Additions	139	-	623	-	398	-	18	-
Reversals	-332	-	-260	-	-371	-	-6	-
Modifications	-	1	1	-1	-	-	-	-
Modification gains	-	2	1	2	-	-	-	-
Modification losses	-	-1	-	-3	-	-	-	-
Amortization, fair value changes, and other changes in measurement	-	340	-	38	-	-100	-	-
Positive change in fair value of POCI assets								49
Exchange differences and other changes	-	489	2	-51	70	14	3	2
Changes in the scope of consolidation	-	-	-	233	-	-	-	-
Addition of subsidiaries	-	-	-	233	-	-	-	-
Balance as at Dec. 31, 2021	**282**	**376,209**	**374**	**17,176**	**1,267**	**2,870**	**13**	**90**

The undiscounted expected credit losses on purchased or originated credit-impaired assets that were recognized for the first time during the reporting period totaled €120 million (2020: €99 million).

Non-current assets and disposal groups classified as held for sale that were previously recognized as financial assets measured at amortized cost

	Stage 1		Stage 2		Stage 3	
€ million	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
Balance as at Jan. 1, 2020	-	194	-	-	3	7
Addition/increase in loan drawdowns	-	24	-	-	-	16
Derecognitions and repayments	-	-215	-	-	-	-11
Changes to models/risk parameters	-	-	-	-	-	-
Additions	-	-	-	-	1	-
Reversals	-	-	-	-	-1	-
Amortization, fair value changes, and other changes in measurement	-	-	-	-	-	-204
Exchange differences and other changes	-	1	-	-	-3	192
Balance as at Dec. 31, 2020	-	4	-	-	-	-
Derecognitions and repayments	-	-4	-	-	-	-
Balance as at Dec. 31, 2021	-	-	-	-	-	-

Finance leases

	Stage 1		Stage 2		Stage 3	
€ million	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
Balance as at Jan. 1, 2020	3	1,374	5	148	8	25
Addition/increase in loan drawdowns	2	133	13	6	15	2
Change to finance leases due to transfer between stages	3	-234	-3	204	-4	36
Transfer from stage 1	-2	-398	2	382	-	16
Transfer from stage 2	4	159	-9	-192	5	39
Transfer from stage 3	1	5	4	14	-9	-19
Derecognitions and repayments	-6	-471	-10	-97	-7	-29
Changes to models/risk parameters	-	-	1	-	-	-
Additions	-	-	1	-	-	-
Balance as at Dec. 31, 2020	2	802	6	261	12	34
Addition/increase in loan drawdowns	3	109	8	6	26	2
Change to finance leases due to transfer between stages	2	-16	-	3	-6	13
Transfer from stage 1	-1	-162	1	157	-	5
Transfer from stage 2	2	142	-4	-165	2	23
Transfer from stage 3	1	4	3	11	-8	-15
Derecognitions and repayments	-5	-347	-8	-94	-18	-20
Balance as at Dec. 31, 2021	**2**	**548**	**6**	**176**	**14**	**29**

Financial guarantee contracts and loan commitments

	Stage 1		Stage 2		Stage 3		POCI assets	
€ million	Loss allowances	Nominal amount	Loss allowances	Nominal amount	Loss allowances	Nominal amount	Loss allowances	Nominal amount
Balance as at Jan. 1, 2020	45	64,937	10	575	140	282	-	-
Addition/increase in loan drawdowns	92	78,042	25	2,175	54	279	4	27
Change to financial guarantee contracts and loan commitments due to transfer between stages	-2	-1,993	-	1,853	2	140	-	-
Transfer from stage 1	-10	-2,257	10	2,139	-	118	-	-
Transfer from stage 2	8	262	-11	-294	3	32	-	-
Transfer from stage 3	-	2	1	8	-1	-10	-	-
Derecognitions and repayments	-65	-65,755	-30	-2,539	-73	-443	-3	-18
Changes to models/risk parameters	-8	-	33	-	10	-	-	-
Additions	42	-	54	-	73	-	-	-
Reversals	-50	-	-21	-	-63	-	-	-
Amortization, fair value changes, and other changes in measurement	-	-179	-	-1	-	-	-	-
Exchange differences and other changes	-	-493	-	382	-4	2	-	-
Balance as at Dec. 31, 2020	62	74,559	38	2,445	129	260	1	9
Addition/increase in loan drawdowns	133	90,732	157	3,777	51	228	1	58
Change to financial guarantee contracts and loan commitments due to transfer between stages	22	-930	-25	828	3	102	-	-
Transfer from stage 1	-6	-1,742	6	1,738	-	4	-	-
Transfer from stage 2	27	805	-32	-928	5	123	-	-
Transfer from stage 3	1	7	1	18	-2	-25	-	-
Derecognitions and repayments	-88	-85,334	-49	-3,927	-72	-320	-1	-65
Changes to models/risk parameters	-66	-	-82	-	15	-	-	-
Additions	36	-	54	-	58	-	1	-
Reversals	-102	-	-136	-	-43	-	-1	-
Amortization, fair value changes, and other changes in measurement	-	176	-	8	-	1	-	-
Exchange differences and other changes	-	-27	-	24	-16	-	-	-
Balance as at Dec. 31, 2021	**63**	**79,176**	**39**	**3,155**	**110**	**271**	**1**	**2**

Contractual modifications and derecognitions

The negotiation or modification of contractually agreed cash flows relating to a financial asset leads to a modified asset. The modification of contractually agreed cash flows can lead to the derecognition of the existing financial asset and the recognition of a new one. In the case of modifications that do not lead to the derecognition of the financial asset (non-substantial contractual modifications), the modifications of the contractually agreed cash flows are recognized as a modification gain or loss in the amount of the difference between the originally agreed cash flows and the modified cash flows discounted with the original effective interest rate. If substantial modifications are made to the contract for a financial asset, the asset is derecognized and then recognized as a new asset. The POCI asset rules apply to impaired assets (stage 3). If contractual modifications for a financial asset do not have a substantial impact, the asset is reviewed to ascertain whether credit risk has increased significantly since initial recognition. The assessment to determine whether there has been a significant deterioration in the credit quality of modified assets compares the probability of default based on the modified cash flows and on the residual maturity as at the reporting date against the probability of default based on the original cash flows and residual maturity on initial recognition.

In 2021, contractually agreed payments in relation to financial assets allocated to stages 2 and 3 of the impairment model with an amortized cost of €636 million (December 31, 2020: €323 million) were modified to take account of changes in contractual cash flows. The modifications resulted in a modification loss of €2 million (2020: €2 million).

The gross carrying amount of financial assets whose contractually agreed cash flows were modified and that had been allocated to stage 2 in the impairment model but were transferred to stage 1 during the reporting period amounted to €36 million (2020: €1 million).

Maximum exposure to credit risk

The DZ BANK Group is exposed to credit risk from financial instruments. The maximum exposure to credit risk is represented by the fair value, amortized cost, or nominal amount of financial instruments. The following collateral is held to reduce the exposure to this maximum credit risk:

AS AT DECEMBER 31, 2021

€ million	Maximum exposure to credit risk	
FINANCIAL ASSETS MEASURED AT FAIR VALUE	189,490	
Financial assets measured at fair value through profit or loss	67,422	
Financial assets mandatorily measured at fair value through profit or loss	58,707	
Financial assets designated as at fair value through profit or loss	8,715	
Financial assets measured at fair value through other comprehensive income	122,068	
Financial assets mandatorily measured at fair value through other comprehensive income	122,068	
of which credit-impaired		
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	395,328	
of which credit-impaired		
FINANCE LEASES	731	
of which credit-impaired		
FINANCIAL GUARANTEE CONTRACTS AND LOAN COMMITMENTS	83,123	
of which credit-impaired		

AS AT DECEMBER 31, 2021

€ million	Maximum exposure to credit risk	
Non-current assets and disposal groups classified as held for sale from financial assets measured at fair value	132	

	of which secured with:					
	Guarantees, indemnities, risk subparticipations	Credit insurance	Land charges, mortgages, registered ship and aircraft mortgages	Pledged loans and advances, assignments, other pledged assets	Financial collateral	Other collateral
	438	**1**	**13,178**	**310**	**3,000**	**926**
	376	**1**	**20**	**21**	**217**	**56**
	207	1	19	21	217	-
	169	-	1	-	-	56
	62	**-**	**13,158**	**289**	**2,783**	**870**
	62	-	13,158	289	2,783	870
	-	-	46	-	-	-
	7,667	**3,269**	**108,872**	**1,381**	**8,884**	**4,403**
	113	228	585	100	79	128
	6	**-**	**-**	**2**	**-**	**-**
	-	-	-	1	-	-
	255	**1,658**	**5,857**	**690**	**10**	**56**
	2	4	11	15	-	18

	of which secured with:					
	Guarantees, indemnities, risk subparticipations	Credit insurance	Land charges, mortgages, registered ship and aircraft mortgages	Pledged loans and advances, assignments, other pledged assets	Financial collateral	Other collateral
	-	-	-	-	-	131

AS AT DECEMBER 31, 2020

€ million	Maximum exposure to credit risk	
FINANCIAL ASSETS MEASURED AT FAIR VALUE	**172,163**	
Financial assets measured at fair value through profit or loss	**65,228**	
Financial assets mandatorily measured at fair value through profit or loss	55,758	
Financial assets designated as at fair value through profit or loss	9,470	
Financial assets measured at fair value through other comprehensive income	**106,935**	
Financial assets mandatorily measured at fair value through other comprehensive income	106,935	
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	**385,366**	
of which credit-impaired		
FINANCE LEASES	**1,076**	
of which credit-impaired		
FINANCIAL GUARANTEE CONTRACTS AND LOAN COMMITMENTS	**77,747**	
of which credit-impaired		

AS AT DECEMBER 31, 2020

€ million	Maximum exposure to credit risk	
Non-current assets and disposal groups classified as held for sale from financial assets measured at fair value	95	
Non-current assets and disposal groups classified as held for sale from financial assets measured at amortized cost	4	

	of which secured with:					
	Guarantees, indemnities, risk subparticipations	Credit insurance	Land charges, mortgages, registered ship and aircraft mortgages	Pledged loans and advances, assignments, other pledged assets	Financial collateral	Other collateral
	834	**2**	**206**	**331**	**2,756**	**825**
	566	**2**	**24**	**26**	**1,297**	**79**
	364	2	23	26	1,296	39
	202	-	1	-	1	40
	268	**-**	**182**	**305**	**1,459**	**746**
	268	-	182	305	1,459	746
	6,894	**2,729**	**113,950**	**2,343**	**8,265**	**6,283**
	71	265	1,344	126	151	398
	10	**-**	**-**	**5**	**-**	**1**
	-	-	-	4	-	1
	389	**1,450**	**5,972**	**786**	**2**	**56**
	3	6	2	11	-	12

	of which secured with:					
	Guarantees, indemnities, risk subparticipations	Credit insurance	Land charges, mortgages, registered ship and aircraft mortgages	Pledged loans and advances, assignments, other pledged assets	Financial collateral	Other collateral
	-	-	-	-	-	55
	-	-	-	-	-	-

A range of different collateral is held in the traditional lending business to reduce the exposure to the maximum credit risk. Specifically, this collateral includes mortgages on residential and commercial real estate, registered ship and aircraft mortgages, guarantees (including indemnities and credit insurance), financial security (e.g. certain fixed-income securities, shares, and investment fund units), blanket and individual assignments of trade receivables, and various types of physical collateral. Generally, cash collateral, high-quality government bonds, and Pfandbriefe are held in the trading business in accordance with the collateral policy to reduce the risk attaching to OTC derivatives. Some financial instruments in stage 3 are not written down because they are fully covered by collateral.

A residual value method is used to determine changes in fair value attributable to changes in credit risk. As a result of changes in credit risk, the fair value of financial assets designated as at fair value through profit or loss had increased by €137 million at the end of 2021 (December 31, 2020: €47 million). The cumulative gains/losses resulting from the change in fair values attributable to changes in credit risk amounted to a net gain of €54 million (December 31, 2020: net loss of €82 million).

The credit risk associated with financial assets designated as at fair value through profit or loss was mitigated as at the reporting date by financial guarantee contracts with a value of €139 million (December 31, 2020: €163 million) furnished by affiliated banks.

Credit risk concentrations

The credit risk from financial instruments to which the DZ BANK Group is exposed is broken down by sector using the Deutsche Bundesbank industry codes and by geographic region using the annually updated country groups published by the International Monetary Fund (IMF). Volumes, measured on the basis of fair values and gross carrying amounts of financial assets and the credit risk from financial guarantee contracts and loan commitments, are broken down using the following credit rating classes:

- Investment grade: equates to internal rating classes 1A–3A
- Non-investment grade: equates to internal rating classes 3B–4E
- Default: equates to internal rating classes 5A–5E
- Not rated: no rating necessary or not classified

‘Not rated’ comprises counterparties for which a rating classification is not required.

AS AT DECEMBER 31, 2021

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Investment grade							
Fair value	Stage 1	53,483	31,829	17,332	12,098	1,851	977
	Stage 2	265	6	127	-	-	-
Gross carrying amount	Stage 1	196,936	16,121	59,828	54,451	7,385	30
	Stage 2	383	7	72	1,380	7,379	-
Nominal amount	Stage 1	29,134	166	22,450	6,725	2,953	-
	Stage 2	-	-	283	3	11	-
Non-investment grade							
Fair value	Stage 1	81	1,040	652	203	-	187
	Stage 2	20	146	86	23	1	-
Gross carrying amount	Stage 1	1,694	135	12,244	14,575	18	-
	Stage 2	231	143	3,079	2,415	32	-
	Stage 3	-	-	-	7	-	-
Nominal amount	Stage 1	645	399	6,810	3,068	-	-
	Stage 2	172	-	2,222	44	57	-

AS AT DECEMBER 31, 2020

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Investment grade							
Fair value	Stage 1	52,952	33,115	15,413	-	1,682	267
	Stage 2	169	-	423	-	-	-
Gross carrying amount	Stage 1	178,638	19,976	60,614	36,695	7,188	480
	Stage 2	105	13	282	467	3,744	-
Nominal amount	Stage 1	27,499	186	21,971	8,133	2,501	-
	Stage 2	5	-	331	-	100	-
Non-investment grade							
Fair value	Stage 1	176	262	94	-	-	-
	Stage 2	18	73	17	-	1	-
Gross carrying amount	Stage 1	1,517	120	12,203	36,190	57	-
	Stage 2	298	139	3,361	3,830	22	-
	Stage 3	-	-	1	5	-	-
Nominal amount	Stage 1	447	255	7,840	176	-	-
	Stage 2	95	-	1,749	2	53	-

AS AT DECEMBER 31, 2021

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Default							
Fair value	Stage 3	16	-	11	7	-	-
Gross carrying amount	Stage 2	-	-	1	-	-	-
	Stage 3	210	7	1,537	724	102	-
	POCI assets	-	-	30	-	-	-
Nominal amount	Stage 2	-	-	3	-	-	-
	Stage 3	15	-	240	15	-	-
	POCI assets	-	-	2	-	-	-
Not rated							
Fair value	Stage 1	918	454	19	1	232	2
Gross carrying amount	Stage 1	1,639	325	2,085	8,136	1,155	-
	Stage 2	829	42	240	832	258	28
	Stage 3	-	-	7	305	-	-
	POCI assets	-	-	5	55	-	-
Nominal amount	Stage 1	1,216	9	1,493	2,751	1,356	-
	Stage 2	257	-	41	52	10	-
	Stage 3	-	-	-	1	-	-

AS AT DECEMBER 31, 2020

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Default							
Fair value	Stage 3	17	-	-	-	-	-
Gross carrying amount	Stage 2	-	-	1	-	-	-
	Stage 3	265	7	2,228	737	119	-
	POCI assets	-	-	38	-	-	-
Nominal amount	Stage 3	-	-	257	2	-	-
	POCI assets	-	-	8	-	-	-
Not rated							
Fair value	Stage 1	850	1,117	70	-	217	-
Gross carrying amount	Stage 1	2,051	619	2,533	8,090	1,508	-
	Stage 2	447	42	738	713	245	30
	Stage 3	1	-	99	319	-	-
	POCI assets	-	-	3	29	-	-
Nominal amount	Stage 1	1,116	9	1,136	2,290	998	-
	Stage 2	3	-	58	22	27	-

AS AT DECEMBER 31, 2021

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Investment grade						
Fair value	Stage 1	44,314	62,837	1,480	3,943	4,996
	Stage 2	69	110	219	-	-
Gross carrying amount	Stage 1	299,115	32,459	944	1,531	702
	Stage 2	8,748	407	62	4	-
Nominal amount	Stage 1	54,283	6,511	115	519	-
	Stage 2	297	-	-	-	-
Non-investment grade						
Fair value	Stage 1	329	724	15	1,095	-
	Stage 2	69	144	-	63	-
Gross carrying amount	Stage 1	23,084	1,493	152	3,937	-
	Stage 2	4,427	904	99	470	-
	Stage 3	-	7	-	-	-
Nominal amount	Stage 1	8,826	535	242	1,319	-
	Stage 2	1,518	799	38	140	-

AS AT DECEMBER 31, 2020

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Investment grade						
Fair value	Stage 1	32,823	61,883	1,398	3,061	4,264
	Stage 2	98	325	169	-	-
Gross carrying amount	Stage 1	273,595	26,591	922	1,622	861
	Stage 2	4,401	178	1	31	-
Nominal amount	Stage 1	53,711	6,068	118	394	-
	Stage 2	338	88	-	10	-
Non-investment grade						
Fair value	Stage 1	88	281	-	163	-
	Stage 2	3	106	-	-	-
Gross carrying amount	Stage 1	43,393	2,476	291	3,927	-
	Stage 2	6,179	628	73	770	-
	Stage 3	1	5	-	-	-
Nominal amount	Stage 1	6,490	1,035	47	1,147	-
	Stage 2	1,427	373	23	76	-

AS AT DECEMBER 31, 2021

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Default						
Fair value	Stage 3	7	27	-	-	-
Gross carrying amount	Stage 2	1	-	-	-	-
	Stage 3	1,678	415	75	412	-
	POCI assets	30	-	-	-	-
Nominal amount	Stage 2	3	-	-	-	-
	Stage 3	223	27	1	19	-
	POCI assets	2	-	-	-	-
Not rated						
Fair value	Stage 1	431	1,195	-	-	-
Gross carrying amount	Stage 1	10,863	2,007	3	432	35
	Stage 2	1,598	527	1	103	-
	Stage 3	273	39	-	-	-
	POCI assets	57	3	-	-	-
Nominal amount	Stage 1	5,885	746	-	194	-
	Stage 2	355	5	-	-	-
	Stage 3	1	-	-	-	-

AS AT DECEMBER 31, 2020

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Default						
Fair value	Stage 3	-	17	-	-	-
Gross carrying amount	Stage 2	1	-	-	-	-
	Stage 3	1,882	703	147	623	-
	POCI assets	38	-	-	-	-
Nominal amount	Stage 3	154	83	-	22	-
	POCI assets	8	-	-	-	-
Not rated						
Fair value	Stage 1	736	1,235	2	-	281
Gross carrying amount	Stage 1	12,542	1,852	3	269	136
	Stage 2	1,603	503	1	108	-
	Stage 3	358	61	-	-	-
	POCI assets	30	2	-	-	-
Nominal amount	Stage 1	4,598	772	-	179	-
	Stage 2	99	11	-	-	-

» 89 Maturity analysis

AS AT DECEMBER 31, 2021

€ million	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Financial assets	**124,578**	**23,023**	**40,711**	**162,820**	**252,739**	**26,074**
Cash and cash equivalents	85,763	-	-	-	-	-
Loans and advances to banks	9,818	4,338	12,259	42,689	41,453	-
Loans and advances to customers	17,338	6,349	19,507	74,420	91,707	18
Derivatives used for hedging (positive fair values)	1	11	75	182	201	-
Financial assets held for trading	7,505	10,230	1,545	7,012	18,916	3,182
of which non-derivative financial assets held for trading	7,157	9,856	436	2,847	7,669	3,182
of which derivatives (positive fair values)	348	374	1,109	4,165	11,247	-
Investments	887	1,043	4,345	19,798	26,115	2,866
Investments held by insurance companies	625	1,027	2,868	18,654	74,346	19,979
of which non-derivative investments held by insurance companies	470	1,026	2,852	18,642	74,345	19,978
of which derivatives (positive fair values)	155	1	16	12	1	1
Other assets	2,641	25	112	65	1	29
Financial liabilities	**-122,045**	**-17,568**	**-20,955**	**-131,240**	**-114,949**	**-71,895**
Deposits from banks	-67,303	-9,350	-8,256	-73,503	-38,772	-1,567
Deposits from customers	-45,293	-2,029	-2,443	-7,504	-19,429	-66,779
Debt certificates issued including bonds	-7,717	-4,269	-5,503	-28,975	-34,208	-
Derivatives used for hedging (negative fair values)	-18	-30	-153	-637	-857	-
Financial liabilities held for trading	-561	-1,393	-4,145	-18,071	-18,772	-502
of which non-derivative financial liabilities held for trading	-261	-919	-3,065	-13,115	-10,147	-502
of which derivatives (negative fair values)	-300	-474	-1,080	-4,956	-8,625	-
Other liabilities	-1,103	-437	-246	-1,483	-922	-3,022
of which non-derivative other liabilities	-1,079	-403	-213	-1,400	-846	-3,020
of which derivatives (negative fair values)	-24	-34	-33	-83	-76	-2
Subordinated capital	-50	-60	-209	-1,067	-1,989	-25
Financial guarantee contracts and loan commitments	**-78,212**	**-124**	**-481**	**-253**	**-23**	**-3,510**
Financial guarantee contracts	-9,548	-59	-9	-86	-21	-27
Loan commitments	-68,664	-65	-472	-167	-2	-3,483

AS AT DECEMBER 31, 2020

€ million	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Financial assets	**105,984**	**16,115**	**40,108**	**164,113**	**250,805**	**22,194**
Cash and cash equivalents	68,148	-	-	-	-	-
Loans and advances to banks	13,517	4,189	11,761	39,315	35,476	-
Loans and advances to customers	16,018	6,675	17,796	73,898	92,052	18
Derivatives used for hedging (positive fair values)	1	5	19	94	38	-
Financial assets held for trading	4,564	2,833	3,203	9,092	22,819	1,964
of which non-derivative financial assets held for trading	4,258	2,247	1,808	3,626	6,644	1,964
of which derivatives (positive fair values)	306	586	1,395	5,466	16,175	-
Investments	996	1,240	4,459	21,757	31,338	2,375
Investments held by insurance companies	631	1,147	2,799	19,853	69,081	17,802
of which non-derivative investments held by insurance companies	350	1,070	2,791	19,829	69,068	17,787
of which derivatives (positive fair values)	281	77	8	24	13	15
Other assets	2,109	26	71	104	1	35
Financial liabilities	**-117,376**	**-11,869**	**-24,899**	**-114,000**	**-114,877**	**-69,878**
Deposits from banks	-72,724	-3,556	-9,824	-56,314	-35,823	-1,576
Deposits from customers	-37,829	-2,172	-3,134	-7,523	-22,823	-64,761
Debt certificates issued including bonds	-2,524	-3,628	-6,753	-26,359	-32,180	-
Derivatives used for hedging (negative fair values)	-10	-32	-152	-883	-1,542	-
Financial liabilities held for trading	-2,982	-1,926	-4,622	-19,010	-20,774	-931
of which non-derivative financial liabilities held for trading	-2,801	-1,001	-2,413	-13,100	-10,020	-931
of which derivatives (negative fair values)	-181	-925	-2,209	-5,910	-10,754	-
Other liabilities	-1,207	-530	-235	-1,402	-1,094	-2,585
of which non-derivative other liabilities	-1,188	-504	-230	-1,300	-953	-2,579
of which derivatives (negative fair values)	-19	-26	-5	-102	-141	-6
Subordinated capital	-100	-25	-179	-2,509	-641	-25
Financial guarantee contracts and loan commitments	**-74,528**	**-85**	**-333**	**-241**	**-35**	**-2,050**
Financial guarantee contracts	-8,233	-53	-3	-146	-10	-52
Loan commitments	-66,295	-32	-330	-95	-25	-1,998

The maturity analysis shows contractually agreed cash inflows with a plus sign and contractually agreed cash outflows with a minus sign. In the case of financial guarantee contracts and loan commitments, the potential cash outflows are shown.

The contractual maturities do not match the estimated actual cash inflows and cash outflows, especially in the case of financial guarantee contracts and loan commitments. The management of liquidity risk based on expected and unexpected cash flows is described in section 5.2.5 of the risk report in the group management report.

The maturity analysis for lease liabilities in accordance with IFRS 16.58 is presented in note 95.

» 90 Issuance activity

The following table shows the new issues, early repurchases, and repayments upon maturity in connection with issuance activity for unregistered paper, broken down by line item.

€ million	2021			2020		
	New issues	Repur-chases	Repayments	New issues	Repur-chases	Repayments
DEBT CERTIFICATES ISSUED INCLUDING BONDS	**37,340**	**-3,973**	**-24,570**	**31,738**	**-1,563**	**-45,970**
Bonds issued	**12,958**	**-3,331**	**-5,714**	**21,252**	**-859**	**-10,282**
Mortgage Pfandbriefe	4,741	-1	-2,474	4,708	-12	-2,080
Public-sector Pfandbriefe	-	-10	-197	252	-	-786
Other bonds	8,217	-3,320	-3,043	16,292	-847	-7,416
Other debt certificates issued	**24,382**	**-642**	**-18,856**	**10,486**	**-704**	**-35,688**
FINANCIAL LIABILITIES HELD FOR TRADING	**9,690**	**-8,569**	**-1,178**	**7,014**	**-1,450**	**-5,544**
SUBORDINATED CAPITAL	**215**	**-353**	**-118**	**1,376**	**-22**	**-263**
Total	**47,245**	**-12,895**	**-25,866**	**40,128**	**-3,035**	**-51,777**

The transactions shown under other debt certificates issued all relate to commercial paper. The transactions presented under financial liabilities held for trading were carried out using bonds issued, including share certificates, index-linked certificates, and other debt certificates. The transactions under subordinated capital were carried out using subordinated liabilities.

F Other disclosures

» 91 Contingent liabilities

€ million	Dec. 31, 2021	Dec. 31, 2020
Contingent liabilities from placement and underwriting obligations	-	41
Contingent liabilities arising from contributions to the resolution fund for CRR credit institutions	111	88
Contingent liabilities in respect of litigation risk	22	39
Total	**134**	**168**

The contingent liabilities arising from contributions to the resolution fund for CRR credit institutions consist of irrevocable payment commitments (IPCs) that the Single Resolution Board (SRB) approved in response to applications that were made to furnish collateral in partial settlement of the contribution to the European bank levy.

The contingent liabilities in respect of litigation risk in the direct health business of the R+V subgroup essentially relate to the not improbable risk of an outflow of resources embodying economic benefits as a result of certain premium adjustments potentially being ineffective. In addition, the contingent liabilities in respect of litigation risk comprise a small number of court proceedings relating to different cases. Where provisions have been recognized for particular claims, no contingent liabilities are recognized.

The underwriting obligations disclosed as at December 31, 2020 in relation to an undertaking by DZ BANK AG in connection with its involvement in the funding of a power plant project as part of an initiative to support economic growth in less developed regions of Saudi Arabia have expired, so there were no longer any contingent liabilities from placement and underwriting obligations as at December 31, 2021.

» 92 Financial guarantee contracts and loan commitments

€ million	Dec. 31, 2021	Dec. 31, 2020
Financial guarantee contracts	**9,750**	**8,497**
Loan guarantees	4,776	4,681
Letters of credit	965	636
Other guarantees and warranties	4,010	3,180
Loan commitments	**72,854**	**68,775**
Credit facilities to banks	24,900	23,695
Credit facilities to customers	37,326	34,042
Guarantee credits	1,059	1,538
Letters of credit	147	145
Global limits	9,422	9,356
Total	**82,604**	**77,272**

The amounts shown for financial guarantee contracts and loan commitments are the nominal values of the commitment in each case.

» 93 Trust activities

Assets held and liabilities entered into as part of trust activities do not satisfy the criteria for recognition on the balance sheet. The following table shows the breakdown for trust activities:

€ million	Dec. 31, 2021	Dec. 31, 2020
Trust assets	**2,312**	**2,094**
Loans and advances to banks	2,049	1,570
Loans and advances to customers	10	12
Investments	252	512
Trust liabilities	**2,312**	**2,094**
Deposits from banks	2,031	1,530
Deposits from customers	281	564

Trust assets and trust liabilities each include trust loans amounting to €2,031 million (December 31, 2020: €1,530 million).

» 94 Business combinations

ZBI GmbH, Erlangen, (formerly ZBI Partnerschafts-Holding GmbH) and 3 of its subsidiaries were fully consolidated for the first time in 2020 following a business combination (ZBI Group). The consideration transferred for the ZBI Group totaled €199 million. The fair value of the net assets stood at €105 million on the acquisition date, of which €5 million was attributable to non-controlling interests. The difference of €99 million between the consideration transferred and the share of the remeasured net assets was recognized as goodwill.

ZBI Immobilienmanagement GmbH, Erlangen, (formerly ZBI Projektentwicklungs GmbH) was acquired along with the ZBI Group as part of the business combination. It had not been included in the scope of consolidation in 2020 as it was not material. As a result of internal restructuring, the company's importance to the DZ BANK Group has increased so it was subsequently included in the scope of consolidation at the start of 2021. First-time consolidation was carried out prospectively with effect from January 1, 2021; the prior-year figures were not restated. As part of a purchase price allocation, a customer base with a value of €2 million and related deferred tax liabilities were identified and recognized in addition to the assets that had been identified in 2020 as a result of the acquisition of the ZBI Group. Consolidation of the carrying amount of the investment based on the company's remeasured equity caused goodwill to increase by €17 million.

Goodwill is allocated to the DZ BANK Group's operating segments, each of which constitutes a cash-generating unit. As at the balance sheet date, goodwill of €155 million was allocated to the UMH subgroup operating segment (December 31, 2020: €138 million). No goodwill was allocated to the TeamBank operating segment (December 31, 2020: €2 million).

Goodwill is regularly tested for possible impairment in the last quarter of the financial year. If there are any indications of possible impairment, more frequent impairment tests are also carried out. In an impairment test, the carrying amount of the goodwill-bearing units is compared with the relevant recoverable amount. The carrying amount is equivalent to the equity attributable to the goodwill-bearing entity. For the purposes of the test, the goodwill is notionally increased by the amount attributable to non-controlling interests. If the recoverable amount exceeds the carrying amount, no impairment of the goodwill is recognized. The recoverable amount is determined as the value in use of the goodwill-bearing entity. Value in use is based on the DZ BANK Group's 4-year plan, from which estimated future cash flows can be derived.

The basic assumptions are determined using an overall assessment based on past experience, current market and economic conditions, and estimates of future market trends. The macroeconomic scenario used as the basis for the 4-year plan assumes that new and stricter COVID-19-related lockdowns in Germany lead to a further recession that gives way to an increasingly rapid recovery over the course of the year. The scenario also assumes that both the euro area and the US dollar area will initially be hit by rising inflation, although the ECB's target for the euro area of 2.0 percent is unlikely to be exceeded for very long but is above 2.0 percent in 2021. The US inflation rate will temporarily rise above the 2.0 percent mark but will not accelerate any further. The monetary policy of the US and European central banks will remain highly expansionary for the foreseeable future, so key interest rates are likely to remain at a very low level for a number of years. However, the ECB's COVID-19-related emergency measures will be gradually withdrawn. The scenario anticipates virtually unchanged spreads on government bonds issued by the peripheral countries of the eurozone.

Cash flows beyond the end of the 4-year period were estimated using a constant rate of growth of 0.5 percent (2020: 0.75 percent) for the following operating segments: UMH subgroup and TeamBank. The value in use for a goodwill-bearing entity is produced by discounting these cash flows back to the date of the impairment test. The discount rate (before taxes) used for the UMH subgroup operating segment in 2021, which was determined on the basis of the capital asset pricing model, was 13.38 percent (2020: 13.53 percent). A discount rate (before taxes) of 14.47 percent was used for the TeamBank operating segment (2020: 14.10 percent).

In the fourth quarter of 2021, there were indications that the goodwill allocated to the TeamBank operating segment might be impaired. The subsequent impairment test resulted in the recognition of an impairment loss of €2 million in respect of the goodwill. The impairment loss was recognized in other net operating income. There had been no impairment losses in the previous year.

Sensitivity analyses are also carried out in which parameters relevant to the calculation of value in use are modified within a plausible range of values. The parameters that are particularly relevant to the DZ BANK Group are the forecast cash flows and the discount rates. No impairment requirement would arise in the UMH subgroup operating segment in any of the scenarios.

» 95 Leases

DZ BANK Group as lessor

The underlying assets in leases in which the DZ BANK Group is the lessor can be subdivided into the following classes: land and buildings, office furniture and equipment, and intangible assets.

For the most part, the land and buildings asset class consists of commercial real estate, including parking areas. A smaller proportion is accounted for by residential real estate. Lease assets in the office furniture and equipment asset class are motor vehicles, IT and office equipment, production machinery, medical technology devices, and photovoltaic installations. Software is the most significant item under intangible assets.

Finance leases

Within the DZ BANK Group, the VR Smart Finanz subgroup is active as a lessor. The companies in the VR Smart Finanz subgroup enter into leases with customers for motor vehicles, production machinery, and photovoltaic installations. In addition to office equipment, software is also leased. Some of the leases include purchase, extension, or termination options; they have terms of 1 to 21 years for office furniture and equipment, and 2 to 7 years for intangible assets.

In addition to the actual underlying assets financed by the leases, further items of collateral such as guarantees, repurchase agreements, and residual value guarantees are contractually agreed in order to reduce the risk. Lease assets are also monitored, for example by means of on-site inspections.

€ million	Dec. 31, 2021	Dec. 31, 2020
Gross investment	**789**	**1,154**
Up to 1 year	314	431
More than 1 year and up to 2 years	207	308
More than 2 years and up to 3 years	125	195
More than 3 years and up to 4 years	68	110
More than 4 years and up to 5 years	40	53
More than 5 years	34	57
less unearned finance income	**-37**	**-58**
Net investment	752	1,096
less present value of unguaranteed residual values	**-17**	**-30**
Present value of minimum lease payment receivables	**735**	**1,066**

The change in the present value of the minimum lease payment receivables was largely attributable to expiring finance leases and partial repayments at the request of customers.

Gains on disposals of €3 million were recognized in 2021 (2020: €3 million). Losses on disposals amounted to €2 million (2020: €3 million). They are reported under interest income in note 34 together with the financial income derived from the net investment in the lease.

Operating leases

Leases are in place for commercial and residential real estate, including parking areas. The leases normally include extension options. A small number of leases are also entered into for office furniture and equipment.

The following table shows a breakdown by asset class of the carrying amounts of the underlying assets in the leases, comprising investment property and items of property, plant and equipment, as at the reporting date:

€ million	Dec. 31, 2021	Dec. 31, 2020
Land and buildings	3,808	3,790
Office furniture and equipment	9	8
Total	**3,817**	**3,798**

Income from operating leases amounted to €268 million in the reporting year (2020: €275 million), the bulk of which comprised rental income from investment property held by the insurance companies.

As at the reporting date, the breakdown of the total amount of minimum lease payments expected to be received from operating leases in the future was as follows:

€ million	Dec. 31, 2021	Dec. 31, 2020
Total future minimum lease payments under non-cancelable leases	**1,107**	**1,099**
Up to 1 year	237	241
More than 1 year and up to 2 years	147	141
More than 2 years and up to 3 years	123	123
More than 3 years and up to 4 years	111	108
More than 4 years and up to 5 years	98	96
More than 5 years	391	390

DZ BANK Group as lessee

The underlying assets in leases in which the DZ BANK Group is the lessee can be subdivided into the following classes: land and buildings, and office furniture and equipment.

Leases involving the land and buildings asset class in which the DZ BANK Group is the lessee relate to the leasing of offices and business premises (including parking) for the group's own business operations. Some of these leases include extension and termination options. The lease terms are up to 20 years. There are also a small number of leases for office furniture and equipment. These include leases for motor vehicles and workplace equipment. The lease terms are up to 5 years.

Rights to use underlying assets in leases are included under property, plant and equipment, investment property, and right-of-use assets, and under other assets. The following table shows the changes in the carrying amounts of the right-of-use assets, broken down by class of underlying asset:

€ million	Land and buildings	Office furniture and equipment
Carrying amounts as at Jan. 1, 2020	307	27
Additions	208	24
Revaluation	41	-
Depreciation	-75	-17
Disposals	-18	-3
Changes attributable to currency translation	-1	-
Changes in scope of consolidation	19	-
Carrying amounts as at Dec. 31, 2020	481	31
Additions	165	21
Revaluation	20	1
Depreciation	-86	-18
Disposals	-11	-1
Changes attributable to currency translation	3	-
Changes in scope of consolidation	1	-
Carrying amounts as at Dec. 31, 2021	**573**	**33**

Lease liabilities of €632 million were recognized under other liabilities and insurance companies' other liabilities (December 31, 2020: €522 million).

The interest expense for lease liabilities is disclosed in notes 34 and 41.

The following table shows a breakdown of the contractual maturities for lease liabilities:

€ million	Dec. 31, 2021	Dec. 31, 2020
Up to 1 year	93	80
More than 1 year and up to 3 years	160	133
More than 3 years and up to 5 years	140	115
More than 5 years	257	215

The total cash outflows for lease liabilities in 2021 amounted to €140 million (2020: €129 million).

The following income and expenses have been recognized in the income statement for rights to use underlying assets in leases:

€ million	2021	2020
Expenses relating to short-term leases	-2	-5
Expenses relating to leases for low-value assets	-20	-18
Expenses relating to variable lease payments not included in the lease liability	-8	-5
Income from subleasing right-of-use assets	11	10
Gains and losses on sale and leaseback transactions	22	4

The expenses relating to short-term leases relate primarily to leases for motor vehicles as well as real estate with lease terms between 2 and 12 months. Expenses relating to leases for low-value assets mainly relate to the office furniture and equipment asset class.

The lease commitments could give rise to potential future cash outflows as a result of variable lease payments, extension options, or termination options. These potential cash outflows have not been included in the measurement of the lease liability because, under current assessments, it is not possible to determine with a sufficient degree of reliability whether, and to what extent, the variable components will materialize or will be used. Within the DZ BANK Group, there are variable lease payments of this nature in connection with utilities related to real estate leases. The entities in the DZ BANK Group estimate that variable lease payments, extension options, and termination rights contractually provided for in leases could give rise to future cash outflows of €446 million (2020: €392 million).

As at the reporting date, there were also future commitments amounting to €1 million (2020: €189 million) arising from leases that had been signed by the entities in the DZ BANK Group but that had not yet commenced. As at December 31, 2020, most of these leases had been real estate leases for offices and ATM sites, for example.

In 2021, 2 sale-and-leaseback transactions were entered into for business premises. The term of the sale-and-leaseback transactions is 8 years and the contracts include an extension option. In 2020, a sale-and-leaseback transaction had been entered into for offices and business premises. The term of this sale-and-leaseback transaction is 10.5 years and the contract includes an extension option.

Taking account of the contractual term, the incremental borrowing rate of interest is mainly determined on the basis of observable risk-free yield curves, supplemented by liquidity spreads, credit spreads and, if applicable, a currency markup. The term to maturity of the lease liabilities is based on the initial contractual term of the lease. If leases contain termination or extension options, the probability of these options being exercised is assessed using objective criteria or on the basis of expert opinion.

» 96 Disclosures on revenue from contracts with customers

Effects in the income statement

Disclosures on revenue from contracts with customers, broken down by operating segment

2021

€ million	BSH	R+V	TeamBank	
Income type				
Fee and commission income from securities business	-	-	-	
Fee and commission income from asset management	-	-	-	
Fee and commission income from payments processing including card processing	-	-	-	
Fee and commission income from lending business and trust activities	-	-	4	
Fee and commission income from financial guarantee contracts and loan commitments	-	-	-	
Fee and commission income from international business	-	-	-	
Fee and commission income from building society operations	43	-	-	
Other fee and commission income	77	-	140	
Fee and commission income in gains and losses on investments held by insurance companies and other insurance company gains and losses	-	73	-	
Other income in gains and losses on investments held by insurance companies and other insurance company gains and losses	-	71	-	
Other operating income	-	-	8	
Total	**120**	**144**	**153**	
Main geographical markets				
Germany	110	144	153	
Rest of Europe	10	-	-	
Rest of World	-	-	-	
Total	**120**	**144**	**153**	
Type of revenue recognition				
At a point in time	120	7	153	
Over a period of time	-	137	-	
Total	**120**	**144**	**153**	

	UMH	DZ BANK – CICB	DZ HYP	DZ PRIVAT-BANK	VR Smart Finanz	DVB	Other/ Consolidation	**Total**
	3,774	490	-	239	-	-	-93	4,410
	16	-	-	384	-	-	-6	394
	-	244	-	2	-	1	49	295
	-	82	7	-	-	10	25	128
	-	62	8	-	-	1	-4	67
	-	12	-	-	-	-	-	12
	-	-	-	-	-	-	-	43
	-	64	18	2	4	1	-144	162
	-	-	-	-	-	-	-	73
	-	-	-	-	-	-	-	71
	8	-	-	-	-	-	36	53
	3,799	**954**	**33**	**627**	**4**	**12**	**-137**	**5,708**
	2,906	954	33	258	4	2	-156	4,408
	893	-	-	365	-	10	19	1,297
	-	-	-	3	-	-	-	3
	3,799	**954**	**33**	**627**	**4**	**12**	**-137**	**5,708**
	559	343	29	165	4	2	-220	1,162
	3,239	611	4	462	-	10	83	4,546
	3,799	**954**	**33**	**627**	**4**	**12**	**-137**	**5,708**

2020

€ million	BSH	R+V	TeamBank	
Income type				
Fee and commission income from securities business	-	-	-	
Fee and commission income from asset management	-	-	-	
Fee and commission income from payments processing including card processing	-	-	-	
Fee and commission income from lending business and trust activities	-	-	4	
Fee and commission income from financial guarantee contracts and loan commitments	-	-	-	
Fee and commission income from international business	-	-	-	
Fee and commission income from building society operations	39	-	-	
Other fee and commission income	64	-	116	
Fee and commission income in gains and losses on investments held by insurance companies and other insurance company gains and losses	-	39	-	
Other income in gains and losses on investments held by insurance companies and other insurance company gains and losses	-	65	-	
Other operating income	-	-	10	
Total	**103**	**104**	**130**	
Main geographical markets				
Germany	94	104	130	
Rest of Europe	9	-	-	
Rest of World	-	-	-	
Total	**103**	**104**	**130**	
Type of revenue recognition				
At a point in time	103	2	130	
Over a period of time	-	102	-	
Total	**103**	**104**	**130**	

	UMH	DZ BANK – CICB	DZ HYP	DZ PRIVAT-BANK	VR Smart Finanz	DVB	Other/ Consolidation	**Total**
	2,768	427	-	194	-	-	-83	3,306
	12	-	-	280	-	-	-5	287
	-	232	-	1	-	1	47	281
	-	69	8	-	-	22	22	125
	-	54	8	-	-	2	-4	60
	-	12	-	-	-	-	-	12
	-	-	-	-	-	-	-	39
	-	55	-	3	15	3	-108	148
	-	-	-	-	-	-	-	39
	-	-	-	-	-	-	-	65
	8	-	-	-	-	-	34	52
	2,788	**849**	**16**	**478**	**15**	**28**	**-97**	**4,414**
	2,147	849	16	143	15	3	-111	3,390
	641	-	-	333	-	23	14	1,020
	-	-	-	2	-	2	-	4
	2,788	**849**	**16**	**478**	**15**	**28**	**-97**	**4,414**
	448	306	12	186	15	5	-262	945
	2,340	543	4	292	-	23	165	3,469
	2,788	**849**	**16**	**478**	**15**	**28**	**-97**	**4,414**

In 2021, the DZ BANK Group recognized revenue from contracts with customers in an amount of €3 million that had been included in contract liabilities at the beginning of the year (2020: €4 million).

Effects on the balance sheet

Receivables, contract assets, and contract liabilities

Receivables from contracts with customers in which the recognized income is not subject to calculation using the effective interest method are accounted for in application of the rules in IFRS 15. Contract assets and contract liabilities are also recognized as a result of circumstances in which the fulfilment of the counter-performance is conditional on something other than the passage of time.

There were no contract liabilities as at the reporting date (December 31, 2020: €3 million). The contract liabilities recognized at the end of 2020 had arisen from the service business.

Changes in receivables, contract assets, and contract liabilities from contracts with customers

€ million	Loans and advances to banks	Loans and advances to customers	Other receivables (other assets)	Contract liabilities
Balance as at Jan. 1, 2020	4	137	168	19
Additions	48	427	2,358	3
Derecognitions	-46	-453	-2,349	-19
Other	-	1	1	-
Balance as at Dec. 31, 2020	6	112	178	3
Additions	95	527	3,366	-
Derecognitions	-88	-501	-3,313	-3
Other	-	1	-	-
Balance as at Dec. 31, 2021	**12**	**139**	**231**	**-**

Other disclosures on revenue from contracts with customers

Performance obligations

Performance obligations are satisfied predominantly over a period of time. Within any year, performance obligations over time are billed mainly on a monthly or quarterly basis. Performance obligations related to a point in time are satisfied when the service in question has been performed. The related fees are normally due after the service has been provided. In the property development business, the performance obligation is satisfied gradually with the completion of the individual stages of construction. The consideration does not vary for the most part.

If advance payments are received, this leads to the recognition of contract liabilities, which are then reversed again over the maturity of the contract.

» 97 Government grants

The ECB made additional liquidity available under the TLTRO III program in order to support lending to households and companies during the COVID-19 pandemic. The DZ BANK Group participated in the program with a total drawdown amount of €32,416 million (December 31, 2020: €17,837 million). The bidder group originally comprising DZ BANK AG and TeamBank was extended to include DZ HYP with effect from February 18, 2021. This extension applies to new business from tranche 7 onward of the TLTRO III program and also retrospectively with regard to checking compliance with the net lending volume required for receipt of the interest-rate advantage. The extended bidder group's total volume of €32,416 million was recognized under deposits from banks on the balance sheet. The term for each tranche is a maximum of 3 years. Early, voluntary partial or full repayment is possible at quarterly intervals from 12 months after disbursement.

In accordance with the rules of the TLTRO III program, the interest on the liquidity provided depends on the net lending volume in the specified comparative periods. The market-oriented basic interest rate in 2021 was minus 0.5 percent. It was accounted for in accordance with IFRS 9 and was recognized pro rata in net interest income in an amount of €149 million under interest expense for financial liabilities with a positive effective interest rate. A 0.5 percentage point lower interest rate was achieved in the period June 24, 2020 to June 23, 2021 because the net lending volume of the extended bidder group's eligible loans (loans to the non-financial sector in the eurozone, excluding consumer home finance) was positive in the period March 1, 2020 to March 31, 2021 and was thus higher than the required reference volume. Because the net lending volume of the bidder group was also higher than the required reference volume in the period October 1, 2020 to December 31, 2021, a 0.5 percentage point lower interest rate also applies in the period June 24, 2021 to June 23, 2022. Because both of these conditions were met, the interest rate for 2021 was minus 1.0 percent. As an additional interest-rate advantage has therefore been granted by the ECB, which is a government agency within the meaning of IAS 20.3, this additional interest-rate advantage achieved is accounted for as a government grant in accordance with IAS 20. As a result, additional income of €183 million was recognized in net interest income under interest expense for financial liabilities with a positive effective interest rate in the period under review. Of this sum, €35 million was attributable to the period June 24, 2020 to December 31, 2020 because there had not yet been reasonable assurance as at December 31, 2020 that the condition would be met and thus that the government grant could be recognized in profit or loss.

In addition to the TLTRO III program, government grants of €23 million were deducted from the carrying amount of investment property held by insurance companies (December 31, 2020: €17 million). The grants are non-interest-bearing, low-interest or forgivable loans. In addition, income subsidies of €1 million were recognized in profit or loss (2020: €0 million).

» 98 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., and in total for DZ HYP, that these companies are able to meet their contractual obligations. These entities are identified in the list of DZ BANK Group's shareholdings (note 107) as being covered by a letter of comfort. The 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, and the 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, were discontinued by means of a termination agreement in 2021.

» 99 Employees

Average number of employees by employee group:

	2021	2020
Female employees	**14,705**	14,282
Full-time employees	9,152	8,750
Part-time employees	5,552	5,532
Male employees	**17,566**	17,128
Full-time employees	16,405	15,962
Part-time employees	1,160	1,166
Total	**32,271**	**31,410**

» 100 Auditor fees

The total fees charged for 2021 by the independent auditors of the consolidated financial statements, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, (2020: Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft, Stuttgart), broken down by type of service are as follows:

€ million	2021	2020
Auditing services	12.2	12.3
Other attestation services	0.6	0.8
Tax consultancy services	0.2	0.6
Other services	1.0	0.6
Total	**13.9**	**14.3**

The fees for auditing services comprise expenses relating to the audit of the consolidated financial statements and group management report of DZ BANK as well as the audits of the annual financial statements and management reports of DZ BANK and consolidated subsidiaries carried out by the auditors of the consolidated financial statements. The fees for auditing services also comprise expenses relating to 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 89 of the German Securities Trading Act (WpHG) and services for which the auditors' professional seal must or can be applied. The fees for other services predominantly include fees for consultancy services.

» 101 Remuneration for the Board of Managing Directors and Supervisory Board of DZ BANK

In 2021, overall remuneration for DZ BANK's Board of Managing Directors from the group in accordance with IAS 24.17 amounted to €14.6 million (2020: €14.1 million). This total is broken down into short-term employee benefits of €9.1 million (2020: €8.8 million), post-employment benefits of €3.8 million (2020: €3.6 million), and share-based payments of €1.7 million (2020: €1.7 million). The remuneration for the Board of Managing Directors in 2021 and 2020 included the total bonus awarded to the Board of Managing Directors for the year in question. Supervisory Board remuneration amounted to €1.0 million (2020: €1.1 million) and consisted of payments due in the short term.

The remuneration for the Board of Managing Directors included contributions of €0.3 million (2020: €0.3 million) to defined contribution pension plans. DZ BANK has defined benefit obligations for the members of the Board of Managing Directors amounting to €36.0 million (December 31, 2020: €38.2 million).

In 2021, the total remuneration for the Board of Managing Directors of DZ BANK for the performance of their duties in DZ BANK and its subsidiaries pursuant to section 314 (1) no. 6a HGB was €11.1 million (2020: €10.7 million), while the total remuneration for the Supervisory Board for the performance of these duties amounted to €1.0 million (2020: €1.1 million).

The total remuneration paid to former members of the Board of Managing Directors or their surviving dependants pursuant to section 314 (1) no. 6b HGB amounted to €9.9 million in 2021 (2020: €9.9 million). DZ BANK has defined benefit obligations for former members of the Board of Managing Directors or their surviving dependants amounting to €177.0 million (2020: €176.4 million).

» 102 Share-based payment transactions

The entities in the DZ BANK Group have entered into share-based payment agreements with the members of the Board of Managing Directors and with certain other salaried employees.

BSH has entered into agreements governing share-based variable remuneration with the members of its Board of Managing Directors, the managing directors of Schwäbisch Hall Kreditservice GmbH, the heads of division, and a group of selected managers (risk takers). The amount of variable remuneration depends on the achievement of agreed targets. The parameters factored into the remuneration are management-related KPIs that are important to a building society. If the variable remuneration amounts to €50,000 or more, 20 percent of it is paid immediately in the following year and 20 percent after a one-year retention period. 60 percent of the bonus is deferred over a period of up to 5 years, with each payment made after a subsequent retention period of one year. All amounts earmarked for deferred payment are pegged to the change in the enterprise value of the building society. The enterprise value is determined each year by means of a business valuation. If the enterprise value falls, then the retained variable remuneration components are reduced according to specified bands. A rise in the value does not lead to an increase in the deferred remuneration. Negative contributions to profits are taken into account when setting bonuses and pro rata deferrals and at the end of the retention period, which may cause the variable remuneration to be reduced or not be paid.

The following table shows the changes in unpaid remuneration components at BSH:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	1.7	0.4
Remuneration granted	0.7	0.1
Payment of remuneration granted in 2019	-0.2	-
Payment of remuneration granted in previous years	-0.5	-0.2
Unpaid share-based payments as at Dec. 31, 2020	1.7	0.3
Remuneration granted	0.6	0.1
Payment of remuneration granted in 2020	-0.2	-
Payment of remuneration granted in previous years	-0.4	-0.1
Unpaid share-based payments as at Dec. 31, 2021	**1.7**	**0.3**

R+V has entered into agreements governing variable remuneration paid over several years with the members of its Board of Managing Directors and a group of selected salaried employees (risk takers). The amount of variable remuneration depends on the achievement of agreed targets. A proportion of 60 percent of the variable remuneration for members of the Board of Managing Directors, and 40 percent of that for the selected salaried employees, depends on the change in value of the shares in R+V Versicherung AG. In these arrangements, the share value equates to the fair market value of the unlisted shares in R+V Versicherung AG as at December 31 of the year in question. The portion of the bonus subject to payout restrictions will be paid out after 3 years without any reduction if the share value equates to more than 85 percent of the value at the end of the baseline year. If the share value is between 75 percent and 85 percent of this figure, the bonus portion subject to payout restrictions is reduced by half. If the share value falls below 75 percent, payment of the part of the bonus subject to payout restrictions is canceled in full.

The following table shows the changes in unpaid remuneration components at R+V:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	2.1	0.3
Remuneration granted	0.9	0.1
Payment of remuneration granted in previous years	-0.6	-0.1
Unpaid share-based payments as at Dec. 31, 2020	2.4	0.3
Remuneration granted	0.9	0.1
Payment of remuneration granted in previous years	-0.6	-0.1
Unpaid share-based payments as at Dec. 31, 2021	**2.7**	**0.3**

TeamBank has entered into agreements governing variable remuneration paid over several years with the members of its Board of Managing Directors and risk takers. The amount of variable remuneration depends on the achievement of agreed targets. 20 percent of the variable remuneration is paid immediately in the following year after it has been set. Another 20 percent is subject to a retention period of one calendar year. 50 percent of both tranches depends on the long-term changes in the enterprise value of TeamBank. The remaining 60 percent is paid in 5 tranches, each of 12 percent, within 5 calendar years. The change in the enterprise value of TeamBank is used to measure long-term performance. The value is determined using the income capitalization approach.

The following table shows the changes in unpaid remuneration components at TeamBank:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	1.4	-
Remuneration granted	0.4	-
Payment of remuneration granted in 2019	-0.1	-
Payment of remuneration granted in previous years	-0.4	-
Unpaid share-based payments as at Dec. 31, 2020	1.3	-
Remuneration granted	0.3	0.1
Payment of remuneration granted in 2020	-0.1	-
Payment of remuneration granted in previous years	-0.3	-
Unpaid share-based payments as at Dec. 31, 2021	**1.2**	**0.1**

DZ BANK has entered into agreements governing variable remuneration paid over several years with the members of its Board of Managing Directors, heads of division, and a group of selected salaried employees (risk takers). The amount of variable remuneration depends on the achievement of agreed targets. In the case of members of the Board of Managing Directors and heads of division, 80 percent of the total variable remuneration is deferred over a period of up to 6 years from when the bonus is determined. For risk takers below the level of head of division with variable remuneration of more than €130,000, 80 percent of the total variable remuneration is deferred over a period of up to 4 years from when the bonus is determined. For risk takers below the level of head of division with variable remuneration of more than €50,000 and up to €130,000, 70 percent of the total variable remuneration is deferred over a period of up to 4 years from when the bonus is determined. Amounts are paid out after taking into account deferral or retention periods. The deferred portion of the variable remuneration may be reduced or even fully withdrawn if there is an adverse change in the value of DZ BANK shares or if there are negative contributions to profits from DZ BANK, individual divisions, or individual activities. A rise in the value of DZ BANK shares does not lead to an increase in the deferred remuneration. The value of the shares is determined each year by means of an independent business valuation. The deferred portion of the variable remuneration for members of the Board of Managing Directors is reduced by 50 percent if the share price falls by between 7.5 percent and 12.5 percent. If the share price drops by more than 12.5 percent, the deferred portion of the variable remuneration is canceled. In the case of heads of division and risk takers below the level of head of division, the deferred portion of the variable remuneration is reduced by 25 percent if the share price falls by between 15 percent and 20 percent. If the share price drops by between 20 percent and 25 percent, the deferred portion of the variable remuneration is reduced by 50 percent. If the share price drops by more than 25 percent, the deferred portion of the variable remuneration is canceled in full. If the change in the share price does not reach the specified threshold values, the deferred portion of the variable remuneration is not reduced as a result of the change in the share price. Based on a value per DZ BANK share of €8.65 from the business valuation as at December 31, 2017 (adjusted share value following the merger), a value per share of €8.65 as at December 31, 2018, a value per share of €8.35 as at December 31, 2019, a value per share of €8.05 as at December 31, 2020, and a value per share of €8.80 as at December 31, 2021, it can currently be assumed that the deferred remuneration will be paid in full. No options have been granted for these groups of employees. Share-based payments are granted in the year after they have been earned.

The following summary shows the change in unpaid share-based payment components at DZ BANK:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	2.9	18.5
Remuneration granted	1.6	5.8
Payment of remuneration granted in 2019	-0.4	-2.2
Payment of remuneration granted in previous years	-1.3	-5.3
Unpaid share-based payments as at Dec. 31, 2020	2.8	16.8
Remuneration granted	1.7	5.4
Payment of remuneration granted in 2020	-0.4	-2.9
Payment of remuneration granted in previous years	-0.9	-4.4
Unpaid share-based payments as at Dec. 31, 2021	**3.2**	**14.9**

DZ HYP has entered into agreements governing variable remuneration paid over several years with the members of its Board of Managing Directors and a group of selected salaried employees (risk takers). The level of variable performance-based remuneration is based on the achievement of quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets. 20 percent of the variable remuneration is paid immediately in the following year after the annual financial statements have been adopted and the variable remuneration has been set by the Supervisory Board. Payment of the remaining 80 percent of the bonus set for the previous year is spread out over a period of up to 6 years in total, taking into account deferral and retention periods. All amounts earmarked for deferred payment are linked to the long-term performance of DZ HYP because they are pegged to the value of its shares. Negative contributions to profits are taken into account when setting bonuses and pro rata deferrals, which may cause the variable remuneration to be reduced or cancelled.

The heads of division are classified as risk takers. Individual contractual agreements on variable performance-based remuneration have been reached with the heads of division. The variable performance-based remuneration is set with reference to a contractually agreed target bonus. Quantitative and qualitative targets derived from the corporate strategy in the form of group, overall bank, divisional, and individual targets are assessed and used to determine the actual bonus level. If the variable performance-based remuneration amounts to €50,000 or more, 20 percent of it is paid immediately in the following year. The other 80 percent of the calculated bonus is deferred over a period of up to 6 years. Of this deferred amount, 50 percent is pegged to the long-term performance of DZ HYP, which is calculated on the basis of the enterprise value. Negative contributions to profits are taken into account when setting bonuses and pro rata deferrals.

The following table shows the changes in unpaid remuneration components at DZ HYP:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	1.2	0.5
Remuneration granted	0.4	0.2
Payment of remuneration granted in 2019	-0.2	-0.1
Payment of remuneration granted in previous years	-0.3	-0.1
Unpaid share-based payments as at Dec. 31, 2020	1.1	0.5
Remuneration granted	0.4	0.2
Payment of remuneration granted in 2020	-0.1	-0.1
Payment of remuneration granted in previous years	-0.3	-0.2
Unpaid share-based payments as at Dec. 31, 2021	**1.1**	**0.4**

DZ PRIVATBANK has entered into an agreement on variable remuneration components with the members of its Board of Managing Directors. The level of variable remuneration is based on quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets. The variable remuneration is paid out over 6 years. The initial payout amount of 20 percent is paid out immediately after the variable remuneration amount has been set. A further 20 percent is subject to a retention period of one year. The remaining 60 percent is spread out over a period of 5 years. To this end, the retained component is subdivided into 5 equal portions. All deferred payouts are linked to the long-term change in the enterprise value of DZ PRIVATBANK. The enterprise value is determined each year by means of an independent business valuation. If the enterprise value falls, then the retained variable remuneration components are reduced according to specified bands.

The following table shows the changes in unpaid remuneration components at DZ PRIVATBANK:

€ million	Board of Managing Directors
Unpaid share-based payments as at Jan. 1, 2020	1.7
Remuneration granted	0.4
Payment of remuneration granted in 2019	-0.1
Payment of remuneration granted in previous years	-0.3
Reduction of share-based payments	-0.1
Unpaid share-based payments as at Dec. 31, 2020	1.6
Remuneration granted	0.6
Payment of remuneration granted in 2020	-0.1
Payment of remuneration granted in previous years	-0.3
Unpaid share-based payments as at Dec. 31, 2021	**1.8**

In addition to a basic salary, the remuneration system for the Board of Managing Directors of VR Smart Finanz includes a variable remuneration component. It is determined on the basis of quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets. A three-year period is applied as the basis for calculating target achievement. The maximum variable remuneration is set in the event of full achievement of each individual target. All amounts earmarked for deferred payment are linked to the long-term performance of VR Smart Finanz because they are pegged to its enterprise value. Negative contributions to profits are taken into account when setting the amount of variable remuneration and pro rata deferrals, which may cause the variable remuneration to be reduced or cancelled.

The following table shows the changes in unpaid remuneration components at VR Smart Finanz:

€ million	Board of Managing Directors
Unpaid share-based payments as at Jan. 1, 2020	1.9
Remuneration granted	0.3
Payment of remuneration granted in 2019	-0.1
Payment of remuneration granted in previous years	-0.5
Reduction of share-based payments	-0.1
Unpaid share-based payments as at Dec. 31, 2020	1.5
Remuneration granted	0.4
Payment of remuneration granted in 2020	-0.1
Payment of remuneration granted in previous years	-0.4
Reduction of share-based payments	-0.1
Unpaid share-based payments as at Dec. 31, 2021	**1.3**

If the variable remuneration granted to the Board of Managing Directors and risk takers at DVB exceeds €50,000 for a financial year, it is not paid out immediately and is instead subject to certain deferral periods and additional retention periods. The employee becomes entitled immediately (in the following year) to 40 percent of the granted variable remuneration. Only 50 percent of this amount is paid immediately; the remaining 50 percent is subject to an additional one-year retention period, during which it is pegged to the change in the DVB Bank Group’s enterprise value. The remaining 60 percent of the variable remuneration is divided into 5 tranches (each equating to 12 percent) and deferred over a period of 1 to 5 years. After the deferral period, 50 percent of each tranche is subject to an additional one-year retention period and is pegged to the change in the DVB Bank Group’s enterprise value during both the deferral period and the retention period. Entitlements arising from deferred variable remuneration were sold in connection with the sale of the Aviation Asset Management and Aviation Investment Management businesses in 2021. The proportion of the deferred variable remuneration that was sold that is attributable to share-based payments is shown under disposal of share-based payments.

The following table shows the changes in unpaid remuneration components at DVB:

€ million	Board of Managing Directors	Risk takers
Unpaid share-based payments as at Jan. 1, 2020	0.2	2.7
Remuneration granted	0.2	2.1
Payment of remuneration granted in 2019	-0.1	-0.7
Payment of remuneration granted in previous years	-	-0.5
Unpaid share-based payments as at Dec. 31, 2020	0.3	3.6
Remuneration granted	0.2	0.9
Payment of remuneration granted in 2020	-0.1	-0.9
Payment of remuneration granted in previous years	-	-0.4
Disposal of share-based payments	-	-1.0
Unpaid share-based payments as at Dec. 31, 2021	**0.4**	**2.2**

In 2021, the agreements described above gave rise to expenses for share-based payment transactions in the DZ BANK Group of €10.3 million (2020: €10.9 million) and income from the reversal of provisions for share-based payments of €3.0 million (2020: €0.1 million). As at December 31, 2021, the provisions recognized for share-based payment transactions in the DZ BANK Group amounted to €44.9 million (December 31, 2020: €49.3 million).

» 103 Related party disclosures

DZ BANK enters into transactions with related parties (persons or entities) as part of its ordinary business activities. All of this business is transacted on an arm's length basis. Most of these transactions involve typical banking products and financial services.

Transactions with related parties (entities)

€ million	Dec. 31, 2021	Dec. 31, 2020
Loans and advances to banks	**22**	**60**
to joint ventures	22	60
Loans and advances to customers	**154**	**193**
to subsidiaries	43	47
to joint ventures	10	9
to associates	50	81
to pension plans for the benefit of employees	13	-
to other related parties (entities)	38	56
Investments	**5**	**5**
of joint ventures	5	5
Investments held by insurance companies	**200**	**104**
of subsidiaries	131	104
of pension plans for the benefit of employees	69	-
Property, plant and equipment, and investment property	**-**	**1**
of subsidiaries	-	1
Other assets	**41**	**78**
of subsidiaries	22	26
of associates	1	-
of pension plans for the benefit of employees	18	52
Non-current assets and disposal groups classified as held for sale	**25**	**-**
of associates	25	-
Deposits from banks	**74**	**169**
owed to joint ventures	74	169
Deposits from customers	**219**	**203**
owed to subsidiaries	173	161
owed to associates	3	4
owed to other related parties (entities)	43	38
Financial liabilities held for trading	**6**	**7**
of other related parties (entities)	6	7
Other liabilities	**33**	**17**
of subsidiaries	23	10
of joint ventures	3	2
of pension plans for the benefit of employees	7	5
Subordinated capital	**19**	**19**
of pension plans for the benefit of employees	18	18
of other related parties (entities)	1	1

€ million	Dec. 31, 2021	Dec. 31, 2020
Financial guarantee contracts	**1**	**7**
for subsidiaries	1	7
Loan commitments	**743**	**58**
to subsidiaries	60	46
to joint ventures	10	10
to associates	2	2
to pension plans for the benefit of employees	672	-

The changes in transactions with pension plans for the benefit of employees essentially relate to the setting up of an extended initial fund of R+V Pensionsversicherung a.G.; see note 69.

Income of €6 million (2020: income of €10 million) in the total reported net interest income, expenses of €3 million (2020: expenses of €3 million) in the total reported net fee and commission income, and expenses of €14 million (2020: expenses of €28 million) in the total reported net income from insurance business were attributable to transactions with related parties (entities).

Transactions with related parties (persons)

Related parties (persons) are key management personnel who are directly or indirectly responsible for the planning, management, and supervision of the activities of DZ BANK, as well as their close family members. For the purposes of IAS 24, the DZ BANK Group considers the members of the Board of Managing Directors and the members of the Supervisory Board to be key management personnel. As at December 31, 2021, the DZ BANK Group's loans and loan commitments to related parties (persons) amounted to €0.5 million (December 31, 2020: €0.7 million).

Like unrelated parties, key management personnel and their close family members also have the option of obtaining further financial services from the DZ BANK Group, for example in the form of insurance contracts, home savings contracts, and leases. Where they made use of this option, the transactions were carried out on an arm's-length basis.

» 104 Board of Managing Directors

Uwe Fröhlich
(Co-Chief Executive Officer)
Responsibilities: Cooperative Banks/Verbund; Communications & Marketing; Research and Economics; Strategy & Group Development; Structured Finance

Dr. Cornelius Riese
(Co-Chief Executive Officer)
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; Services & Organisation

Ulrike Brouzi
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 Services

Thomas Ullrich
Responsibilities: Group Human Resources; Operations; Payments & Accounts; Transaction Management

» 105 Supervisory Board

Henning Deneke-Jöhrens
(Chairman of the Supervisory Board)
Chief Executive Officer
Volksbank eG Hildesheim-Lehrte-Pattensen

Ulrich Birkenstock
(Deputy Chairman of the Supervisory Board)
Employee
R+V Allgemeine Versicherung AG

Martin Eul
(Deputy Chairman of the Supervisory Board
until May 19, 2021)
Chief Executive Officer
Dortmunder Volksbank eG

Ingo Stockhausen
(Deputy Chairman of the Supervisory Board
since May 19, 2021)
Chief Executive Officer
Volksbank Oberberg eG

Uwe Barth
Spokesman of the Board of Managing Directors
Volksbank Freiburg eG
(Member of the Supervisory Board since May 19, 2021)

Heiner Beckmann
Senior manager
R+V Allgemeine Versicherung AG

Timm Häberle
Co-Chief Executive Officer
VR-Bank Ludwigsburg 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

Josef Hodrus
Spokesman of the Board of Managing Directors
Volksbank Allgäu-Oberschwaben eG
(Member of the Supervisory Board since May 19, 2021)

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
(Member of the Supervisory Board until September 15, 2021)

Sascha Monschauer
Chief Executive Officer
Volksbank RheinAhrEifel eG

Wolfgang Nett
Sales Director
Union Investment Privatfonds GmbH
(Member of the Supervisory Board since September 15, 2021)

Rolf Dieter Pogacar
Employee
R+V Allgemeine Versicherung AG

Stephan Schack
Chief Executive Officer
Volksbank Raiffeisenbank eG, Itzehoe

Gregor Scheller
Chief Executive Officer
VR Bank Bamberg-Forchheim eG
(Member of the Supervisory Board until May 19, 2021)

Uwe Spitzbarth
Departmental coordinator
ver.di Bundesverwaltung

Sigrid Stenzel
Labor union secretary
Social security department
ver.di Niedersachsen-Bremen

Dr. Wolfgang Thomasberger
Chief Executive Officer
VR Bank Rhein-Neckar eG
(Member of the Supervisory Board until May 19, 2021)

Dr. Gerhard Walther
Chief Executive Officer
VR-Bank Mittelfranken West eG
(Member of the Supervisory Board since May 19, 2021)

Supervisory Board committees

Nominations Committee

Henning Deneke-Jöhrens, Chairman
Ulrich Birkenstock, Deputy Chairman*
Martin Eul, member until May 19, 2021
Timm Häberle, member since May 19, 2021
Pilar Herrero Lerma, member until September 15, 2021*
Renate Mack*
Wolfgang Nett, member since September 23, 2021*
Ingo Stockhausen, member since May 19, 2021
Dr. Wolfgang Thomasberger, member until May 19, 2021

Remuneration Control Committee

Henning Deneke-Jöhrens, Chairman
Ulrich Birkenstock, Deputy Chairman*
Martin Eul, member until May 19, 2021
Dr. Peter Hanker, member since May 19, 2021
Pilar Herrero Lerma, member until September 15, 2021*
Renate Mack*
Wolfgang Nett, member since September 23, 2021*
Ingo Stockhausen, member since May 19, 2021
Dr. Wolfgang Thomasberger, member until May 19, 2021

Mediation Committee

Henning Deneke-Jöhrens, Chairman
Ulrich Birkenstock, Deputy Chairman*
Martin Eul, member until May 19, 2021
Uwe Spitzbarth*
Ingo Stockhausen, member since May 19, 2021

Audit Committee

Timm Häberle, Chairman
Henning Deneke-Jöhrens
Martin Eul, member until May 19, 2021
Dr. Peter Hanker, member since May 19, 2021
Andrea Hartmann*
Marija Kolak
Renate Mack*
Rolf Dieter Pogacar*
Stephan Schack
Ingo Stockhausen, member since May 19, 2021
Dr. Wolfgang Thomasberger, member until May 19, 2021

Risk Committee

Dr. Wolfgang Thomasberger, Chairman until May 19, 2021
Dr. Peter Hanker, Chairman since June 17, 2021
Heiner Beckmann*
Henning Deneke-Jöhrens
Martin Eul, member until May 19, 2021
Timm Häberle
Pilar Herrero Lerma, member until September 15, 2021*
Dr. Dierk Hirschel, member since September 23, 2021*
Renate Mack*
Sascha Monschauer, member since May 19, 2021
Gregor Scheller, member until May 19, 2021
Ingo Stockhausen, member since May 19, 2021
Dr. Gerhard Walther, member since May 19, 2021

*Employee representatives.

» 106 Supervisory mandates held by members of the Board of Managing Directors and employees

Within DZ BANK

As at December 31, 2021, 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

Uwe Fröhlich (Co-Chief Executive Officer)	DZ HYP AG, Hamburg and Münster (*) Chairman of the Supervisory Board
	DZ PRIVATBANK S.A., Strassen (*) Chairman of the Supervisory Board
	VR Smart Finanz AG, Eschborn (*) Chairman of the Supervisory Board
Dr. Cornelius Riese (Co-Chief Executive Officer)	Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall (*) Chairman of the Supervisory Board
	R+V Versicherung AG, Wiesbaden (*) Chairman of the Supervisory Board
	TeamBank AG Nürnberg, Nuremberg (*) Chairman of the Supervisory Board
	Union Asset Management Holding AG, Frankfurt am Main (*) Chairman 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	Atruvia AG, Frankfurt am Main Member of the Supervisory Board
	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
	DZ PRIVATBANK S.A., Strassen (*) Deputy Chairman of the Supervisory Board

Ulrike Brouzi	Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall (*) Member of the Supervisory Board
	R+V Allgemeine Versicherung AG, Wiesbaden (*) Member of the Supervisory Board
	R+V Lebensversicherung AG, Wiesbaden (*) Member of the Supervisory Board
	Salzgitter AG, Salzgitter Member of the Supervisory Board
	Union Asset Management Holding AG, Frankfurt am Main (*) 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 (*) Deputy Chairman of the Supervisory Board
	DZ HYP AG, Hamburg and Münster (*) Member of the Supervisory Board
	R+V Versicherung AG, Wiesbaden (*) Member of the Supervisory Board
	VR Smart Finanz AG, Eschborn (*) Deputy Chairman of the Supervisory Board
Thomas Ullrich	Deutsche WertpapierService Bank AG, Frankfurt am Main Deputy Chairman of the Supervisory Board
	TeamBank AG Nürnberg, Nuremberg (*) Deputy Chairman of the Supervisory Board
	VR Payment GmbH, Frankfurt am Main (*) Chairman of the Supervisory Board

DZ BANK employees

Arnd Volker Bernbeck	DVB Bank SE, Frankfurt am Main (*) Member of the Supervisory Board
Rolf Büscher	DVB Bank SE, Frankfurt am Main (*) Member of the Supervisory Board ReiseBank AG, Frankfurt am Main (*) Member of the Supervisory Board
Johannes Koch	Deutsche WertpapierService Bank AG, Frankfurt am Main Member of the Supervisory Board
Winfried Münch	AKA Ausfuhrkredit-Gesellschaft mbH, Frankfurt am Main Member of the Supervisory Board
Jochen Philipp	Banco Cooperativo Español S.A., Madrid Member of the Board of Directors
Claudio Ramsperger	Cassa Centrale Banca – Credito Cooperativo Italiano S.p.A., Trento Member of the Board of Directors
Gregor Roth	ReiseBank AG, Frankfurt am Main (*) Chairman of the Supervisory Board VR Payment GmbH, Frankfurt am Main (*) 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

In the DZ BANK Group

As at December 31, 2021, members of the Boards of Managing Directors and employees also held mandates on the statutory supervisory bodies of the following major companies in Germany. Companies included in the consolidation are indicated with an asterisk (*).

Reinhard Klein Chief Executive Officer Bausparkasse Schwäbisch Hall AG	Schwäbisch Hall Kreditservice GmbH, Schwäbisch Hall (*) Chairman of the Supervisory Board
Peter Magel Member of the Board of Managing Directors Bausparkasse Schwäbisch Hall AG	Schwäbisch Hall Kreditservice GmbH, Schwäbisch Hall (*) Member of the Supervisory Board
Claudia Klug General Executive Manager Bausparkasse Schwäbisch Hall AG	Schwäbisch Hall Facility Management GmbH, Schwäbisch Hall Chairwoman of the Supervisory Board
Dr. Norbert Rollinger Chief Executive Officer R+V Versicherung AG	Condor Lebensversicherungs-AG, Hamburg (*) Chairman of the Supervisory Board KRAVAG-ALLGEMEINE Versicherungs-AG, Hamburg (*) Chairman of the Supervisory Board KRAVAG-LOGISTIC Versicherungs-AG, Hamburg (*) Chairman of the Supervisory Board Raiffeisendruckerei GmbH, Neuwied Member of the Supervisory Board R+V Allgemeine Versicherung AG, Wiesbaden (*) Chairman of the Supervisory Board R+V Krankenversicherung AG, Wiesbaden (*) Chairman of the Supervisory Board R+V Lebensversicherung AG, Wiesbaden (*) Chairman of the Supervisory Board R+V Pensionsfonds AG, Wiesbaden (*) Chairman of the Supervisory Board R+V Service Center GmbH, Wiesbaden Chairman of the Supervisory Board SECURITAS HOLDING GmbH, Berlin Member of the Supervisory Board Union Asset Management Holding AG, Frankfurt am Main (*) Member of the Supervisory Board

Claudia Andersch
Member of the Board of Managing Directors
R+V Versicherung AG

CHEMIE Pensionsfonds AG, Munich (*)
Member of the Supervisory Board

Condor Lebensversicherungs-AG, Hamburg (*)
Member of the Supervisory Board

R+V Pensionsfonds AG, Wiesbaden (*)
Deputy Chairwoman of the Supervisory Board

R+V Pensionskasse AG, Wiesbaden (*)
Chairwoman of the Supervisory Board

Jens Hasselbächer
Member of the Board of Managing Directors
R+V Versicherung AG

R+V Direktversicherung AG, Wiesbaden (*)
Deputy Chairman of the Supervisory Board

R+V Krankenversicherung AG, Wiesbaden (*)
Deputy Chairman of the Supervisory Board

Dr. Christoph Lamby
Member of the Board of Managing Directors
R+V Versicherung AG

Condor Allgemeine Versicherungs-AG, Hamburg (*)
Chairman of the Supervisory Board

Extremus Versicherungs-AG, Cologne
Member of the Supervisory Board

KRAVAG-ALLGEMEINE Versicherungs-AG, Hamburg (*)
Member of the Supervisory Board

KRAVAG-LOGISTIC Versicherungs-AG, Hamburg (*)
Member of the Supervisory Board

R+V Pensionskasse AG, Wiesbaden (*)
Member of the Supervisory Board

Tillmann Lukosch
Member of the Board of Managing Directors
R+V Versicherung AG

Condor Allgemeine Versicherungs-AG, Hamburg (*)
Member of the Supervisory Board

KRAVAG-ALLGEMEINE Versicherungs-AG, Hamburg (*)
Member of the Supervisory Board

KRAVAG-LOGISTIC Versicherungs-AG, Hamburg (*)
Member of the Supervisory Board

R+V Direktversicherung AG, Wiesbaden (*)
Member of the Supervisory Board

Dr. Edgar Martin Member of the Board of Managing Directors R+V Versicherung AG	GDV Dienstleistungs-GmbH, Hamburg Member of the Supervisory Board R+V Direktversicherung AG, Wiesbaden (*) Chairman of the Supervisory Board Sprint Sanierung GmbH, Cologne (*) Chairman of the Supervisory Board
Julia Merkel Member of the Board of Managing Directors R+V Versicherung AG	KRAVAG-ALLGEMEINE Versicherungs-AG, Hamburg (*) Member of the Supervisory Board R+V Pensionskasse AG, Wiesbaden (*) Member of the Supervisory Board Südzucker AG, Mannheim Member of the Supervisory Board
Marc René Michallet Member of the Board of Managing Directors R+V Versicherung AG	CHEMIE Pensionsfonds AG, Munich (*) Member of the Supervisory Board Condor Allgemeine Versicherungs-AG, Hamburg (*) Deputy Chairman of the Supervisory Board Condor Lebensversicherungs-AG, Hamburg (*) Deputy Chairman of the Supervisory Board GWG Gesellschaft für Wohnungs- und Gewerbebau Baden-Württemberg AG, Stuttgart (*) Chairman of the Supervisory Board KRAVAG-ALLGEMEINE Versicherungs-AG, Hamburg (*) Member of the Supervisory Board KRAVAG-LOGISTIC Versicherungs-AG, Hamburg (*) Member of the Supervisory Board R+V Pensionsfonds AG, Wiesbaden (*) Member of the Supervisory Board

Christian Polenz Deputy Chief Executive Officer TeamBank AG Nürnberg	SCHUFA Holding AG, Wiesbaden Chairman of the Supervisory Board
Hans Joachim Reinke Chief Executive Officer Union Asset Management Holding AG	Union Investment Institutional GmbH, Frankfurt am Main (*) Deputy Chairman of the Supervisory Board Union Investment Privatfonds GmbH, Frankfurt am Main (*) Chairman of the Supervisory Board Union Investment Real Estate GmbH, Hamburg (*) Deputy Chairman of the Supervisory Board
Alexander Lichtenberg Member of the Board of Managing Directors Union Asset Management Holding AG	Union Investment Service Bank AG, Frankfurt am Main (*) Chairman of the Supervisory Board
Alexander Schindler Member of the Board of Managing Directors Union Asset Management Holding AG	Quoniam Asset Management GmbH, Frankfurt am Main (*) Chairman of the Supervisory Board Union Investment Institutional GmbH, Frankfurt am Main (*) Chairman of the Supervisory Board Union Investment Institutional Property GmbH, Hamburg (*) Deputy Chairman of the Supervisory Board
Jens Wilhelm Member of the Board of Managing Directors Union Asset Management Holding AG	Union Investment Institutional Property GmbH, Hamburg (*) Chairman of the Supervisory Board Union Investment Privatfonds GmbH, Frankfurt am Main (*) Deputy Chairman of the Supervisory Board Union Investment Real Estate GmbH, Hamburg (*) Chairman of the Supervisory Board
Sonja Albers Employee Union Asset Management Holding AG	Union Investment Service Bank AG, Frankfurt am Main (*) Deputy Chairwoman of the Supervisory Board
Dr. Daniel Günnewig Employee Union Asset Management Holding AG	Union Investment Service Bank AG, Frankfurt am Main (*) Member of the Supervisory Board

André Haagmann Member of the Board of Managing Directors Union Investment Institutional GmbH	Quoniam Asset Management GmbH, Frankfurt am Main (*) Deputy Chairman of the Supervisory Board
Jörg Kotzenbauer Chief Executive Officer ZBI GmbH	ZBI Fondsmanagement AG, Erlangen (*) Chairman of the Supervisory Board
Dr. Bernd Ital Member of the Board of Managing Directors ZBI GmbH	ZBI Fondsmanagement AG, Erlangen (*) Member of the Supervisory Board

» 107 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
APZ Beteiligungs GmbH 1)	Darmstadt	81.70		4,943	1,903 *
APZ CarMotion GmbH 1)	Fischamend, Austria	100.00		444	-273 *
APZ GmbH 1)	Darmstadt	100.00		7,135	- *
APZ Mobilty GmbH 1)	Darmstadt	100.00		-133	-158 *
Aquila Aircraft Leasing Ltd. 1)	Dublin, Ireland	-		-21	1
Assimoco S.p.A. 1)	Milan, Italy	68.94		235,238	27,428
Assimoco Vita S.p.A. 1)	Milan, Italy	82.14		212,585	25,880
Attrax Financial Services S.A. 1)	Luxembourg, Luxembourg	100.00		85,026	36,466
Aufbau und Handelsgesellschaft mbH 1)	Stuttgart	94.90		525	- *
AXICA Kongress- und Tagungszentrum Pariser Platz 3 GmbH 4)	Berlin	100.00		26	- *
BankingGuide GmbH	Düsseldorf	60.00		198	-967 *
BAUFINEX GmbH 1)	Schwäbisch Hall	70.00		1,856	197 *
BAUFINEX Service GmbH 1)	Berlin	50.00	75.00	25	- *
Bausparkasse Schwäbisch Hall Aktiengesellschaft - Bausparkasse der Volksbanken und Raiffeisenbanken - 4)	Schwäbisch Hall	97.58		1,812,302	-
Beteiligungsgesellschaft Westend 1 mbH & Co. KG 1)	Frankfurt am Main	94.90		18,256	771
BGP Asset Management GmbH i.L. 1)	Berlin	100.00		1,750	-54 *
BWG Baugesellschaft Württembergischer Genossenschaften mbH 1)	Stuttgart	94.78		9,965	- *
Canadian Iron Ore Railcar Leasing LP 1)	Toronto, Canada	-		-	-
Canadian Iron Ore Railcar Partner Ltd 1)	Toronto, Canada	-		-	-
carexpert Kfz-Sachverständigen GmbH 1)	Walluf	60.00		4,485	14 *
CHEMIE Pensionsfonds AG 1)	Wiesbaden	100.00		31,518	1,200
Chiefs Aircraft Holding (Malta) Limited 1)	Floriana, Malta	-		2,436	174
CI CONDOR Immobilien GmbH 1)	Hamburg	100.00		20,100	- *
compertis Beratungsgesellschaft für betriebliches Vorsorgemanagement mbH 1)	Wiesbaden	100.00		4,724	969 *
COMPLINA GmbH 1)	Wiesbaden	100.00		140	25 *
Condor Allgemeine Versicherungs-Aktiengesellschaft 1) 4)	Hamburg	100.00		41,762	-
Condor Dienstleistungs GmbH 1)	Hamburg	100.00		405	49 *
Condor Lebensversicherungs-Aktiengesellschaft 1)	Hamburg	94.98		51,742	-
DCAL Aircraft Malta Ltd. 1)	Floriana, Malta	-		-99	-15,219
DEGEKONZEPT Grundstücksverwaltungsgesellschaft mbH 1)	Eschborn	100.00		101	11
Deucalion Capital I (UK) Ltd. 1)	London, UK	-		532	41
Deucalion Capital II (MALTA) Limited 1)	Valletta, Malta	-		20	17
Deucalion Capital II (UK) Ltd. 1)	London, UK	-		-	-
Deucalion Capital II Limited 1)	George Town, Cayman Islands	-		-609	1,463
Deucalion Capital VI Limited 1)	George Town, Cayman Islands	-		-247	-13
Deucalion Capital VIII Limited 1)	George Town, Cayman Islands	-		-74	-6,698
Deucalion Ltd. 1)	George Town, Cayman Islands	-		28,883	1,709
DEVIF-Fonds Nr. 150 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DEVIF-Fonds Nr. 2 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DEVIF-Fonds Nr. 250 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DEVIF-Fonds Nr. 500 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DEVIF-Fonds Nr. 528 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DEVIF-Fonds Nr. 60 Deutsche Gesellschaft für Investmentfonds 1)	Frankfurt am Main	-		n/a	n/a
DG Participacoes Ltda. 1)	São Paulo, Brazil	100.00		-	- *
Dilax Beteiligungs Verwaltungsgesellschaft mbH 1)	Berlin	100.00		25	- *
Dilax Beteiligungsgesellschaft mbH & Co. KG 1)	Berlin	92.39		2,381	- *
Dilax France SAS 1)	Valence, France	100.00		1,035	476
Dilax Intelcom AG 1)	Ermatingen, Switzerland	100.00		479	170
Dilax Intelcom GmbH 1)	Berlin	97.01		668	-1,055
Dilax Intelcom Iberica S.L.U. 1)	Madrid, Spain	100.00		365	6
Dilax Management Investment Reserve GmbH 1)	Berlin	100.00		227	-3 *
Dilax Management Investment Verwaltungsgesellschaft mbH 1)	Berlin	100.00		18	-1 *
Dilax Management Investmentgesellschaft mbH & Co. KG 1)	Berlin	99.50		179	- *
Dilax Systems Inc. 1)	Saint Lambert, Canada	100.00		778	233
Dilax Systems UK Ltd. 1)	London, UK	100.00		94	2,580
DILAX Systems US Inc 1)	Wilmington, USA	100.00		129	120
DVB Asia Ltd. 1)	Singapore, Singapore	100.00		189,879	111
DVB Bank America N.V. 1)	Willemstad, Curaçao	100.00		172,475	62,086
DVB Bank SE 4)	Frankfurt am Main	100.00		516,146	-
DVB Transport Finance Limited 1)	London, UK	100.00		4,907	419

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
DVG Deutsche Vermögensverwaltungs-Gesellschaft mit beschränkter Haftung 4)	Frankfurt am Main	100.00		82	- *
DZ BANK Kunststiftung gGmbH	Frankfurt am Main	100.00		25	- *
DZ BANK Sao Paulo Representacao Ltda. 2)	São Paulo, Brazil	100.00		441	46 *
DZ Beteiligungsgesellschaft mbH Nr. 11 4)	Frankfurt am Main	100.00		6,620	- *
DZ Beteiligungsgesellschaft mbH Nr. 14 4)	Frankfurt am Main	100.00		51	- *
DZ Beteiligungsgesellschaft mbH Nr. 18 4)	Frankfurt am Main	100.00		60,726	-
DZ Beteiligungsgesellschaft mbH Nr. 21 4)	Frankfurt am Main	100.00		25	- *
DZ Beteiligungsgesellschaft mbH Nr. 22	Frankfurt am Main	100.00		17	-1 *
DZ Beteiligungsgesellschaft mbH Nr. 23 4)	Frankfurt am Main	100.00		25	- *
DZ Beteiligungsgesellschaft mbH Nr. 24	Frankfurt am Main	100.00		17	- *
DZ CompliancePartner GmbH 4)	Neu-Isenburg	100.00		3,086	- *
DZ FINANCIAL MARKETS LLC	New York, USA	100.00		6,032	2,338 *
DZ Gesellschaft für Grundstücke und Beteiligungen mbH 4)	Frankfurt am Main	100.00		1,461	- *
DZ HYP AG 3) 4)	Hamburg/Münster	96.42		1,762,331	-
DZ PRIVATBANK (Schweiz) AG 1)	Zurich, Switzerland	100.00		200,872	21,673
DZ PRIVATBANK S.A. 3)	Strassen, Luxembourg	91.78		850,312	23,368
DZ Versicherungsvermittlung Gesellschaft mbH 4)	Frankfurt am Main	100.00		51	- *
DZ Vierte Beteiligungsgesellschaft mbH 4)	Frankfurt am Main	100.00		249,687	-
Englische Strasse 5 GmbH 1)	Wiesbaden	90.00		16,129	469 *
Evolit Consulting GmbH 1)	Vienna, Austria	100.00		1,881	1,399 *
Fischer Privatkunden Makler GmbH 1)	Herrenberg	90.00		n/a	n/a
FKS-NAVIGIUM GmbH 1)	Eschborn	100.00		-5,093	-1,926
FPAC (Malta) Limited 1)	Floriana, Malta	100.00		5	-3,499
fragWILHELM GmbH 1)	Wiesbaden	100.00		206	-1,328 *
Fundamenta Erteklanc Ingatlanközvetitö es Szolgaltato Kft. 1)	Budapest, Hungary	100.00		-1,135	-445
Fundamenta-Lakáskassza Lakás-takarékpénztár Zrt. 1)	Budapest, Hungary	51.25		156,136	15,071
Fundamenta-Lakáskassza Pénzügyi Közvetitö Kft. 1)	Budapest, Hungary	100.00		8,618	823
GAF Active Life 1 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	96.56		65,354	7,616 *
GAF Active Life 2 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	95.03		71,393	-4,377 *
Gartner, Keil & Co. Klima- und Kältetechnik GmbH 1)	Neulussheim	100.00		783	546 *
GENO Broker GmbH 4)	Frankfurt am Main	100.00		10,000	- *
GENO-Beteiligungsgesellschaft mbH	Düsseldorf	100.00		1,096	-38 *
Genoflex GmbH 1)	Nuremberg	70.00		1	- *
GMS Development - Gesellschaft für Softwareentwicklung m.b.H 1)	Paderborn	100.00		-	- *
GMS Holding GmbH 1)	Paderborn	88.89	75.00	15,448	2,455 *
GMS Management und Service GmbH 1)	Nidderau	100.00		102	25 *
Günther Kältetechnik GmbH 1)	Plüderhausen	60.00		940	243 *
GWG 1. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		2,000	1,076 *
GWG 2. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		3,000	839 *
GWG 3. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		7,000	1,504 *
GWG 4. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		9,000	1,213 *
GWG Beteiligungsgesellschaft mbH 1)	Stuttgart	100.00		28	1 *
GWG Gesellschaft für Wohnungs- und Gewerbebau Baden-Württemberg AG 1)	Stuttgart	91.57		375,106	15,585
GWG Hausbau GmbH 1)	Stuttgart	94.48		2,750	- *
GWG ImmoInvest GmbH 1)	Stuttgart	94.90		10,817	1,799 *
GWG Wohnpark Sendling GmbH 1)	Stuttgart	94.00		4,028	- *
HMDV Hausmeisterservice GmbH i.L. 1)	Berlin	100.00		303	63 *
HMV GmbH 1)	Erlangen	100.00		55	- *
HumanProtect Consulting GmbH 1)	Cologne	100.00		382	116 *
Ihr Autoputzmeister Service GmbH 1)	Graz, Austria	100.00		280	172 *
Immobilien-Gesellschaft 'DG Bank-Turm, Frankfurt am Main, Westend' mbH & Co. KG des genossenschaftlichen Verbundes 2)	Frankfurt am Main	95.97		193,808	16,352
Immobilien-Verwaltungsgesellschaft 'DG BANK-Turm, Frankfurt am Main, Westend' mbH	Frankfurt am Main	100.00		60	25 *
IMPETUS Bietergesellschaft mbH 4)	Düsseldorf	100.00		37,963	-
INFINDO Development GmbH 1)	Düsseldorf	100.00		n/a	n/a
IPConcept (Luxemburg) S.A. 1)	Strassen, Luxembourg	100.00		22,635	12,555
IPConcept (Schweiz) AG 1)	Zurich, Switzerland	100.00		6,400	623
Iron Maple Rail Ltd. 1)	Vancouver, Canada	100.00		-1,600	-1,218
IZD-Beteiligung S.à.r.l. 1)	Senningerberg, Luxembourg	100.00		50	-107 *
K2 Aircraft Malta Ltd 1)	Floriana, Malta	100.00		55	10
Kalsubai Shipping and Offshore Private Ltd. 1)	Mumbai, India	-		-	-
Kälte Eckert GmbH 1)	Markgröningen	70.00		7,066	-210 *
KBIH Beteiligungsgesellschaft für Industrie und Handel mbH	Frankfurt am Main	100.00		35,712	387
KRAVAG Umweltschutz und Sicherheitstechnik GmbH 1)	Hamburg	100.00		323	21 *
KRAVAG-ALLGEMEINE Versicherungs-Aktiengesellschaft 1)	Hamburg	100.00		107,507	36,699
KRAVAG-LOGISTIC Versicherungs-Aktiengesellschaft 1)	Hamburg	51.00		287,520	39,100

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
KV MSN 27602 Aircraft Ltd. 1)	Dublin, Ireland	-		-	-
Lantana Aircraft Leasing Limited 1)	Floriana, Malta	-		-176	2,916
Maple Leaf Shipping Holdco LLC 1)	Majuro, Marshall Islands	-		-	-
MD Aviation Capital Pte. Ltd. 1)	Singapore, Singapore	100.00		-19,705	14
MDAC 1 Pte Ltd. 1)	Singapore, Singapore	100.00		1,378	-119
MDAC 11 Pte Ltd. 1)	Singapore, Singapore	100.00		-40	-97
MDAC 2 Pte Ltd. 1)	Singapore, Singapore	100.00		-100	-377
MDAC 3 Pte Ltd. 1)	Singapore, Singapore	100.00		23	-192
MDAC 4 Pte Ltd. 1)	Singapore, Singapore	100.00		-95	-23
MDAC 5 Pte. Ltd. 1)	Singapore, Singapore	100.00		-169	-201
MDAC 6 Pte Ltd. 1)	Singapore, Singapore	100.00		-241	-549
MDAC 8 Pte Ltd. 1)	Singapore, Singapore	100.00		-94	18
MDAC 9 Pte Ltd. 1)	Singapore, Singapore	100.00		-114	-54
MDAC Malta Ltd. 1)	Floriana, Malta	-		-	-25
MI-Fonds 384 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds 388 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds 391 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds 392 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F 57 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F 59 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F43 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F44 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F45 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F46 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds F47 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds J01 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MI-Fonds J03 Metzler Investment GmbH 1)	Frankfurt am Main	-		n/a	n/a
MIRADOR Development GmbH 1)	Düsseldorf	100.00		n/a	n/a
MSN1164 Freighter Ltd. 1)	Dublin, Ireland	-		-	-
MSU Management-, Service- und Unternehmensberatung GmbH 1)	Landau in der Pfalz	60.00		919	159 *
NTK Immobilien GmbH 1)	Hamburg	100.00		44	- *
NTK Immobilien GmbH & Co. Management KG 1)	Hamburg	100.00		-	-409 *
Okoye Beteiligungsverwaltungs GmbH 1)	Vienna, Austria	80.00		7,994	1,076 *
Pascon GmbH 1)	Wiesbaden	100.00		36	4 *
payfree GmbH 1)	Düsseldorf	60.00		2,694	-831
PCAM Issuance II SA Issue RV AVL 001 1)	Luxembourg, Luxembourg	-		n/a	n/a
PDZ Personaldienste & Zeitarbeit GmbH 4)	Darmstadt	100.00		60	- *
Pension Consult-Beratungsgesellschaft für Altersvorsorge mbH 1)	Wiesbaden	100.00		724	-883 *
Phoenix Beteiligungsgesellschaft mbH 4)	Düsseldorf	100.00		5,849	-
Quoniam Asset Management GmbH 1)	Frankfurt am Main	93.79	100.00	29,016	13,171
R+V AIFM S.à.r.l. 1)	Luxembourg, Luxembourg	100.00		506	-356 *
R+V Allgemeine Versicherung Aktiengesellschaft 1) 4)	Wiesbaden	95.00		774,177	-
R+V Deutschland Real (RDR) 1)	Hamburg	-		n/a	n/a
R+V Dienstleistungs GmbH 1)	Wiesbaden	100.00		650	8 *
R+V Direktversicherung AG 1) 4)	Wiesbaden	100.00		13,320	-
R+V Erste Anlage GmbH i.L. 1)	Wiesbaden	100.00		290	- *
R+V INTERNATIONAL BUSINESS SERVICES Ltd., Dublin 1)	Dublin, Ireland	100.00		1,347	115 *
R+V KOMPOSIT Holding GmbH 1) 4)	Wiesbaden	100.00		1,832,272	-
R+V Krankenversicherung AG 1)	Wiesbaden	100.00		148,985	25,000
R+V Lebensversicherung Aktiengesellschaft 1)	Wiesbaden	100.00		1,206,933	-
R+V Mannheim P2 GmbH 1)	Wiesbaden	94.00		57,343	1,855 *
R+V Pensionsfonds AG 1)	Wiesbaden	100.00		37,173	2,560
R+V Pensionskasse AG 1)	Wiesbaden	100.00		104,033	800
R+V Personen Holding GmbH 1)	Wiesbaden	100.00		1,184,523	-7,388
R+V Rechtsschutz-Schadenregulierungs-GmbH 1)	Wiesbaden	100.00		326	49 *
R+V Service Center GmbH 1) 4)	Wiesbaden	100.00		2,869	- *
R+V Service Holding GmbH 1) 4)	Wiesbaden	100.00		196,695	-
R+V Treuhand GmbH 1)	Wiesbaden	100.00		58	7 *
R+V Versicherung AG 4)	Wiesbaden	92.21		2,149,774	-
RC II S.a.r.l. 1)	Munsbach, Luxembourg	90.00		8,833	71 *
ReiseBank Aktiengesellschaft 1)	Frankfurt am Main	100.00		19,267	-
RUV Agenturberatungs GmbH 1)	Wiesbaden	100.00		333	67 *
RV AIP S.C.S. SICAV-SIF 1)	Luxembourg, Luxembourg	99.00		10	- *
RV AIP S.C.S. SICAV-SIF - RV TF 2 Infra Debt 1)	Luxembourg, Luxembourg	97.55		411,014	6,035 *
RV AIP S.C.S. SICAV-SIF – RV TF 6 Infra Debt II 1)	Luxembourg, Luxembourg	98.40		30,500	- *
RV AIP S.C.S. SICAV-SIF – RV TF 7 Private Equity 1)	Luxembourg, Luxembourg	99.01		30,500	- *
RV AIP S.C.S. SICAV-SIF - RV TF Acquisition Financing 1)	Luxembourg, Luxembourg	98.67		156,509	2,136 *
RV AIP S.C.S. SICAV-SIF – TF 3 Primaries 1)	Luxembourg, Luxembourg	99.25		n/a	n/a
RV AIP S.C.S. SICAV-SIF – TF 4 Secondaries 1)	Luxembourg, Luxembourg	99.25		n/a	n/a

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
RV AIP S.C.S. SICAV-SIF – TF 5 Co-Investments 1)	Luxembourg, Luxembourg	99.25		n/a	n/a
RV Securitisation I S.à.r.l. 1)	Senningerberg, Luxembourg	100.00		n/a	n/a
RV Securitisation I S.à.r.l. - Aviation Opportunities I 1)	Senningerberg, Luxembourg	-		n/a	n/a
S2 Shipping and Offshore Ptd Ltd. 1)	Singapore, Singapore	100.00		-	-6,516
Schwäbisch Hall Facility Management GmbH 1)	Schwäbisch Hall	100.00		5,248	-1,572
Schwäbisch Hall Kreditservice GmbH 1) 4)	Schwäbisch Hall	100.00		18,775	-
Schwäbisch Hall Wohnen GmbH 1)	Schwäbisch Hall	100.00		3,303	-2,497
Shipping and Intermodal Investment Management Fund I LLC 1)	Majuro, Marshall Islands	-		-7,785	-4,266
SHT Schwäbisch Hall Training GmbH 1)	Schwäbisch Hall	100.00		4,671	362 *
SOS Kältetechnik GmbH 1)	Königsdorf	100.00		705	465 *
Sprint Italia S.r.l. 1)	Bolzano, Italy	51.00		n/a	n/a
Sprint Sanierung GmbH 1)	Cologne	100.00		29,973	-3,449 *
SRF III Ltd. 1)	Floriana, Malta	-		15	1,069
Stephenson Capital Limited 1)	George Town, Cayman Islands	-		-196	848
TeamBank AG Nürnberg 2) 4)	Nuremberg	92.60		539,699	-
Tiger Aircraft Leasing (UK) Limited 1)	London, UK	-		-	-
Twenty Holding Private Limited 1)	Singapore, Singapore	-		-	-
UI Infrastruktur Management SARL 1)	Luxembourg, Luxembourg	100.00		28	8 *
UI Management S.a.r.l. 1)	Luxembourg, Luxembourg	100.00		15	1 *
UI Private Debt Management S.à r.l. 1)	Luxembourg, Luxembourg	100.00		n/a	n/a
UI Vario: 2 issued by Union Investment Luxembourg S.A. 1)	Luxembourg, Luxembourg	-		n/a	n/a
UII Anzinger Strasse 29 Verwaltung LP GmbH 1)	Hamburg	100.00		n/a	n/a
UII Issy 3 Moulins SARL 1)	Paris, France	100.00		7	- *
UII MS Immobilien GP GmbH 1)	Hamburg	100.00		26	1
UII MS Immobilien Verwaltung LP GmbH 1)	Hamburg	100.00		n/a	n/a
UII PSD KN ImmoInvest GP GmbH 1)	Hamburg	100.00		85	17 *
UII SCE Management GP GmbH 1)	Hamburg	100.00		62	19 *
UII Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		20	-2 *
UIN Union Investment Institutional Fonds Nr. 1039 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 1041 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 1059 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 560 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 578 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 635 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 669 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 715 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 716 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 772 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 817 1)	Frankfurt am Main	-		3,282,176	-2,175
UIN Union Investment Institutional Fonds Nr. 825 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 833 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 834 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 839 1)	Frankfurt am Main	-		n/a	n/a
UIN Union Investment Institutional Fonds Nr. 913 1)	Frankfurt am Main	-		n/a	n/a
UIR Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		91	-5
UIW Austria Verwaltungs GmbH 1)	Erlangen	100.00		24	-1 *
UMB Unternehmens-Managementberatungs GmbH 1)	Wiesbaden	100.00		5,055	1,301 *
Union Asset Management Holding AG 2)	Frankfurt am Main	96.59		1,722,827	730,949
Union Investment Austria GmbH 1)	Vienna, Austria	100.00		20,405	3,456
Union Investment Institutional GmbH 1) 5)	Frankfurt am Main	100.00		103,970	-
Union Investment Institutional Property GmbH 1) 5)	Hamburg	90.00		45,862	23,454
Union Investment Luxembourg S.A. 1)	Luxembourg, Luxembourg	100.00		305,438	121,448
Union Investment Privatfonds GmbH 1) 5)	Frankfurt am Main	100.00		860,942	-
Union Investment Real Estate Asia Pacific Pte. Ltd. 1)	Singapore, Singapore	100.00		875	149 *
Union Investment Real Estate Austria AG 1)	Vienna, Austria	94.50		9,371	1,791
Union Investment Real Estate Digital GmbH 1) 5)	Hamburg	100.00		10,225	-
Union Investment Real Estate France S.A.S. 1)	Paris, France	100.00		3,457	1,229 *
Union Investment Real Estate GmbH 2) 5)	Hamburg	94.50		194,477	60,339
Union Investment Service Bank AG 1) 5)	Frankfurt am Main	100.00		103,115	-
Union IT-Services GmbH 1) 5)	Frankfurt am Main	100.00		7,634	-
Union Service-Gesellschaft mbH 1) 5)	Frankfurt am Main	100.00		12,660	-
Unterstützungskasse der Condor Versicherungsgesellschaften GmbH 1)	Hamburg	66.67		26	- *
URA Verwaltung GmbH 1)	Vienna, Austria	100.00		41	1 *
VisualVest GmbH 1) 5)	Frankfurt am Main	100.00		25,525	-
VR Consultingpartner GmbH 1)	Frankfurt am Main	100.00		1,078	- *
VR Equity Gesellschaft für regionale Entwicklung in Bayern mbH 1)	Frankfurt am Main	100.00		5,177	-20
VR Equitypartner Beteiligungskapital GmbH & Co. KG UBG 2)	Frankfurt am Main	100.00		36,021	2,757
VR Equitypartner GmbH 4)	Frankfurt am Main	100.00		69,070	-

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
VR Equitypartner Management GmbH 1)	Frankfurt am Main	100.00		348	-7
VR Factoring GmbH 4)	Eschborn	100.00		39,385	-
VR GbR 2)	Frankfurt am Main	100.00		229,212	84,244
VR HYP GmbH 1)	Hamburg	100.00		25	- *
VR Kreditservice GmbH 1) 4)	Hamburg	100.00		25	- *
VR Makler GmbH 1)	Hannover	100.00		428	-1,485 *
VR Mittelstandskapital Unternehmensbeteiligungs GmbH 2)	Düsseldorf	100.00		7,789	761
VR Payment GmbH	Frankfurt am Main	90.00		57,392	10,629
VR Real Estate GmbH 1)	Hamburg	100.00		25	- *
VR Smart Finanz AG 4)	Eschborn	100.00		211,070	-
VR Smart Finanz Bank GmbH 1) 4)	Eschborn	100.00		250,147	-
VR Smart Guide GmbH 1)	Eschborn	100.00		1,182	199
VR WERT Gesellschaft für Immobilienbewertung mbH 1) 4)	Hamburg	100.00		50	- *
VR-Leasing Beteiligungs GmbH 1)	Eschborn	100.00		98,643	-11
WBS Wohnwirtschaftliche Baubetreuungs- und Servicegesellschaft mbH 1)	Stuttgart	94.90		23,878	3,894
ZBI Beteiligungs GmbH 1)	Erlangen	100.00		46	-104 *
ZBI Fondsmanagement GmbH 1)	Erlangen	100.00		10,401	-
ZBI Fondsverwaltungs GmbH 1)	Erlangen	100.00		1,219	-59 *
ZBI GmbH 1)	Erlangen	94.90		9,365	-973
ZBI Immobilienmanagement GmbH 1)	Erlangen	100.00		745	- *
ZBI Professional Fondsverwaltungs GmbH 1)	Erlangen	100.00		5,225	5,073 *
ZBI Regiofonds Wohnen GF GmbH 1)	Erlangen	100.00		8	-3 *
ZBI Regiofonds Wohnen GmbH 1)	Erlangen	100.00		14	- *
ZBI Vertriebskoordinations GmbH i.L. 1)	Erlangen	100.00		807	782 *
ZBI Vorsorge - Plan Wohnen GF GmbH 1)	Erlangen	100.00		20	- *
ZBI Vorsorge - Plan Wohnen GmbH 1)	Erlangen	100.00		21	-1 *
ZBI Wohnen Plus Verwaltungs GmbH 1)	Erlangen	100.00		20	1 *
ZBI WohnWert Verwaltungs GmbH 1)	Erlangen	100.00		16	-1 *
ZBVV Zentral Boden Vermietung und Verwaltung GmbH 1)	Erlangen	100.00		6,061	-

JOINT VENTURES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
BAU + HAUS Management GmbH 1)	Wiesbaden	50.00		10,014	855 *
BEA Union Investment Management Limited 1)	Hong Kong, Hong Kong	49.00		57,973	11,198 *
Deutsche WertpapierService Bank AG	Frankfurt am Main	50.00		296,008	37,216
DZ BANK Galerie im Städel Kunstverwaltungsgesellschaft mbH	Frankfurt am Main	50.00		22	-2 *
IZD-Holding S.à.r.l. 1)	Senningerberg, Luxembourg	50.30	50.00	9	-61 *
Norafin Verwaltungs GmbH 1)	Mildenau	44.72	45.63	24,786	754 *
Prvá stavebná sporitel'na, a.s. 1)	Bratislava, Slovakia	32.50		284,075	17,224
R+V Kureck Immobilien GmbH Grundstücksverwaltung Braunschweig 1)	Wiesbaden	50.00		7,024	168 *
TrustBills GmbH i.L.	Hamburg	25.00		-	- *
Trustlog GmbH 1)	Hamburg	50.00		n/a	n/a
Versicherungs-Vermittlungsgesellschaft des Sächsischen Landesbauernverbandes mbH 1)	Dresden	50.00		215	1 *
Versicherungs-Vermittlungsgesellschaft mbH des Bauernverbandes Mecklenburg-Vorpommern e.V. (VVB) 1)	Neubrandenburg	50.00		204	11 *
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Brandenburg (VVB) 1)	Teltow	50.00		33	4 *
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Sachsen-Anhalt e.V. (VVB) 1)	Magdeburg	50.00		72	4 *
Zhong De Zuh Fang Chu Xu Yin Hang (Sino-German-Bausparkasse) Ltd. 1)	Tianjin, China	24.90		403,665	12,589

ASSOCIATES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
adorsys GmbH & Co. KG 1)	Nuremberg	25.89		2,073	831
adorsys Verwaltungs GmbH 1)	Nuremberg	25.90		29	1
aku.beteiligung GmbH 1)	Aalen	46.04		7,322	-417 *
Bankenkonsortium der Zenit GmbH, GbR	Düsseldorf	33.30		-	- *
bbv-service Versicherungsmakler GmbH 1)	Munich	25.20		2,251	377 *
Berlin-AI Management S.à r.l. 1)	Luxembourg, Luxembourg	20.00		n/a	n/a
Blitz SKB GmbH 1)	Giessen	41.76		n/a	n/a
Bookwire Holding GmbH 1)	Frankfurt am Main	49.00		11,679	-591 *
DITTRICH + CO Holding GmbH 1)	Frankfurt am Main	49.85		9,941	-18 *
Dr. Förster Holding GmbH 1)	Neu-Isenburg	20.06		-12,858	-1,280 *
European Convenience Food GmbH 1)	Garrel	41.16	41.52	3,366	-1,747 *
GBS Beteiligungsgesellschaft mbH 1)	Bayreuth	42.33		7,326	1,220 *
GGB-Beratungsgruppe GmbH	Stuttgart	23.13		-1,123	-1,858 *
GHM Holding GmbH 1)	Remscheid	40.00		17,471	-10 *
GHM MPP Reserve GmbH 1)	Remscheid	50.00		346	-3 *
GHM MPP Verwaltungs GmbH 1)	Remscheid	50.00		21	2 *
Glas Strack Holding GmbH 1)	Bochum	51.06	49.90	n/a	n/a
Goldeck Zetti Beteiligungsgesellschaft mbH 1)	Leipzig	39.23		33,749	2,673 *
Groneweg Verwaltungsgesellschaft mbH 1)	Greven	48.00		19,745	1,753 *
Hör Technologie GmbH 1)	Weiden i.d.OPf.	62.78	49.99	20,063	-2,250 *
Hudson Chemical Tankers Ltd 1)	Middlesex, UK	25.00		-	-
Impleco GmbH 1)	Berlin	50.00		1,929	-1,820
Informatik Consulting Systems Holding GmbH 1)	Stuttgart	49.83	49.43	9,543	1,475 *
Kapitalbeteiligungsgesellschaft für die mittelständische Wirtschaft in Nordrhein-Westfalen mbH - KBG -	Neuss	23.60		5,331	783 *
KCM Bulkers Ltd. 1)	Tortola, Virgin Islands	49.00		-	-
KTP Holding GmbH 1)	Bous	37.36		41,585	770 *
MSN 1272&1278 Aircraft Leasing 1)	Grand Cayman, Cayman Islands	20.00		n/a	n/a
N3K Group GmbH 1)	Heilbronn	25.10		15,546	1,448 *
Ostertag DeTeWe Group GmbH 1)	Walddorfhäslach	58.52	49.90	60	-25 *
Pesca Management GmbH 1)	Munich	49.30		n/a	n/a
SCL GmbH 1)	Butzbach	49.00		4,948	1,085
Signet Wohnmöbel GmbH 1)	Hochstadt am Main	49.80		2,256	266 *
Solectrix Holding GmbH 1)	Frankfurt am Main	49.90		n/a	n/a
Treuhand- und Finanzierungsgesellschaft für Wohnungs- und Bauwirtschaft mit beschränkter Haftung. Treufinanz	Düsseldorf	33.14		1,626	191 *
TREVA Entertainment GmbH i. L. 1)	Hamburg	32.70		-	- *
Votronic Elektronik-Systeme GmbH 1)	Lauterbach	49.80		2,582	1,708 *
Weisshaar Holding GmbH 1)	Deisslingen	84.94	49.92	-	- *

SHAREHOLDINGS OF 20% OR MORE

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
AMP Capital Infrastructure Debt Fund IV (EUR), L.P. 1)	Luxembourg, Luxembourg	39.84		223,130	1,929 *
AMP Capital Infrastructure Debt Fund V (EUR), L.P. 1)	Luxembourg, Luxembourg	89.49		n/a	n/a
Assiconf S.r.l. 1)	Turin, Italy	20.00		88	2 *
ASSICRA Servizi Assisurativi Banche di Credito Cooperativo Abruzzo e Molise S.r.l. 1)	Pescara, Italy	25.00		516	29 *
BRASIL FLOWERS S.A. 1)	Barbacena, Brazil	45.00		n/a	n/a
BREDS IV Aggregator SCSp 1)	Luxembourg, Luxembourg	90.91		n/a	n/a
Burghofspiele GmbH 1)	Eltville	20.00		-	-21 *
Bürgschaftsbank Brandenburg GmbH	Potsdam	25.31		32,101	1,077 *
Bürgschaftsbank Mecklenburg-Vorpommern GmbH	Schwerin	30.38		17,161	262 *
Bürgschaftsbank Sachsen-Anhalt GmbH	Magdeburg	29.73		16,577	141 *
Bürgschaftsbank Thüringen GmbH	Erfurt	22.13		27,285	65 *
Cheyne Real Estate Credit (CRECH) Fund IV Loans SCS SICAV-SIF 1)	Luxembourg, Luxembourg	20.83		332,487	7,677 *
Cheyne Real Estate Credit Holdings VII 1)	Luxembourg, Luxembourg	99.84		n/a	n/a
CMMT Partners L.P. 1)	Camden, USA	47.07		534,089	35,893 *
Credit Suisse Global Infrastructure SCA SICAR 1)	Luxembourg, Luxembourg	30.09		25,353	8,249 *
Digital Colony II Foreign Feeder-MV, SCSp 1)	Luxembourg, Luxembourg	68.10		n/a	n/a
DZ BANK Mikrofinanzfonds eG i.L. 2)	Frankfurt am Main	30.90	0.45	259	- *
EIG Global Project Fund V-A, L.P. 1)	Wilmington, USA	51.28		n/a	n/a
Finatem II GmbH & Co. KG 1)	Frankfurt am Main	20.20		12,519	2,908 *
FREUNDE DER EINTRACHT FRANKFURT Aktiengesellschaft 1)	Frankfurt am Main	32.05	19.84	6,525	257 *
GENOPACE GmbH 1) 5)	Berlin	27.49		200	- *
Global Energy & Power Infrastructure Fund III E, SCSp 1)	Luxembourg, Luxembourg	35.34		42,005	3,365 *
Global Infrastructure Partners III-C2, L.P. 1)	New York, USA	27.97		416,466	54,075 *
Golding Mezzanine SICAV IV Teilfonds 2 i.L. 1)	Luxembourg, Luxembourg	49.98		2,323	-745 *
GTIS Brazil II S-Feeder LP 1)	Edinburgh, UK	100.00		30,431	-83 *
KKR North America Fund XIII EEA Feeder SCSp 1)	Luxembourg, Luxembourg	95.32		n/a	n/a
Kreditgarantiegemeinschaft in Baden-Württemberg Verwaltungs-GmbH	Stuttgart	20.00		1,023	- *
Macquarie Asia Infrastructure Fund 2 SCSp 1)	Luxembourg, Luxembourg	50.48		161,028	10,981 *
Macquarie Asia Infrastructure Fund EU Feeder L.P. 1)	London, UK	100.00		96,458	10,174 *
MB Asia Real Estate Feeder (Scot.) L.P. 1)	Edinburgh, UK	34.80		1,304	-341 *
Medico 12 GmbH & Co. KG 1)	Frankfurt am Main	99.98		648	-178 *
Partners Group Direct Infrastructure 2020 (EUR), L.P.S.C.Sp. 1)	Luxembourg, Luxembourg	21.00		n/a	n/a
paydirekt GmbH	Frankfurt am Main	33.33		18,019	5,062 *
RV-CVIII Holdings, LLC 1)	Camden, USA	100.00		73,103	-7,933 *
Schroder Italien Fonds GmbH & Co. KG 1)	Frankfurt am Main	23.08	19.74	728	28 *
Schroder Property Services B.V. S.à.r.l. 1)	Senningerberg, Luxembourg	30.00		345	4 *
Swiss Life ESG Health Care Germany V S.C.S., SICAV-SIF 1)	Luxembourg, Luxembourg	41.33		n/a	n/a
Swiss Life Health Care III SICAV-FIS 1)	Luxembourg, Luxembourg	33.33		138,442	11,251 *
Swiss Life Health Care IV SICAV-FIS 1)	Luxembourg, Luxembourg	46.51		73,288	3,748 *
Technology DZ Venture Capital Fund I GmbH & Co. KG i.L. 1)	Munich	34.33		8,752	-51 *
TF H III Technologiefonds Hessen Gesellschaft mit beschränkter Haftung	Wiesbaden	25.00		6,957	-45 *
TF H Technologie-Finanzierungsfonds Hessen Gesellschaft mit beschränkter Haftung (TF H GmbH) i.L.	Wiesbaden	33.33		529	-23 *
Tishman Speyer Brazil Feeder (Scots/D), L.P. 1)	Edinburgh, UK	100.00		9,741	-8,442 *
Tishman Speyer European Real Estate Venture VIII Parallel SCSp 1)	Luxembourg, Luxembourg	55.88		-9,205	-6,708 *
Tishman Speyer European Strategic Office Fund Feeder, L.P. 1)	London, UK	97.18		1,287	515 *
TXS GmbH 1)	Hamburg	24.50		200	59 *
VAD Beteiligungen GmbH	Berlin	33.33		n/a	n/a
VBI Beteiligungs GmbH 1)	Vienna, Austria	24.50		2,624	2,203 *
VR-NetWorld GmbH 2)	Bonn	43.48		6,045	148 *

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	12.03		584,868	42,265 *
EDEKABANK Aktiengesellschaft	Hamburg	8.35		168,479	7,610 *
EURO Kartensysteme GmbH	Frankfurt am Main	19.60		12,292	105 *
PANELLINIA BANK SOCIETE ANONYME (under special liquidation)	Athens, Greece	8.42	5.28	-	- *
Protektor Lebensversicherungs-AG 1)	Berlin	5.27		7,853	2 *
Raiffeisendruckerei GmbH 1)	Neuwied	7.88		36,656	2,738 *
SCHUFA Holding AG 1)	Wiesbaden	17.94		127,985	40,247 *

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
aam2cred Debt Investments GmbH 1)	Frankfurt am Main	10.00		2,287	-603 *
ABE Clearing S.A.S a Capital Variable	Paris, France	1.92		36,533	5,354 *
AERS Consortio AG 1)	Stuttgart	16.50		114	-18 *
AgroRisk Polska Spólka z ograniczona odpowiedzialnoscia 1)	Poznań Poland	15.00		n/a	n/a
Airport Garden Services and Business Center S.A. 1)	Brussels-Zaventem, Belgium	0.33		2,081	1,808 *
AKA Ausfuhrkredit-Gesellschaft mit beschränkter Haftung	Frankfurt am Main	0.31		261,565	8,372 *
Akademie Badischer Volksbanken und Raiffeisenbanken GmbH 1)	Karlsruhe	0.03		n/a	n/a *
Anlegerentschädigung von Wertpapierfirmen GmbH 1)	Vienna, Austria	0.57	1.61	n/a	n/a
Architrave GmbH 1)	Berlin	12.04		n/a	n/a *
ARDIAN Infrastructure Fund V B S.C.S., SICAV-RAIF 1)	Luxembourg, Luxembourg	13.58		55,128	-10,738 *
Assicoop-Assicurazioni Cooperative S.r.l. 1)	Catania, Italy	0.41		n/a	n/a
assistance partner GmbH & Co. KG 1)	Munich	5.01		1,102	102 *
Atruvia AG 2)	Frankfurt am Main	0.35		447,672	24,679 *
Bank Polskiej Spoldzielczosci Spolka Akcyjna	Warsaw, Poland	1.00		179,726	6,355,881 *
BayBG Bayerische Beteiligungsgesellschaft mbH	Munich	9.38		244,646	2,274 *
Bayerische Raiffeisen- Beteiligungs-Aktiengesellschaft 2)	Beilngries	1.85		855,534	10,818 *
Berliner Volksbank eG 1)	Berlin	-	0.10	-	- *
Beteiligungs-Aktiengesellschaft der bayerischen Volksbanken 1)	Pöcking	1.14		232,160	159 *
BGG Bayerische Garantiegesellschaft mit beschränkter Haftung für mittelständische Beteiligungen	Munich	13.15		57,390	2,016 *
Blackrock Renewable Income Europe Fund 1)	Dublin, Ireland	7.69		474,768	34,794 *
Blackstone Real Estate Partners Europe III L.P. 1)	New York, USA	1.62		579,252	5,229 *
Blackstone Real Estate Partners International I.E. L.P. 1)	New York, USA	9.77		-26,468	30,572 *
BLHV Versicherungs-Service GmbH 1)	Freiburg	9.00		124	99 *
BTG Beteiligungsgesellschaft Hamburg mbH	Hamburg	10.00		5,007	-134 *
Bürgschaftsbank Bremen GmbH	Bremen	4.86		8,395	136 *
Bürgschaftsbank Hessen GmbH	Wiesbaden	15.87		22,806	982 *
Bürgschaftsbank Nordrhein-Westfalen GmbH Kreditgarantiegemeinschaft	Neuss	15.75		39,244	1,022 *
Bürgschaftsbank Rheinland-Pfalz GmbH	Mainz	14.31		17,224	40 *
Bürgschaftsbank Sachsen GmbH	Dresden	14.66	16.59	44,260	175 *
Bürgschaftsbank Schleswig-Holstein Gesellschaft mit beschränkter Haftung	Kiel	11.79		41,909	84 *
Bürgschaftsgemeinschaft Hamburg GmbH	Hamburg	6.36		26,939	156 *
Caprese S.A. 1)	Brussels-Zaventem, Belgium	-		3,154	-594 *
Cash Logistik Security AG 1)	Düsseldorf	4.10		6,230	1,041 *
CASSA CENTRALE BANCA - CREDITO COOPERATIVO ITALIANO S.P.A.	Trento, Italy	3.69		1,133,926	35,868 *
CLS Group Holdings AG	Lucerne, Switzerland	0.69		397,709	-33,271 *
Coop System S.p.A. 1)	Rome, Italy	1.97		n/a	n/a
Copenhagen Infrastructure III K/S 1)	Copenhagen K, Denmark	5.94		n/a	n/a
Copenhagen Infrastructure III US AIV Non-QFPF Blocker K/S 1)	Copenhagen K, Denmark	13.20		n/a	n/a
Copenhagen Infrastructure III-A K/S 1)	Copenhagen K, Denmark	5.87		n/a	n/a
Copenhagen Infrastructure IV K/S 1)	Copenhagen K, Denmark	7.15		n/a	n/a
Copenhagen Infrastructure IV US AIV Non-QFPF K/S 1)	Copenhagen K, Denmark	15.24		n/a	n/a
Crown Secondaries Special Opportunities II S.C.S. 1)	Luxembourg, Luxembourg	7.71		n/a	n/a
Curzon Capital Partners III LP 1)	London, UK	11.99		n/a	n/a
Curzon Capital Partners IV LP 1)	London, UK	10.73		287,011	40,641 *
Deutsche Bauernsiedlung - Deutsche Gesellschaft für Landentwicklung (DGL) mbH 1)	Frankfurt am Main	16.26		-	- *
Deutsche Börse Commodities GmbH	Frankfurt am Main	16.20	14.48	10,370	6,955 *
DG IMMOBILIEN MANAGEMENT Gesellschaft mbH	Frankfurt am Main	5.01		20,600	1,211 *
DG IMMOBILIEN-Objektgesellschaft 'Stuttgart, Industriestrasse' Kreft & Dr. Neumann KG (DGI 49) i.L.	Frankfurt am Main	0.98		-	- *
DG Nexolution eG 2)	Wiesbaden	1.54	1.58	69,442	1,948 *
DI Rathaus-Center Pankow Nr.35 KG 1)	Düren	3.86		27,574	2,303 *
Domus Beteiligungsgesellschaft der Privaten Bausparkassen mbH Berlin 1)	Berlin	14.13		30	-2 *
EIG Energy Fund XVI (Scotland) L.P. 1)	Edinburgh, UK	14.02		432,903	7,146 *
EIG Energy Fund XVII (Scotland) L.P. 1)	Edinburgh, UK	15.61		302,603	28,351 *
EPI Interim Company SE	Sint-Jans Molenbeek, Belgium	4.55		n/a	n/a
Euro Capital S.A.S. 1)	Metz, France	4.44		30,557	-1,689 *
European Property Investors Special Opportunities, L.P. 1)	London, UK	6.35		136,153	-56,671 *
European Property Investors, L. P. 1)	London, UK	6.50		5,349	-80 *
EXTREMUS Versicherungs-Aktiengesellschaft 1)	Cologne	5.00		64,219	119 *
FIDUCIA Mailing Services eG 2)	Karlsruhe	0.13		76	- *
GAD Beteiligungs GmbH & Co. KG 2)	Münster	2.49		119,597	3,020 *
GBK Holding GmbH & Co. KG 1)	Kassel	0.02		468,549	11,365 *
GDV Dienstleistungs-GmbH 1)	Hamburg	2.82		28,941	1,511 *
GI Data Infrastructure Fund-A LP 1)	Wilmington, USA	13.60		n/a	n/a

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
GIP Capital Solutions Feeder Fund II (EEA) 1)	Luxembourg, Luxembourg	15.00		-1,665	-1,087 *
GLADBACHER BANK Aktiengesellschaft von 1922	Mönchengladbach	17.53		39,878	749 *
Global Infrastructure Partners IV-C2, L.P. 1)	Luxembourg, Luxembourg	17.17		-2,969	-48,952 *
Global Renewable Power Infrastructure Fund III (C), SCSp 1)	Luxembourg, Luxembourg	6.40		n/a	n/a
GMB Systems GmbH & Co. KG 1)	Hamburg	10.75		n/a	n/a
GMS Mitarbeiter Beteiligungsgesellschaft UG & Co.KG 1)	Paderborn	4.00		986	-8 *
Golding Mezzanine SICAV III i.L. 1)	Luxembourg, Luxembourg	1.30		38,200	-10,642 *
Grand Hotel Heiligendamm GmbH & Co. KG Fundus Fonds Nr. 34 1)	Vettweiss-Disternich	1.90		-9,257	-31 *
Gründerfonds Ruhr GmbH & Co. KG 1)	Essen	7.25		9,183	-647 *
HANDWERKSBAU NIEDERRHEIN AKTIENGESELLSCHAFT	Düsseldorf	10.15		28,056	1,807 *
heal.capital I GmbH & Co. KG 1)	Berlin	0.99		-	-1,010 *
Hines European Value Fund SCSp 1)	Luxembourg, Luxembourg	13.87		488,081	27,341 *
Immigon portfolioabbau ag i.A.	Vienna, Austria	3.79		717,881	-4,903 *
Immo Feest en Cultuurpaleis Oostende SA 1)	Brussels, Belgium	-		16,010	-631 *
Interessengemeinschaft Frankfurter Kreditinstitute GmbH	Frankfurt am Main	7.01		24,359	8,677 *
IVS Immobilien GmbH 1)	Schiffweiler	6.00		26	- *
K in Kortrijk S.A. 1)	Brussels, Belgium	-		90,880	-5,560 *
KLAAS MESSTECHNIK GmbH 1)	Seelze-Harenberg	15.00		28	- *
KLV BAKO Vermittlungs-GmbH	Karlsruhe	10.00		251	9 *
Konsortium der Absatzfinanzierungsinstitute plettac-assco GbR	Wuppertal	-	7.08	n/a	n/a
Kreditgarantiegemeinschaft der Freien Berufe Baden-Württemberg Verwaltungs GmbH	Stuttgart	4.76		153	- *
Kreditgarantiegemeinschaft der Industrie, des Verkehrsgewerbes und des Gastgewerbes Baden-Württemberg Verwaltungs-GmbH	Stuttgart	15.28		1,300	- *
Kreditgarantiegemeinschaft des bayerischen Gartenbaues GmbH	Munich	9.07		649	- *
Kredit-Garantiegemeinschaft des bayerischen Handwerks Gesellschaft mit beschränkter Haftung	Munich	12.00		4,846	- *
Kreditgarantiegemeinschaft des Gartenbaues Baden-Württemberg Verwaltungs-GmbH	Stuttgart	12.00		138	- *
Kreditgarantiegemeinschaft des Handels Baden-Württemberg Verwaltungs-GmbH	Stuttgart	10.05		1,022	- *
Kreditgarantiegemeinschaft des Handwerks Baden-Württemberg Verwaltungs-GmbH	Stuttgart	10.05		1,001	- *
Kreditgarantiegemeinschaft des Hotel- und Gaststättengewerbes in Bayern GmbH	Munich	9.66		4,359	- *
Kreditgarantiegemeinschaft für den Handel in Bayern GmbH	Munich	7.19		6,317	- *
Kunststiftung Baden-Württemberg GmbH 1)	Stuttgart	0.50		-	- *
Les Grands Pres S.A. 1)	Brussels-Zaventem, Belgium	-	0.11	52,074	2,864 *
Macquarie European Infrastructure Fund 4 L.P. 1)	St. Peter Port, Guernsey	5.70		2,765,494	405,131 *
Macquarie European Infrastructure Fund 6 SCSp 1)	Luxembourg, Luxembourg	4.15		-19,959	-19,961 *
MBG H Mittelständische Beteiligungsgesellschaft Hessen GmbH	Wiesbaden	16.26		10,881	393 *
MBG Mittelständische Beteiligungsgesellschaft Baden-Württemberg Gesellschaft mit beschränkter Haftung	Stuttgart	9.94	8.33	83,352	2,056 *
MBG Mittelständische Beteiligungsgesellschaft Rheinland-Pfalz mbH	Mainz	9.80	11.11	16,353	362 *
MBG Mittelständische Beteiligungsgesellschaft Schleswig-Holstein mbH	Kiel	14.59	15.22	44,210	724 *
Mittelständische Beteiligungsgesellschaft Berlin-Brandenburg mbH	Potsdam	8.89		24,155	1,263 *
Mittelständische Beteiligungsgesellschaft Mecklenburg-Vorpommern mbH	Schwerin	16.00		17,962	1,344 *
Mittelständische Beteiligungsgesellschaft Niedersachsen (MBG) mit beschränkter Haftung	Hannover	19.92		15,097	366 *
Mittelständische Beteiligungsgesellschaft Sachsen mbH	Dresden	9.38		49,446	277 *
Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt (MBG) mbH	Magdeburg	19.84		24,270	21 *
Mittelständische Beteiligungsgesellschaft Thüringen mbH	Erfurt	10.28		27,422	580 *
Münchener Hypothekenbank eG 2)	Munich	1.18		1,546,756	37,701 *
Munster S.A. 1)	Luxembourg, Luxembourg	0.11		1,923	-505 *
Niedersächsische Bürgschaftsbank (NBB) Gesellschaft mit beschränkter Haftung	Hannover	17.68		30,140	39 *
North Haven Infrastructure Partners III Feeder A L.P. 1)	Kitchener, Canada	3.05		n/a	n/a
North Haven Infrastructure Partners III SCSp 1)	Luxembourg, Luxembourg	0.61		n/a	n/a
Opción Jamantab S. A. DE C. V. 1)	Mexico City, Mexico	-		9,957	-171 *
Partners Group Direct Equity IV (EUR) S.C.A., SICAV-RAIF 1)	Luxembourg, Luxembourg	6.84		55,128	-10,738 *
Partners Group Global Mezzanine 2007 S.C.A., SICAR 1)	Luxembourg, Luxembourg	2.24		45,799	1,580 *
PRIVATE EQUITY SCS SICAV-SIF 1)	Luxembourg, Luxembourg	-		n/a	n/a
Prosa Beteiligungs GmbH & Co. KG 1)	Frankfurt am Main	15.63		587	-408 *
Raiffeisen Waren-Zentrale Rhein-Main eG	Cologne	2.00		114,597	6,882 *
Raiffeisen-Kassel A-Beteiligungs GmbH & Co. KG	Kassel	8.22		172,763	7,065 *
Raiffeisen-Kassel B-Beteiligungs GmbH & Co. KG	Kassel	8.22		172,763	7,065 *
Royale 120 New Building S.A. 1)	Brussels-Zaventem, Belgium	-		43,841	1,049 *

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Royale 120 S.A. 1)	Brussels-Zaventem, Belgium	0.01		1,011	-38 *
RPD Real Property Development GmbH 1)	Langenwang, Austria	10.00		1,208	521
RREEF Pan-European Infrastructure Feeder GmbH & Co. KG 1)	Eschborn	17.70		348,880	-116 *
S.W.I.F.T. Society for Worldwide International Financial Telecommunication 2)	La Hulpe, Belgium	0.24		493,915	-137 *
Saarländische Wagnisfinanzierungsgesellschaft mbH	Saarbrücken	2.59		8,267	110 *
SALEG Sachsen-Anhaltinische Landesentwicklungs GmbH 1)	Magdeburg	1.15		13,842	378 *
Sana Kliniken AG 1)	Ismaning	0.69		1,017,094	66,685 *
Schulze-Delitzsch-Haus, eingetragene Genossenschaft 1)	Bonn	0.97		1,503	195 *
SGB-Bank Spólka Akcyjna	Poznań Poland	0.28		153,307	5,973 *
SIGNA Development Selection AG 1)	Innsbruck, Austria	5.00		674,359	125,995 *
SIGNA Prime Selection AG 1)	Innsbruck, Austria	5.00		3,283,737	497,973 *
Société de la Bourse de Luxembourg S.A. 1)	Luxembourg, Luxembourg	0.04		128,838	7,611 *
Splash Investment GmbH 1)	Munich	11.69		n/a	n/a
Strategie Invest SICAV 1)	Zurich, Switzerland	0.07		n/a	n/a
Süddeutsche Zuckerrübenverwertungs-Genossenschaft eG	Ochsenfurt	4.44	4.55	201,688	7,555 *
Target Partners Capital GmbH & Co. KG 1)	Munich	10.00	10.01	278	-7 *
Technologiezentrum Schwäbisch Hall GmbH 1)	Schwäbisch Hall	4.17	5.56	-	- *
Teko - Technisches Kontor für Versicherungen Gesellschaft mit beschränkter Haftung 1)	Düsseldorf	10.00		142	31 *
True Sale International GmbH	Frankfurt am Main	7.69		4,624	-240 *
Ufficio Centrale Italiano di Assistenza Assicurativa Automobilisti in Circolazione Internazionale -U.C.I. Societe consortie a R.L. 1)	Milan, Italy	0.09		1,330	16 *
UII Anzinger Strasse 29 GmbH & Co. KG 1)	Hamburg	0.01		n/a	n/a
UII MS Immobilien GmbH & Co. geschlossene InvKG 1)	Hamburg	0.01		n/a	n/a
UIR Belgique 1 S.A. 1)	Brussels, Belgium	0.13		68,492	1,877 *
UIR Le Président 1 1)	Brussels-Zaventem, Belgium	-	0.06	3,539	-175 *
UIR MU III S.A. de C.V. 1)	Mexico City, Mexico	-		6,628	-183 *
UniInstitutional Private Debt SCS SICAV-SIF 1)	Senningerberg, Luxembourg	-		n/a	n/a
UniInstitutional Sachwerte SCS SICAV-SIF 1)	Luxembourg, Luxembourg	-		n/a	n/a
Visa Inc.	San Francisco, USA	-		30,890,631	10,758,817 *
VNT Automotive GmbH 1)	Langenwang, Austria	10.00		9,416	467 *
VR-Bank Heilbronn Schwäbisch Hall eG 1)	Schwäbisch Hall	-	0.01	123,808	4,516 *
VR-IMMOBILIEN-LEASING GmbH 1)	Eschborn	6.00		14,470	1,362 *
WESTFLEISCH Finanz AG 1)	Münster	0.36		243,902	8,080 *
WRW Wohnungswirtschaftliche Treuhand Rheinland-Westfalen Gesellschaft mit beschränkter Haftung i.L.	Düsseldorf	2.73		n/a	n/a
ZBI Regiofonds Wohnen 1 GmbH & Co. geschlossene Investmentkommanditgesellschaft 1)	Erlangen	0.02		n/a	n/a
ZBI Vorsorge-Plan Wohnen 1 GmbH & Co. KG 1)	Erlangen	0.48		n/a	n/a
ZBI Zentral Boden Immobilien GmbH & Co. KG WohnWert 1 Geschlossene Investmentkommanditgesellschaft 1)	Erlangen	-		n/a	n/a
ZG Raiffeisen eG	Karlsruhe	1.01	0.02	81,627	3,639 *

1) Held indirectly.
2) Including shares held indirectly.
3) A letter of comfort exists.
4) Profit-and-loss transfer agreement with DZ BANK (direct or indirect).
5) Section 264 (3) HGB and section 264b HGB have been applied.
n/a = no figures available.
* Prior-year figures.

Responsibility statement

To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the group in accordance with German principles of proper accounting, and the group management report includes a fair review of the development and performance of the business and the position of the group, together with a description of the material opportunities and risks associated with the expected development of the group.

Frankfurt am Main, March 1, 2022

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[1]

To DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main

Report on the audit of the consolidated financial statements and of the Group management report

Audit Opinions

We have audited the consolidated financial statements of DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at 31 December 2021, and the consolidated statement of comprehensive income, consolidated statement of profit or loss, consolidated statement of changes in equity and consolidated statement of cash flows for the financial year from 1 January to 31 December 2021, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of DZ BANK AG Deutsche Zentral-Genossenschaftsbank for the financial year from 1 January to 31 December 2021.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § [Article] 315e Abs. [paragraph] 1 HGB [Handelsgesetzbuch: German Commercial Code] and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at 31 December 2021, and of its financial performance for the financial year from 1 January to 31 December 2021, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to § 322 Abs. 3 Satz [sentence] 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as „EU Audit Regulation") 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

[1] Translation of the auditor's report issued in German language on the annual financial statements prepared in German language by the management of DZ BANK AG Deutsche Zentral-Genossenschaftsbank. The German auditor's report is authoritative.

responsibilities under those requirements and principles are further described in the „Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities 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 Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 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 audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from 1 January to 31 December 2021. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

❶ **Risk provisions for loans and advances to customers measured at amortised cost**

❷ **Measurement of assets recognised at fair value, for which the fair value is determined using valuation techniques that incorporate at least one significant unobservable market parameter**

❸ **Measurement of Bauspar-specific provisions (provisions relating to building society operations)**

❹ **Measurement of the partial loss provisions for known and unknown claims contained in the gross provisions for outstanding claims in the property-casualty business (direct insurance and reinsurance)**

❺ **Measurement of the benefit reserve for life and health insurance contained in the insurance liabilities**

Our presentation of these key audit matters has been structured in each case as follows:

① Matter and issue

② Audit approach and findings

③ Reference to further information

Hereinafter we present the key audit matters:

❶ **Risk provisions for loans and advances to customers measured at amortised cost**

① In the consolidated financial statements, loans and advances to customers measured at amortised cost amounting to € 189,044 million (30.1% of total assets) are reported under the balance sheet item „Loans and advances to customers". As of 31 December 2021, there is an allowance for credit losses for the loan portfolio consisting of specific and general loan loss provision of € 1,908 million in total. The measurement of risk provisioning in customer credit business is determined in particular by the structure and quality of the credit portfolios, macroeconomic influencing factors and the estimates of the executive directors with regard to future loan defaults, among other things, also against the background of the expected impact of the ongoing Corona pandemic on the lending business. The amount of specific loan loss provisions corresponds to the difference between the outstanding loan amount and the present value of the cash flows still expected from the loan. Existing collateral are taken into account. Portfolio loan loss provisions are created for foreseeable counterparty risks in the lending business that have not yet been specified for individual borrowers. For this purpose, general provisions are recognized for loans not individually impaired in the amount of the expected loss for an observation period of twelve months, unless the credit default risk is significantly increased. If the credit default risk is significantly increased, a general loan loss provision is recognized for the foreseeable losses over the remaining term of the loan in issue. To take into account current economic developments due to the Corona pandemic, the Group has updated the macroeconomic forecasts and made expert-based adjustments to the statistically determined shift factors. In calculating risk provisions, the Group incorporated for the first time so-called post-model adjustments for the installment loan business. These post-model adjustments take into account the expectations of the executive directors with regard to the ongoing Corona pandemic and some other risk drivers that have not yet been considered in the models, including the shift factors.

The value adjustments in the customer credit business is highly significant for the assets, liabilities and financial performance of the Group and also involves considerable scope for judgment of the executive directors with regard to macroeconomic forecasts and the shift factors used, the post-model adjustments as well as the cash flows still expected from an individually impaired loan exposure. In addition, the valuation parameters applied, which are also subject to significant uncertainties due to the effects of the Corona pandemic, have a significant influence on the recognition and amount of any necessary cumulative value adjustments. Against this background, this matter was of particular significance in the context of our audit.

② As part of our audit, we first assessed the adequacy of the IT system for determining the risk provisioning in the customer credit business and the design of the controls in the Group's relevant internal control system and tested the functionality of the controls, in particular with regard to the collection of business data, the risk classification of borrowers, the determination of the risk provisioning, and the validation of the valuation models. In addition, we assessed the valuation of loan receivables, including the appropriate application of valuation methods and adequacy of estimated values, on the basis of risk-based samples of loan exposures. In doing so, we evaluated, among other things, the available documentation of the Group with regard to the economic circumstances and the recoverability of the corresponding collateral. We also understood and assessed the executive directors' assessment of the effects of the Corona pandemic and their consideration in the valuation of the receivables. In terms of the valuation of real estate, ship and wind power financings, with the involvement of our specialists for the valuation of real estate, ships and for renewable energies, we have traced the application of the valuation models and assessed the appropriateness of the input factors and forward-looking assumptions.

Furthermore, in order to assess the value adjustments made, we traced and evaluated the valuation methods applied by the Group, the underlying input data, macroeconomic assumptions and parameters as well as the results of the validation procedures. In particular, we assessed the expert-based adjustments of the statistically determined shift factors with the help of our internal specialists from the area of financial mathematics. We also questioned the necessity of post-model adjustments and comprehended their determination in terms of amount. On the basis of our audit procedures we performed, we were able to satisfy ourselves of the overall reasonableness of the assumptions made by the executive directors in assessing the recoverability of the credit portfolio as well as the appropriateness and effectiveness of the controls implemented by the Group.

③ The Group's disclosures on risk provisions for loans and advances to customers measured at amortised cost are included in the notes to the consolidated financial statements in sections 05 „Financial instruments“, 22 „Loss allowances“, 45 „Loss allowances“, 61 „Loss allowances“ and 88 „Nature and extent of risks arising from financial instruments and insurance contracts“.

❷ Measurement of assets recognised at fair value, for which the fair value is determined using valuation techniques that incorporate at least one significant unobservable market parameter

① In the consolidated financial statements assets amounting to € 24,753 million (3.9 % of total assets) are reported under the balance sheet items „Loans and advances to customers“, „Financial assets held for trading“, „Investments“, „Investments held by insurance companies“ und „Non-current assets classified as held for sale“ for which the fair value is determined using valuation techniques that incorporate at least one significant unobservable market parameter (so-called Level 3 assets).

In the valuation of Level 3 assets, there is an increased valuation risk due to the necessity of using model-based calculations and significant valuation parameters that are not observable on the market. The executive directors must make judgments, estimates and assumptions in this context, including with respect to the possible effects of the ongoing Corona pandemic. Minor changes to those assumptions or to the methods used may have a material impact on the measurement of these assets. Due to the material significance of Level 3 assets to the Group's assets, liabilities and financial performance, as well as the judgements of the executive directors and the associated estimation uncertainties, the valuation of the Level 3 assets was of particular significance in the context of our audit

② As part of our audit, we assessed the models used by the Group for the valuation of Level 3 assets and the assumptions made by the executive directors. In doing so, we used, among other things, our valuation expertise for financial instruments, our industry knowledge and our industry experience. We also assessed the design and effectiveness of the Group's controls over the valuation of Level 3 assets and their recognition in the statement of comprehensive income. Based on this, we performed further tests of detail in relation to the valuation of these assets. Our tests of detail included assessing the selected measurement methods and their consistent application, assessing the assumptions made and the mathematical correctness of the procedures applied. In addition, we tested the completeness and accuracy of the underlying portfolio data and the valuations derived from them in a risk-based sample. Based on our audit procedures, we were able to satisfy ourselves that the estimates and assumptions made by the executive directors for the purpose of measuring the Level 3 assets are substantiated and sufficiently documented.

③ With regard to the valuation principles applied, we refer to the Group's disclosures in the notes to the consolidated financial statements in section 77 „Assets and liabilities measured at fair value on the balance sheet“.

❸ Measurement of Bauspar-specific provisions (provisions relating to building society operations)

① In the Group’s consolidated financial statements Bauspar-specific provisions (provisions relating to building society operations) amounting to €1,398 million are reported under the „Provisions“ balance sheet item. These include Bauspar-specific provisions that relate to the Group’s obligations from interest bonuses (particularly loyalty bonuses) on Bauspar deposits. Under the tariff terms and conditions, bonuses are granted to Bauspar customers subject to the occurrence of various conditions, such as the Bauspar customer's election to exercise their option to receive the interest bonus, the observance of a waiting period, which, if the option is exercised, begins on the valuation date on which the target valuation figure and a certain minimum Bauspar deposit are reached, the attainment of a minimum term of the Bauspar contract, and the waiver of the right to draw down the allocated Bauspar loan. The bonuses represent obligations that are uncertain as to their amount and timing. They are measured at the best estimate of the expenses required to settle the present obligation at the reporting date. The estimate is made on the basis of the results of the Bauspar-specific simulation calculations (collective simulations). In the course of selecting the parameters for these simulation calculations, the executive directors make assumptions regarding new business, the future behavior of Bauspar customers on the basis of historical data and the forecast capital market rate of interest, and the forecast period. A bandwidth method is used to determine the simulation calculation, which forms the basis for recognizing the provision and which is thus regarded by the executive directors as the best possible estimate. The forecast quality of the models used for the Bauspar-specific simulation calculation is validated on an annual basis. The calculation of the Bauspar-specific provisions required the use of judgments and assumptions by the executive directors. Minor changes in these assumptions in the model used for the Bauspar-specific simulation calculations can have a material impact on the measurement of the Bauspar-specific provisions for interest bonuses.

Due to the material significance of these provisions for the assets, liabilities and financial performance of the Company as well as the associated uncertainties in the estimations made and the scope for judgment on the part of the executive directors, the measurement of the Bauspar-specific provisions was of particular significance in the context of our audit.

② Given the significance of Bauspar-specific provisions for the Group's overall business, as part of our audit we assessed the methods used by the Group for the Bauspar-specific simulation calculations, and the assumptions made by the executive directors and those used by the Group, together with our internal specialists for Bauspar-specific mathematics. The assessment was based on our industry expertise and experience, among other things. We also evaluated the Group's process for determining and recognizing Bauspar-specific provisions. Furthermore, we assessed the forecast quality of the model used based on the accuracy of past forecasts. Therewith, we assessed the results of the Group's calculations of the amount of the provisions and evaluated the consistent application of the model.

Based on our audit procedures, we were able to satisfy ourselves that the estimates and assumptions made by the executive directors for the purpose of measuring the Bauspar-specific provisions are substantiated and sufficiently documented.

③ The Group’s disclosures relating to Bauspar-specific provisions are contained in sections 26 „Provisions“ and 69 „Provisions“ of the notes to the consolidated financial statements.

❹ Measurement of the partial loss provisions for known and unknown claims contained in the gross provisions for outstanding claims in the property-casualty business (direct insurance and reinsurance)

① In the consolidated financial statements a gross provision for outstanding claims (referred to as „gross claims provisions") amounting to € 16,429 million (2.6 % of total assets) is reported under the „Insurance liabilities" balance sheet item.

In accordance with IFRS 4.13, the Group recognizes claims provisions pursuant to the requirements of § 341g HGB. In accordance therewith, claims provisions must be recognized to the extent necessary in accordance with prudent business judgment to ensure that obligations under insurance contracts can be met on a long-term basis. Defining assumptions for the purpose of measuring the claims provisions requires the Group's executive directors, in addition to complying with the requirements of commercial and regulatory law, to make estimates of future events and to apply appropriate measurement methods. This also includes the expected effects of the ongoing Corona pandemic on the recognition of the claims provisions in the lines of business concerned. The methods used to determine the amount of the claims provisions and the calculation parameters are based on judgments and assumptions made by the executive directors. Minor changes to those assumptions or to the methods used may have a material impact on the measurement of the claims provisions.

Due to the material significance of the amounts of these provisions for the assets, liabilities and financial performance of the Group, the complexity of the applicable requirements and the underlying methods as well as the scope for judgment on the part of the executive directors and the associated uncertainties in the estimations made, the measurement of the provisions for known and unknown claims was of particular significance in the context of our audit.

② Given the significance of the provisions for known and unknown claims for the Group's overall business, as part of our audit we assessed the assumptions made by the executive directors and the methods used by the Group together with our internal actuaries. Thereby, we based our assessment on our industry expertise and experience, among other things, and considered recognized methods. We also evaluated the design and effectiveness of the controls established by the Group for the purpose of calculating and recording claims provisions. On that basis, we carried out additional analytical audit procedures and tests of details relating to the measurement of the provisions for known and unknown claims. Among other things, we evaluated and assessed the estimation of the reserve for individual loss events using a risk-based selection based on the claims documentation. Therewith, we assessed the results of the Group's calculations of the amount of the provisions with reference to the applicable legal requirements and evaluated the consistent application of the measurement methods and the accrual basis of accounting. In this context, we also assessed the executive directors' estimate as to the effects of the Corona pandemic on the lines of business concerned.

Based on our audit procedures, we were able to satisfy ourselves that the estimates and assumptions made by the executive directors for the purpose of measuring the provisions for known and unknown claims are substantiated and sufficiently documented.

③ The Group's disclosures relating to the benefit reserve contained in the insurance liabilities are contained in the sections 11 „Insurance business" and 70 „Insurance liabilities" of the notes to the consolidated financial statements.

❺ Measurement of the benefit reserve for life and health insurance contained in the insurance liabilities

① In the consolidated financial statements a benefit reserve amounting to a total of € 74,167 million (11.8% of total assets) is reported under the „Insurance liabilities" balance sheet item.

In accordance with IFRS 4.13, the Group recognizes insurance liabilities pursuant to the requirements of § 341g HGB. In accordance therewith, insurance liabilities must be recognized to the extent necessary in accordance with prudent business judgment to ensure that obligations under insurance contracts can be met on a long-term basis. This requires compliance with a large number of regulatory requirements for the calculation of the provisions in addition to the requirements of German commercial law. Defining assumptions for the purpose of measuring the insurance liabilities requires the executive directors, in addition to complying with the requirements of German commercial law and regulatory law, to make estimations of future events and to apply appropriate measurement methods. Minor changes to those assumptions or to the methods used may have a material impact on the measurement of the insurance liabilities.

The Group's benefit reserve included in the insurance liabilities mainly comprises long-term obligations arising from pension, invalidity, endowment and death benefits, as well as health and long-term care benefits. The benefit reserve in health insurance comprises the aging reserve determined based on the individual contracts, the cumulated funds from the direct credit in accordance with § 150 VAG [Versicherungsaufsichtsgesetz: German Insurance Supervision Act] and the provision for the statutory supplement in accordance with § 149 VAG. In response to the persistent low interest rate environment on the capital markets, on 1 March 2011 an amendment to the DeckRV [Deckungsrückstellungsverordnung: German Regulation on the Principles Underlying the Calculation of the Benefit Reserve] in relation to life insurance contracts introduced an additional interest provision for the new portfolio and an interest enhancement in accordance with approved business plan for insurance contracts in the regulated existing portfolio. The additional interest provision is reported as part of the benefit reserve.

Due to the material significance of the benefit reserve in terms of amount for the assets, liabilities and financial performance of the Group, the complexity of the applicable requirements and the underlying methods as well as the scope for judgment on the part of the executive directors and the associated uncertainties in the estimations made, the measurement of the benefit reserve was of particular significance in the context of our audit.

② Given the significance of the benefit reserve for the Group's overall business, as part of our audit we assessed the assumptions made by the executive directors and the methods used by the Group together with our internal valuation specialists. Thereby, we based our assessment on our industry expertise and experience, among other things, and considered recognized methods. We also evaluated the design and effectiveness of the controls established by the Group for the purpose of calculating and recording the benefit reserve. On that basis, we carried out additional analytical audit procedures and tests of details relating to the measurement of the benefit reserve. Among other things, we also reconciled a risk-based sample of the data on which the calculation of the settlement amount was based with the underlying documentation. Therewith, we assessed the results of the Group's calculations of the amount of the benefit reserves with reference to the applicable legal requirements and evaluated the consistent application of the measurement methods. With respect to calculating the additional interest provision, we examined the determination and application of the benchmark rate. We also evaluated the recognition of interest rate obligations in connection with guaranteed annuity factors in unit-linked life insurance. For the benefit reserve in health insurance, we also inspected and reconciled the confirmations from the trustee for the adjustments to premiums.

Based on our audit procedures, we were able to satisfy ourselves that the estimates and assumptions made by the executive directors for the purpose of measuring the insurance liabilities are substantiated and sufficiently documented.

③ The Group's disclosures relating to the gross claims provisions contained in the insurance liabilities are contained in the sections 11 „Insurance business“ and 70 „Insurance liabilities“ of the notes to the consolidated financial statements.

Other Information

The executive directors are responsible for the other information.

The other information comprises

– the separate non-financial report pursuant to § 289b Abs. 3 HGB and § 315b Abs. 3 HGB
– the annual report, excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor’s report

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information mentioned above and, in so doing, to consider whether the other information

– is materially inconsistent with the consolidated financial statements, with the group management report disclosures audited in terms of content or with our knowledge obtained in the audit, or
– otherwise appears to be materially misstated.

Responsibilities of the Executive Directors and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group’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 unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group’s position and is, in all material respects, consistent with the consolidated 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 group 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 group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated 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 audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 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 consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group 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 audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- 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 Group'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 consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit 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 Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group 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 audit 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 consolidated 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

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB

Assurance Opinion

We have performed assurance work in accordance with § 317 Abs. 3a HGB to obtain reasonable assurance as to whether the rendering of the consolidated financial statements and the group management report (hereinafter the „ESEF documents") contained in the electronic file dzbankag-2021-12-31-de.zip and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format („ESEF format"). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the group management report into the ESEF format and therefore relates neither to the information contained within these renderings nor to any other information contained in the electronic file identified above.

In our opinion, the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying group management report for the financial year from 1 January to 31 December 2021 contained in the „Report on the Audit of the Consolidated Financial Statements and on the Group Management Report" above, we do not express any assurance opinion on the information contained within these renderings or on the other information contained in the electronic file identified above.

Basis for the Assurance Opinion

We conducted our assurance work on the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above in accordance with § 317 Abs. 3a HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering, of Financial Statements and Management Reports, Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB (IDW AsS 410 (10.2021)) and the International Standard on Assurance Engagements 3000 (Revised). Our responsibility in accordance therewith is further described in the „Group Auditor's Responsibilities for the Assurance Work on the ESEF Documents" section. Our audit firm applies the IDW Standard on Quality Management 1: Requirements for Quality Management in the Audit Firm (IDW QS 1).

Responsibilities of the Executive Directors and the Supervisory Board for the ESEF Documents

The executive directors of the Company are responsible for the preparation of the ESEF documents including the electronic renderings of the consolidated financial statements and the group management report in accordance with § 328 Abs. 1 Satz 4 Nr. [number] 1 HGB and for the tagging of the consolidated financial statements in accordance with § 328 Abs. 1 Satz 4 Nr. 2 HGB.

In addition, the executive directors of the Company are responsible for such internal control as they have considered necessary to enable the preparation of ESEF documents that are free from material non-compliance with the requirements of § 328 Abs. 1 HGB for the electronic reporting format, whether due to fraud or error.

The supervisory board is responsible for overseeing the process for preparing the ESEF documents as part of the financial reporting process.

Group Auditor's Responsibilities for the Assurance Work on the ESEF Documents

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error. We exercise professional judgment and maintain professional skepticism throughout the assurance work. We also:

- Identify and assess the risks of material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance work on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e., whether the electronic file containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815 in the version in force at the date of the consolidated financial statements on the technical specification for this electronic file.
- Evaluate whether the ESEF documents provide an XHTML rendering with content equivalent to the audited consolidated financial statements and to the audited group management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, in the version in force at the date of the consolidated financial statements, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on 19 May 2021. We were engaged by the supervisory board on 23 November 2021. We have been the group auditor of the DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, without interruption since the financial year 2021.

We declare that the audit opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

Reference to an other matter – Use of the auditor´s report

Our auditor's report must always be read together with the audited consolidated financial statements and the audited group management report as well as the assured ESEF documents. The consolidated financial statements and the group management report converted to the ESEF format – including the versions to be published in the Federal Gazette – are merely electronic renderings of the audited consolidated financial statements and the audited group management report and do not take their place. In particular, the „Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB" and our assurance opinion contained therein are to be used solely together with the assured ESEF documents made available in electronic form.

German public auditor responsible for the engagement

The German Public Auditor responsible for the engagement is Peter Kleinschmidt.

Frankfurt am Main, 4 March 2022

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Schmitz	Kleinschmidt
Wirtschaftsprüfer	Wirtschaftsprüfer
(German Public Auditor)	(German Public Auditor)

Report of the Supervisory Board

Henning Deneke-Jöhrens, Chairman of the Supervisory Board of DZ BANK AG

In 2021, the Supervisory Board carried out the tasks assigned to it by law, the Articles of Association, and rules of procedure. As part of this remit, the Supervisory Board advised the Board of Managing Directors and monitored its management activities. In particular, the Supervisory Board focused on the capital situation of DZ BANK and its strategy as the network-oriented central institution and holding company of a financial services group. It also thoroughly addressed current regulatory challenges, the risk position of the bank and the group, as well as the development of systems and procedures used to manage the main risks in the Bank sector and Insurance sector. The Supervisory Board was always involved in decisions of fundamental importance. The Board of Managing Directors provided the Supervisory Board with regular, timely, and comprehensive reports on all matters relevant to DZ BANK, in particular the strategy, planning, business performance, risk situation, risk management, remuneration systems, regulatory requirements, (information) technology, organizational matters, and compliance.

In 2021, despite the ongoing COVID-19 pandemic, the DZ BANK Group did not need to make any significant adjustments to its strategic focus, which was enshrined in the 'Verbund First 4.0' strategic program established in 2018. In the reporting year, strategic activities were particularly focused on sustainability, which is becoming an issue of major importance for the entities in the DZ BANK Group, both in their core businesses and in their own operations. The 'Verbund First 4.0' strategic program otherwise continues to be aimed at improvements in three key areas: market offering, control and production processes, and corporate culture. Once again in 2021, significant positive effects were derived from the strategy in respect of these key areas.

Meetings of the Supervisory Board

The Supervisory Board held five ordinary meetings in 2021. Its members attended the meetings of the Supervisory Board and its committees regularly.

At its meetings in the reporting year, the Supervisory Board regularly received and discussed reports from the Board of Managing Directors on current business performance, the capital situation, and profitability of DZ BANK AG and the DZ BANK Group. In this context, besides consideration of the previously mentioned sustainability-related strategy updates in the DZ BANK Group, there were discussions on the impact of the COVID-19 pandemic on the business performance, liquidity, and capital of the DZ BANK Group, the impact of the disastrous flooding in Rhineland-Palatinate and North Rhine-Westphalia in July 2021 on net income from insurance business, the challenges for Bausparkasse Schwäbisch Hall and others posed by low interest rates, and the reduction of the portfolio and structure at DVB Bank. The Supervisory Board regularly received and discussed reports on the work of the committees from their Chairs. During the meetings, and by using a voting procedure in writing, the Supervisory Board also adopted resolutions in connection with transactions requiring its consent, such as commitments to long-term equity investments and loans. HR issues from 2020 relating to DZ BANK AG and the DZ BANK Group were further matters considered by the Supervisory Board. In addition, the Supervisory Board addressed nomination and remuneration issues, passing the necessary resolutions in accordance with the recommendations submitted by the Nominations Committee, the Remuneration Control Committee, and the Risk Committee. The Supervisory Board received the report from Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft, Stuttgart, (EY) on the audit of the single-entity financial statements for the year ended December 31, 2020 and the report of the Audit Committee on the audit of the single-entity financial statements and management report of DZ BANK AG and of the consolidated financial statements and group management report for the year ended December 31, 2020, approved this Audit Committee report following its own review, and approved the single-entity financial statements of DZ BANK AG and the consolidated financial statements for the year ended December 31, 2020 in accordance with the recommendation of the Audit Committee. In further deliberations, the Supervisory Board acknowledged the 2020 Sustainability Report of the DZ BANK Group, which included the non-financial reporting of DZ BANK AG and the DZ BANK Group, and the findings of the audit of the separate combined non-financial report of DZ BANK AG and the DZ BANK Group for the period January 1 to December 31, 2020, which the Supervisory Board had engaged the auditors to carry out in order to obtain limited assurance. On this basis and following its own review, the Supervisory Board came to the conclusion that the above report for 2020 satisfied the statutory requirements.

In accordance with the Audit Committee's recommendations, the Supervisory Board also approved the report of the Supervisory Board to the Annual General Meeting as well as the agenda for the Annual General Meeting on May 19, 2021. Based on the recommendation of the Audit Committee, this was accompanied by the Supervisory Board's proposal to the Annual General Meeting that PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, (PwC) be appointed as auditor of the single-entity financial statements and the consolidated financial statements for the year ended December 31, 2021 and as auditor for the review of the group's half-year financial report for the period ended June 30, 2021 and any other interim financial statements at the level of the group or DZ BANK AG prepared for periods up to the 2022 Annual General Meeting.

In the context of the annual financial statements and the appropriation of profits to be decided by the Annual General Meeting, the Supervisory Board discussed the ECB's restrictions on dividend policy during the COVID-19 pandemic. The ECB had recommended to the banks that it directly supervises in the eurozone that dividend payments from the distributable profits for the 2019 and 2020 financial years be limited. Accordingly, the Supervisory Board had proposed to the Annual General Meeting of DZ BANK on May 19, 2021 a dividend payment of 16 cents per share, which was the highest amount permissible under these restrictions. After the ECB then announced on July 23, 2021 that it would no longer retain its dividend restrictions after September 30, 2021, the Board of Managing Directors of DZ BANK convened an Extraordinary Annual General Meeting.

At this Extraordinary General Meeting of DZ BANK on November 4, 2021, the Supervisory Board proposed a further dividend payment of 16 cents per share.

Both after the Annual General meeting and following the election of the employee representatives to the Supervisory Board, the Supervisory Board addressed a number of matters, which included electing the Chairman of the Supervisory Board and his two deputies, deciding on the composition of the Supervisory Board committees, and approving recommended resolutions relating to the appointment of the Chair and deputy of each committee.

Under items scheduled for regular discussion, the Supervisory Board examined the strategic and operational planning at DZ BANK AG and in the DZ BANK Group for 2022 in the third and fourth quarters of 2021. This included discussing the recovery planning, which is required by law, in addition to the strategic and operational planning.

In addition, the Supervisory Board received a presentation from the ECB covering the following: risk analysis and the supervisor's priorities for 2021, the 2021 SREP for the DZ BANK Group, i.e. the 2021 Supervisory Review and Evaluation Process including the supervisor's main concerns with regard to the DZ BANK Group, the quantitative capital requirements/recommendations specified by the supervisor for the DZ BANK Group, the stress test results and Pillar 2 guidance, the status of the 2020 SREP measures, and the key supervisory activities relating to the DZ BANK Group. The Supervisory Board then discussed these matters with the ECB's representatives.

Meetings of the Supervisory Board committees

Each Supervisory Board committee also met on a number of occasions in 2021. During this period, the Nominations Committee held two meetings, the Remuneration Control Committee three meetings, the Audit Committee four meetings, and the Risk Committee five meetings. The Mediation Committee did not need to meet at all.

In the year under review, the **Nominations Committee** addressed the annual reappraisal of the Board of Managing Directors and the Supervisory Board, proposing a related resolution to the Supervisory Board. The committee also discussed the suitability and election of new members of the Supervisory Board and dealt with succession planning for the Board of Managing Directors.

In implementation of the changes arising from the EBA guidelines on the assessment of the suitability of members of the management body and key function holders (EBA/GL/2021/06), the committee decided on modifications to the associated internal framework policy and other documents relating to the fit and proper requirements for members of the Board of Managing Directors and the Supervisory Board.

Following the formal constitution of the Supervisory Board on May 19 and on September 23, 2021, the Nominations Committee accepted the recommendation of the Supervisory Board and once again appointed Mr. Henning Deneke-Jöhrens as Chairman and Mr. Ullrich Birkenstock as Deputy Chairman of the Nominations Committee.

At its meetings in 2021, the **Remuneration Control Committee** covered a wide range of remuneration issues and contractual matters relating to the Board of Managing Directors. The topics included the variable remuneration of the members of the Board of Managing Directors, the amount of which was specified for 2020, and the targets for the members of the Board of Managing Directors in 2021, both at corporate and individual levels. In this context, the committee also addressed the need to set the overall amount of variable remuneration at DZ BANK AG and in the DZ BANK Group in accordance with section 7 of the German Regulation Governing Remuneration at Institutions (InstitutsVergV).

The committee also deliberated on a new occupational pension approach for future members of the Board of Managing Directors, carried out a test of the appropriateness of the remuneration granted to the Board of Managing Directors, and, under a regularly scheduled agenda item, reviewed the salaries of the members of the Board of Managing Directors to apply from January 1, 2022. Further discussions by the Remuneration Control Committee covered the structure of the remuneration systems for employees, the appropriateness of the remuneration systems, analysis of the risk takers for 2021, and the remuneration officer's remuneration control report. In addition, the committee received reports from the remuneration officer on the appropriateness of the remuneration systems and on the latest remuneration regulations. Where necessary, the Remuneration Control Committee proposed individual resolutions to the Supervisory Board on these matters.

Following the formal constitution of the Supervisory Board on May 19 and on September 23, 2021, the Remuneration Control Committee accepted the recommendation of the Supervisory Board and once again appointed Mr. Henning Deneke-Jöhrens as Chairman and Mr. Ullrich Birkenstock as Deputy Chairman of the Remuneration Control Committee.

In 2021, the **Audit Committee** studied the findings of the audit of the single-entity financial statements and management report of DZ BANK AG as well as of the consolidated financial statements and group management report for the year ended December 31, 2020 by EY. It recommended that the Supervisory Board approves the single-entity financial statements of DZ BANK AG and the consolidated financial statements for the year ended December 31, 2020, as submitted.

Furthermore, the committee discussed the switch in auditor planned for 2021 and, accordingly, the appointment of the auditor of the single-entity financial statements and the auditor of the consolidated financial statements for 2021 as well as the auditor for the review of the group's half-year financial report and any other interim financial statements. In regard to the above, the Audit Committee considered the independence and quality of the auditor. The fee to be paid to the auditor was also taken into account. The Audit Committee recommended that the Supervisory Board proposes to the Annual General Meeting on May 19, 2021 that PwC or KPMG AG Wirtschaftsprüfungsgesellschaft, Berlin, be appointed as the new auditor of the single-entity financial statements and the consolidated financial statements for the year ended December 31, 2021 and as auditor for the review of the group's half-year financial report for the period ended June 30, 2021 and any other interim financial statements at the level of the group or DZ BANK AG prepared for periods up to the 2022 Annual General Meeting. In doing so, the committee expressed a preference for PwC.

In addition, the Audit Committee examined the half-year financial report of the DZ BANK Group for the period ended June 30, 2021 and the reports from PwC on the review of the half-year financial report, on the audit of the securities and investment services business and depositary function in 2020/2021. Furthermore, the Audit Committee studied the planning for the audit of the 2021 single-entity and consolidated financial statements by PwC, discussed the auditor's areas of focus for 2021 and key findings from the current audit, and monitored the financial reporting process.

In other activities, the Audit Committee discussed the report of the Supervisory Board to the Annual General Meeting and prepared the Supervisory Board's review of the combined non-financial statement for DZ BANK AG and the DZ BANK Group for 2020. This also involved studying the findings of the external review of the separate combined non-financial report, for which EY was also engaged by the Supervisory Board. The committee recommended resolutions to the Supervisory Board in relation to both matters.

In addition, the Audit Committee examined and discussed the business performance, capital, and profitability of the DZ BANK Group. The committee routinely focused on supervisory audits carried out in the DZ BANK Group, the latest regulatory issues, non-financial risk, and the project portfolio at DZ BANK AG, and discussed these matters with the Board of Managing Directors. Other matters addressed by the committee included the report for the year ended December 31, 2020 and the quarterly reports prepared by Group Audit, the annual compliance report for 2020, the IT strategy of the DZ BANK Group, the IT strategy of DZ BANK AG, and IT/cyber risk. In this context, the Audit Committee monitored the effectiveness of the internal control system, risk management system, and internal audit. Additionally, it examined the engagement of the auditor for non-audit services and updated the guidance for the approval of such services at the end of the year. The committee also looked at the final regulations under the German Act to Strengthen Financial Market Integrity (FISG) and discussed recommended courses of action in this regard.

Following the formal constitution of the Supervisory Board on May 19, 2021, the Audit Committee accepted the recommendation of the Supervisory Board and re-appointed Mr. Timm Häberle as Chairman of the Audit Committee.

In 2021, the **Risk Committee** studied the findings of the review of the lending business, which had been brought forward, regulatory and organizational matters, and the shareholdings in preparation for the audit of the single-entity financial statements of DZ BANK AG and of the consolidated financial statements for the year ended December 31, 2020. In addition, the committee advised the Supervisory Board on current and future aggregate risk appetite and strategy in the DZ BANK Group. It also helped the Supervisory Board to monitor implementation of this strategy. This involved regularly examining the quarterly reports on aggregate risk (including risk indicators) and credit risk. As scheduled at the end of the year, it also involved reviewing and acknowledging the group governance policy, the risk appetite statement, and the 2022 risk strategies for the DZ BANK Group. The review of the risk reports and strategies was an important component in the process of monitoring the effectiveness of the risk management system at DZ BANK AG and in the DZ BANK Group.

The Risk Committee also scrutinized an ECB letter on identifying and measuring credit risk in connection with the COVID-19 pandemic, ECB guidance on climate-related and environmental risk in the DZ BANK Group, and other current risk procedures at DZ BANK AG.

Moreover, the Risk Committee acknowledged and discussed reports from the Board of Managing Directors on the results of the stress tests in the DZ BANK Group. It also dealt with various loan applications and matters relating to long-term equity investments, where necessary adopting resolutions or issuing recommendations to the Supervisory Board. In further deliberations, the committee examined the terms and conditions in customer business. The committee also looked at and noted the outsourcing strategy and reviewed the remuneration systems at DZ BANK pursuant to section 25d (8) sentence 4 KWG with a recommendation to the Supervisory Board to acknowledge the finding that the incentives set as part of the remuneration system take account of the risk, capital, and liquidity structure of the institution as well as the probability and maturity of revenue. The deliberations of the committee also covered the work program for 2021ff of 2021 resolution planning in accordance with the Single Resolution Board's requirements.

Following the formal constitution of the Supervisory Board on May 19, 2021, the Risk Committee accepted the recommendation of the Supervisory Board and appointed Dr. Peter Hanker as Chairman of the Risk Committee to succeed Dr. Wolfgang Thomasberger, who has stepped down from the Supervisory Board.

Corporate governance

In line with the requirements of the German Banking Act, the Supervisory Board conducted an evaluation of the Board of Managing Directors and a self-evaluation in the first quarter of 2021. It found that the structure, size, composition, and performance of both the Board of Managing Directors and the Supervisory Board and the knowledge, skills, and experience of the individual members of the Board of Managing Directors and Supervisory Board and of the Board of Managing Directors and Supervisory Board as a whole fulfilled the requirements laid down by law and in the Articles of Association. The Supervisory Board therefore confirmed the individual suitability of the individual members of the Board of Managing Directors and Supervisory Board and the collective suitability of the Board of Managing Directors and Supervisory Board as a whole. In this context, it also signed off an updated profile of skills and expertise for the Board of Managing Directors and Supervisory Board.

In its view, the Supervisory Board had adequate financial and personnel resources at its disposal in the reporting year to be able to support new members in becoming familiar with their role and to provide the training that is necessary to maintain members' required level of expertise. DZ BANK offered and offers to cover the costs for members of the Supervisory Board of training programs from external providers that are relevant to the activities of Supervisory Boards. As part of the onboarding process, new members took up the offer of customized internal training sessions and information meetings to help them prepare for their tasks on the Supervisory Board of DZ BANK AG. In 2021, the Supervisory Board also received internal training on various matters relating to the business of DZ BANK and concerning the Supervisory Board.

There were no indications of fundamental and far-reaching conflicts of interests affecting Supervisory Board members.

Cooperation with the auditor

A major change in 2021 was the switch to the new auditor, PwC. Auditing staff from PwC attended all meetings of the Audit Committee, although still in the capacity of observers at the financial reporting review meeting on March 24, 2021. The condensed interim consolidated financial statements for the period ended June 30, 2021 were the first financial statements to be reviewed and given a review report by PwC.

The Audit Committee received reports on the migration of the audit engagement and discussed the audit plan, together with the (preliminary) key audit matters for the 2021 single-entity and consolidated financial statements, with PwC. The Audit Committee also received information on the areas of audit focus identified by BaFin pursuant to section 30 KWG and by PwC itself. The Audit Committee received details from PwC on the amendments to the FISG, which were then discussed. Based on the obligation to monitor the quality of audits, which has been expressly codified for the first time in the AktG, the Audit Committee held detailed discussions on suitable evaluation criteria and, at its meeting on March 23, 2022, adopted appropriate guidelines which were used as the basis for monitoring the quality of the audit of the financial statements for the year ended December 31, 2021.

For the purpose of monitoring the quality of the audit of the financial statements for the year ended December 31, 2021, the Audit Committee asked PwC to provide a quality report explaining the quality assurance processes and measures implemented by the auditor, for example in connection with acceptance and continuation of the engagement and in connection with independent quality assurance related to the engagement. The committee also evaluated the quality of the audit itself using indicators it decided on in advance.

The auditor PwC confirmed that the single-entity financial statements – together with the bookkeeping system – and the management report of DZ BANK AG as well as the consolidated financial statements and the group management report submitted by the Board of Managing Directors for the year ended December 31, 2021 complied with the applicable legal provisions. PwC issued an unqualified opinion for each of these sets of financial statements. The audit reports were submitted to the members of the Supervisory Board, who discussed them in detail at their meetings. In addition, the Chairman of the Supervisory Board and the Chairs of the Supervisory Board committees maintained a regular, intensive dialog with the auditor. This dialog also covered the independent auditor's report pursuant to section 322 HGB (including the key audit matters). The Supervisory Board agrees with the findings of the audit.

The Board of Managing Directors of DZ BANK AG issued a separate combined non-financial report for DZ BANK AG and the DZ BANK Group for 2021. The Supervisory Board decided to submit the report for a voluntary external review, for which it engaged the auditor. PwC did not become aware of any facts that would lead it to believe that the separate combined non-financial report for DZ BANK AG and the DZ BANK Group for the period January 1 to December 31, 2021 had not been prepared, in all material respects, in accordance with the statutory requirements. On this basis and in accordance with the Audit Committee's recommendation, the Supervisory Board concluded, having conducted its own review, that the non-financial report complies with the statutory requirements. At its meeting on March 24, 2022, the Supervisory Board therefore approved the 2021 non-financial report prepared by DZ BANK.

Adoption of the financial statements

At their respective meetings, the Supervisory Board and its Audit Committee scrutinized the single-entity financial statements and management report of DZ BANK AG (including the Board of Managing Directors' proposal for the appropriation of profits) as well as the consolidated financial statements and group management report for the year ended December 31, 2021. The Chairman of the Audit Committee provided the Supervisory Board with detailed information about the committee's extensive deliberations on the single-entity financial statements and management report of DZ BANK AG as well as the consolidated financial statements and group management report. Representatives of the auditor attended the Supervisory Board meeting convened to adopt the financial statements as well as the preparatory meetings held by the Audit Committee and by the Risk Committee so that they could report in detail on the material findings of their audit. They were also available to answer questions from the members of the Supervisory Board. The Supervisory Board did not express any reservations following the concluding findings of its review. The Supervisory Board approved the single-entity financial statements of DZ BANK AG and the consolidated financial statements prepared by the Board of Managing Directors for the year ended December 31, 2021 at its meeting on March 24, 2022 in line with the Audit Committee's resolution recommendation. The financial statements have therefore been adopted. The Board of Managing Directors and the Supervisory Board will propose to the Annual General Meeting on May 25, 2022, in a resolution on the appropriation of the distributable profit reported in the 2021 single-entity financial statements amounting to €364,413,470.58, that a dividend of 20 cents per non-par-value share be paid. The total dividend amounts to €358,268,951.40. The profit carried forward is €6,144,519.18.

Personnel changes on the Supervisory Board

On the shareholder representatives' side, Mr. Martin Eul, Mr. Gregor Scheller, and Dr. Wolfgang Thomasberger stepped down from the Supervisory Board of DZ BANK AG on May 19, 2021. The Supervisory Board would like to express its gratitude to Mr. Eul, Mr. Scheller, and Dr. Thomasberger for the considerable commitment and enormous experience that they brought to the work of the Supervisory Board and its committees, thereby making such a substantial contribution to the success of DZ BANK. Mr. Uwe Barth, Mr. Josef Hodrus, and Dr. Gerhard Walther joined the Supervisory Board on May 19, 2021.

On the employee representatives' side, Mr. Rainer Mangels stepped down from the Supervisory Board on September 25, 2021. The Supervisory Board would like to thank Mr. Mangels for his dedication over many years. Mr. Wolfgang Nett joined the Supervisory Board on September 15, 2021.

The Supervisory Board wishes to thank the Board of Managing Directors and all employees of the DZ BANK Group for their valuable contribution in 2021.

Frankfurt am Main, March 24, 2022

DZ BANK AG
Deutsche Zentral-Genossenschaftsbank,
Frankfurt am Main

Henning Deneke-Jöhrens
Chairman of the Supervisory Board

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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

This annual report is available in
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