

2022 Annual Report

Key figures

DZ BANK GROUP

€ million	2022	2021
FINANCIAL PERFORMANCE		
Income ¹	6,549	7,242
Loss allowances	-304	120
Profit before taxes	1,797	3,096
Net profit	1,073	2,176
Cost/income ratio (percent)	67.9	58.9
	Dec. 31, 2022	Dec. 31, 2021
FINANCIAL POSITION		
Assets		
Loans and advances to banks	123,444	107,659
Loans and advances to customers	203,646	195,665
Financial assets held for trading	48,909	47,321
Investments	43,393	52,440
Investments held by insurance companies	105,955	129,119
Remaining assets	101,694	95,069
Equity and liabilities		
Deposits from banks	186,787	196,562
Deposits from customers	159,429	138,975
Debt certificates issued including bonds	82,349	79,652
Financial liabilities held for trading	52,478	43,411
Insurance liabilities	103,795	118,863
Remaining liabilities	19,126	21,149
Equity	23,076	28,661
Total assets/total equity and liabilities	627,041	627,273
Volume of business (€ billion)	1,130.9	1,166.3

	Dec. 31, 2022	Dec. 31, 2021
RISK POSITION		
LIQUIDITY ADEQUACY		
DZ BANK Group		
Minimum liquidity surplus (€ billion)	14.3	19.4
DZ BANK banking group		
Liquidity coverage ratio – LCR (percent)	145.9	147.7
Net stable funding ratio – NSFR (percent)	122.3	127.1
CAPITAL ADEQUACY		
DZ BANK Group		
Economic capital adequacy (percent)	220.8	210.7
DZ BANK financial conglomerate		
Coverage ratio (percent)	152.1	150.8
DZ BANK banking group		
Common equity Tier 1 capital ratio (percent)	13.7	15.3
Tier 1 capital ratio (percent)	15.2	16.8
Total capital ratio (percent)	18.0	18.5
Leverage ratio (percent)	4.7	7.3
MREL ratio (percent)	38.3	37.3
Subordinated MREL ratio (percent)	28.5	26.5
AVERAGE NUMBER OF EMPLOYEES	32,985	32,271
LONG-TERM RATING		
Standard & Poor's	A+	A+
Moody's Investors Service	Aa2	Aa2
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

2	Letter to shareholders
6	Group management report
196	Consolidated financial statements
396	Responsibility statement
397	Independent auditor's report
410	Report of the Supervisory Board

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,

In a challenging financial year, the DZ BANK Group achieved an encouraging level of profit before taxes of €1.8 billion. This figure was slightly better than what we had forecast. All entities of the DZ BANK Group were able to maintain their operating performance at the good level of 2021. This performance was underpinned by our broadly diversified business model and the close collaboration within the cooperative financial network.

The financial year 2022 was characterized by extreme uncertainty as a result of the after-effects of the coronavirus pandemic and Russia's invasion of Ukraine at the start of 2022, which has inflicted immeasurable pain and suffering for an entire year now. This pivotal event – rightly classified as a seismic shift– has also impacted political, social, and economic life in Germany and Europe significantly. Rising energy and commodity prices and record levels of inflation dampened the economic outlook massively. In addition, the geopolitical situation and the rapid turnaround in interest-rate policy around the world brought the positive trend in the capital markets to an abrupt end.

Apart from implementing the sanctions imposed on Russia, supporting businesses was one of the primary responsibilities of the financial industry in these circumstances. This was clearly reflected in our customer business, which recorded substantial growth. DZ BANK – Central Institution and Corporate Bank was there to help its customers in the Capital Markets and Corporate Banking business lines to manage their increased liquidity requirements in connection with capital investment and dealing with disruption to supply chains and the procurement of commodities. Demand in the Transaction Banking business line was also robust. Despite a mild slowdown over the course of the year, customer business at DZ HYP remained stable. This made a substantial contribution to earnings. Union Investment once again generated a very satisfying high level of profit before taxes despite declines in the volume of assets under management and net inflows due to market

conditions. With interest rates going back up again, Bausparkasse Schwäbisch Hall was able to significantly increase its new home savings business and achieved a healthy profit before taxes that was influenced by one-off items. Customer business at R+V Versicherung held steady. Nonetheless, the trend seen in the financial markets led to a significant decline in gains and losses on investments held by insurance companies for R+V Versicherung. The overall risk situation remained unremarkable. Furthermore, we brought an important project to its conclusion with the successful integration of DVB Bank into DZ BANK AG.

The key results in detail:

The DZ BANK Group's **net interest income** amounted to €3.32 billion, which was higher than the healthy figure for 2021 of €2.79 billion. This was primarily due to the increase at Bausparkasse Schwäbisch Hall and the encouraging performance of the customer business at the Central Institution and Corporate Bank. **Net fee and commission income** went down year on year to €2.75 billion (2021: €2.94 billion). This was primarily attributable to Union Investment, which saw an anticipated decline in performance-related components, and to falls in the equity markets. **Gains and losses on trading activities** improved significantly to a net gain of €823 million (2021: €152 million) thanks to the good performance of the capital markets operating business and, in particular, IFRS-related valuation effects at the Central Institution and Corporate Bank. **Gains and losses on investments** deteriorated to a net loss of €119 million (2021: net gain of €245 million). The reason for this was a deterioration in gains and losses on the disposal of bonds at Bausparkasse Schwäbisch Hall and on own-account investing activities at Union Investment as a result of movements in the capital markets. **Other gains and losses on valuation of financial instruments** amounted to a net loss of €286 million (2021: net gain of €242 million). This deterioration was due to negative changes in the valuation of guarantee commitments and own-account investing activities at Union Investment. The volatile conditions in the financial markets and the resulting decline in gains and losses on investments held by insurance companies at R+V Versicherung meant that **net income from insurance business** deteriorated to a net expense of €179 million (2021: net income of €842 million), partly for accounting reasons. The gloomy economic outlook resulted in a net addition to **loss allowances** of €304 million (2021: net reversals of €120 million). A significant proportion of the additions were made in order to reflect the anticipated macroeconomic conditions. **Administrative expenses** increased to €4.45 billion (2021: €4.27 billion).

These good results reflect the hard work and dedication of the employees in the DZ BANK Group. On behalf of the entire Board of Managing Directors, we would like to express our gratitude to them.

The DZ BANK Group's capital adequacy remains good, although the common equity Tier 1 capital ratio fell to 13.7 percent as at December 31, 2022 (December 31, 2021: 15.3 percent). This decrease was predominantly attributable to temporary accounting effects at R+V Versicherung. As part of the DZ BANK Group, R+V Versicherung already had to measure its assets at fair value in accordance with IFRS 9. The liabilities on the balance sheet, and therefore liabilities to policyholders, will only be measured at fair value after the transition to IFRS 17. This has led to the recognition of a temporary technical interest-rate risk caused by the strong increase in interest rates during the reporting period. The result was an – again temporary – negative contribution to earnings and a significantly lower contribution to the capital ratio. We anticipate a countervailing positive effect for the liabilities on the balance sheet at R+V Versicherung due to the introduction of IFRS 17. This will have a significant positive impact on the common equity Tier 1 capital ratio as at June 30, 2023.

Taking account of the requirements of diligent capital management, an amount of €380 million will be added to the profit carried forward for 2022. In addition, we are going to issue a new AT1 bond in the coming months as an attractive investment opportunity.

The first few weeks of the new year have seen continued brisk demand in the customer business. This gives us cause for optimism. And despite all the challenges, the German economy is demonstrating its resilience. Although Germany's economic output declined by 0.4 percent in the fourth quarter, the negative expectations and extreme scenarios have so far not materialized on the scale that was originally predicted. Nevertheless,

the geopolitical developments and economic trends in the new year are a source of risk. Our economists currently forecast that gross domestic product will edge down slightly in 2023. Inflation is likely to remain well above the European Central Bank's target this year. Volatility is also expected to continue at an elevated level. As a financial intermediary, the DZ BANK Group may feel the impact of these conditions very keenly. Against this backdrop, we anticipate that our profit before taxes will be within our long-term target range of €1.5 billion to €2 billion.

Although we are currently facing many pressing challenges, we never lose sight of our long-term strategic objectives. One of these is to continue to promote the transition to a low-carbon economy by actively supporting our customers. For example, we are backing the shift to clean energy. Last year, we increased the volume of new lending in the field of renewable energies by more than 30 percent to €660 million in Germany alone. Under our sustainability program, we are taking steps to further enhance our sustainability profile. In 2022, we put in place a system for the management, reporting, and disclosure of climate-related data and the analysis of particularly carbon-intensive sectors in our business portfolio, and thus prepared the ground for the formulation of effective decarbonization strategies. The results of this work and the instruments developed will also be made available for use within the cooperative financial network in order to create synergies.

Optimizing our group structures and leveraging cross-organizational potential for efficiency remain key priorities. At the same time, we are seizing the opportunities that arise for investing in sustainable growth and the digitalization of processes and services. Within the cooperative financial network, we are contributing to strategic projects that aim to secure the future success of the network over the long term. In addition to our long-term engagement in research and development organization amberra, we have also invested in a new smart data unit. Its purpose is to help us unlock the potential of data-assisted customer interaction for the cooperative banks, increase the efficiency of our sales processes, and strengthen customer retention. These and other measures lay the foundations for our future profitability.

It is still too early to properly assess the long-term implications of current geopolitical challenges for the German and European economy. The onus is on all parts of society to mobilize all available resources and set the right course to ensure the continued competitiveness and resilience of our economy. In this respect, the cooperative financial network is in a very strong position. We have a long track record of profitable growth and are ready to tackle the challenges ahead with confidence and determination.

Kind regards,



Uwe Fröhlich
Co-Chief Executive Officer



Dr. Cornelius Riese
Co-Chief Executive Officer

Group management report

10	DZ BANK Group fundamentals	49	Events after the balance sheet date
10	Business model and strategic focus	50	Human resources report and sustainability
10	DZ BANK – central institution and corporate bank	52	Outlook
14	BSH	52	Economic conditions
15	R+V	52	52 Global economic trends
15	TeamBank	52	52 Trends in the USA
16	UMH	53	53 Trends in the eurozone
16	DZ HYP	53	53 Trends in Germany
17	DZ PRIVATBANK	54	54 Trends in the financial sector
18	VR Smart Finanz	55	Financial position and financial performance
18	DVB	57	Liquidity and capital adequacy
19	Management of the DZ BANK Group	57	Operating segments in detail
19	Management units	57	57 BSH
20	Governance	59	59 R+V
24	Key performance indicators	60	60 TeamBank
25	Management process	61	61 UMH
26	Business report	62	62 DZ BANK – CICB
26	Economic conditions	63	63 DZ HYP
27	The financial industry amid continued efforts to stabilize the economy of the eurozone	64	64 DZ PRIVATBANK
28	Financial performance	65	65 VR Smart Finanz
28	Financial performance at a glance	65	65 DZ BANK – holding function
32	Financial performance in detail		
45	Net assets		
47	Financial position		

66	DZ BANK Group and DZ BANK opportunity report	99	ESG risks
66	Management of opportunities	99	Expansion of ESG risk management
66	Potential opportunities	100	Climate-related and environmental risks
66	Potential opportunities from macroeconomic developments	101	Social risks and corporate governance risks
67	Potential opportunities from regulatory initiatives	102	Liquidity adequacy
67	Potential opportunities from strategic initiatives	102	Strategy
70	DZ BANK Group and DZ BANK risk report	102	Economic perspective
70	Disclosure principles	109	Normative perspective
71	DZ BANK Group	111	Capital adequacy
71	Summary	111	Strategy, organization, and responsibility
71	Risk management system	112	Economic perspective
73	Risk factors and risks	116	Normative perspective
77	Risk profile and risk appetite	122	Stress tests for types of risk covered by capital
78	Fundamental principles of risk management	123	Bank sector
78	Regulatory framework for risk management	123	Credit risk
78	Risk culture	123	Definition
79	Risk appetite	125	Business background and risk strategy
79	Risk strategies	125	Risk factors
79	Risk-oriented corporate governance	126	Organization, responsibility, and reporting
87	Risk management tools	127	Risk management
93	General risk factors	137	Lending volume
93	Regulatory risk factors	145	Credit portfolios particularly affected by negative macroeconomic conditions
94	Macroeconomic risk factors	147	Credit portfolios particularly affected by acute global crises
97	Rating downgrades for DZ BANK	148	Credit portfolios with increased risk content
98	Dealing with the impact of acute global crises	148	Risk position
98	Relaxation of supervisory requirements	149	Equity investment risk
98	Risk management measures	149	Definition and business background
		150	Risk strategy, responsibility, and reporting
		150	Risk factors
		150	Risk management
		150	Carrying amounts of long-term equity investments and risk position

151	Market risk	169	Insurance sector
	151 Definition	169	Basic principles of risk management in the Insurance sector
	151 Business background and risk strategy		169 Risk strategy
	152 Risk factors		170 Organization, responsibility, and reporting
	152 Organization, responsibility, and reporting	170	Actuarial risk
	153 Management of market risk		170 Definition and business background
	155 Management of market liquidity risk		171 Risk factors
	156 Risk position		172 Management of life actuarial risk
157	Technical risk of a home savings and loan company		173 Management of health actuarial risk
	157 Definition		174 Management of non-life actuarial risk
	158 Business background and risk strategy		176 Impact of the war in Ukraine
	158 Risk factors		176 Claims rate trend in non-life insurance
	158 Responsibility, reporting, and risk management		177 Risk position
	158 Risk position	177	Market risk
159	Business risk		177 Definition and business background
	159 Definition and business background		178 Risk factors
	159 Risk strategy		178 Risk management
	159 Risk factors		183 Lending volume
	159 Organization, responsibility, and reporting		186 Risk position
	159 Risk management	187	Counterparty default risk
	160 Risk position		187 Definition and business background
160	Reputational risk		187 Risk factors
	160 Definition and business background		187 Risk management
	160 Risk strategy		188 Risk position
	161 Risk factors	188	Reputational risk
	161 Responsibility and risk management		188 Definition and business background
161	Operational risk		188 Risk factors
	161 Definition		188 Risk management
	161 Business background and risk strategy	188	Operational risk
	162 Organization, responsibility, and reporting		188 Definition and business background
	162 Central risk management		189 Central risk management
	163 Operational risk subtypes		190 Operational risk components
	168 Impact of the war in Ukraine		193 Risk position
	168 Losses	193	Risks from entities in other financial sectors
	168 Risk position		

I DZ BANK Group fundamentals

1 Business model and strategic focus

The DZ BANK Group focuses its strategy on the local cooperative banks. In doing so, it pursues 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. The DZ BANK Group supports the cooperative banks by providing extensive financial products and services in the Retail Banking, Corporate Banking, Capital Markets, and Transaction Banking business lines. This partnership 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, Frankfurt am Main, (Atruvia), and the BVR on the strategic agenda and the digitalization initiative. Within the framework of this initiative, which was approved by the BVR's general meeting of members in June 2018, the cooperative financial network is pursuing the shared aim of developing an omnichannel sales model and integrating all touchpoints for members and customers, from branches and service centers to smartphones. 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. In addition, each individual entity in the DZ BANK Group pursues a range of 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), the 'Fokus 2020' program at DZ HYP AG, Hamburg and Münster, (DZ HYP), and the 'Horizont 2025' program at Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, (Bausparkasse Schwäbisch Hall; subgroup abbreviated to BSH).

In 2022, the focus of the joint activities was once again on sustainability. Alongside business model-specific sustainability measures, the entities in the DZ BANK Group also work together on a broad range of sustainability topics. A key task in the reporting year was the transformation of the Group Corporate Responsibility Committee (GCRC) into the Group Sustainability Committee (GSC), which is made up of the members of the Boards of Managing Directors of the main DZ BANK group entities. The GSC meets once a quarter and coordinates all sustainability-specific decision-making of relevance to the group, helps the entities in the DZ BANK Group to manage, communicate, and coordinate sustainability matters, and formulates strategic input. Detailed information on sustainability management can be found in the DZ BANK Group's Sustainability Report.

Other key matters for the DZ BANK Group were the digitalization of customer interfaces and the automation of existing business models and processes with the aim of enhancing efficiency and taking account of the changes in customer behavior.

1.1 DZ BANK – central institution and corporate bank

DZ BANK consists of DZ BANK – holding function and DZ BANK – central institution and corporate bank. DZ BANK – holding function, which is treated separately in 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 constitute a separate operating segment within the meaning of IFRS 8.5 and is not analyzed separately in this chapter, 'Business model and strategic focus'.

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.

For the sake of simplicity, DZ BANK – central institution and corporate bank equates to DZ BANK in this chapter, 'Business model and strategic focus'.

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, its shareholders, and its partners in joint activities covering sales and the provision of advisory services. 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 an important point of contact and customer relationship manager for the cooperative banks, with the aim of assisting them with their business activities in the regional markets. Moreover, 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.

The support for the cooperative banks regarding sustainability is provided at various levels. Knowledge is shared using a number of different dialogue formats and events, such as a sustainability conference. In addition, a sustainability portal provides members with a central platform for sustainability information. Collaboration with the cooperative banks will intensify in the years ahead, particularly in view of increasing regulatory requirements.

Network committees ensure that the cooperative banks are closely involved in DZ BANK's strategic considerations and initiatives. The aim of the Central Advisory Council is to enable important strategic matters in the DZ BANK Group to be discussed in depth and to connect 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 to the individual market situation and is integrated with the activities of the cooperative financial network. DZ BANK has twelve regional branches that look after both its direct customers and customers in the joint business with the cooperative banks at a regional level. 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 in Frankfurt am Main.

DZ BANK continually upgrades its range of corporate banking services and processes in Germany. The digital platform MetaMarktplatz (Meta marketplace) implemented in 2022, which can be accessed through the VR GeschäftsNavigator (VR business navigator), enhances the DZ BANK Group's offering for joint lending business (referred to as Meta business in German) and syndicated business. The MetaMarktplatz should help to raise

efficiency in the business origination phase and unlock additional potential in the market. More than 550 local cooperative banks have now completed the onboarding process, which means they can use the platform to find suitable partners, whether other cooperative banks or entities in the DZ BANK Group.

DZ BANK is further developing payments processing for its corporate customers and their retail customers on the basis of the Request-to-Pay (RTP) system. RTP bridges the gap between billing and bill payment, enabling billers to digitalize the payment transfer process and operates across Europe. DZ BANK plans to develop customer-oriented solutions in collaboration with cooperative enterprises such as Atruvia and market partners. The first pilot project is scheduled for late 2023.

In addition to digitalization, other areas of focus in 2022 were integrating sustainability into the customer dialogue and helping corporate customers with their transformation in the context of the decarbonization of industry. DZ BANK also aims to support the international business of the cooperative financial network's corporate customers where required. It 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. In addition, it makes use of its contacts with partner banks in the countries concerned to help customers open local accounts or obtain financing in the relevant currency. As DZ BANK is seeing increased demand for low-volume export finance for corporate customers of the cooperative financial network, it uses the SmaTiX (Small Ticket Express) portal of AKA Ausfuhrkredit-Gesellschaft mbH to support these customers.

In the first half of 2022, DZ BANK identified additional potential for growth in German and international corporate banking, for example the expansion of business opportunities for renewable energies in Europe and the extension of foreign trade finance.

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 provided at federal state and national level in Germany and at the level of the European Union (EU). In this context, it primarily works with Germany's KfW development bank, the federal states' own development banks, and Landwirtschaftliche Rentenbank.

1.1.3 Retail Banking

In the Retail Banking business line, DZ BANK offers cooperative banks, cooperation banks, and retail customers a comprehensive range of services based on its financial services concept. One of the primary areas of focus is the marketing of securities business with retail customers, for which DZ BANK provides products, processes, and platforms.

The products provided include customer investment solutions for advisory customers and independent retail investors of all experience levels. The product range consists of DZ BANK's own interest-rate products, derivatives and, in particular, investment certificates covering topics such as sustainability. In this context, charitable investment certificates are issued, where selected organizations receive sponsorship from DZ BANK. Another area of focus in the customer business is the depositary for securities, for which DZ BANK has added savings plans based on funds, exchange-traded funds (ETFs), and equities to its product range.

DZ BANK offers a management cycle to support the cooperative banks with their strategic planning. This encompasses the planning, implementation, and control of the corporate strategy as well as tools for data and analytics. It also helps the cooperative banks to fulfill their regulatory obligations. As part of its marketing programs for young customers, new investment accounts, and sustainability, DZ BANK offers packages of measures in the form of processes and support services. These also help with the fulfillment of regulatory requirements, for example concerning sustainability in advisory services.

In accordance with its digitalization strategy, DZ BANK is developing platform solutions for advisors and customers of the cooperative banks and cooperation banks. DZ BANK's meinGIS platform provides advisors

with access to the latest market information, such as share prices, charts, and corporate news. Digital access is also provided for customers in the securities business so that they can open an investment account and carry out trades online, for example. This feature is integrated into both the VR Banking App and the VR ProfiBroker e-brokerage application, which provides users with a range of information and products, gives access to DZ BANK research, and suggests products. Furthermore, retail customers can use the Meine Anlagezertifikate (my investment certificates) function to obtain information on the investment products in their investment accounts. DZ BANK's derivatives portal completes the product and information offering.

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.

DZ BANK's Group Treasury division is responsible for managing and optimizing liquidity throughout the DZ BANK Group. This ranges from managing the cooperative banks' day-to-day cash inflows and outflows in the context of the cash-pooling function performed by DZ BANK as the cooperative central institution to optimizing the procurement of liquidity by issuing securities. These are sold through the bank's own sales units and through intermediaries to institutional customers, such as insurance companies and fund management companies in Germany and abroad, and to retail customers of the cooperative banks. Group Treasury is also responsible for securities documentation in DZ BANK's capital markets business, which includes equity instruments and debt instruments issued by DZ BANK or by customers.

DZ BANK is working on further expanding its sustainability expertise and environmental, social, and corporate governance (ESG) activities in its capital markets business with institutional customers. DZ BANK provided support for an issuance volume of more than €45 billion, making it one of the leading syndicate banks in the market for euro-denominated sustainable bonds and promissory notes in 2022. In December, DZ BANK was once again mandated as one of the lead managers to support a further EU social bond as part of the SURE program.

In cooperative network business, DZ BANK is updating its advisory and sales processes to take account of the changing requirements of the cooperative banks and in order to leverage potential efficiencies. The EGo own-account investing platform was also further developed in the reporting year. This platform provides information, transaction functions, and simulations designed to help the cooperative banks with all of their own-account investing activities.

1.1.5 Transaction Banking

In the Transaction Banking business line, DZ BANK provides its customers with payments processing, card processing, customer-centric solutions, capital markets services, and securities services. It also offers depository 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.

The focus of this business line is on ensuring that the cooperative financial network is well equipped for the future requirements of transaction banking. To this end, the DZ BANK is participating in the European Payments Initiative (EPI) aimed at establishing a European payment system. The evolution of the concept into EPI 2.0 and the focus on a digital wallet solution provides an opportunity to create a European payment system. DZ BANK is actively supporting the introduction of a digital euro both at European level and at the level of the German banking industry and the cooperative financial network. It is working with other European and German banks to design a deposit money token, which is a tokenized, blockchain-based version of deposit money.

In October 2022, DZ BANK entered into a strategic partnership with PPI AG centered on the activities in Europe to establish an RTP system. They are working together to develop the RTP platform PAYCY, a white-label solution for the market that will make it possible to create a seamless link between billing and payment. The first corporate customers have signed up to the solution on the basis of a prototype pay-per-use model.

DZ BANK has invested in the entity created by the merger of ID wallet provider Verimi and identification service Yes in order to further the aim of expanding an ecosystem consisting of digital identities. This should make the cooperative financial network more competitive in this market as the use of identity services becomes increasingly prevalent in payments processing. DZ BANK is keeping step with the evolution of card processing by enhancing its portfolio of solutions. Digital debit cards are now available for e-commerce in the form of giro pay 4.0. DZ BANK is also developing and using the platform services VR Ticket and VR Entertain as a way of offering customer-oriented solutions and stimulating transaction growth.

In the capital markets and securities services business, the decision was made in 2022 that DZ BANK would provide an access service to the primary institutions for the new European Collateral Management System (ECMS). DZ BANK is continuing to pursue its growth strategy in the depositary business. It is steadily broadening its collaboration in this business with DZ PRIVATBANK S. A., Luxembourg, (DZ PRIVATBANK), and their joint activities are brought together in the Fondshafen (fund haven) campaign.

Trends in relation to distributed ledger technology are being closely monitored by the relevant steering committees at the level of the central institution and corporate bank and at the level of the group. DZ BANK is running two initiatives designed to build up expertise in the new technology and establish an initial product offering: a solution with which retail customers can invest in selected cryptocurrencies and a solution for institutional customers for the settlement and deposit of cryptoassets. The next stage of development will focus on cryptosecurities, which are regulated by the German Electronic Securities Act (eWpG) and for which DZ BANK is creating a dedicated IT platform. In the subsequent stage of development, the aim is to facilitate the settlement and deposit of selected cryptocurrencies for institutional customers on this platform.

1.2 BSH

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. BSH also supports its customers with finance solutions and platforms that help them to help themselves.

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 focus is on traditional home savings loans, BSH's 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 further developing its range of products. The home savings tariffs and financing plans offer solutions that cater to different target groups and their individual financial needs. For example, interest on loans can be fixed for the future or for follow-up finance, renovation work aimed at improving energy efficiency and mitigating climate change can be carried out thanks to short saving periods, and there are home savings tariffs that help customers to start saving and to build up their savings.

International business is an integral component of BSH's corporate strategy and is concentrated on selected regions with specific building society regulations. The focus is on maintaining the existing approach to business in Slovakia, Hungary, and China.

The cooperative financial network is continuing to develop its homes and housebuilding ecosystem. Services for buying and selling properties were added in the year under review, complementing the existing information and services relating to building, finance, homes, and modernization. To this end, Impleco GmbH, a joint venture between BSH and PSD Bank Rhein-Ruhr, PSD Bank Berlin-Brandenburg, and PSD Bank Westfalen-Lippe, acquired the activities of the DeinNeuesZuhause.de real estate portal and integrated them into the

wohnglück.de platform. Thanks to this integration, Impleco's portfolio of products and services – which also includes PIA (personal real estate assistant) – is becoming a fundamental component of the 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. The insurance products are generally geared toward economic sustainability because they offer customers either an opportunity for long-term capital formation in a pension plan or a form of financial protection against risk.

One of R+V's goals is to help its customers become more sustainable. This is relevant to all business sectors. In non-life business, the aim for the future is for customers to receive a consistent green service that adheres to cross-product standards, for example paperless processes, a carbon-offsetting option, regional service providers in the event of a claim, and an energy savings bonus. R+V also offers a digital motor vehicle insurance card based on wallet technology, ensuring that customers always have proof of their insurance to hand on their smartphone. Solutions are also available that support the transition to cleaner energy and transportation, such as insurance for electric and hybrid vehicles and photovoltaic systems as well as indemnity insurance for the use of geothermal power and geothermal systems. R+V's product portfolio is rounded off by environmental liability and environmental impairment insurance products, insurance against natural disasters, and advice on risk prevention in these areas.

In addition, R+V plans to expand in the growth areas of sustainability and healthcare / long-term nursing care, becoming a health partner for its customers. In 2022, it therefore launched new digital services that consist of packages of offerings covering a particular topic. The Family Coach, for example, is an ecosystem of services from R+V's partners for family planning and for the first years of a young family. The Best Specialist service focuses on finding the right doctor and the best possible treatment. The range of unit-linked insurance products is also being steadily expanded to include sustainable investment strategies by factoring in sustainability risk and the climate target of achieving greenhouse gas neutrality for the entire investment portfolio by 2050. Under the new arrangements for using the excess in the context of income protection insurance, R+V only offers sustainability-oriented fund investments.

R+V is also continuing to invest in using digital technologies and developing new products with due regard to the market environment, stepping up the use of omnichannel sales (which includes professionalizing digital sales), implementing a target operational structure for customers and processes, digitalizing and upgrading IT, and establishing a strategic capital management system.

1.4 TeamBank

TeamBank AG Nürnberg, Nuremberg, (TeamBank) is 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 the renamed 'easyCredit-Ratenkauf' (known as 'ratenkauf by easyCredit' until September 2022) installment purchase solution, which can be used both online and in-store. In Austria, TeamBank 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. It is striving to progressively transition from a purely ad hoc lending business into a long-term liquidity partner. TeamBank works with the Deutschland im Plus foundation in order to prevent consumers from becoming over-indebted.

TeamBank also focuses on using groundbreaking technologies and laying the technical foundations for its pursuit of growth. In connection with the joint venture GENOFLEX, which was established with platform technology provider Hypoport in the fourth quarter of 2021, a pilot phase took place in 2022 that confirmed the platform's market relevance and the decision was made to roll it out throughout the cooperative financial network in 2023. GENOFLEX is a consumer finance platform that participating cooperative banks can use – if a suitable easyCredit option is not available – to offer either an alternative option from other cooperative banks or a different product from financial institutions outside the cooperative banking sector.

TeamBank increased its shareholding in SCHUFA Holding AG, Wiesbaden, in June 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 solutions for retail and institutional clients. In both areas of business, it is aiming for further expansion of the volume of assets under management.

For retail clients, 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 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 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. Risk management lies at the core of all investment processes. UMH's objective in its institutional client business is to consolidate its positioning as an active risks/returns manager and sustainability manager. The volume of sustainably managed assets has risen steadily in recent years.

UMH follows a transparent approach to sustainable investment. This is the responsibility of the ESG committee in portfolio management. UMH has also established an interdisciplinary sustainability team for real estate investment. The properties selected for the funds in both the retail and institutional real estate business must satisfy certain quality criteria and pursue the objective of generating stable rental income over the long term in order to secure a return for the investor. UMH aims for portfolios that are broadly diversified in terms of geography and usage type.

1.6 DZ HYP

The core business policy objective of 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 a range of 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 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 its corporate customer business, DZ HYP has its own direct business and also acts as a partner to the cooperative banks. Customers in this area include commercial real estate investors and companies in the housing sector. The focus is on real estate finance in the German market. German customers in selected international markets are supported too. DZ HYP also works closely with the local cooperative banks in its retail customer business, where the product portfolio includes initial and follow-up finance for new builds, purchases, and modernization/renovation.

DZ HYP launched the FK Digital project with the aim of further digitalizing its corporate customer business. This should create a modern, digital working environment within this business in order to raise efficiency and cater to the constantly growing requirements of all market players.

In the consumer home finance business, sales platforms are becoming increasingly important. DZ HYP is helping the cooperative banks to make inroads into this market segment. In 2022, integration with the Europace sales platform was achieved, complementing the offering on the Genopace and Baufinex platforms for the cooperative financial network, and was piloted with selected primary banks. The objective is to provide the cooperative banks with competitive products on the relevant sales platforms.

Within the DZ BANK Group, DZ HYP also operates as the center of excellence for collaboration with public-sector customers. The core element of this business with local authorities and their legally dependent subsidiaries is the awarding of short-term loans to local authorities and loans to public-sector entities in collaboration with the cooperative banks.

DZ HYP's sustainability strategy provides guidance on defining key areas of action and suitable initiatives for sustainability management. As part of an annual update, the strategy is being adjusted in terms of the defined level of ambition in order to embed sustainability more firmly within the core business. In this context, DZ HYP placed its first green Pfandbrief on the market in February 2022. Business processes, together with the internal and external reporting systems, are being progressively expanded and upgraded to include the various aspects of sustainability.

1.7 DZ PRIVATBANK

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

DZ PRIVATBANK's products and services encompass asset management and advisory mandates, as well as investment and financing solutions for private banking and wealth management customers, and for entrepreneurs/business owners, foundations, and semi-institutional investors. It also provides depositary services for Union Investment, for DZ PRIVATBANK's own fund solutions, and for domestic and international fund initiators, plus flexible loan solutions denominated in euros and other currencies for retail and corporate customers. DZ PRIVATBANK offers solutions for sustainability-minded customers. Going forward, it wants to continue increasing the extent to which sustainability factors are taken into account in its asset management activities, offer more solutions in this area, and integrate them into selection processes.

DZ PRIVATBANK has specified targeted areas for sales growth in its sectors of the market. These include financial portfolio management (asset management), for example for sustainability-oriented international client accounts and Switzerland-oriented client accounts. The latter give customers of DZ PRIVATBANK access to top-quality Swiss assets in all asset classes. The Switzerland-oriented investment solutions are now an integral part of the cooperative banks' digital customer transaction processes. Marketing is supported in various ways, including digital options for reaching customers. A virtual 'Tour de Suisse', for example, created a digital customer experience designed to present the plus points and opportunities of Switzerland and the country's qualities as a financial center.

In recent years, DZ PRIVATBANK has consolidated its market position by working closely with the cooperative banks. The main core growth areas at DZ PRIVATBANK are private banking/wealth management and the fund business relating to liquid and alternative asset classes. LuxCredit financing also offers growth potential in collaboration with the cooperative banks. The main example in this area is VR ImmoFlex, which is targeted at the 50+ age group. These people have a high proportion of their wealth invested in their own home, and VR ImmoFlex makes it easier for them to access liquidity through financing.

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 partner banks with their day-to-day financial needs. Its portfolio ranges from finance solutions for leasing, hire purchase, and loans up to €750,000 (individual asset value) to the Bonitätsmanager (credit status manager) and VR Smart Guide digital services. The latter is a tool for financial planning and bookkeeping.

VR Smart Finanz attaches particular importance to offering automated, rapid finance decisions within a few minutes and to providing an omnichannel approach for business loans. The loan amount is generally disbursed within 24 hours. Sales partners also benefit from data-supported marketing approaches. VR Smart Finanz's portfolio therefore contributes to the range of digital and personal banking services and to omnichannel sales in corporate banking.

As part of the strategy, VR Smart Finanz constantly strives to enhance its finance solutions, integrate them into the internal platforms used by the cooperative financial network, and establish new decentralized sales channels and sales partners, such as digital financing platforms, for the cooperative financial network. Sales partners put small businesses in need of finance in contact with VR Smart Finanz, which enabled it to reach potential new customers through these partnerships in 2022.

1.9 DVB

DVB Bank SE, Frankfurt am Main, (DVB Bank; subgroup abbreviated to DVB) was a specialist niche provider in the area of international transport finance, focusing on shipping finance. On April 1, 2021, DVB Bank published the decision to integrate with DZ BANK. This was achieved by way of a merger on August 12, 2022, which took place retrospectively from January 1, 2022.

2 Management of the DZ BANK Group

2.1 Management units

The DZ BANK Group comprises DZ BANK as the parent company and the DZ BANK Group's subsidiaries in which DZ BANK directly or indirectly exercises control.

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

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 liquidity risk, credit risk, equity investment risk, market risk, 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 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.

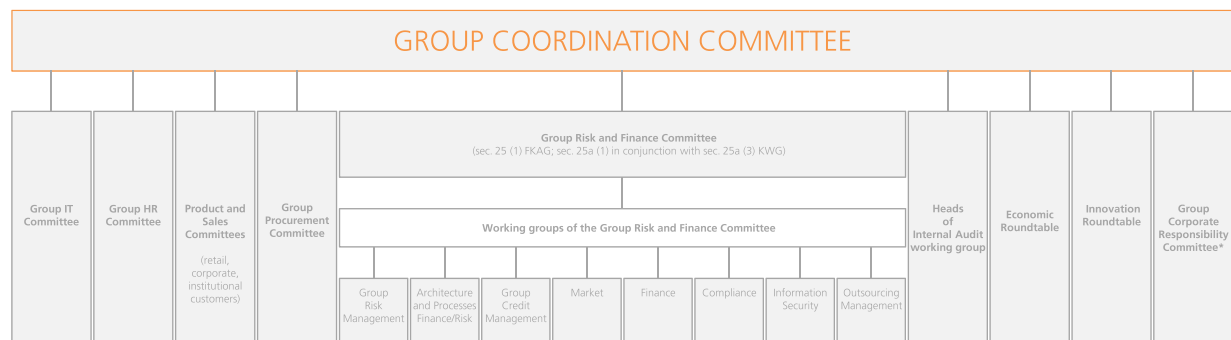
2.2.2 Appointments to key posts in the subsidiaries

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 (e.g. the risk and investment committee, the audit committee, and the 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 Corporate Responsibility Committee (Group CRC) was renamed the Group Sustainability Committee (GSC) in 2023.

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. Effective from 2023, the Group Corporate Responsibility Committee has been replaced by the Group Sustainability Committee, which now includes members of the Boards of Managing Directors (see '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 and resolution 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 executives at various subsidiaries. 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 and on ensuring a coordinated roadmap, a transparent project portfolio, and a holistic data governance approach.
- 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 **Heads of Compliance working group** assists DZ BANK with compliance management across the group where 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 Heads of 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 Heads of Compliance working group must respect the individual responsibility of the heads of compliance in the group entities and ensure specific regulatory requirements are observed. The 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 general parameters 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. From an operational perspective, the activities are coordinated by the Heads of IT group and implemented in the IT units in the DZ BANK Group.

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 at DZ BANK and its subsidiaries, 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 – the Group Procurement Committee's executive arm consisting of the DZ BANK Group's heads of procurement – 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 subsidiaries. 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, is the platform for sharing 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 Officers, who are 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, 2022), 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.7.2 and VII.7.3 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) and the net stable funding ratio (NSFR).

– **Capital adequacy:**

The KPIs for economic capital adequacy are described in chapter VII.8.2 of this group management report. The KPIs for normative internal capital adequacy are included in chapter VII.8.3. They comprise the coverage ratio for the financial conglomerate, the total capital ratio, the Tier 1 capital ratio, the common equity Tier 1 capital ratio, and the leverage ratio, as well as the minimum requirement for own funds and eligible liabilities (MREL ratio, subordinated MREL ratio).

– **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 & Corporate Development, Group Risk Control & Services, 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 & Corporate Development division is responsible for overall coordination of the strategic planning process.

II Business report

1 Economic conditions

The spread of the Omicron variant of COVID-19 still loomed large over the start of 2022. High levels of infection meant that many employees were absent due to illness, and moderate containment measures were introduced. In addition, disruptions in international supply chains posed challenges for the industrial sector. However, over the course of the year, the pandemic faded into the background. Following Russia's invasion of Ukraine on February 24, 2022, the spotlight quickly shifted to different economic risks. Initially, these mainly comprised the immediate fallout from the war in the form of even more severe supply chain disruptions and western sanctions against Russia. The dependence of the German economy on energy exports from Russia rapidly became a prominent topic. And alongside concerns about energy security, energy costs soon also became a pressing issue. Inflation rose to record highs, forcing the central banks to abandon their long-established regime of zero interest rates. In the end, the German economy did not have to introduce gas rationing, as initially feared, but the uncertainty, combined with high inflation and concerted efforts to reduce energy consumption, did trigger a slowdown in economic growth. Germany's total economic output rose by 1.8 percent in 2022, following growth of 2.6 percent in 2021.

Despite the difficult conditions, the German economy expanded by 0.8 percent in the first quarter of 2022 compared with the previous quarter. Capital expenditure was the main source of growth impetus, whereas net exports held back growth. The aforementioned problems took a heavier toll on growth in the second quarter of 2022. Industrial output slowed over the course of the quarter, foreign trade declined, and retail sales fell compared with the first three months of the year. From the first to the second quarter of 2022, economic growth was 0.1 percent. In the third quarter of 2022, economic activity continued to pick up, with real gross domestic product (GDP) rising by 0.5 percent compared with the previous quarter. Consumer spending was the main driver of economic output between July and September 2022. Although prices continued to rise rapidly and the energy crisis began to take hold, consumers were keen to take advantage of the lifting of most coronavirus-related restrictions and spent more on activities such as travelling and going out. Most service sectors consequently recorded a quarter-on-quarter increase in economic output. Wholesale/retail, transportation, and hospitality saw the biggest improvements in gross value added (up by 3.3 percent). However, the adverse impact of high inflation became more tangible toward the end of the year. In the fourth quarter of 2022, economic output in Germany fell by 0.4 percent compared with the previous quarter.

The eurozone economy also picked up during 2022, although growth was held back by high inflation and increased uncertainty. Following a post-pandemic bounce-back in GDP in 2021 (up by 5.3 percent year on year), the eurozone's economy grew at a rate of 3.5 percent in 2022. In the first quarter of 2022, GDP went up by 0.6 percent, followed by a quarter-on-quarter rise of 0.9 percent in the second quarter. GDP growth then slowed to 0.3 percent in the third quarter and 0.1 percent in the fourth quarter.

The US economy travelled a very rocky road in 2022. The economic impact of the war in Ukraine and the resulting spike in energy prices were much less pronounced in the US than in Europe. But supply chain disruptions affected growth noticeably, and high inflation – combined with the Federal Reserve's (Fed) monetary policy shift toward rapid interest-rate increases – sapped additional momentum. In the first half of 2022, the US economy even slipped into a 'technical recession'. At 2.1 percent, GDP growth for 2022

as a whole was down significantly on the prior-year figure of 5.9 percent. A key pillar of support for the US economy was consumer spending, which – in turn – was propped up by a robust labor market. The unemployment rate fell from 3.9 percent in December 2021 to 3.5 percent in December 2022.

The rate of economic expansion in China slowed substantially during 2022. Following growth of 8.1 percent in 2021, economic output increased by just 2.8 percent in 2022. Multiple waves of severe restrictions imposed to contain the spread of COVID-19 weighed heavily on the Chinese economy. This was compounded by a slowdown in global economic growth and the weakness of the Chinese housing market.

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

Over the course of 2022, uncertainty in the capital markets increased due to the war in Ukraine, whereas the previous year had been characterized by a recovery in the markets as countries emerged from the depths of the COVID-19 pandemic.

The STOXX Europe 600, a share index comprising 600 large listed European companies, stood at 424.89 points as at December 31, 2022, which was 62.91 points lower than its level at the end of the previous year (December 31, 2021: 487.80 points). By contrast, the index had gained 88.77 points from December 31, 2020 to December 31, 2021.

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 2023 because of the COVID-19 pandemic.

At the end of the third quarter of 2022, the total borrowing of the 19 eurozone countries equated to 93.0 percent of their GDP, a decrease of 4.3 percentage points compared with the figure of 97.3 percent as at September 30, 2021.

Italy's public debt as a percentage of GDP stood at 147.3 percent in the third quarter of 2022 (third quarter of 2021: 154.2 percent), which is the highest in the eurozone after that of Greece.

Portugal's public debt as a percentage of GDP was 120.1 percent in the third quarter of 2022, compared with 129.1 percent in the same quarter of 2021.

In Spain, public debt as a percentage of GDP was 115.6 percent in the third quarter of 2022 (third quarter of 2021: 121.9 percent).

Based on a policy of quantitative easing, the European Central Bank (ECB) has supported the markets for government bonds in recent years, 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. 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.

At its meeting on December 15, 2022, the ECB decided to raise the rate for the deposit facility to 2.00 percent. The main refinancing rate was set at 2.50 percent, while the rate for the marginal lending facility was set at 2.75 percent. On December 16, 2021, the ECB Governing Council had decided that net asset purchases under the pandemic emergency purchase program (PEPP) with a maximum volume of €1,850.0 billion would be discontinued at the end of March 2022. The maturing principal payments from securities purchased under the PEPP will be reinvested until at least the end of 2024. On March 10, 2022, the ECB Governing Council decided to gradually reduce the monthly volume of assets bought under the asset purchase program (APP). As a result, monthly net purchases amounted to €40.0 billion in April 2022, €30.0 billion in May 2022, and €20.0 billion in June 2022. Net new purchases under the APP were discontinued in July 2022. The maturing principal payments from securities purchased under the APP must be fully reinvested until the end of February 2023. After this date, the APP portfolio will be scaled back at a measured pace by reducing the amount of maturing principal payments from securities that are reinvested. Until the end of the second quarter of 2023, the portfolio will be trimmed down by €15.0 billion per month on average. The pace of reductions beyond this point will be determined further down the line.

On December 14, 2022, the Fed announced that the federal funds rate would be raised again, to a range of 4.25 percent to 4.50 percent. In accordance with the Fed's decision of December 15, 2021, the federal funds rate had remained unchanged in the range of 0.00 percent to 0.25 percent in the previous year. The asset purchases of the Federal Reserve were wound up in March 2022. Since June 2022, the central bank has been slimming down its balance sheet by no longer fully reinvesting securities when they mature. At present, the Fed is reducing its balance sheet by US\$ 95 billion per month.

The financial performance of Germany's two largest banks was generally positive in 2022. One of them tripled its net profit compared with the previous year, while the other reported a twofold increase in net profit. The loss allowances for loans and advances recognized by these major banks rose sharply compared with the previous year. With regard to administrative expenses, one of the banks achieved a significant reduction while the other recorded only a modest fall in the reporting year.

3 Financial performance

3.1 Financial performance at a glance

Market conditions in the reporting year were shaped by sharply rising interest rates, the war in Ukraine, and the after-effects of pandemic-related restrictions. In this challenging environment, the DZ BANK Group generated a profit before taxes of €1,797 million (2021: €3,096 million).

The year-on-year changes in the key figures that made up the net profit generated by the DZ BANK Group in 2022 were as described below.

FIG. 2 – INCOME STATEMENT

€ million	2022	2021
Net interest income	3,322	2,785
Net fee and commission income	2,749	2,935
Gains and losses on trading activities	823	152
Gains and losses on investments	-119	245
Other gains and losses on valuation of financial instruments	-286	242
Gains and losses from the derecognition of financial assets measured at amortized cost	35	-
Net income from insurance business	-179	842
Loss allowances	-304	120
Administrative expenses	-4,447	-4,265
Staff expenses	-2,072	-2,021
Other administrative expenses ¹	-2,374	-2,244
Other net operating income	204	41
Profit before taxes	1,797	3,096
Income taxes	-724	-920
Net profit	1,073	2,176

¹ General and administrative expenses plus depreciation/amortization expense.

Operating income in the DZ BANK Group amounted to €6,549 million (2021: €7,242 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 increased by €537 million year on year to €3,322 million (2021: €2,785 million).

Within this figure, interest income from lending and money market business rose by €1,203 million to €5,726 million (2021: €4,523 million) and interest income from bonds and other fixed-income securities went up by €144 million to €485 million (2021: €341 million).

There was a positive change in interest on portfolio hedges of interest-rate risk (portfolios comprising financial assets), which improved by €304 million to a net expense of €77 million (2021: net expense of €381 million). By contrast, there was a negative change in interest on portfolio hedges of interest-rate risk (portfolios comprising financial liabilities), which deteriorated by €69 million to a net expense of €19 million (2021: net income of €50 million).

Interest expense for deposits from banks and customers rose by €594 million to €2,528 million (2021: €1,934 million) for volume-related reasons. This increase was attributable to a decline in interest expense on home savings deposits due to a one-off item of €185 million in connection with the reversal of provisions relating to building society operations and a simultaneous reduction in additions to provisions relating to building society operations of €95 million. Interest expense on debt certificates issued including bonds went up by €285 million to €494 million (2021: €209 million). This was mainly due to expansion of the portfolio of issued commercial paper.

Net fee and commission income declined by €186 million to €2,749 million (2021: €2,935 million).

Net fee and commission income from securities business diminished by €287 million to €2,325 million (2021: €2,612 million). This was primarily due to the €356 million reduction in performance-related management fees to €25 million (2021: €381 million) in the Union Investment Group. However, the Union Investment Group's volume-related net income contribution advanced by €50 million to €1,801 million (2021: €1,751 million) on the back of an increase in the average level of assets under management.

In addition, net fee and commission income from asset management improved by €14 million year on year to €128 million (2021: €114 million) and lending and trust activities by €31 million to €85 million (2021: €54 million).

Gains and losses on trading activities in 2022 came to a net gain of €823 million compared with a net gain of €152 million for the previous year.

This change was due to the significant volatility of market prices, which – as a result of risk management – had opposing effects on gains and losses on non-derivative financial instruments and embedded derivatives on the one hand and on gains and losses on derivatives on the other. Gains and losses on non-derivative financial instruments and embedded derivatives improved by €4,771 million to a gain of €4,473 million (2021: loss of €298 million). Conversely, gains and losses on derivatives deteriorated by €4,104 million to a loss of €3,794 million (2021: gain of €310 million). Gains and losses on exchange differences came to a net gain of €144 million (2021: net gain of €141 million).

Gains and losses on investments fell by €364 million to a net loss of €119 million (2021: net gain of €245 million).

Within this figure, gains and losses on the disposal of bonds and other fixed-income securities deteriorated by €180 million to a net loss of €41 million (2021: net gain of €139 million) – predominantly as a result of sales of securities in the BSH subgroup – and gains and losses on the disposal of shares and other variable-yield securities deteriorated by €64 million to a net loss of €62 million (2021: net gain of €2 million), primarily due to the disposal of investment fund units from the Union Investment Group's own-account investments.

Gains and losses on investments in associates amounted to a net gain of €15 million (2021: net gain of €109 million). The prior-year figure was, to a large extent, attributable to gains recognized on the disposal of direct equity investments held by VR Equitypartner.

Other gains and losses on valuation of financial instruments came to a net loss of €286 million (2021: net gain of €242 million).

This year-on-year change was attributable to the deterioration in gains and losses on financial instruments designated as at fair value through profit or loss of €271 million to a net loss of €160 million (2021: net gain of €111 million), in gains and losses on financial assets mandatorily measured at fair value through profit or loss of €127 million to a net loss of €75 million (2021: net gain of €52 million), in gains and losses from fair value hedge accounting of €65 million to a net loss of €45 million (2021: net gain of €20 million), and in gains and losses on derivatives used for purposes other than trading of €64 million to a net loss of €6 million (2021: net gain of €58 million).

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 2022, this figure decreased by €1,021 million to a net expense of €179 million (2021: net income of €842 million). The reduction was primarily due to the deterioration – driven by the situation in the capital markets – in gains and losses on investments held by insurance companies and other insurance company gains and losses of €8,640 million to a net loss of €3,389 million (2021: net gain of €5,251 million).

Conversely, insurance benefit payments fell by €8,229 million to €12,127 million (2021: €20,356 million). In the non-life insurance business, the overall claims rate was above the level of the prior year but below the three-year average. There was a major claim of around €71 million from a hotel business in December 2022. Expenses totaled €124 million from storms Nadia, Ylenia, Zeynep, and Antonia and €48 million from storms Emmelinde and Finja, with a corresponding impact on natural disaster claims during the reporting year. In the inward reinsurance business, the series of winter storms in Europe resulted in claims incurred of €42 million. The claims in connection with flooding in the South African province of KwaZulu-Natal came to €75 million, while claims in connection with hurricane Ian amounted to €89 million and claims resulting from tornado and hail events in April 2022 totaled €28 million. Moreover, expenses of €51 million associated with derecho storms in the United States were reflected in the ratio (a derecho is a widespread and long-lived straight-line wind storm).

Premiums earned fell by €597 million to €18,397 million (2021: €18,994 million).

As a member of the DZ BANK Group, R+V already had to measure its assets at fair value in accordance with IFRS 9. Equity and liabilities, and therefore liabilities to policyholders, will only be treated in the same way after the transition to IFRS 17 in the coming year. In 2022, insurance contracts were reported in accordance with IFRS 4 for the final time. For further information on the implications of IFRS 17 for net income from insurance business, see chapter V.4.2 of the outlook in this group management report.

Loss allowances amounted to a net addition of €304 million (2021: net reversal of €120 million).

Loss allowances for loans and advances to customers amounted to a net addition of €236 million (2021: net reversal of €71 million). The net addition to loss allowances for loans and advances to banks came to €30 million (2021: net reversal of €22 million). The net addition to other loss allowances for loans and advances was €42 million (2021: net reversal of €1 million). The net reversal of loss allowances for investments amounted to €4 million (2021: net reversal of €25 million).

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 went up by €182 million to €4,447 million (2021: €4,265 million). Within this figure, staff expenses advanced to €2,072 million, compared with €2,021 million in 2021. This increase was predominantly due to pay rises, appointments, and higher provisions for pensions and other post-employment benefits. Other administrative expenses climbed to €2,374 million (2021: €2,244 million), mainly because of increased contributions to the bank levy and higher expenses incurred in connection with consultancy and IT.

Other net operating income amounted to €204 million (2021: €41 million).

Income from the reversal of provisions and accruals rose by €71 million to €157 million (2021: €86 million), whereas expenses for restructuring fell by €73 million to €5 million (2021: €78 million). Residual other net operating income improved by €35 million to a net expense of €16 million (2021: net expense of €51 million). This was attributable, among other factors, to the recognition of canceled, non-interest-bearing home savings deposits of €30 million (2021: €9 million). There was a countervailing decline in gains and losses on non-current assets and disposal groups classified as held for sale, with the net gain falling by €21 million to €49 million (2021: net gain of €70 million).

Profit before taxes for 2022 amounted to €1,797 million, compared with €3,096 million in 2021.

The **cost/income ratio** (i.e. the ratio of administrative expenses to operating income) for the reporting year came to 67.9 percent (2021: 58.9 percent).

The **regulatory return on risk-adjusted capital (RORAC)** was 9.3 percent (2021: 15.7 percent).

Income taxes amounted to €724 million in the reporting year (2021: €920 million).

The DZ BANK Group generated a **net profit** of €1,073 million in 2022, compared with a net profit of €2,176 million in 2021.

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 2022 (chapter V of the 2021 group management report).

In 2022, the DZ BANK Group generated profit before taxes that was slightly higher than the budgeted figure.

Net interest income in the reporting year was much higher than expected, which was mainly attributable to a one-off item in connection with the reversal of provisions relating to building society operations at BSH and an increase in customer business at DZ BANK – CICB. The marked rise in net fee and commission income was driven primarily by growth in average assets under management. Gains and losses on trading activities improved substantially compared with the forecast figure, predominantly as a result of IFRS-related valuation effects in connection with own issues. Meanwhile, gains and losses on investments deteriorated sharply, in contrast to the positive forecast issued in 2021. This was attributable to losses on disposals at BSH and UMH. Net income from insurance business fell more steeply in the reporting year than had been forecast. Net additions to loss allowances remained considerably below the budgeted figure for 2022. 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 2022 compared with 2021.

3.2.1 BSH

The BSH subgroup's **net interest income** rose by €163 million in 2022 to €744 million (2021: €581 million).

Net interest income arising on investments declined by €104 million to €246 million (2021: €350 million).

Conversely, interest expense on home savings deposits fell by €324 million to €407 million (2021: €731 million). Of this reduction, €185 million was attributable to a one-off item in connection with the reversal of provisions relating to building society operations, €95 million to lower additions to provisions relating to building society operations, and €44 million to the lower interest rates applicable to current tariffs.

In the case of loans issued under advance or interim financing arrangements and other building loans, income amounted to €1,039 million (2021: €1,083 million). Income from home savings loans amounted to €70 million (2021: €70 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 2022, the amortization amount included in interest cost was €209 million (2021: €200 million).

Net fee and commission income amounted to €11 million in the reporting year (2021: €12 million).

In the home savings business in 2022, BSH entered into approximately 463 thousand (2021: 441 thousand) new home savings contracts with a volume of €34.1 billion (2021: €24.0 billion) in Germany.

In the home finance business, the realized volume of new business came to €16.3 billion (2021: €18.3 billion) in Germany.

Gains and losses on investments amounted to a net loss of €90 million (2021: net gain of €22 million). Within this figure, gains and losses on the disposal of bonds deteriorated to a net loss of €60 million (2021: net gain of €27 million). Valuations of joint ventures led to a net loss of €30 million (2021: net loss of €5 million).

Loss allowances amounted to a net addition of €16 million (2021: net addition of €14 million). The increase in loss allowances in the reporting year primarily related to the updating of macroeconomic parameters, while the main factor in the prior year had been the effect of recalibrating the rating systems.

Administrative expenses went up by €13 million to €528 million (2021: €515 million). At €274 million, staff expenses were €42 million higher than the prior-year level of €232 million. A €9 million rise in administrative expenses in the BSH subgroup was mainly caused by salary increases under collective pay agreements and by the inflation compensation payment. The remaining increase in staff expenses and the drop in other administrative expenses resulted largely from the first-time consolidation of Schwäbisch Hall Facility Management GmbH, BAUFINEX GmbH, and Schwäbisch Hall Wohnen GmbH. Other administrative expenses declined by €29 million to €254 million (2021: €283 million).

Other net operating income decreased by €26 million to €16 million (2021: €42 million). The recognition of canceled, non-interest-bearing home savings deposits generated income of €30 million (2021: €9 million). However, expenses relating to pre-litigation legal risks increased to €48 million (2021: €3 million).

Profit before taxes went up by €13 million to €143 million (2021: €130 million) because of the changes described above.

The **cost/income ratio** in 2022 was 76.7 percent (2021: 78.1 percent).

Regulatory RORAC was 11.2 percent (2021: 10.0 percent).

3.2.2 R+V

Premiums earned came to €18,397 million (2021: €18,994 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 fell by a total of €693 million to €8,707 million (2021: €9,400 million).

Premiums earned from the life insurance business declined by €792 million to €7,842 million. Except for the business involving unit-linked products, all product groups recorded a downturn in premium income, with single premiums falling particularly sharply.

In the health insurance business, net premiums earned rose by a total of €99 million to €865 million across all product groups.

In the non-life insurance business, premium income earned grew by €174 million to €6,738 million, with most of this growth being generated from corporate customer business and banks/deposit business.

Premiums earned from the inward reinsurance business diminished by €77 million to €2,952 million. The portfolio in the UK motor vehicle liability division was scaled back. All other product groups, particularly loans and deposits, recorded increases in premium income. While business in the US and Asia improved, Europe and all other regions recorded downturns. Nonetheless, Europe remains the biggest market.

Gains and losses on investments held by insurance companies and other insurance company gains and losses deteriorated by €8,648 million to a net loss of €3,368 million (2021: net gain of €5,280 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 level of long-term interest rates was significantly higher than in 2021. The ten-year swap rate was 3.20 percent as at December 31, 2022 (December 31, 2021: 0.30 percent). The movement of spreads on interest-bearing securities had a negative impact on gains and losses on investments held by insurance companies and other insurance company gains and losses. In the year under review, spreads continued to widen. A weighted spread calculated in accordance with R+V's portfolio structure stood at 89.8 points as at December 31, 2022 (December 31, 2021: 66.7 points). In the comparative period, this spread had risen from 50.3 points as at December 31, 2020 to 66.7 points as at December 31, 2021.

During the reporting year, equity markets relevant to R+V performed worse than in 2021. For example, the EURO STOXX 50, a share index comprising 50 large listed companies in the eurozone, fell by 504 points over the reporting year to 3,794 points. In 2021, this index had risen by 745 points.

In the reporting year, movements in exchange rates between the euro and various currencies were generally less favorable than in the previous year. For example, the US dollar/euro exchange rate on December 31, 2022 was 0.937 compared with 0.879 as at December 31, 2021. In the previous year, the exchange rate had moved from 0.817 as at December 31, 2020 to December 0.879 as at December 31, 2021.

Overall, these trends in the reporting year essentially resulted in a €7,918 million negative change – resulting from the effects of changes in negative fair values – in unrealized gains and losses to a net loss of €5,302 million (2021: net gain of €2,616 million), a €937 decrease in the contribution to earnings from the derecognition of investments to a loss of €866 million (2021: gain of €70 million), a €363 million deterioration in foreign-exchange gains and losses to a net gain of €399 million (2021: net gain of €761 million), and a €25 million decline in the balance of depreciation, amortization, impairment losses, and reversals of impairment losses to a net expense of €101 million (2021: net expense of €76 million). However, net income under current income and expense rose by €133 million to €2,229 million (2021: €2,096 million), while other insurance gains and losses and non-insurance gains and losses improved by €460 million to a net gain of €272 million (2021: net loss of €187 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 €12,127 million, which equated to a fall of €8,229 million compared with the corresponding figure of €20,356 million in 2021.

The change 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 change in gains and losses on investments held by insurance companies from unit-linked life insurance was also reflected in insurance benefit payments in the form of a €5,167 million fall in the expenses (2021: €2,846 increase in expenses). Another factor in the decrease in insurance benefit payments was the change in premium refunds, which resulted from the change, recognized in profit or loss, in the provision for premium refunds. A reversal of €176 million was made from the supplementary change-in-discount-rate reserve (2021: addition of €730 million).

In the non-life insurance business, the overall claims rate was above the level of the prior year but below the three-year average. There was a major claim of around €71 million from a hotel business in December 2022. Expenses totaled €124 million from storms Nadia, Ylenia, Zeynep, and Antonia and €48 million from storms Emmelinde and Finja, with a corresponding impact on natural disaster claims during the reporting year.

In the inward reinsurance business, the net claims ratio was 73.3 percent (2021: 73.5 percent). The ratios for basic and medium claims were below those of the previous year. By contrast, the ratio for major claims went up. The series of winter storms in Europe resulted in claims incurred of €42 million. The claims in connection with flooding in the South African province of KwaZulu-Natal came to €75 million, while claims in connection with hurricane Ian amounted to €89 million and claims resulting from tornado and hail events in April 2022 totaled €28 million. Moreover, expenses of €51 million associated with derecho storms in the United States were reflected in the ratio (a derecho is a widespread and long-lived straight-line wind storm).

Insurance business operating expenses incurred in the course of ordinary business activities went down by €10 million to €3,173 million (2021: €3,183 million). This change was attributable to the fact that the increase of €70 million in the non-life division was more than offset by decreases of €40 million each in the inward reinsurance and life/health insurance divisions.

Other net operating income decreased by €42 million to a net expense of €5 million (2021: net income of €37 million). The prior-year figure had been significantly boosted by gains on property disposals. This effect was not repeated in the reporting year.

The factors described above resulted in a **loss before taxes** of €268 million (2021: profit before taxes of €772 million).

Regulatory RORAC was minus 2.9 percent (2021: 7.7 percent).

3.2.3 TeamBank

Net interest income amounted to €511 million and thus improved year on year (2021: €492 million). Average loans and advances to customers in the reporting year came to €9,119 million (2021: €9,395 million).

As at December 31, 2022, loans and advances to customers stood at €9,583 million (December 31, 2021: €9,208 million). The number of customers rose to 1,010 thousand (December 31, 2021: 984 thousand). TeamBank had made credit facilities from easyCredit-Finanzreserve totaling €3,041 million available to its customers as at December 31, 2022 (December 31, 2021: €2,555 million). In 2022, 23.2 percent (2021: 18.6 percent) of new business was generated through easyCredit-Finanzreserve.

As at December 31, 2022, TeamBank was working with 669 (December 31, 2021: 701) of Germany's 729 (December 31, 2021: 772) cooperative banks and with 154 (December 31, 2021: 148) partner banks in Austria.

Net fee and commission income saw a negative change of €12 million to a net expense of €13 million (2021: net expense of €1 million). Fee and commission income from the brokering of credit insurance policies fell as a consequence of the German Act on Supporting the Regulation of Crowdfunding Service Providers (SFBG). However, this was mitigated by making adjustments to the R+V framework agreement.

The net addition to **loss allowances** amounted to €100 million, which was up by €43 million compared with the prior-year figure of €57 million. Rating downgrades due to customers' poorer payment history and, to a lesser extent, a rise in new business prompted a higher net addition to loss allowances. The partial reversal of the post-model adjustment recognized in the previous year had a countervailing effect. The relevant risks materialized in the reporting year and were reflected in the increased expense for loss allowances. Moreover, the expense for loss allowances had been exceptionally low in 2021.

Administrative expenses amounted to €286 million (2021: €289 million). Within this figure, staff expenses totaled €108 million (2021: €110 million) while other administrative expenses came to €178 million (2021: €179 million).

Profit before taxes stood at €134 million and thus decreased by €17 million compared with the prior-year figure of €151 million.

TeamBank's **cost/income ratio** in 2022 was 55.1 percent (2021: 58.1 percent).

Regulatory RORAC was 22.8 percent (2021: 26.1 percent).

3.2.4 UMH

Net fee and commission income declined by €257 million to €2,036 million (2021: €2,293 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 €7.4 billion to €428.7 billion (2021: €421.3 billion), the volume-related contribution to net fee and commission income rose to €1,801 million (2021: €1,751 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 €25 million (2021: €381 million). The decrease was largely the result of some high-volume funds not fulfilling the conditions for the transfer of a performance-related management fee in 2022. Income from real estate fund transaction fees came to €75 million (2021: €90 million). Expenses for the performance bonus for sales partners totaled €44 million (2021: €101 million).

Union Investment generated net inflows from its retail business of €10.7 billion (2021: €19.7 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, stood at 3.8 million contracts as at December 31, 2022, with a decrease in the 12-month savings volume to €7.1 billion (December 31, 2021: €7.4 billion).

The total assets in the portfolio of Riester pension products amounted to €23.3 billion (December 31, 2021: €27.5 billion).

The number of fund-linked savings plans managed by Union Investment in its retail business as at December 31, 2022 totaled 6.5 million (December 31, 2021: 6.4 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 €2.7 billion in 2022 (2021: €2.6 billion).

Assets under management in the PrivatFonds family amounted to €22.7 billion as at December 31, 2022 (December 31, 2021: €27.2 billion).

In its institutional business, the Union Investment Group generated net inflows amounting to €6.8 billion (2021: €20.8 billion).

The portfolio volume of funds conforming with article 8 or article 9 of the EU Sustainable Finance Disclosure Regulation (SFDR) amounted to €122.4 billion (December 31, 2021: €125.6 billion). As at December 31, 2022, this figure included €81.2 billion in assets defined as sustainable by Union Investment based on its own criteria.

Gains and losses on investments amounted to a net loss of €58 million (2021: net gain of €2 million), largely due to the net loss realized on the disposal of investment fund units from Union Investment's own-account investments.

Other gains and losses on valuation of financial instruments deteriorated by €195 million to a net loss of €155 million (2021: net gain of €40 million), which was largely attributable to a net loss of €125 million from the valuation of guarantee commitments (2021: net gain of €37 million) and the net loss of €30 million arising on the valuation of Union Investment's own-account investments (2021: net gain of €2 million).

Administrative expenses went up by €76 million to €1,194 million (2021: €1,118 million). Staff expenses increased by €11 million to €567 million (2021: €556 million) due to the rise in expenses for semi-retirement and pensions and as a result of average pay rises. Other administrative expenses climbed by €65 million to €627 million (2021: €562 million), mainly because of higher expenses incurred in connection with IT, consultancy, office management, information procurement, public relations, marketing, and rents for land and buildings.

Other net operating income amounted to net income of €54 million (2021: net income of €0 million). This year-on-year rise was mainly attributable to higher expenses for provisions in the previous year, for example in connection with taxation relating to corporate action and various other matters.

Based on the changes described above, **profit before taxes** amounted to €695 million (2021: €1,233 million).

The **cost/income ratio** in 2022 was 63.2 percent (2021: 47.5 percent).

Regulatory RORAC was greater than 100.0 percent (2021: 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 by €87 million to €1,113 million (2021: €1,026 million).

In 2022, the allocation of bonus interest resulting from participation in the TLTRO III program was changed from decentralized distribution among the business lines to centralized disclosure. Consequently, the following information on the business lines does not include earnings from TLTRO III and the figures for the previous year have been restated accordingly. The TLTRO III program's impact on earnings is disclosed separately below.

In the Corporate Banking business line, net interest income rose by €27 million to €550 million (2021: €523 million). The net interest income in the four regional corporate customer divisions plus Central Corporate Banking increased to €309 million (2021: €286 million). The rise in the operating lending business was due to the growth of the lending volume.

At €173 million, net interest income in the Structured Finance division was on a par with the previous year. The figure for 2022 was boosted by successful business activities that resulted in a greater lending volume in all product units and by the appreciation of the US dollar.

In the Investment Promotion division, net interest income advanced by €4 million to €68 million (2021: €64 million). This year-on-year increase primarily resulted from new business commitments and substantial portfolio growth in 2021, and from the fact that some of the associated development loans were only made available over the course of 2022 due to high demand for residential development funding.

At €1 million, net interest income from the separately managed real estate lending portfolio was down compared with the prior-year figure of €11 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 money market and capital markets business increased by €262 million to €383 million (2021: €121 million). This increase was thanks to the growth of business with cooperative financial network customers and institutional customers in the short-dated maturity segment, and to the treasury portfolios. Repayment gains on repurchased own issues also contributed to the improvement.

Net interest income attributable to bonus interest resulting from participation in the TLTRO III program decreased by €96 million to €71 million (2021: €167 million). The prior-year figure had included the share of interest generated in the second half of 2020.

Other net interest income from loan administration fees advanced by €6 million to €29 million (2021: €23 million).

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 €79 million (2021: €182 million). The reduction compared with 2021 can be explained by lower income from long-term equity investments at VR Equitypartner GmbH (down by €78 million to €23 million) and DZ Beteiligungsgesellschaft mbH Nr. 18 (down by €21 million to €9 million).

Net fee and commission income rose by €18 million to €489 million (2021: €471 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 €32 million higher than in 2021 at €183 million (2021: €151 million). Of this increase, €10 million was attributable to the syndicated loan business, €9 million to fees and commissions on loans in the securitization business, €5 million to fees and commissions in connection with loan processing, and €4 million to financial guarantee contracts / loan commitments.

In the Capital Markets business line, the contribution to net fee and commission income fell by €32 million to €192 million (2021: €224 million). One reason for this change was a €17 million rise in expenses for bonuses on own issues. Another was a €14 million decline in income from securities brokerage business.

Net fee and commission income in the Transaction Banking business line was also up year on year at €170 million, a rise of €12 million compared with the prior-year figure of €158 million. This increase was primarily driven by currency transactions in the service business (contribution of €8 million) and by the safe custody and securities management business (contribution of €3 million). Payments processing fees increased as well, but this was more than offset by higher fee and commission expenses payable to equensWorldline SE.

As part of service procurement arrangements, DZ BANK has transferred processing services in the lending business to Schwäbisch Hall Kreditervice, in the payments processing business to equensWorldline SE and Cash Logistik 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 €201 million (2021: €190 million) and were broken down and reported under the net fee and commission income for the business lines as follows: Corporate Banking €9 million (2021: €9 million) and Capital Markets/Transaction Banking €192 million (2021: €181 million).

Gains and losses on trading activities amounted to a net gain of €871 million (2021: net gain of €67 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 – apart from credit rating effects – also included in gains and losses on trading activities. The credit-rating-related effects pertaining to these financial instruments are included in other gains and losses on valuation of financial instruments if the instruments are financial assets or in equity if the instruments are financial liabilities.

Gains and losses on operating trading activities in the Capital Markets business line amounted to a net gain of €528 million, compared with €616 million in 2021.

Widening credit spreads had a substantial adverse impact on gains and losses on trading activities.

Income in the business with institutional customers went up year on year across all customer groups. Helping customers to protect their investments against rising interest rates through the use of derivative hedge transactions was a focal topic.

The foreign-exchange business improved in light of volatility in the currency markets. Business in interest-rate structures also picked up in terms of both profitability and volume. Secondary market business in bonds was weaker than in the previous year due to the market environment.

Whereas there had been a significant negative impact from IFRS-related effects in 2021, IFRS-related effects made a positive contribution to gains and losses on trading activities in the reporting year. In 2022, the key factors behind this figure included the fair value gains and losses relating to own issues in the fair value PL and fair value option subcategories. Whereas mark-ups had narrowed in the previous year, mainly due to calmer conditions in the bond markets following the COVID-19 crisis (2021: loss of €257 million), these mark-ups widened again in 2022, which gave rise to a net gain of €241 million for these issues under fair value gains and losses.

Ineffectiveness in hedge accounting also boosted earnings. This income was matched by an expense in the same amount recognized under other gains and losses on valuation of financial instruments.

Gains and losses on investments deteriorated by €88 million to a net loss of €13 million (2021: net gain of €75 million). The net loss in the reporting year resulted from losses of €145 million from the sale of securities in the category 'financial assets measured at fair value through other comprehensive income' combined with gains of €131 million arising from the termination of hedges held in the fair value hedge accounting portfolio.

Other gains and losses on valuation of financial instruments deteriorated to a net loss of €91 million (2021: net gain of €58 million). Within this figure, the valuation of financial instruments measured at fair value through profit or loss declined by €10 million to a net loss of €7 million (2021: net gain of €3 million), credit-risk-related measurement effects relating to financial assets measured using the fair value option declined by €29 million to a net gain of €5 million (2021: net gain of €34 million), and the effects of ineffectiveness in hedge accounting declined by €110 million to a net loss of €89 million (2021: net gain of €21 million).

Gains and losses from the derecognition of financial assets measured at amortized cost improved by €3 million to a net gain of €32 million (2021: net gain of €29 million).

Loss allowances amounted to a net addition of €172 million (2021: net reversal of €89 million). Within this figure, the net additions in the lending business and in respect of investments amounted to €199 million. Of this total, net reversals of €11 million related to the loss allowances in stage 1, while net additions of €121 million and €89 million respectively related to the loss allowances in stage 2 and stage 3. The net reversal in respect of recoveries on loans and advances previously impaired, directly recognized impairment losses, other gains and losses on purchased or originated credit-impaired assets (POCI assets), additions to other provisions for loans and advances, and gains and losses from the credit-risk-related modification was €27 million (2021: net reversal of €68 million).

Of the net additions in stages 1 and 2, €32 million was required 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.

Furthermore, loss allowances were increased in stages 2 and 3 owing to geopolitical risks and changes in the credit ratings of individual industries and counterparties.

In 2021, loss allowances had been influenced by reversals in stage 3 that were largely the result of the scaling back of an individual exposure of €51 million.

Administrative expenses went up by €58 million to €1,350 million (2021: €1,292 million).

Staff expenses fell by €8 million to €622 million (2021: €630 million). This was attributable, among other factors, to interest-rate-related measurement effects on provisions for employee benefits.

Other administrative expenses grew by €65 million to €728 million (2021: €663 million). Within this figure, the expenses for the restructuring fund for banks (bank levy) and contributions to the BVR protection scheme rose by €3 million to €81 million (2021: €78 million).

Furthermore, IT costs increased by €18 million to €192 million (2021: €174 million), office expenses by €7 million to €31 million (2021: €24 million), and consultancy expenses by €32 million to €205 million (2021: €173 million). The depreciation and amortization charges included in other administrative expenses went down by €3 million to €76 million (2021: €79 million). The breakdown of these charges was as follows: depreciation of right-of-use assets €29 million (2021: €32 million), depreciation of property, plant and equipment, and investment property €29 million (2021: €28 million), and amortization of other intangible assets €18 million (2021: €19 million).

Other net operating income amounting to €26 million (2021: net expense of €58 million) included reversals of provisions and accruals amounting to income of €67 million (2021: income of €38 million), expenses for paydirekt of €19 million (2021: expenses of €11 million), and additions to provisions for onerous contracts relating to leased out buildings amounting to an expense of €18 million (2021: expense of €18 million).

Profit before taxes amounted to €904 million in the reporting year, which was €439 million higher than the figure of €465 million reported for 2021.

The **cost/income ratio** in 2022 was 55.6 percent (2021: 77.5 percent).

Regulatory RORAC was 15.2 percent (2021: 8.6 percent).

3.2.6 DZ HYP

At €732 million, the **net interest income** of DZ HYP was €11 million higher than in the previous year (2021: €721 million).

The rise in net interest income was mainly the result of portfolio growth. The volume of real estate loans swelled by €1,192 million to €56,686 million (December 31, 2021: €55,494 million).

The volume of new business (including public-sector finance) stood at €10,439 million (2021: €12,048 million). In the corporate customer business, the volume of new business came to €8,064 million (2021: €8,736 million). In the retail customer business, the volume of new commitments amounted to €1,624 million (2021: €2,730 million). In the public-sector business, DZ HYP generated a new business volume of €751 million (2021: €582 million).

The volume of new lending jointly generated with the local cooperative banks in the corporate customer business amounted to €2,978 million in 2022 (2021: €3,859 million).

Net fee and commission income stood at €18 million (2021: €18 million).

Gains and losses on investments deteriorated to a net gain of €31 million (2021: net gain of €42 million). Of this net gain for 2022, €30 million was linked to the sale of Portuguese government bonds. In the previous year, there had been gains of €43 million from disposals of Spanish government bonds.

Other gains and losses on valuation of financial instruments declined by €77 million to a net loss of €14 million (2021: net gain of €63 million). A narrowing of credit spreads was evident in both 2022 and 2021, although this had resulted in a more positive overall valuation effect in 2021. For example, the gains and losses on valuation of bonds from the peripheral countries of the eurozone amounted to a net gain of €25 million in 2022 (2021: €87 million). Of this amount, a loss of €1 million (2021: gain of €33 million) was attributable to Italian government bonds, a gain of €20 million (2021: €39 million) to Spanish government bonds, and a gain of €6 million (2021: €15 million) to Portuguese government bonds. Valuation effects relating to other financial instruments had a countervailing influence, resulting in the overall net loss.

Loss allowances amounted to a net addition of €78 million (2021: net addition of €24 million). In light of significant changes in the economic environment, loss allowances for loans and advances relating to risks that had previously not been covered specifically were increased in order to take account of lingering uncertainty in the market. Reversals of loss allowances in stage 3 in connection with specific exposures had a countervailing effect.

Administrative expenses went up by €9 million to €256 million (2021: €247 million). Staff expenses rose by €8 million to €104 million (2021: €96 million) due to the increase in headcount and higher provisions for pensions and other post-employment benefits. Other administrative expenses were unchanged at €152 million.

Profit before taxes fell to €455 million (2021: €588 million).

The **cost/income ratio** in 2022 was 32.4 percent (2021: 28.8 percent).

Regulatory RORAC was 33.6 percent (2021: 41.6 percent).

3.2.7 DZ PRIVATBANK

The **net interest income** of DZ PRIVATBANK rose by €24 million to €83 million (2021: €59 million). This improvement was mainly attributable to higher income in the lending and money market businesses due to the changed interest-rate regime and market opportunities being seized in liquidity management.

In 2022, 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 €5.2 billion (2021: €4.9 billion).

Net fee and commission income went up by €8 million to €220 million (2021: €212 million).

The increase in net fee and commission income was mainly attributable to the larger contributions to income from private banking and the fund services business as a result of higher average asset volumes.

As at December 31, 2022, high-net-worth individuals' assets under management, which comprise the volume of securities, derivatives, and deposits of customers in the private banking business, came to €21.2 billion (December 31, 2021: €22.2 billion).

The value of funds under management amounted to €168.0 billion as at December 31, 2022 (December 31, 2021: €182.1 billion). The number of fund-related mandates was 565 (December 31, 2021: 550).

Administrative expenses increased by €26 million to €277 million (2021: €251 million). Staff expenses rose by €6 million to €160 million (2021: €154 million), predominantly due to the higher number of employees, the statutory index-linking of salaries in Luxembourg, pay rises, and a negative EUR/CHF exchange-rate effect. Other administrative expenses went up year on year to €116 million (2021: €97 million) due, in particular, to increased IT costs, higher regulatory contributions, maintenance costs for the bank building, and higher advertising and consultancy costs in connection with capital expenditure aimed at boosting the growth of the front-office divisions.

Profit before taxes climbed to €52 million (2021: €41 million).

The **cost/income ratio** in 2022 was 83.7 percent (2021: 85.7 percent).

Regulatory RORAC was 14.1 percent (2021: 12.1 percent).

3.2.8 VR Smart Finanz

Net interest income at VR Smart Finanz amounted to €116 million in the reporting year (2021: €125 million). The decrease in net interest income was mainly due to a slight year-on-year decline in the lending and object finance portfolio volume to €2,919 million (December 31, 2021: €3,015 million), which resulted from the discontinuation of the 'VR Smart flexibel' support loan as of April 30, 2022. This product had been offered in collaboration with Germany's KfW development bank. Longer delivery times for assets, which led to delays in final billing, meant that this effect could not be fully offset by income from object finance business.

New lending and object finance business with customers in the small business, self-employed, and SME segments was encouraging in the reporting year, increasing by €157 million to €1,026 million (2021: €869 million). Against the backdrop of a rise in investing activities among small and medium-sized enterprises (SMEs), demand for object finance, especially the hire purchase solution 'VR Smart express', was high in 2022. The volume of new 'VR Smart express' business came to €472 million (2021: €381 million). New business involving the 'VR Smart flexibel' business loan increased to €310 million (2021: €193 million). This reflected growth in the need for liquidity finance over the course of the year.

Net fee and commission income, which amounted to a net expense of €29 million (2021: net expense of €30 million), was predominantly influenced by the fees and commissions paid to the cooperative banks.

Loss allowances in 2022 amounted to a net addition of €9 million (2021: net addition of €14 million). This fall in expenses was primarily attributable to the change in the volume of lending and a year-on-year reduction in loan defaults among SME customers.

Administrative expenses went down by €4 million to €76 million (2021: €80 million) as a result of strict management of costs. The reduction in headcount meant that staff expenses declined by €2 million to €45 million (2021: €47 million). Other administrative expenses fell by €2 million to €32 million (2021: €34 million).

Other net operating income amounted to €0 million (2021: net expense of €9 million). The prior-year figure had included higher restructuring expenses than in 2022 as a result of a site closure.

The **profit before taxes** of VR Smart Finanz amounted to €3 million (2021: loss before taxes of €9 million).

The **cost/income ratio** in 2022 was 86.4 percent (2021: 93.0 percent).

Regulatory RORAC was 1.8 percent (2021: minus 5.2 percent).

3.2.9 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 €51 million in the reporting year (2021: net expense of €32 million).

The interest expense on subordinated capital went up by €5 million to €47 million (2021: €42 million) against the backdrop of an increase in the volume of this capital in the third quarter of 2022.

Net interest income from the funding of long-term equity investment carrying amounts and the investment of capital amounted to a net expense of €4 million in 2022 (2021: net income of €10 million). This decline was caused by higher funding expenses for long-term equity investments due to changes in market interest rates.

Administrative expenses went up by €20 million year on year to €228 million (2021: €208 million).

The expenses relating to the bank levy and contributions (in particular to the BVR protection scheme) rose by €11 million to €67 million (2021: €56 million). Furthermore, IT and project expenses increased from €63 million in 2021 to €72 million in 2022. Other expenses for the benefit of the group and local cooperative banks decreased by €1 million to €28 million (2021: €29 million). Expenses from the group management function amounted to €61 million, a year-on-year increase of €1 million (2021: €60 million).

3.2.10 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.

As part of the merger of DVB Bank into DZ BANK, changes were made to the internal reporting in 2022. DVB no longer constitutes a separate management unit and is therefore included under 'Other/Consolidation'. The prior-year figures have been restated accordingly.

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

4 Net assets

As at December 31, 2022, the DZ BANK Group's **total assets** had decreased by €0.3 billion to €627.0 billion (December 31, 2021: €627.3 billion) and thus held steady.

The **volume of business** amounted to €1,130.9 billion (December 31, 2021: €1,166.3 billion). This figure comprised the total assets, the assets under management at UMH as at December 31, 2022 amounting to €413.1 billion (December 31, 2021: €454.1 billion), the financial guarantee contracts and loan commitments amounting to €88.6 billion (December 31, 2021: €82.6 billion), and the volume of trust activities amounting to €2.2 billion (December 31, 2021: €2.3 billion).

Cash and cash equivalents went up by €7.7 billion to €93.7 billion (December 31, 2021: €86.0 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).

Loans and advances to banks rose to €123.4 billion (December 31, 2021: €107.7 billion). Loans and advances to banks in Germany swelled to €114.0 billion (December 31, 2021: €99.9 billion) while loans and advances to foreign banks increased to €9.4 billion (December 31, 2021: €7.7 billion).

Loans and advances to customers amounted to €203.6 billion, which was higher than the figure of €195.7 billion reported as at December 31, 2021. Loans and advances to customers in Germany grew to €176.1 billion (December 31, 2021: €169.7 billion) while loans and advances to foreign customers rose to €27.5 billion (December 31, 2021: €25.9 billion).

Financial assets held for trading amounted to €48.9 billion (December 31, 2021: €47.3 billion). Within this amount, derivatives (positive fair values) stood at €21.5 billion (December 31, 2021: €16.2 billion), bonds and other fixed-income securities at €7.7 billion (December 31, 2021: €11.0 billion), shares and other variable-yield securities at €1.4 billion (December 31, 2021: €1.8 billion), receivables at €18.3 billion (December 31, 2021: €18.4 billion), money market placements at €17.1 billion (December 31, 2021: €17.1 billion), and promissory notes and registered bonds at €1.3 billion (December 31, 2021: €1.3 billion).

Investments declined by €9.0 billion to €43.4 billion (December 31, 2021: €52.4 billion). The main reason for this change was a decrease in the portfolio of bonds and other fixed-income securities of €8.4 billion to €40.7 billion (December 31, 2021: €49.1 billion).

Investments held by insurance companies fell by €23.1 billion to €106.0 billion (December 31, 2021: €129.1 billion). This was due to a €13.7 billion decrease in fixed-income securities to €47.7 billion (December 31, 2021: €61.4 billion), a €3.1 billion decrease in registered bonds to €5.4 billion (December 31, 2021: €8.5 billion), a €2.3 billion decrease in assets related to unit-linked contracts to €16.4 billion (December 31, 2021: €18.7 billion), and a €2.0 billion decrease in mortgage loans to €11.0 billion (December 31, 2021: €13.0 billion).

Deposits from banks as at December 31, 2022 amounted to €186.8 billion, which was €9.8 billion lower than the figure reported as at December 31, 2021 of €196.6 billion. Deposits from domestic banks were down by €17.1 billion to €170.7 billion (December 31, 2021: €187.8 billion), whereas deposits from foreign banks rose by €7.3 billion to €16.1 billion (December 31, 2021: €8.8 billion). As at December 31, 2022, the nominal value of the DZ BANK Group's participation in the ECB's TLTRO III program was €11.0 billion (December 31, 2021: €32.4 billion).

Deposits from customers grew by €20.4 billion to €159.4 billion (December 31, 2021: €139.0 billion). Deposits from domestic customers rose by €14.0 billion to €129.7 billion (December 31, 2021: €115.7 billion) and deposits from foreign customers by €6.5 billion to €29.8 billion (December 31, 2021: €23.3 billion).

At the end of the reporting year, the carrying amount of **debt certificates issued including bonds** was €82.3 billion (December 31, 2021: €79.7 billion). Within this figure, bonds issued totaled €68.3 billion (December 31, 2021: €67.1 billion) while the portfolio of other debt certificates came to €14.1 billion (December 31, 2021: €12.6 billion).

Financial liabilities held for trading went up by €9.1 billion to €52.5 billion (December 31, 2021: €43.4 billion). The change was largely attributable to an increase in derivatives (negative fair values) of €11.2 billion and a countervailing decline of €2.2 billion in the amount of bonds issued.

Insurance liabilities went down by €15.1 billion to €103.8 billion (December 31, 2021: €118.9 billion). This was largely attributable to the decrease of €15.6 billion in the provision for premium refunds to €4.4 billion (December 31, 2021: €11.2 billion) and the decrease of €0.9 billion in the reserve for unit-linked insurance contracts to €14.9 billion (December 31, 2021: €15.8 billion). By contrast, the benefit reserve increased by €1.0 billion to €75.2 billion (December 31, 2021: €74.2 billion) and the provision for claims outstanding by €0.4 billion to €16.8 billion (December 31, 2021: €16.4 billion).

As at December 31, 2022, **equity** stood at €23.1 billion, which equates to a year-on-year fall of €5.6 billion (December 31, 2021: €28.7 billion). This change was due to a reduction in the reserve from other comprehensive income of €5.8 billion to minus €4.1 billion (December 31, 2021: €1.7 billion) and a fall in non-controlling interests of €0.7 billion to €1.1 billion (December 31, 2021: €1.8 billion).

The **capital adequacy** of the DZ BANK financial conglomerate, the DZ BANK banking group, and the R+V Versicherung AG insurance group is described in the risk report within this group management report (chapter VII.8).

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, 2022, the nominal value of the DZ BANK Group's participation in the ECB's TLTRO III program was €11.0 billion (December 31, 2021: €32.4 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 adequacy** (chapter VII.7). 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 2022 Sustainability Report.

The 2022 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 war in Ukraine and the resultant energy crisis continue to cast a shadow over the outlook for the global economy. The European Union, including Germany, and the other western allies have been gradually tightening their sanctions against Russia. Many countries – not just Russia – are feeling the negative economic impact of the higher energy prices and the sanctions imposed. The adverse effect on Germany, in particular, and other EU countries is especially pronounced because they have been heavily dependent on energy supplies from Russia until now.

Other factors impacting the economic outlook include the COVID-19 pandemic and international trade disputes. Although the virus variants that are currently circulating are less dangerous, there is significant uncertainty about how the coronavirus pandemic will develop going forward.

The risk of new protectionist measures in trade relations between the United States, China, and Europe has increased in recent months, as can be seen from the debate surrounding the US Inflation Reduction Act. Geopolitical tensions, such as over the position of Taiwan, may prompt a further escalation of trade disputes. This would adversely affect the global economy and hit the heavily export-dependent German economy particularly hard. Supply chain problems and renewed upswings in energy prices could prolong the phase of elevated inflation rates.

Although Germany and the rest of Europe will probably be able to avoid a physical shortage of gas, the energy crisis – and the resulting high level and volatility of energy prices – is likely to trigger a recession in some parts of the world at the start of 2023. Another factor is the surge in interest rates, which has made companies and consumers less willing to invest. In the case of the latter, this particularly affects investment in real estate. Nonetheless, the regions affected by recession should start to stage an economic recovery this year.

With rates already high before the outbreak of the war in Ukraine, inflation shot up in many regions of the world in 2022 as a consequence of the energy crisis. Although it probably reached its zenith at the end of 2022, inflation is likely to fall only gradually because, for many products, it will take quite some time for the high energy prices to filter through the various production stages before reaching end customers. This means that, despite their downward trajectory, inflation rates are expected to remain far above the western central banks' target levels in 2023.

1.2 Trends in the USA

The US economy did not present a clear-cut picture in 2022. Despite various challenges, the growth rate for gross domestic product (GDP) was moderate at 2.1 percent.

However, the prospects for 2023 are much gloomier as inflation is predicted to fall only gradually, with an average rate for the year of around 6 percent. Inflation therefore continues to eat into consumers' real incomes. The problems created by restrictive monetary policy are increasingly taking their toll on the real economy too. Sentiment has already deteriorated markedly, especially in the construction industry. A period of recession in 2023 now appears inevitable. Consequently, DZ BANK anticipates a year-on-year decline in US economic output of around 0.8 percent in 2023, even though the economy is likely to embark on a rally in the second half of the year. From the current perspective, however, the consistently stable condition of the US labor market should particularly help to avoid a more severe recession.

1.3 Trends in the eurozone

The Ukraine war is grinding on and the EU is continuing to impose sanctions on Russia, resulting in persistently high uncertainty. Back in the summer of 2022, the cutting off of Russian gas supplies to Europe was seen as a serious risk for the economies of the eurozone. However, Europe's gas storage facilities were filled for the winter much more quickly than had been expected when the war began. Increased deliveries of gas from other countries are making up for some of the volume that would otherwise be supplied by Russia.

Nevertheless, gas and electricity prices remain much higher than before the crisis. This is leading to significant production restrictions, as the high prices make certain production processes unprofitable and they are therefore being cut back. On the one hand, these partial production shutdowns are helping to achieve the targeted gas savings but, on the other, the loss of value creation is contributing to the decline in economic growth. In addition, high energy prices and inflationary pressures right across the goods and food sectors are making consumers less willing to make purchases. This is squeezing consumer spending.

The eurozone economy is thus likely to slip into recession. A moderate economic recovery is then expected but not until spring 2023, when the warmer weather will reduce demand for energy. This in turn will reduce the upward pressure on prices. While the eurozone's economic growth was fairly robust at 3.5 percent in 2022, economic output is likely to shrink by 1.0 percent in 2023. DZ BANK expects the inflation rate to decrease from 8.5 percent in 2022 to 6.0 percent in 2023, but it will therefore still be at a very high level. The combination of the generally mild winter weather and the fall in gas and electricity prices is reducing the burden on households and companies, raising the prospect of more favorable macroeconomic conditions ahead.

1.4 Trends in Germany

Since the outbreak of the war in Ukraine, the sustained interruption of gas supplies from Russia has always been seen as the biggest risk to the German economy. Although this has become a reality, huge efforts have been made to fill the gas storage facilities since the start of the war. In 2022, high volumes of gas were stored more quickly than in the previous year, partly thanks to increased deliveries of gas from other countries. The opening of Germany's first liquid gas terminal at the beginning of 2023 is expected to bring further relief for the country's tight supply situation. Nevertheless, the high energy prices mean that less gas is being consumed, and this is essential if a shortage is to be avoided. In particular, however, production restrictions in industry are acting as a brake on economic growth.

The prolonged upward trend in the German real estate market initially continued in 2022. However, demand for property, which had previously been fueled by historically low financing rates and capital market yields, suddenly slumped in the second quarter owing to the surge in interest rates. Having previously risen sharply, residential real estate prices peaked in mid-2022 and are expected to fall by between 4 percent and 6 percent in 2023. Commercial real estate prices stagnated in both 2021 and 2022, largely as a result of adverse pandemic-related factors such as people working from home and shopping online. In 2023, commercial properties may see a price fall of between 7 percent and 9 percent because investors are demanding higher returns. Despite the high price level in the real estate market, the tight supply of properties should counteract a more pronounced price correction. Nevertheless, the jump in financing and construction costs has put paid to many building projects. This makes a marked reduction in completions likely in 2023.

The decline in construction activity is holding back economic growth and high inflation is eating into consumers' budgets. As a result, the German economy is slipping into recession, even in the absence of an actual shortfall in gas supplies. Following GDP growth of 1.8 percent in 2022, DZ BANK predicts a slight contraction in 2023. The relief measures planned by the German government for companies and households, such as the cap on gas and electricity prices, will ease the energy-price-related fallout from record-high inflation rates somewhat but not cancel it out completely. DZ BANK anticipates only a moderate decline in inflation from its elevated levels. The inflation forecast for 2023 is 6.5 percent, compared with 8.7 percent in 2022. Energy is expected to make less of a contribution to inflation over the course of 2023, but industrial goods

and food will probably increase the upward pressure on prices. In Germany too, the sharp fall in energy prices in recent months has been a major factor in the improvement in sentiment among companies and consumers and is resulting in brighter economic prospects. From the current perspective, a more pronounced fall in economic output could therefore be avoided this year.

1.5 Trends in the financial sector

In 2022, the world's major central banks abandoned the expansionary monetary policy that they had introduced in response to the financial crisis and hiked interest rates dramatically. The financial markets had not anticipated a monetary policy shift of these proportions. The US Fed has been raising the federal funds rate in order to curb inflation, with the latest increase taking it to a range of 4.5 percent to 4.75 percent. Having previously been at zero, the ECB's main refinancing rate now stands at 3.0 percent.

The Fed discontinued its bond-buying program in March 2022 and then began trimming its balance sheet in May 2022, while the ECB intends to start gradually reducing its holdings under the asset purchase program (APP) from March 2023. The ECB plans to reinvest the maturing principal payments from the securities purchased under the pandemic emergency purchase program (PEPP) until at least the end of 2024. This cautious approach from the ECB, which has been designed with flexibility in mind and is complemented by the transmission protection instrument (TPI) introduced in July 2022, should help to prevent spreads on the bonds of individual eurozone countries from rising excessively – where the ECB does not see these rises as justified by the fundamentals – and thus to counter potential fragmentation risk. It remains to be seen what effect these measures will have, including in terms of the stability of the eurozone.

Monetary policy and geopolitical conditions prompted a sharp rise in the nominal interest rate, which had been at a low level at the start of 2022. Nevertheless, the yield curve in the euro area remains relatively flat and has recently inverted. The US dollar yield curve is currently exhibiting a pronounced inversion, reflecting the recession that is expected in the United States.

The shift in the term structure of interest rates to positive territory should benefit interest-related business in the financial sector. However, there is a concern that a further rise in interest rates, combined with the predicted softening of the economy, may result in higher levels of loan defaults and to slumps in the financial markets, such as the real estate and bond markets. Expected price levels are likely to determine whether the major central banks conclude their cycle of interest-rate hikes in 2023 and then leave key interest rates at a level that real interest rates become restrictive. This would bring them closer to the goal of price stability again.

As described above, the factors acting as a brake on the global economy include the problems affecting supply chains around the world (which could flare up again if the pandemic worsens in China), geopolitical tensions, and the related trade disputes. Irrespective of any government support measures, the intensity of the expected recession, particularly in Europe, is likely to depend on developments in the war in Ukraine and on the supply of commodities and energy at reasonable prices (see also chapters 1.1 to 1.4 of the outlook and chapter VII.4.2 of the risk report with regard to the macroeconomic risk factors).

Given that the uncertainty factors – which are relevant to the major economic areas (United States, Europe, and China) – are occurring simultaneously and have an impact on each other, it is impossible to rule out unexpected adverse effects on companies and households, which in turn would have negative implications for the financial position and financial performance of the financial sector in 2023.

Regardless of the aforementioned macroeconomic conditions, the financial sector has faced considerable pressure in terms of both adjustment and costs in recent years. This is due to the need to implement structural change to adapt to competitive conditions, but may be intensified by the strong upward pressure on prices and the potential threat of a wage/price spiral. A large number of competitors, frequently with approaches

based on disruptive technologies, 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.

The agenda of regulatory reforms initiated in response to the financial crisis has a range of objectives, including making the financial sector more resilient in the event of a crisis, mainly through improved capital and liquidity adequacy, and ensuring that the risks arising from the business activities in the financial industry are not borne by the public sector. As a result, the financial industry has progressively reduced its leverage and substantially bolstered its risk-bearing capacity by improving liquidity and capital adequacy. The steps to implement the Basel III framework that are still planned should be seen in this context, as should the corresponding requirements imposed by EU banking regulators.

The issue that is likely to continue shaping activities in the financial industry in the long term is the implementation of the multifaceted ESG standards and their implications for the business models used in the sector. Among other aims, the standards embody a political objective, which is to facilitate and actively support the transition of the economy to an environmentally sustainable basis, a process that is deemed to be necessary because of climate change and the related risks. 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. The consideration of ESG aspects in the financial and capital markets is, on the one hand, opening up new market opportunities for the financial sector. On the other, events in the various ESG categories should also be seen as risks and managed accordingly. Information on the handling of ESG risks can be found in the risk report (chapter VII.6).

2 Financial position and financial performance

In 2023, 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 2023 from the underlying planning scenario, in the form of opportunities and risks, may have an influence on financial position and financial performance.

According to the planning for 2023, **total assets** will generally remain steady compared with the figure as at the end of 2022. The forecast growth in the customer business, which will have a corresponding impact on the balance sheet, is expected to be focused in the BSH, DZ HYP, 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, among other factors, the reduced use of open market operations under the ECB's TLTRO III programs.

Based on current assessments, **net interest income** (including net income from long-term equity investments) will decline markedly for various reasons in 2023, even though the operating business is expected to be robust. One reason is the absence of positive effects seen in the reporting year (see chapters II.3.2.1 'BSH' and 3.2.5 'DZ BANK – CICB' of the business report). Net interest income is expected to be stabilized by the forecast growth in the interest-bearing business, especially in the operating segments in the DZ BANK Group that are sensitive to interest rates.

Although **net fee and commission income** is projected to be slightly lower in 2023 compared with the high level achieved in 2022, it will still make a hefty contribution to the earnings of the DZ BANK Group. In the UMH operating segment, a small reduction in volume-related net fee and commission income has been budgeted on the assumption that average assets under management will hold steady. Income from the commission-bearing business in the DZ BANK – CICB and DZ PRIVATBANK operating segments is predicted to fall slightly.

Gains and losses on trading activities in 2023 are expected to deteriorate significantly compared with 2022 owing to the absence of positive effects seen in the reporting year (see chapter II.3.2.5 'DZ BANK – CICB' of the business report).

Gains and losses on investments are anticipated to improve noticeably to a net gain in 2023, partly because the figure for 2022 was depressed by sales of investments and other factors (see chapters II.3.2.1 'BSH' and II.3.2.4 'UMH' of the business report).

Other gains and losses on valuation of financial instruments are likely to improve significantly in 2023, returning to a normal level. This is based on the expected changes in the valuation parameters and the absence of negative valuation effects recognized in the reporting year (see chapter II.3.2.4 'UMH' of the business report).

Net income from insurance business is predicted to rise sharply in 2023. In respect of the R+V operating segment, this forecast is rooted not only in expectation of an encouraging level of insurance operating business but also, in particular, in the predicted normalization of gains and losses on investments held by insurance companies and, to a lesser extent, in the expected effects of the changes to the accounting standards for insurance companies (see chapter V.4.2 'R+V' of the outlook).

Expenses for **loss allowances** will probably go up significantly in 2023, reflecting the targeted volume of new business in a macroeconomic environment that is expected to deteriorate.

Administrative expenses are likely to rise slightly in 2023 compared with the reporting year because of growth-related capital investment, inflation, and the planned increases in the contributions to the bank levy and the BVR deposit guarantee fund.

The **other net operating income** generated by the DZ BANK Group in 2023 is expected to fall substantially, largely because of the absence of positive one-off items recognized in 2022 (see chapters II.3.2.4 'UMH' and 3.2.5 'DZ BANK – CICB' of the business report).

Despite the challenging geopolitical conditions that saw a sharp correction in the capital markets and a surge in interest rates, the DZ BANK Group's profit before taxes was slightly higher than budgeted in 2022, which is an indication of the DZ BANK Group's resilience. Based on current assessments, **profit before taxes** in 2023 is predicted to be within the long-term target range of €1.5 billion to €2.0 billion because the macroeconomic environment is expected to remain very difficult.

The future financial performance of the DZ BANK Group could be subject to risks arising from possible variances from the macroeconomic base data assumed in the planning scenario. The strength of the predicted recession, the level of price increases, and the related financial and capital market influences are among the uncertainties that are creating challenges for the individual business models in the DZ BANK Group. These uncertainties are monitored continuously and factored into the DZ BANK Group's planning, reporting system, and management.

The **cost/income ratio** for the DZ BANK Group is likely to edge up in 2023 as a result of the expected small year-on-year increase in income and simultaneous small rise in expenses.

Regulatory RORAC, the risk-adjusted performance measure based on regulatory risk capital, will probably decline a little in 2023 because of the lower earnings projections.

3 Liquidity and capital adequacy

Based on the position at the end of 2022 and the funding measures planned for 2023, the DZ BANK Group predicts that it will be able to continue maintaining an appropriate level of economic and regulatory **liquidity adequacy** in 2023.

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

As matters currently stand, the DZ BANK Group's **capital adequacy** will continue to be assured for 2023 from both economic and regulatory perspectives; that is to say, it will continue to have at its disposal the available internal capital and eligible own funds necessary to cover the risks associated with the finance business and other risks arising from the group's business operations. For 2023, this takes into account the introduction of the sectoral systemic risk buffer of 2 percent of risk-weighted assets for domestic loans secured by residential real estate and the raising of the countercyclical capital buffer rate for Germany to 0.75 percent. These capital buffers need to be met entirely from 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 2023, a high priority will once again be given to strengthening the capital base in order to ensure stable capital ratios.

For 2023, DZ BANK anticipates that the **common equity Tier 1 capital ratio** of the DZ BANK Group will be strengthened significantly as a result of the introduction of the IFRS 17 accounting standard in the R+V operating segment with effect from January 1, 2023. One of the main changes stemming from application of these new accounting rules for the insurance industry is that not only the assets but now also the equity and liabilities of the R+V operating segment will be measured at fair value, which means that the temporary valuation effects that led to a fall in the DZ BANK Group's common equity Tier 1 capital ratio in 2022 owing to the change in interest rates should be largely cancelled out again. Overall, DZ BANK is aiming for a common equity Tier 1 capital ratio of above 14 percent in 2023.

Further information on capital adequacy can be found in the risk report (chapter VII.8).

4 Operating segments in detail

4.1 BSH

After a boom lasting many years, the rise in lending rates and construction prices is likely to once again take its toll on demand for residential real estate in 2023. Following the sharp increase in lending rates in 2022, experts at the Institut der Deutschen Wirtschaft (IW) [German Economic Institute] predict that the situation will ease slightly in 2023, with rates expected to rise only moderately. On the supply side, construction activity is likely to remain muted owing to shortages of materials and labor. The Zentralverband des Deutschen Baugewerbes e. V. (ZDB) [German Construction Confederation] is therefore forecasting the completion of just 245,000 homes in 2023, compared with 280,000 in 2022.

Cost continues to be a major stumbling block when deciding whether to improve the energy efficiency of a residential property. However, the decline in construction activity and persistently high energy prices are likely to push householders toward modernization in 2023, providing further momentum for energy efficiency measures. Building societies are helping their customers to save up specifically so that they can afford to invest in boosting the efficiency of their homes. Two-thirds of home savings in Germany are plowed into real estate, for example to update the heating technology or the roof.

Although the economy is expected to soften, the labor market will probably remain robust in 2023. On the whole, German households' debt levels are not excessively high. Consequently, a significant increase in payment difficulties among borrowers with building loans is not anticipated in the forecast period.

In the core home finance business, the volume of new business is likely to fall sharply in 2023. This can mainly be explained by the significant volume in the first half of 2022, which will affect the year-on-year comparison. Whereas the 'Schwäbisch-Hall-instantly-available-home finance-loans' are predicted to see a substantial decline, BSH anticipates a sharp rise in respect of home savings loans and bridging loans, albeit from a low level. This also reflects the expected fall in demand for residential real estate and an increase in energy efficiency measures.

As regards home savings, the second core business at BSH, new business is predicted to be slightly below the record level achieved in 2022 because of the rise in interest rates in 2022, combined with the likely continuation of economic uncertainty.

The low level of interest rates in previous years means that the rise in interest rates will not have much of a positive impact on interest income in 2023. However, the rapid rise in interest rates will have a greater effect on the funding that is required – partly for regulatory reasons – in 2023. Moreover, net interest income in 2022 was boosted by a one-off item (see chapter II.3.2.1 'BSH' of the business report). Based on these expectations, **net interest income** is forecast to decline significantly in 2023.

Net fee and commission income is likely to decline sharply in 2023 in percentage terms. A substantial reduction in new home finance business, combined with a small year-on-year decrease in new home savings business, will probably lead to a low level of net fee and commission income being recognized.

Gains and losses on investments are predicted to improve significantly because action taken in response to the surge in interest rates weighed heavily on the figure for 2022 (see chapter II.3.2.1 'BSH' of the business report).

With regard to loss allowances, BSH will benefit from the expected ongoing stability of the labor market, despite volatile economic conditions in Germany. Support measures introduced by the German government will also provide relief. Despite the substantial growth of the lending portfolio in recent years, **loss allowances** will probably be down moderately from their already low level in 2022.

In 2023, **administrative expenses** are projected to rise slightly compared with 2022. The increase is expected to remain significantly below the rate of inflation.

Taking these various factors into account, BSH anticipates that its **profit before taxes** will see a sharp year-on-year fall in 2023.

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

Regulatory RORAC is expected to decline markedly.

4.2 R+V

Given the macroeconomic risk factors and geopolitical tensions, 2023 will be another very challenging year. Nonetheless, R+V – the composite insurer in the cooperative financial network – is planning to continue on its trajectory of profitable growth in 2023. This is based on the WIR@R+V strategic program, which focuses on making customers happy, increasing profitability, and maintaining a strong capital base.

With effect from the 2023 financial year, R+V's underwriting business will be reported in accordance with IFRS 17 Insurance Contracts, which supersedes the transitional standard IFRS 4. Based on the new valuation methods and in accordance with the rules of IFRS 17, the R+V operating segment will use a new structure for its income statement consisting of insurance revenue, insurance service expenses, insurance finance income or expenses, and other components.

In connection with the introduction of this new accounting standard, the existing performance indicators will continue to be used, with adjustments where necessary. Other indicators will be developed over time by looking at the approach taken in the wider insurance industry and based on internal considerations.

For 2023, the IFRS 4-oriented bottom-up planning was used to produce additional planning in accordance with IFRS 17. Overall, a significant improvement in **profit before taxes** compared with 2022 is expected. This improvement can be seen in the original IFRS 4 planning and is due primarily to the predicted normalization of gains and losses on investments held by insurance companies and, to a lesser extent, to the changes under IFRS 17.

Regardless of the IFRS 17 requirements regarding the new structure for the income statement and the notes to the consolidated financial statements, R+V plans to continue disclosing its gross premiums written in the notes as well as its **combined ratio** (total of insurance business operating expenses and claims expenses divided by premiums earned). These continue to be financial key performance indicators and are implicit elements of the insurance revenue and insurance service expenses to be reported under IFRS 17. R+V anticipates a sharp rise in **gross premiums written** in 2023. Based on the fair-value-oriented valuation methods in IFRS 17 for liabilities arising from insurance contracts, the combined ratios reported in the non-life insurance and inward reinsurance businesses are generally expected to improve year on year.

The values budgeted for in the IFRS 4-based bottom-up planning are explained below in order to provide comparability between the forecasts for 2023 and 2022. However, the planning is subject to uncertainty because potential variances from the assumed planning scenario may arise in the current environment.

The **non-life insurance** division is expected to continue generating growth in 2023 and will tackle both existing and new challenges in the context of the Füreinander WIRKEN strategy. The new IT platform PhoeniX, along with interdisciplinary collaboration between agile teams, will support the rapid, customer-oriented development of products.

A slight rise in **gross premiums written** is predicted for 2023. The **claims rate** calculated in accordance with IFRS 4 valuation methods (net expenses for claims divided by net premiums earned) is forecast to hold steady compared with 2022, based on the economic performance assumed in the planning and the level of households' disposal incomes. The **expense ratio** (net insurance business operating expenses divided by net premiums earned) will probably be a little higher than the 2022 level.

Even after the period of low interest rates, business management in the **life and health insurance** division will continue to focus on profitability in 2023.

Gross premiums written in **life insurance** are predicted to be higher than in 2022, which will be a very ambitious achievement in the current environment. A sharp rise in **gross premiums written** is anticipated in **health insurance**.

In the **inward reinsurance** division, the improvement in prices and conditions for reinsurance cover is expected to continue in 2023. The influence of climate change on natural disaster events in recent years has made it clear that the agreements between primary insurers and their reinsurance partners do not yet adequately take into account events with short return periods or the increase in high-volume minor claims. There are also catch-up effects in terms of prices, firstly as a result of the claims incurred in the past in relation to the COVID-19 pandemic and secondly for higher claims in 2022 due to the rise in inflation.

The inward reinsurance division will continue to focus on improving other insurance gains and losses in line with the ongoing adjustment of the division's strategy. Further moderate growth in **gross premiums written** is predicted. From the perspective of expenses under IFRS 4, a slight improvement in the **expense ratio** and an unchanged **claims rate** are expected for 2023.

In 2023, **gains and losses on investments held by insurance companies** (excluding the portion attributable to unit-linked life insurance) are forecast to improve sharply compared with 2022. The rise in interest rates and the setbacks on the stock markets weighed heavily on gains and losses on investments held by insurance companies in 2022.

Regulatory RORAC is projected to rise considerably in 2023 because of the negative earnings figure reported under IFRS in 2022 (sharp rise in interest rates; see chapter II.3.2.2 'R+V' of the business report).

4.3 TeamBank

Government relief measures are stabilizing households' disposal incomes and have helped to avoid a slump in consumer spending. However, the continued potential for escalation of the war in Ukraine and for an energy shortage next winter remains a material economic risk.

Having contracted as a result of the coronavirus pandemic, the consumer finance market returned to growth in 2023. Consumers are showing extremely little inclination to make purchases, whereas the inclination to obtain finance is stable. Overall, therefore, borrowing is expected to fall slightly in the next twelve months. By contrast, consumers' growing preference for digital channels is likely to encourage the use of installment payment plans in e-commerce.

In collaboration with the cooperative banks, TeamBank is aiming in 2023 to generate profitable, sustainable growth at a rate that is higher than that of the market. This should result in a noticeable increase in **net interest income**.

Net fee and commission income is predicted to deteriorate sharply compared with 2022, mainly because of increased bonus payments to partner banks in line with the anticipated higher level of new business and a further 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).

The expense for **loss allowances** is likely to rise significantly in 2023 because of the significant portfolio growth that is targeted and because, compared with 2022, there will be no beneficial impact from reversals resulting from model adjustments.

Administrative expenses are expected to remain steady in 2023.

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

The **cost/income ratio** for 2023 is likely to remain at the same level as that in 2022.

Primarily because of the change in profit before taxes in 2023, there is likely to be a slight decline in **regulatory RORAC**.

4.4 UMH

Economic conditions continue to be shaped by slowing economic growth, high inflation, and more restrictive monetary policy. As a result, the central banks are firmly focused on tackling inflation and are therefore prepared to accept a further weakening of growth. This is likely to continue to be the dominant factor for the global economy in the months ahead in 2023. Geopolitical risks are also weighing heavily on the markets. Against this backdrop, UMH intends to continue generating profitable growth.

As in previous years, this will require UMH to be much more successful than its competitors. It intends to do so by becoming more agile and innovative. In the new environment, companies have to be able to act much more quickly if they are to maintain a strong customer focus. It is more important than ever to respond flexibly and rapidly to requirements. UMH also intends to further improve its efficiency by making greater use of the opportunities presented by digitalization within the cooperative financial network. Achieving these objectives – primarily securing UMH's competitiveness, but also satisfying ongoing regulatory requirements – calls for substantial capital expenditure.

UMH is aiming for a significantly higher level of assets under management by the end of 2023. New business is expected to be on a par with 2022 and, in terms of overall performance, 2023 should see a modest return on investment.

Net fee and commission income is projected to fall slightly in 2023, the main reasons being a sharp decrease in the income expected from performance-related management fees, a small reduction in volume-related net fee and commission income, and a steady level of average 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 improve significantly in 2023, largely because of an anticipated sharp positive change in the effect from the valuation of guarantee commitments for investment products and from a much higher contribution from the investment fund units held as part of own-account investing activities.

Administrative expenses are projected to rise slightly in 2023, including a small increase in staff expenses at UMH. Based on current assessments, general and administrative expenses will rise markedly, largely because of higher expenses for public relations/marketing, consultancy, and rents for land and buildings. Depreciation and amortization charges are expected to increase significantly, mainly in connection with software.

A sharp decrease in **other net operating income** is expected, mainly because of the anticipated decline in income from the reversal of provisions.

Based on the factors described above, **profit before taxes** in 2023 is projected to be significantly higher than in 2022.

From the current perspective, a slight fall in the **cost/income ratio** and a moderate fall in **regulatory RORAC** are expected.

4.5 DZ BANK – CICB

Economic growth in Germany and the rest of the eurozone is heavily influenced by geopolitical developments and has an impact on the banking sector.

Faced with rising inflation rates, the ECB changed tack with its monetary policy in 2022, which affected the financial performance of German banks in various ways. On the one hand, rising interest rates can provide a boost to banks' lending business but, on the other, securities bought in the past – particularly government and corporate bonds – fall in value.

The inflation-related pressure on costs and margins is being compounded by major foreign banks entering the market with innovative products and cost advantages and by fintechs and non-banks offering specialist solutions for corporate banking. This means that banks still need to optimize their cost base in an environment of volatile markets so that they can maintain their profitability in the medium term. As a result, no letup in the economic challenges faced by banks in Germany and throughout Europe is expected in 2023.

Net interest income (excluding income from long-term equity investments) is predicted to fall sharply in 2023. It will therefore be below the 2022 level, which was influenced by a number of factors, including income from the bonus interest under the ECB's TLTRO III program.

The aim will be to achieve further growth in operating income, specifically in net interest income from corporate banking based on a predicted increase in the lending volume. In line with the strategy of the DZ BANK – CICB operating segment, corporate banking will remain the key area of growth.

The planned growth in volume is to be achieved with packages of measures under the 'Verbund First 4.0' strategic program, such as greater customer focus, an improvement in new customer acquisition through greater regionalization, and investment in skills training for employees. The DZ BANK – CICB operating segment also plans to strengthen development lending by involving further development banks and integrating them into a digital sales platform. At the same time, processes will be automated throughout the value chain in order to improve efficiency, resulting in positive effects on net interest income. This includes the plans to largely digitalize the lending and risk processes, particularly in corporate banking.

The DZ BANK – CICB operating segment expects slightly higher margins in some parts of the corporate banking business in 2023 despite a market environment still considered to be competitive.

Net fee and commission income in 2023 is projected to not quite reach the high level of 2022 and will probably decline slightly. This is largely the result of not only rising fee and commission expenses but also the slightly more cautiously estimated service fees in the individual operating units within the DZ BANK – CICB operating segment in response to the general market uncertainty.

The aim is to achieve continued growth of fee and commission income thanks to the strong market positioning in the Transaction Banking business line on the back of the digitalization strategy and thanks to a steady increase in the number of transactions in payments processing and securities services. In payments processing, the trend toward mobile payments is expected to continue, especially in view of advancing digitalization.

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. Operating fee and commission income should be generated from growth driven by strengthening existing customer relationships, signing up new customers, and expanding the product range.

Gains and losses on trading activities will probably deteriorate sharply in 2023. This can be explained by positive valuation effects resulting from the widening of mark-ups for own issues in 2022 (see chapter II.3.2.5 'DZ BANK – CICB' of the business report) and the corresponding pull-to-par effects in 2023.

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 the operating capital markets business, key income drivers in 2023 are likely to include the further exploitation of capital-markets-related cross-selling potential in corporate banking. A higher level of money market income is also expected from the increase in interest rates and the harnessing of potential in the securities business by stepping up collaboration with the cooperative banks in customer business. Trading activity is anticipated to remain at a high level in 2023, with the market as a whole subject to significant volatility.

In 2022, **loss allowances** were affected by additions in connection with the war in Ukraine and the resulting macroeconomic conditions. Loss allowances are likely to rise sharply in 2023 because of the ongoing economic uncertainty and a nevertheless anticipated increase in the lending volume.

In all probability, **administrative expenses** will go up significantly in 2023. General and administrative expenses are expected to increase, partly due to inflation and partly in connection with strategic capital expenditure on IT infrastructure and IT security. Higher contributions to the BVR protection scheme and for banking supervision are also anticipated. Staff expenses are projected to be driven up by strategic investment, primarily aimed at the further expansion of corporate banking in 2023.

In view of these circumstances, **profit before taxes** in the DZ BANK – CICB operating segment is expected to fall sharply in 2023. The main reasons for this decrease are the one-off items recognized in 2022, in particular income from the ECB's TLTRO III programs and the net gain under gains and losses on trading activities (see chapter II.3.2.5 'DZ BANK – CICB' of the business report).

Current assessments show that the **cost/income ratio** will go up sharply in 2023 as a result of the forecast decline in financial performance compared with 2022 and a rise in administrative expenses.

As things stand, **regulatory RORAC** will probably decline markedly in 2023 – despite slightly lower capital requirements – owing to the reduction in profit before taxes.

4.6 DZ HYP

In view of the surge in interest rates and ongoing uncertainty, particularly in connection with the war in Ukraine, 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 fall in demand for commercial real estate as a result of structural change cannot be ruled out. Developments are being closely monitored overall and could have an impact on lending. Moreover, DZ HYP expects real estate to generally remain an attractive investment product, despite the change in interest-rate levels. It also anticipates that the significant decrease in the new-build volume will continue to create substantial pressure from buyers and renters in the real estate markets.

Net interest income in 2023 is projected to be slightly below the 2022 figure. DZ HYP anticipates 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 2022.

Current assessments show that credit spreads in public-sector finance are likely to hold steady or even improve a little in 2023. **Other gains and losses on valuation of financial instruments**, which resulted in a net loss in 2022, will therefore probably move into positive territory in 2023.

A significantly higher expense for **loss allowances** is expected in 2023.

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 up sharply on the corresponding 2022 figure.

Based on a stable operating performance, but particularly because of the decline in net interest income, higher loss allowances, and rising administrative expenses, **profit before taxes** in 2023 is predicted to be significantly below the 2022 figure.

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

Regulatory RORAC is likely to decline markedly due to the fall in profit before taxes forecast for 2023.

4.7 DZ PRIVATBANK

DZ PRIVATBANK's operating business is expected to deliver a positive performance thanks to a predicted rise in volume-related key figures, particularly in connection with the anticipated inflows into assets under management in private banking, and due to the higher level of interest rates.

Net interest income is projected to fall sharply in 2023 because of the absence of one-off income recognized in 2022 (see chapter II.3.2.7 'DZ PRIVATBANK' of the business report).

DZ PRIVATBANK anticipates a small decrease in **net fee and commission income** in 2023 in expectation of higher expenses for the acquisition of asset management mandates. The main value driver is fund volume, and the volume of funds from Union Asset Management Holding AG and third parties is expected to be up significantly at the end of 2023.

Gains and losses on trading activities are forecast to deteriorate significantly in 2023 because customer-driven transaction figures are likely to be lower.

DZ PRIVATBANK's **administrative expenses** are projected to fall slightly in 2023.

Based on current forecasts, a moderate decrease in **profit before taxes** is expected for 2023 as a gloomier market environment is forecast.

The **cost/income ratio** is likely to rise slightly in 2023, while **regulatory RORAC** will probably hold steady at its 2022 level.

4.8 VR Smart Finanz

Despite the challenging economic environment, VR Smart Finanz believes there is potential to significantly expand its finance business in 2023, as it did in 2022. Demand for object finance is expected to grow in view of the rise in asset prices and a persistently high need for investment, particularly in energy efficiency measures and digitalization. 'VR Smart flexibel' provides businesses with a solution with which to cover their growing liquidity requirements, for example due to higher energy prices, increased warehousing costs, and the ending of coronavirus support measures.

VR Smart Finanz intends to respond to the ever-fiercer competition by stepping up its collaboration with the cooperative banks and other sales partners, such as digital financing platform providers. Starting in 2023, VR Smart Finanz's solutions are to be gradually transferred to an API-enabled infrastructure so that new sales partners and sales channels can be integrated more quickly in an automated process. Sustainability-related activities are also to be stepped up. VR Smart Finanz is planning to unlock further sales potential by expanding its omnichannel capabilities and gradually integrating its solutions and digital services into the cooperative financial network's omnichannel platform.

In the context of the growing need for liquidity and finance, the planned initiatives to generate new business growth and accelerate collaboration with the cooperative banks and other partners are likely to result in a strong increase in **net interest income** and 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 significantly in 2023 in line with the planned new business growth. On the basis of a projected moderate rise in **administrative expenses** compared with 2022 and a jump in new business, there should be a noticeable improvement in the **cost/income ratio**.

The developments described above should mean a stable **profit before taxes** and an unchanged level of **regulatory RORAC** in 2023.

4.9 DZ BANK – holding function

Net interest income is predicted to fall markedly in 2023. This forecast is due to growth in the volume of subordinated liabilities and a market-price-driven decrease in the balance of expenses for the funding of long-term equity investment carrying amounts and income from the investment of capital.

Administrative expenses are projected to rise substantially in 2023. This will be driven primarily by the much higher expenses that are expected for the group function, by IT and projects, and by other expenses for the benefit of the group and local cooperative banks.

A significant increase in the **loss before taxes** is forecast for 2023.

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 in which potential income can be unlocked and/or potential cost savings can be achieved.

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

2.1 Potential opportunities from macroeconomic developments

The statements made in the outlook on the expected business performance of the DZ BANK Group in the year ahead are based on the macroeconomic scenario that DZ BANK considers to be the most likely.

If economic conditions in the relevant markets are better than expected, opportunities may arise for the DZ BANK Group. In a positive scenario such as this, supply-side shortfalls in the global markets would be alleviated by a further lessening of global supply chain disruptions – partly as a result of China abandoning its zero-COVID policy and the COVID-19 pandemic ending – combined with an easing of geopolitical tensions and the related trade disputes between the United States and China. The recession that is considered imminent for the major industrialized countries would be milder and shorter-lived than expected, or even avoided altogether, provided that commodity prices and energy prices settle at a lower, predictable level, potentially supported by a foreseeable end to the war in Ukraine. Under the continuing assumption of moderate wage increases despite the remarkable stability of labor markets to date, the major central banks could potentially conclude their cycle of interest-rate hikes in 2023 and leave key interest rates at a sufficiently high level that real interest rates become restrictive. This would bring the goal of a return to price stability another step closer.

All of the positive factors outlined above are highly unlikely to materialize together. From DZ BANK's perspective, however, even the occurrence of individual factors would create an environment for the financial sector that would probably benefit the individual business models and the financial position and financial performance of the DZ BANK Group as a whole. Stable conditions in the financial and capital markets, combined with a steeper yield curve, would have a positive impact on the net interest income and net fee and commission income generated from customer business and on net income from insurance business. In particular, an assumed economic recovery could potentially limit the net expense recognized for loss allowances and thereby help to increase the Group's net profit.

2.2 Potential opportunities from regulatory initiatives

Regulatory changes and initiatives may provide banks and insurance companies with the opportunity to offer products or services that are better tailored to customers' needs. For example, sustainability aspects are becoming increasingly important for many customers when making purchases and investments. Initiatives at European level, such as sustainable finance strategies and proposals for an EU green bond standard, underline the significance of sustainability aspects for the financial sector. Further development of these initiatives may lead to customers and the markets participating in sustainable finance initiatives on a greater scale, which would provide banks and insurance companies with the opportunity to strengthen the unique selling points of their products and services and to unlock potential growth in the sustainable finance business. This would have a positive impact on, for example, net fee and commission income and net interest income.

2.3 Potential opportunities from strategic initiatives

The strategic focus in the DZ BANK Group (see chapter I.1 in 'DZ BANK Group fundamentals' in this (group) management report) 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 develops and implements **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 potential to reinforce their future viability and profitability. The aim is to continue to develop and take action in these areas of collaboration over the coming years.
- At the third level, each individual entity in the DZ BANK Group pursues its own strategic initiatives. One example is the 'Verbund First 4.0' strategic program at DZ BANK, which is designed to ensure the organization's resilience for the future. The program is aimed at improvements in three key areas: market presence (network-focused, customer-oriented, and digital), control and production processes (efficient, effective, and focused), and corporate culture (performance-driven and integrative). The 'Verbund First 4.0' strategic program is updated continually in line with requirements. This transformation is being driven predominantly by key topics such as sustainability, digitalization, and employer branding.

BSH describes its long-term objective through its vision of being the leading product and solutions provider in the homes and housebuilding cooperative ecosystem. It intends to remain the no. 1 in the home savings market and, together with the cooperative banks, to become the no. 1 in home finance. In addition, it is making inroads into new areas of growth for homes and housebuilding by maintaining a firm focus on customers and facilitating close collaboration between the cooperative banks and BSH's field staff on marketing. BSH is a center of excellence for consumer home finance, supporting the cooperative banks and playing an important part in strengthening the cooperative financial network's market position and shining the spotlight on significant topics for the future.

DZ HYP is forging ahead with digitalization in many areas of its business. In consumer home finance, it is further expanding its role as a decentralized product supplier for the banks in the cooperative financial network. Competitive products, rapid processes, and a risk-adjusted pricing model give banks scope to generate income through fees and commissions and through cross-selling options. The focus up to the end

of 2023 is the multi-stage expansion of integration with digital platforms so that additional customer groups can be targeted with best-in-class products and services. The main aspects of DZ HYP's FK Digital project in its corporate customer business are deploying data optimally within processes, improving interfaces, unlocking potential for greater efficiency and, at the same time, catering to the current and future requirements of market players and supervisory authorities alike. This should also help to further optimize the bank's streamlined, profitable approach incorporating intensive customer relationship management. The bank has also drawn up a strategy for implementing the DZ HYP cloud infrastructure.

- R+V's vision is to be the cooperative center of excellence for insurance, healthcare cover, and retirement pensions, working closely with its sales partners. Its strategic program, 'WIR@R+V', is designed to boost earnings power by putting a greater emphasis on profitability so that it can continue to make a significant contribution to the success of business in the cooperative financial network. R+V also remains firmly focused on its growth strategy of strengthening areas of importance for the future, namely healthcare, membership, sustainability, and the omnichannel approach. By delivering a consistently robust business performance, it can maintain sufficient financial strength to be able to remain a reliable partner and deliver on its value propositions in the long term.

Positive effects from the strategic programs and initiatives could have a beneficial impact on, for example, net fee and commission income, net interest income, or administrative expenses.

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. Based on the requirements set out in GAS 20.A1.3, this risk report is structured according to risk type. The chapters about the individual risk types are preceded by general information and information relating to all risk types.

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 of the DZ BANK Group and DZ BANK, 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 chapters VII.14 and VII.20 'Reputational risk' and in chapters VII.15 and VII.21 'Operational risk'.

DZ BANK Group

2 Summary

2.1 Risk management system

2.1.1 Management units and sectors

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). Where a subsidiary acts as the parent company of a subgroup, the entire subgroup comprising the parent company plus its subsidiaries and second-tier subsidiaries is considered to be the management unit.

The management units represent the operating segments of the DZ BANK Group and form the core of the financial services group. All entities in the DZ BANK Group are integrated into the groupwide risk management system. Risk is managed groupwide on a consolidated basis. From a risk perspective, the 'DZ BANK' management unit equates to the central institution and corporate bank operating segment and the holding function.

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.

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

Bank sector:

- DZ BANK
- BSH
- DZ HYP
- DZ PRIVATBANK
- TeamBank
- UMH
- VR Smart Finanz

Insurance sector:

- R+V

Following an entry in the commercial register on August 12, 2022, **DVB** was retrospectively merged into DZ BANK with effect from January 1, 2022 and therefore is no longer a management unit. The risks relating to DVB have passed to DZ BANK and have been integrated into DZ BANK's management processes and its internal and external reporting.

DZ BANK and **DZ HYP** have elected to apply the **liquidity waiver** pursuant to article 8 CRR. 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.

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.

2.1.2 Fundamental features of risk management

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.

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 main elements of the risk management system are 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 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 strategies and have been approved by the Board of Managing Directors. The risk appetite statement contains risk policy guidelines and risk strategy guidance that are applicable throughout the group. It also sets out quantitative requirements reflecting risk appetite.

The DZ BANK Group strives to avoid **concentrations of risk** that are not the conscious result of business policy.

The methods used to **measure risk** are an integral element of the risk management system. They are regularly reviewed, refined where necessary, and adapted to changes in internal and external requirements. Risk model calculations are used to manage the DZ BANK Group.

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.

2.1.3 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, the minimum requirement for own funds and eligible liabilities (MREL), and the subordinated MREL ratio.

2.2 Risk factors and risks

The entities in the DZ BANK Group are exposed to a number of risk factors. These include adverse factors concerning the entity's environment that either affect multiple types of risk (general risk factors) or are typical of specific types of risk (specific risk factors). Disclosures on **general risk factors** can be found in chapter VII.4. The **specific risk factors** are shown in the risk-type-specific chapters of this risk report.

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 there correspond to the outcome of the risk inventory check 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 SECTOR¹

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)	<ul style="list-style-type: none"> – 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 of losses in connection with the recovery of loans, advances, receivables, or collateral	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 policy divergence in the eurozone – Challenging markets in the cruise ship business – Macroeconomic conditions – Correction in real estate markets – Physical climate-related and environmental 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
	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	<ul style="list-style-type: none"> – 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: – A further unexpected rise in interest rates – Risks to the global economy
	Technical risk of a home savings and loan company ² – New business risk – Collective risk	<ul style="list-style-type: none"> – 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) 	<ul style="list-style-type: none"> – Decline in new business – Changed customer behavior (unrelated to changes in interest rates)
	Business risk	Risk that financial performance is not in line with expectations, and this is not covered by other types of risk	<ul style="list-style-type: none"> – Costs of regulation – Competition based on pricing and terms
	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	<ul style="list-style-type: none"> – Decrease in new and existing business – Backing of stakeholders is no longer guaranteed – Materialization of the risks assessed in connection with ESG risks
Non-financial risks	Operational risk	Risk of losses from human behavior, technological failure, weaknesses in process or project management, or external events	<ul style="list-style-type: none"> – 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						
		DZ BANK	BSH	DZ HYP	DZ PRIVATBAN K	TeamBank	UMH	VR Smart Finanz
Risk management KPIs disclosed								
– Liquid securities – Unsecured short-term and medium-term funding – Minimum liquidity surplus – LCR – NSFR	Chapter VII.7.2.6 Chapter VII.7.2.6 Chapter VII.7.2.7 Chapter VII.7.3.3 Chapter VII.7.3.4	•	•	•	•	•		•
– Lending volume – Risk capital requirement for credit risk	Chapters VII.9.6 and VII.9.9 Chapter VII.9.10	•	•	•	•	•		•
– Carrying amounts of investments – Risk capital requirement for equity investment risk	Chapter VII.10.5 Chapter VII.10.5	•	•	•		•	•	•
– Value-at-risk for market risk – Risk capital requirement for market risk	Chapter VII.11.7.1 Chapter VII.11.7.2	•	•	•	•	•	•	•
Risk capital requirement for the technical risk of a home savings and loan company	Chapter VII.12.5		•					
Risk capital requirement for business risk	Chapter VII.13.6	•		•	•	•		•
		•	•	•	•	•	•	•
– Losses from operational risk – Risk capital requirement for operational risk	Chapter VII.15.7 Chapter VII.15.8	•	•	•	•	•	•	•

Management unit disclosures in the risk report:

	Quantitative and qualitative disclosures		Quantitative disclosures		Not relevant
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FIG. 4 – RISKS IN THE INSURANCE OPERATING SEGMENT AND SECTOR

Risk type	Definition	Risk factors	Risk management KPIs disclosed		
RISK COVERED BY CAPITAL PURSUANT TO SOLVENCY II					
Financial risks	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	<ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> – Claims rate trend in non-life insurance – Overall solvency requirement 	<ul style="list-style-type: none"> Chapter VII.17.7 Chapter VII.17.8
	– 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	<ul style="list-style-type: none"> – Higher drawdown of benefits by health insurance policyholders – Increase in claim events as a result of pollution and climate change 		
	– 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	<ul style="list-style-type: none"> – 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 		
	Market risk – Interest-rate risk – Spread risk – Equity risk – Currency risk – Real-estate risk	Risk arising from fluctuation in the level or volatility of market prices of assets, liabilities, and financial instruments that have an impact on the value of the assets and liabilities of the entity	<p>It becomes difficult to generate a guaranteed rate of return because of a narrowing of spreads on investments</p> <p>The fair values of investments fall because of</p> <ul style="list-style-type: none"> – a further unexpected rise in interest rates – a widening of spreads on investments – the issuer's transition risk 	<ul style="list-style-type: none"> – Lending volume – Overall solvency requirement 	<ul style="list-style-type: none"> Chapter VII.18.4 Chapter VII.18.5
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	<ul style="list-style-type: none"> – Lending volume – Overall solvency requirement 	Chapter VII.19.4	
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	<ul style="list-style-type: none"> – Decrease in new and existing business – Backing of stakeholders is no longer guaranteed – Materialization of the risks assessed in connection with ESG risks 		
	Operational risk	Risk of losses arising from inadequate or failed internal processes, personnel, or systems, or from external events	<ul style="list-style-type: none"> – 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 ICT 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	Chapter VII.21.4
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	Chapter VII.22	

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

2.3 Risk profile and risk appetite

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') determine the risk profile. 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 chapters 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, 2022	Dec. 31, 2021	2022	2021	2022	2021
LIQUIDITY ADEQUACY						
DZ BANK Group (economic perspective)						
Minimum liquidity surplus (€ billion) ¹	14.3	19.4	4.0	4.0	0.0	0.0
DZ BANK banking group (normative perspective)						
Liquidity coverage ratio – LCR (percent)	145.9	147.7	110.0	110.0	100.0	100.0
Net stable funding ratio – NSFR (percent)	122.3	127.1	105.0	105.0	100.0	100.0
CAPITAL ADEQUACY						
DZ BANK Group (economic perspective)						
Economic capital adequacy (percent)	220.8	210.7	120.0	120.0	100.0	100.0
DZ BANK financial conglomerate (normative perspective)						
Coverage ratio (percent)	152.1	150.8	110.0	110.0	100.0	100.0
DZ BANK banking group (normative perspective)						
Common equity Tier 1 capital ratio (percent) ²	13.7	15.3	10.0	10.0	9.0	9.0
Tier 1 capital ratio (percent) ²	15.2	16.8	11.9	11.9	10.8	10.8
Total capital ratio (percent) ²	18.0	18.5	14.3	14.3	13.2	13.3
Leverage ratio (percent) ²	4.7	7.3	4.0	3.5	3.0	3.3
MREL ratio as a percentage of risk-weighted assets ^{3, 4}	38.3	37.3	26.8		25.1	
Subordinated MREL ratio as a percentage of risk-weighted assets ³	28.5	26.5	25.5		23.8	

Not available

¹ The measured value relates to the stress scenario with the lowest minimum liquidity surplus. The internal threshold value relates to the observation threshold.

² The external minimum targets are the binding regulatory minimum capital requirements. Further details can be found in chapter VII.8.3.3.

³ Calculated as the ratio of the total of regulatory own funds and eligible bail-in-able liabilities to the total risk exposure amount (TREA).

⁴ The calculation of the MREL ratio was changed with effect from January 1, 2022. This means that the figure as at December 31, 2021 differs from the corresponding disclosures in the 2021 risk report. Details on the minimum capital requirements can be found in chapter VII.8.3.3.

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.

The DZ BANK Group remained within its economic **risk-bearing capacity** in 2022 and also complied with regulatory requirements for capital adequacy on every reporting date.

3 Fundamental principles of risk management

3.1 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 European Central Bank (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 2022 and submitted to BaFin.

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 2022 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 2022 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.

3.2 Risk culture

The DZ BANK Group's risk culture is shaped by the high degree of responsibility assumed by the cooperative financial network for its members and for society, by the values of sustainability, stability, and diversity, and by a strong culture of dialogue. The priority for the day-to-day handling of risk is compliance with strategic and associated operating requirements.

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.

3.3 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 within their risk capacity when implementing their business models and business objectives. Risk capacity is the maximum risk that the DZ BANK Group can take on based on its capital adequacy, liquidity adequacy, capacity for risk management and control, and regulatory restrictions. Risk capacity is therefore largely determined by the DZ BANK Group's available internal capital, own funds, and available liquid assets. 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 overall risk report is used to monitor the internal threshold values.

3.4 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 Risk Management & Services, and Group Finance divisions in close consultation with other relevant divisions at DZ BANK and its subsidiaries.

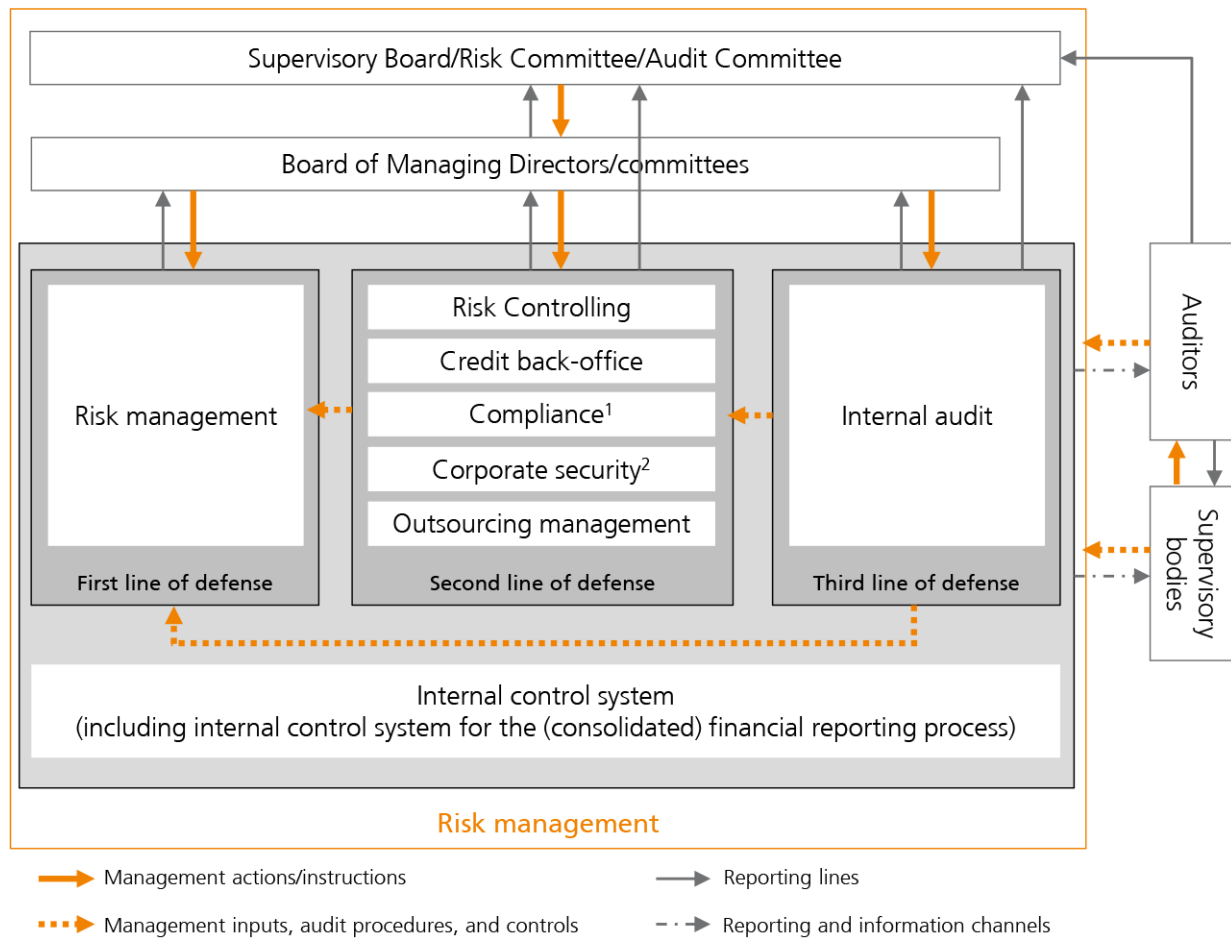
The risk strategies are described in the chapters covering the individual risk types in this risk report.

3.5 Risk-oriented corporate governance

3.5.1 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. These rules do not limit the data protection officers' freedom to operate independently.
- The tasks listed are primarily carried out by the Group Risk Controlling, Group Risk Management & Services, Credit, and Compliance divisions. They are also part of the remit of the Group IT Governance department.
- The Group Risk Controlling, Group Risk Management & Services, and Credit divisions 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'.

3.5.2 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.

3.5.3 Risk control

The Group Risk Controlling and Group Risk Management & Services divisions, which form DZ BANK's central risk control function, are 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. The risk control function lays down the fundamental requirements for the risk measurement methods to be used throughout the group and coordinates implementation with the risk control functions in the other management units. This structure is designed to ensure that risk is managed consistently throughout the group. DZ BANK's risk control function also draws up groupwide rules for the credit risk processes.

Both at DZ BANK and in the other management units, the risk control function is responsible for the transparency of risks assumed and aims to ensure that all risk measurement methods used are up to date. In cooperation with the other management units, the risk control function at DZ BANK therefore prepares groupwide **risk reports** covering all material types of risk based on specified minimum standards using methods agreed between the management units. The risk reports are compiled for the Supervisory Board and the Board of Managing Directors of DZ BANK and for the other management units.

The risk control units in the management units **monitor** compliance with the limits defined for the minimum liquidity surplus and with the entity-related limits that have been set based on the risk capital allocated by DZ BANK.

3.5.4 Credit back-office division

The Credit divisions of the entities in the Bank sector form the back office within the meaning of MaRisk BA. 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.

3.5.5 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), there is a single compliance framework for the main entities in the DZ BANK Group. This framework lays down rules on cooperation between the individual compliance functions and sets out their authority and responsibilities. The compliance framework comprises the compliance policy of the DZ BANK Group and compliance standards. The compliance policy sets out 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. Special circumstances may arise because R+V is subject to different legal and regulatory requirements. The DZ BANK Group's compliance framework is reviewed annually to check that it is up to date.

Further disclosures relating to compliance risk can be found in chapters VII.15.5.1 and VII.21.3.1.

Code of conduct

The risk culture principles (see chapter VII.3.2) 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 comply with DZ BANK's standards on preventing money laundering, the financing of terrorism, and other criminal offenses where required by law. The measures required by the German Anti-Money Laundering Act (GwG) have been put in place and implemented. They are reviewed regularly to check that they are up to date and, if necessary, amended. 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. The data protection officers required by law have been appointed and their names have been submitted to the competent data protection authorities. Standard data protection principles have been issued within the DZ BANK Group. 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. The Data Protection Officers working group in the DZ BANK Group generally meets three times a year. The working group deals with current issues relating to data protection.

3.5.6 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 aim of information security is to safeguard the confidentiality, integrity, authenticity, and availability of the data and information used in business processes. Suitable measures must be taken to adequately protect this data and information against unauthorized access, disclosure, or modification and against loss or theft.

To manage information security, the **DZ BANK Group** has established a groupwide information security management system (Group ISMS) based on ISO/IEC 27001:2013.

DZ BANK has implemented an information security management system (ISMS). The rules that it contains, along with the methodological framework that it provides, are also based on the ISO/IEC 27001:2013 standard. The ISMS is designed to ensure the confidentiality, integrity, availability, and authenticity of the data and information (information assets) used in DZ BANK's core processes, management processes, and support processes. 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 chapters VII.15.5.3 and VII.21.3.2.

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 chapters VII.15.5.4 and VII.21.3.3.

3.5.7 Outsourcing management

At DZ BANK, the Central Outsourcing Management unit acts as the central point of contact for all issues relating to risk management for 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 chapters VII.15.5.5 and VII.21.3.4.

3.5.8 Control functions

Internal audit

The internal audit departments of the management units are responsible for control and monitoring tasks. Independently of individual processes and with a focus on risk, they review and assess compliance with statutory and regulatory requirements and the effectiveness and appropriateness of risk management in general and the internal control system in particular. They also check that all activities and processes are carried out properly, regardless of whether they are outsourced or not. The internal audit departments also ensure that problems identified in audit findings are 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. In addition, the Audit Committee regularly examines the effectiveness of the internal control system, risk management system, and internal audit. It passes on important information to the other Supervisory Board members in the Audit Committee Chairman's reports at Supervisory Board meetings and by distributing the minutes from Audit Committee meetings to the other Supervisory Board members.

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.

3.5.9 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 chapter VII.3.5.10 below, is a sub-system of the bank-wide internal control system.

3.5.10 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.

3.6 Risk management tools

3.6.1 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.

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 chapter VII.9.6.2.

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**. 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.

FIG. 7 – RISK-BEARING LINE ITEMS IN THE CONSOLIDATED FINANCIAL STATEMENTS¹

	BANK SECTOR										INSURANCE SECTOR											
	Credit risk			Market risk							Technical risk of a home savings and loan company	Actuarial risk			Market risk							
	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		Asset-management risk	Life	Health	Non-life	Interest-rate risk	Spread risk	Equity risk	Currency risk	Real-estate risk	Counterparty default risk	Operational risk
Consolidated financial statements																						
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															•	•	•	•	•	•	•	
Property, plant and equipment, investment property, and right-of-use assets				•																		
Other assets	•		•									•	•	•							•	
Financial guarantee contracts and loan commitments	•				•				•													
Risk-bearing assets																						
Deposits from banks					•				•													•
Deposits from customers					•				•													•
Debt certificates issued including bonds					•	•	•	•														
Derivatives used for hedging (negative fair values)			•		•	•	•	•	•	•	•											
Financial liabilities held for trading			•		•	•	•	•	•	•												
Risk-bearing liabilities																						
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 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 chapter VII.7.2.6.

The link between available internal capital, which is used to determine economic capital adequacy, and the consolidated balance sheet is covered in chapter VII.8.2.1.

3.6.2 Measurement of risk and risk concentrations

Framework

Risk management in the DZ BANK Group is based on a **resource-oriented perspective of liquidity and capital**. 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 perspectives within the ILAAP and ICAAP.

A distinction is also made between **economic and normative 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).

R+V (Insurance sector) is not material with regard to liquidity risk in the DZ BANK Group. 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.

Normative perspective

The normative perspective is a forward-looking multi-year analysis of regulatory KPIs for liquidity adequacy and capital adequacy that are used to manage the DZ BANK banking group and its entities. It comprises the following management dimensions: monitoring of the actual figures for regulatory KPIs, liquidity planning, funding planning, capital planning, and adverse stress tests.

3.6.3 Stress tests

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

3.6.4 Limitation principles

The DZ BANK Group has implemented a system of limits to ensure that it retains an adequate level of liquidity and maintains its risk-bearing capacity. A system of limits and pre-set threshold values aims to ensure that the **liquidity surplus** at the level of the DZ BANK Group does not become a shortfall and 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 undergo monitoring.

3.6.5 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. 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 uses derivatives to hedge **interest-rate risk**. In 2022, DZ BANK used micro hedges between securities in the liquidity reserve and derivatives used for hedging for the first time in order to account for economic hedging in accordance with the provisions of section 254 HGB. Internal hedging instruments are included by means of the deputization principle.

3.6.6 Risk reporting and risk manual

The quarterly **overall risk report** includes the risks throughout the group identified by DZ BANK. Together with the **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.

3.6.7 Risk inventory and appropriateness test

Every year, DZ BANK draws up a **risk inventory**, the objective of which is to identify the types of risk that are relevant for the DZ BANK Group and assess the materiality of these risk types. According to need, a risk inventory check may also be carried out at other times in order to identify any material changes in the risk profile during the course of the year. A materiality analysis is carried out for those types of risk that could arise in connection with the operating activities of the entities in the DZ BANK Group. The next step is to assess the extent to which there are concentrations of risk types classified as material in the Bank sector, the Insurance sector, and across sectors.

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.

4 General risk factors

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

4.1 Regulatory risk factors

DZ BANK and its subsidiaries are exposed to changes in the regulatory environment. This applies especially to regulation of the financial services sector, which is undergoing rapid change. The term 'regulation' refers to all aspects of intervention in the financial services industry involving the imposition of rules. Regulation may involve standards related to supervisory law, commercial law, capital markets law, company law, or tax law. Changes in the regulatory environment could have a negative impact on the business activities of DZ BANK and its subsidiaries.

4.1.1 Regulatory capital buffers

BaFin decided to introduce a sectoral systemic risk buffer of 2.0 percent of risk-weighted assets for domestic loans secured by residential real estate and to raise the countercyclical capital buffer rate for Germany from 0.0 percent to 0.75 percent. Since February 1, 2023, these two capital buffers are to be met entirely from common equity Tier 1 capital and result in higher minimum requirements for the common equity Tier 1 capital ratio, Tier 1 capital ratio, and total capital ratio.

All credit institutions in the Bank sector are affected by the countercyclical capital buffer. The sectoral systemic risk buffer affects DZ BANK, BSH, and DZ HYP. The two capital buffers also apply at the level of the DZ BANK banking group.

There is a risk that, in the face of higher minimum requirements, it is not possible to obtain the necessary additional own funds needed to comply with the stricter requirements, it is possible to obtain them only at increased cost, or existing risk-weighted assets 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.

4.1.2 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 have been driving the replacement of key 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. The Libor settings in Swiss francs, pound sterling, Japanese yen, and euros were discontinued at the end of 2021. The administrator provided a 'synthetic' (non-representative) Libor for the Japanese yen and pound sterling. Publication of the setting for Japanese yen was discontinued at the end of 2022. Publication of the setting for pound sterling will be discontinued at the end of March 2023 for the 1-month and 6-month tenors and at the end of June 2023 for the overnight and 12-month tenors. For the 3-month tenor, publication is likely to be discontinued at the end of March 2024. However, the synthetic Libor can only be used for existing business that is difficult to amend, known as the 'tough legacy'.

With effect from June 30, 2023, US dollar Libor will be classed as non-representative and subsequently will be discontinued by the administrator. From January 1, 2022 to June 30, 2023, US dollar Libor will continue to be available, primarily for existing business. The administrator is expected to provide a 'synthetic' (non-representative) Libor for the US dollar until the end of September 2024. 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. 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. Under the IBOR reforms, these new risk-free interest-rate benchmarks were designated as the replacements for the previous interest-rate benchmarks, such as EONIA and Libor. The changeover of the transactions that previously referenced EONIA was completed as at December 31, 2021. Business continuity is assured due to Implementing Regulation (EU) 2021/1848 dated October 21, 2021, which specifies €STR plus a spread adjustment of 8.5 basis points as the replacement for EONIA. The changeover of individual transactions referencing non-US dollar Libor was also completed. The deadline for the changeover of the transactions referencing US dollar Libor is June 30, 2023.

If the changeover of the relevant contracts to the successor interest-rate benchmarks for US dollar Libor is not completed by the aforementioned deadlines, or the organizational and technical requirements are not implemented in time, 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, other interbank rates 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. There are plans to extend the transitional period until December 31, 2025.

4.2 Macroeconomic risk factors

4.2.1 Further escalation of the war in Ukraine; energy shortages

At present, the war in Ukraine is casting a shadow over the outlook for the global economy. Western countries imposed sanctions on Russia at an early stage and have gradually tightened them. The effects are being felt not only by Russia. The entire global economy is suffering from steep increases in the cost of commodities and high energy prices. Germany and other European Union (EU) countries are particularly badly affected because of their dependence on Russian energy supplies. As it is impossible to predict how the war will progress in Ukraine, there is also a risk that Russia will deliberately seek to escalate the conflict further.

Supplies of gas from Russia to Europe have been gradually reduced, and cut off completely to Germany and some other countries. This has resulted in high energy prices, putting a huge strain on the health of the economy as a whole. In the event of problems with the supply of liquefied petroleum gas or if next winter is particularly cold, gas prices may go up once more. There would also be the risk of a shortage of gas next winter until temperatures start to rise again in spring 2024. This would likely have a further severe impact on growth and inflation, lead to restrictions on supply – particularly for industry – and trigger an increase in company insolvencies.

4.2.2 A further unexpected rise in interest rates

Market interest rates rose significantly across all maturity periods in the reporting year as a result of the shift in monetary policy introduced in the United States by the Federal Reserve Board and the tightening implemented by the ECB. After the low-interest-rate environment of previous years, this abrupt change, with its potentially ongoing interest-rate rises, poses a challenge to the Bank sector and the Insurance sector. In 2023, key interest rates in the United States and eurozone are expected to continue rising initially. The cycle of interest-rate hikes will then come to an end, provided that the Federal Reserve Board and ECB are satisfied that they have inflation under control. If this is not the case and the central banks feel compelled to continue raising interest rates beyond the levels priced in by the markets, market interest rates across all maturity periods are likely to climb even higher.

In the **Bank sector**, any further rapid rise in interest rates could trigger market risk. Any resulting fair value losses on BSH's securities portfolios could impact on capital. Liquidity problems would arise due to cash outflows in collective building society operations. In the **Insurance sector**, a rise in interest rates would result in fair value losses on investments. There is also a risk that policyholders could increasingly allow existing life insurance policies to lapse and that new business declines.

4.2.3 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.

In 2022, the eurozone and United States recorded their highest inflation rates in decades. This can be explained by low prices in the previous year and pent-up demand for consumer products and capital goods as a result of the COVID-19 pandemic, the consequences of highly expansionary fiscal policy in the United States and, in particular, rising energy prices worldwide and problems in global supply chains. The war in Ukraine further accelerated the increase in energy and food prices. Shortages of some products as a result of the supply bottlenecks – a situation that was exacerbated by the pandemic – may still trigger substantial price increases for manufacturers, some of which will be passed on to consumers.

This means that there is a risk that the currently elevated level of inflation may not be a temporary phenomenon and may persist 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, made consumers reluctant to spend and wages simultaneously rose as this would result in a wage/price spiral. This could ultimately lead to a period 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.

Stagflation may impact on **credit risk** in the Bank sector and on **market risk** in the Insurance sector, in particular. As at the reporting date, no stagflation-related increase in these risks was evident.

4.2.4 International trade disputes and supply chain problems

For global trade, there continues to be a risk of a renewed escalation of **trade disputes between the United States, China, and Europe** in addition to the effects of disrupted supply chains described in chapter V.1 of the outlook. This could have negative consequences for the global economy, and for the export-dependent German economy in particular. The sanctions imposed on Russia by western countries create further potential for tension between the EU and the United States in respect of countries that either fail to implement these sanctions or only partially impose them, for example China.

The considerable **vulnerability of international supply chains** to specific critical events has become evident in recent years. Examples include the blocking of the Suez Canal by a ship that became stuck, the war in Ukraine, and COVID-19-related stoppages in production and logistics in China. In particular, the Chinese government's restrictive COVID-19 policy led to extensive restrictions on production both in China and for manufacturers in

industrialized countries that make use of Chinese base products. Beijing abruptly pivoted away from its existing COVID-19 strategy at the start of January 2023, lifting all restrictions on entering and leaving China. This has created greater uncertainty about the future course of the pandemic in the country, especially as worker absences attributable to waves of infection may deepen the supply chain problems and increase the risks for the global economy.

For companies in Germany, restrictions on global trade may, on the one hand, lead to higher import prices and a shortage of base products, and on the other, cause a decline in exports. A reduction of the global trade volume may have a negative impact on **credit risk** in the Bank sector (chapter VII.9.3.2) and on **market risk** in the Insurance sector (chapter VII.18).

4.2.5 Economic policy 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. Despite the forecast decrease in government debt – as a percentage of gross domestic product (GDP) – in 2023 and 2024, it will remain at a high level. This means that Italy will probably continue to have very high funding requirements. However, the return to rising interest rates has pushed up Italy's funding costs substantially. A reduction in the ECB's bond purchases or the absence of progress with eliminating government debt could make it much more difficult for Italy and its banks to access the capital markets. Although Italy reached the 45 milestones required for a further payment from the EU recovery fund, it remains to be seen whether the new government in Rome will continue to implement reforms and projects designed to stimulate growth.

The COVID-19 pandemic substantially exacerbated the existing difficulties in **Spain**. Its already considerable level of government debt came under even more pressure due to increased government spending as part of its fiscal support measures, although COVID-19 support provided by the EU helped to ease the situation. Growing inflationary pressures are slowing down the real economy in an environment of global uncertainty, which may have an adverse impact on the already high unemployment rate. This in turn would create slightly gloomier prospects for the economy as a whole. The proportion of non-performing loans in the banking sector, which remains high compared with other EU countries, may therefore rise even higher in the medium term. The tightening of monetary policy by the ECB is also making it harder for Spain to reduce its government debt. The tensions in Catalonia are a further source of risk 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. However, higher interest rates, inflationary pressures, and the currently challenging external environment are holding back economic growth and therefore making it more difficult to reduce debt levels as planned. 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. 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. This may change as a result of the tightening of monetary policy and the expiry of the pandemic emergency purchase program. The ECB has developed the transmission protection instrument so that it can intervene in the markets in order to counteract any excessive rise in risk premiums. However, if it is unable to do so, the risk premiums of more highly indebted member states could increase sharply, which would make it considerably more difficult for these countries to obtain funding through the capital markets.

The effects of economic policy divergence in the eurozone particularly impact on **credit risk** in the Bank sector and on **market risk** in the Insurance sector. Details can be found in chapter VII.9.3.2 and chapter VII.18.4.3.

4.2.6 Correction in real estate markets

Germany's prolonged real estate cycle, which had continued to push up property prices even after the outbreak of the COVID-19 pandemic despite warnings about over-inflated valuations, came to a temporary halt in 2022. In the face of already high price levels, the rises in inflation and home-finance interest rates observed in 2022 increased the risk of a correction in real estate markets. Rising interest rates impose a greater financial burden on real estate buyers, while inflation reduces the income that households and investors have available for repayments.

In the commercial real estate market, project developers and property developers are especially affected by the increasing costs of materials and energy as well as by disrupted supply chains. There continues to be uncertainty about the effect of economic trends and inflation and about the process of adjustment in the wake of the pandemic. This uncertainty particularly affects hotel real estate, office real estate, department stores, shopping malls, and inner-city commercial properties that are mainly used for retail/wholesale businesses not offering day-to-day essentials.

These developments mainly relate to **credit risk** in the Bank sector and **market risk** in the Insurance sector. No material impact on the risk key figures was evident as at the reporting date.

4.2.7 Geopolitical tensions

Some regions of the world are experiencing conflict that extends beyond their borders and is resulting in tensions between superpowers. This is particularly true of Asia.

The protracted dispute on the Korean peninsula flares up repeatedly due to **North Korea's** nuclear weapons program and its many military provocations, for example missile testing off the **coast of South Korea**. Any escalation would directly affect the interests of the superpowers China and the United States and could potentially widen into a conflict with global consequences.

Attention has recently shifted back to the dispute between **China and Taiwan**, in which Taiwan believes it is at constant risk of invasion. The United States reiterated its security guarantees for Taiwan in response to a more aggressive stance from the Chinese government and a series of military maneuvers. As China does not recognize Taiwan's independence, this dispute is likely to continue fueling tensions between China and the United States. However, it is difficult to gauge China's willingness to escalate the dispute. There is also potential for conflict between China and Japan due to Chinese territorial claims on islands situated close to Taiwan that are administered by Japan.

Disputes also exist in other regions. Although they currently appear to be contained within these regions, they intersect with geostrategic interests of other countries and, in unfavorable circumstances, could potentially spread to other regions. This is the case for **Iran** and **countries of the former Soviet Union** that remain under Russian influence.

4.3 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 chapter covering the measurement of liquidity risk (see chapter VII.7.2.5).

The rating agencies S&P Global Ratings, Moody's, and Fitch Ratings confirmed **DZ BANK's ratings** in 2022. The outlooks for the ratings also remained stable.

5 Dealing with the impact of acute global crises

5.1 Relaxation of supervisory requirements

The lowering of the **external minimum targets** for some regulatory key figures that had been carried out by the supervisory authorities in 2020 in response to the **COVID-19 pandemic** continued to apply unchanged in 2022. The same was true for the lower **internal threshold values** 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 pandemic-related relaxing of requirements relating to the preparation of a group recovery plan in previous years ceased to apply. In particular, the number of stress scenarios to be prepared was increased to four again, compared with only two in the previous year.

5.2 Risk management measures

As a result of the normalization of the risks arising from the COVID-19 pandemic, the **special reporting measures relating to the pandemic** implemented in 2020 were integrated into the standard risk reporting system in the first half of 2022. The financial and risk radar and the CET1 radar were no longer used.

A new instrument for reporting to the Board of Managing Directors of DZ BANK was established in February 2022, the **Russia/Ukraine radar**, which is used to closely manage and monitor risks arising from the war in Ukraine.

In response to the war in Ukraine, a one-year ad hoc scenario was added to the groupwide **stress test report** in March 2022. Among other things, this scenario assumes a complete halt in gas supplies from Russia and incorporates rising inflation and interest rates. A two-year scenario was developed in the second quarter based on the threats and risks that continue to be relevant (inflation, interest-rate increases, war in Europe) and contains the medium-term outlook of a halt in gas supplies from Russia. This two-year scenario has been reported since June 30, 2022.

Disclosures on the **risks** resulting from the macroeconomic conditions and the war in Ukraine can be found in the relevant risk-type-specific chapters of this report. This concerns credit risk (chapters VII.9.7 and 9.8) in the Bank sector and actuarial risk (chapter VII.17) and market risk (chapters VII.18.4.3 and 18.4.4) in the Insurance sector.

6 ESG risks

6.1 Expansion of ESG risk management

ESG risks are defined as events or circumstances in the climate-related and environmental ('E'), social ('S'), or corporate governance ('G') spheres that, if they materialized, would definitely or potentially have a significant adverse impact on the financial position or financial performance of the DZ BANK Group and on its reputation.

The focus is currently on climate-related and environmental risks resulting from climate change. These risks comprise both physical risks, such as more frequent natural disasters and floods, and transition risks, which can arise particularly as a result of legislative initiatives and changes in consumer behavior. ESG risks primarily have medium- to long-term effects.

The DZ BANK Group does not classify ESG risks as a risk type in their own right. In accordance with the regulatory definitions, it instead views them as drivers of the classic financial and non-financial risk types (**risk factors**). Risk factors are based on, for example, economic, societal, and (geo)political events and conditions. Sustainability risks have an impact on various risk categories because they bring about a change in the risk factors.

Since 2021, these ESG risk factors have been analyzed as part of the **risk inventory check**. This makes it possible to assess each year which potentially material risk factors in the climate-related and environmental, social, and corporate governance spheres the DZ BANK Group is exposed to. The analysis was refined and backed up by quantitative data in 2022. Potentially material ESG risk factors affect the risk types credit risk, operational risk, reputational risk, and actuarial risk. An analysis of the transition risks for DZ BANK's credit portfolio was also conducted.

ESG risks are **managed** centrally at the level of the DZ BANK Group and on a decentralized basis at the level of the management units. DZ BANK is currently working on implementing various regulatory requirements regarding the management of ESG risks as part of its sustainability umbrella program. The main program requirements are the Guide on climate-related and environmental risks published by the ECB, the delegated regulation on the EU taxonomy, and the ESG disclosure requirements issued by the EBA.

In 2022, DZ BANK participated in the ECB's macroeconomic **climate stress test** and conducted its first **climate risk scenario analyses**.

DZ BANK also uses an **internal classification tool** based on the 17 sustainable development goals (SDGs) of the United Nations to assess the sustainability of the lending business. The tool measures the positive and adverse SDG impacts of DZ BANK's business from an ESG perspective. This primarily relates to the traditional corporate customer lending business, in which the positive impacts outweigh the adverse impacts overall. Building on this, DZ BANK has set itself the target of increasing the positive SDG impacts so that they cover two-thirds of the volume of lending to corporate customers by 2026.

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.

6.2 Climate-related and environmental risks

The significant risks in relation to the climate and environmental aspect are physical climate-related and environmental risks and transition risks.

6.2.1 Physical climate-related and environmental risks

The physical climate-related and environmental risks may relate to acute events, for example more frequent natural disasters such as flooding, or negative effects attributable to long-term climate change.

Losses in the **lending business** may arise, for example, if the recoverability of collateral for loan exposures is adversely impacted by climate events. In addition, as a result of transition effects, there is a risk in the lending business that the earnings power of **corporate finance** borrowers (mainly at DZ BANK) and of **real estate finance** borrowers (mainly at BSH and DZ HYP) could diminish. These effects could lead to a deterioration of the borrowers' credit quality and thus to higher impairment losses. Further information on the significance of physical climate-related and environmental risks is provided in chapter VII.9.3.2.

In the Insurance sector, **non-life actuarial risk** (catastrophe risk) at R+V is the main type of risk that could be significantly affected by physical climate risk. Specifically, in any one year, the actual impact from the size and frequency of losses could exceed the forecast impact. Details can be found in chapters VII.17.2 and VII.17.5.

In both the Bank sector and the Insurance sector, physical climate risk could also give rise to **operational risk**, for example in connection with the non-availability of buildings or IT systems due to weather or environmental events. This type of security risk is described for the Bank sector in chapter VII.15.5.4 and for the Insurance sector in chapter VII.21.3.3.

Furthermore, negative effects from physical climate-related risk on the **reputation** of the DZ BANK Group and DZ BANK cannot be ruled out.

6.2.2 Transition risks

Transition risks are a major risk factor. They may occur in connection with the switch to a lower-carbon and more environmentally friendly economy, particularly if business partners in industries with particular relevance to climate change do not transition to the necessary extent or with the necessary speed. The causes of transition risk include political conditions and transformation targets, changes to legislation, changes in consumer preferences, and the accompanying technological shift. The transition to a low-emission economy is resulting in a changed business and regulatory environment that creates risks for the real economy and could have a negative impact on the financial system and on banks. As a result, climate-related transition risks have a substantial impact on the DZ BANK Group's customers and, in turn, have a direct impact on the DZ BANK Group too. The medium-term nature of these effects means that they are particularly relevant to the lending business. Furthermore, negative effects from transition risks on the reputation of the DZ BANK Group and DZ BANK cannot be ruled out.

Transition risks are relevant to credit risk in the Bank sector (see chapter VII.9.3.2) and to **market risk** in the Insurance sector (see chapter VII.18.3.3).

The DZ BANK Group has developed binding, groupwide rejection criteria for **lending activities** in order to address ESG risks and their effect on its reputation. In general, the rejection criteria prohibit lending in connection with items that pose a high risk of contamination as well as dangerous goods, arms trading, transactions connected with controversial weapons, pornography and prostitution, controversial gambling, and transactions that are deemed illegal according to the laws and regulations of the target country or according to international conventions and agreements. Controversial business practices involving significant breaches of human rights or environmental standards are rejected too. And in view of the associated climate-related and environmental risks, DZ BANK does not permit exposures to customers or activities with links to thermal coal, oil

or gas extraction by means of fracking or from oil shale or tar sands, mining using the mountaintop removal method, or trading of endangered animal or plant species.

DZ BANK also has **sectoral rules** for sectors that are particularly vulnerable from a sustainability perspective. The main areas of focus are dam construction, commodities mining/extraction in general, forestry, fishing, maritime industries, and palm oil production.

Since 2021, an **ad hoc committee** has been available to provide support where risks are identified or where there is a lack of clarity regarding the interpretation of rejection criteria and sectoral rules.

Depending on their individual business model, the entities in the DZ BANK Group have implemented their own strategic response in order to deal with climate-related and environmental risks. This includes the definition of additional rejection criteria.

DZ BANK has undertaken to **comply with voluntary frameworks**, such as the UN Global Compact, the Equator Principles, and the Performance Standards developed by the International Finance Corporation (IFC). All factors of relevance to a financing arrangement are assessed in relation to social, ethical, and environmental risks using a sustainability checklist that is based on the ten principles of the UN Global Compact. Project finance and eligible project-specific corporate finance transactions are also checked for compliance with the IFC Performance Standards using a questionnaire that is aligned with the Equator Principles. This enables possible negative environmental impacts, including on biodiversity, of project finance or trade finance transactions to be identified and the potential resulting risks to be mitigated.

6.3 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 **customer 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.

Social risk may also have a financial impact in the long term with regard to borrowers and business partners. At individual loan level, social risk in DZ BANK's lending business is assessed as part of the **lending processes**. In the same way as for climate-related and environmental risks, the rejection criteria for social risk are checked and sustainability checklists are used. In particular, it is prohibited to maintain business relationships with customers if significant breaches of human rights in their business practices cannot be ruled out.

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.

Corporate governance risks can also arise for **borrowers and business partners** if there are indications that the company in question is not being run in an orderly fashion. The relevant factors include suspected corruption, tax evasion proceedings, and ongoing antitrust proceedings. Similarly to social risk, the risk here lies in the effects of possible judicial proceedings and in a potential drop in revenue as a result of declining demand. To prohibit transactions that do not satisfy the minimum corporate governance requirements defined by the DZ BANK Group, exposures are checked against the rejection criteria during the lending process. DZ BANK also applies its sustainability checklist. Checks for critical corporate governance aspects, such as in the anticorruption and competition/tax categories, are conducted and evaluated in a standardized manner.

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.

7 Liquidity adequacy

7.1 Strategy

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 (regulatory) perspective. Whereas the economic perspective takes into account the requirements of MaRisk BA and the ECB Guide to the ILLAAP, the normative perspective – while also taking account of the ECB Guide to the ILLAAP – additionally applies the requirements from the CRR and the German national requirements for the implementation of the Capital Requirements Directive (CRD) in 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.

7.2 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.

7.2.1 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.

7.2.2 Business background and risk strategy

The activities of DZ BANK and the management units BSH, 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 by the key figures and internal threshold values in the risk appetite statement and by the stress scenarios defined for risk measurement in the economic perspective within the ILLAAP. The stress 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.

7.2.3 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 and other events are incorporated into the calculation of liquidity risk as **stress scenarios** (see chapter VII.7.2.5).

7.2.4 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 **Asset/Liability 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 **Asset/Liability 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.

7.2.5 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 that are material in terms of 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.

DZ BANK's internal liquidity risk model is validated using an **appropriateness test** independently of the organizational unit responsible for developing the model. Furthermore, the model is adjusted in line with changes in the market, products, and processes. Validation is carried out 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. In addition, **adverse stress tests** are carried out to provide a forward-looking assessment of liquidity risk. They involve analyzing whether the DZ BANK Group would be able to ensure an adequate level of liquidity even in the event of exceptional, but plausible, developments over a medium-term horizon. The adverse stress test scenarios underlying this forecast are also used in ICAAP stress testing.

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 specified in the risk appetite statement for the minimum liquidity surplus. The observation threshold and limit as at December 31, 2022 were unchanged compared with the end of 2021. 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.

7.2.6 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.

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 are almost exclusively responsible for maintaining solvency in the stress scenarios with defined limits.

Fig. 8 shows the liquidity value of the liquid securities that would result from secured funding or if the securities were sold.

As at December 31, 2022, the total liquidity value at the level of the **DZ BANK Group** was €35.4 billion (December 31, 2021: €30.3 billion). The total liquidity value attributable to **DZ BANK** as at December 31, 2022 was €26.6 billion (December 31, 2021: €19.9 billion). The rise in the volume of liquid securities was largely attributable to a reduction in the collateral provided for targeted longer-term refinancing operations (TLTRO) entered into with the ECB. The DZ BANK Group made TLTRO repayments amounting to €21.4 billion ahead of schedule in November 2022. The amount repaid by DZ BANK was €18.4 billion.

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.

FIG. 8 – LIQUID SECURITIES

€ billion	DZ BANK Group		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Liquid securities eligible for GC Pooling (ECB Basket)¹	22.3	16.4	17.4	9.8
Securities in own portfolio	16.0	23.0	8.4	10.3
Securities received as collateral	17.4	16.9	17.4	16.9
Securities provided as collateral	-11.1	-23.6	-8.4	-17.4
Liquid securities eligible as collateral for central bank loans	9.1	8.0	5.5	4.5
Securities in own portfolio	16.7	20.5	11.8	13.4
Securities received as collateral	4.1	8.2	4.1	8.2
Securities provided as collateral	-11.7	-20.6	-10.3	-17.0
Other liquid securities	3.9	5.9	3.7	5.6
Securities in own portfolio	3.7	5.8	3.4	5.5
Securities received as collateral	0.3	0.1	0.3	0.1
Securities provided as collateral	-0.1	-	-0.1	-
Total	35.4	30.3	26.6	19.9
Securities in own portfolio	36.4	49.3	23.6	29.1
Securities received as collateral	21.8	25.3	21.8	25.3
Securities provided as collateral	-22.9	-44.2	-18.7	-34.5

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

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 changes in the composition of the sources of funding compared with December 31, 2021 arose because customers and investors were more focused on diversification than in the previous year due to the interest-rate situation. This was largely attributable to the monetary policy measures implemented by the ECB in the second half of 2022.

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

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

€ billion	DZ BANK Group		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Deposits	98.7	97.5	84.2	83.6
Deposits of local cooperative banks	57.3	58.5	56.6	58.5
Current account deposits of other customers	41.4	39.0	27.6	25.2
Money market borrowing	57.1	32.2	54.5	28.7
Central banks, interbank, and customer banks	9.4	5.5	9.3	5.2
Corporate customers and institutional customers	33.6	14.1	32.8	14.0
Certificates of deposit/commercial paper	14.1	12.6	12.3	9.5

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.

7.2.7 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

€ billion	Forward cash exposure		Counterbalancing capacity		Minimum liquidity surplus ¹	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Downgrading	-39.1	-22.5	67.8	51.7	28.7	29.2
Corporate crisis	-30.2	-11.0	44.5	32.9	14.3	21.9
Market crisis	-32.9	-13.2	57.6	42.2	24.7	29.0
Combination crisis	-31.8	0.5	51.4	18.9	19.6	19.4

¹ The values with an orange background are the minimum liquidity surplus in the squeeze scenario.

The reduction in the forward cash exposure and the increase in the counterbalancing capacity mainly resulted from the early TLTRO repayment.

The liquidity risk value measured for the **DZ BANK Group** as at December 31, 2022 for the stress scenario with defined limits with the lowest minimum liquidity surplus (squeeze scenario) was €14.3 billion (December 31, 2021: €19.4 billion). The liquidity risk value attributable to **DZ BANK** as at December 31, 2022 was €4.2 billion (December 31, 2021: €4.5 billion). The decrease in the minimum liquidity surplus for the DZ BANK Group was largely due to a rise in lending business and in purchases of own issues of the local cooperative banks. New issues did not fully cover the funding requirements.

The risk values as at December 31, 2022 for the **DZ BANK Group** were above the internal threshold value (€4 billion) and above the **limit** (€1 billion). They were also above the external minimum target (€0 billion). The observation threshold, limit, and external minimum target remained unchanged compared with 2021. Furthermore, **DZ BANK** did not exceed the **limit** of €700 million (December 31, 2021: €325 million).

The minimum liquidity surplus as at December 31, 2022 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.

The rise in interest rates during the reporting year led to significant movements in the market for interest-rate derivatives and to funding changes, making DZ BANK's minimum liquidity surplus more volatile. **A further unexpected rise in interest rates**, which is described as a risk factor affecting all types of risk in chapter VII.4.2.2, could potentially result in the continuation of the effects described for 2022 and may even cause them to become more pronounced.

7.2.8 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**.

7.3 Normative perspective

7.3.1 Regulatory framework

The normative 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**). Consequently, the requirements for calculating and reporting the LCR and NSFR are applied at the level of a single liquidity subgroup consisting of DZ BANK and DZ HYP. The liquidity waiver means that it is not necessary to comply with the regulatory liquidity requirements at the level of the two individual institutions.

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 the LCR of the liquidity subgroup and that of the 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.

7.3.2 Organization, responsibility, and reporting

The **Group Financial Services** division calculates the liquidity ratios reported for supervisory purposes resulting from the CRR and Commission Delegated Regulation (EU) 2015/61 for the liquidity subgroup and, using the corresponding values for the management units, for the DZ BANK banking group.

Both the **Asset/Liability Committee** and the **Board of Managing Directors** are notified of the LCR and the NSFR each month.

7.3.3 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, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Total liquidity buffer (€ billion)	122.0	97.3	103.7	84.6
Total net liquidity outflows (€ billion)	83.6	65.9	72.6	63.8
LCR (percent)	145.9	147.7	142.7	132.5

¹ DZ BANK and DZ HYP form a liquidity subgroup pursuant to article 8 CRR.

The decrease in the LCR for the **DZ BANK banking group** from 147.7 percent as at December 31, 2021 to 145.9 percent as at December 31, 2022 resulted from the LCR's greater sensitivity in respect of the increased net liquidity outflows. This negative effect had a larger impact than the countervailing, positive effect of the higher excess cover (calculated by deducting the net liquidity outflows from the liquidity buffer).

The larger liquidity buffer was mainly due to the growth of balances with central banks on the back of a higher volume of short-term and long-term deposits from financial and non-financial customers, particularly at the level of DZ BANK. Whereas short-term deposits are added to the liquidity outflows immediately, fixed-term deposits are only included in outflows in the last 30 days before their maturity date. This led to a smaller increase in net liquidity outflows relative to the rise in the liquidity buffer and thus to an increase in excess cover.

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** of 100.0 percent applicable to the DZ BANK banking group and to DZ BANK (including DZ HYP) was also exceeded as at December 31, 2022. Both the internal threshold value and the external minimum target were unchanged compared with those for 2021.

7.3.4 Net stable funding ratio

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, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Available stable funding (weighted equity and liabilities; € billion)	269.5	293.7	199.6	225.3
Required stable funding (weighted assets; € billion)	220.3	231.1	176.1	185.2
Excess cover/shortfall (€ billion) ²	49.2	62.6	23.5	40.2
NSFR (percent)	122.3	127.1	113.4	121.7

¹ DZ BANK and DZ HYP form a liquidity subgroup pursuant to article 8 CRR.

² 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 fall in the NSFR from 127.1 percent as at December 31, 2021 to 122.3 percent as at December 31, 2022 was mainly due to a reduction in the excess cover. The reduction in excess cover was due to a more pronounced fall – relative to the decrease in the funding requirements – in the amount of available stable funding following the partial TLTRO repayment and a reduced volume of operational deposits of the cooperative financial network. The decrease in the funding requirements from encumbered securities that was due to the partial TLTRO cancellation was partly offset by an increase in loans and therefore led to negative excessive cover.

As at the reporting date, both the **internal threshold value** for the NSFR of 105.0 percent and the regulatory **external minimum target** of 100.0 percent were exceeded at the level of the **DZ BANK banking group**. The regulatory **external minimum target** of 100.0 percent was also satisfied at the level of **DZ BANK (including DZ HYP)** as at the reporting date. Both the internal threshold value and the external minimum target were unchanged compared with those for 2021.

8 Capital adequacy

8.1 Strategy, organization, and responsibility

8.1.1 Strategy

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 perspective. Whereas the economic perspective takes into account the requirements of the ECB Guide to the ICAAP and MaRisk BA, the normative 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 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 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.

8.1.2 Organization and responsibility

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 ratio between risk and risk coverage potential. DZ BANK is responsible for risk and capital management, and for compliance with capital adequacy at group level.

The management of economic and normative 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 Asset/Liability 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 monitoring and reporting on 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.

8.2 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.

8.2.1 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 is the economic value of equity. The equity used to determine available internal capital is the equity recognized on the balance sheet as calculated in accordance with the relevant accounting standards, plus/minus reserves and liabilities in respect of assets and liabilities, measured at present value. Adjustments are also made, in particular the deduction of components of additional Tier 1 capital.

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 available internal capital is reviewed on a quarterly basis and, to some extent, on a monthly basis.

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.

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. 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 capital adequacy.

8.2.2 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 2022 was unchanged compared with the previous year at 120.0 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 2021. The threshold values for economic capital adequacy are reviewed annually and adjusted if necessary.

8.2.3 Risk-bearing capacity

Retrospective recalculation of the overall solvency requirement

The annual recalculation of the overall solvency requirement took place as at December 31, 2021 owing to scheduled changes to the parameters for the risk measurement procedures carried out in the second quarter of 2022 for the Insurance sector on the basis of R+V's 2021 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, 2021 given in this risk report have been restated accordingly and are not directly comparable with the figures in the 2021 opportunity and risk report.

Available internal capital and limit

The DZ BANK Group's **available internal capital** as at December 31, 2022 stood at €30,481 million. The comparable figure as at December 31, 2021 was €31,873 million. The year-on-year decrease in available internal capital was largely attributable to the Insurance sector and can primarily be explained by developments in the capital markets.

The **limit** derived from the available internal capital was specified at €22,215 million as at December 31, 2022 (December 31, 2021: €23,588 million).

As at December 31, 2022, **aggregate risk** was calculated at €13,807 million. The comparable figure as at December 31, 2021 was €15,131 million. The decrease was primarily driven by lower credit risk and business risk in the Bank sector.

Economic capital adequacy

As at December 31, 2022, the **economic capital adequacy ratio** for the DZ BANK Group was calculated at 220.8 percent. The comparable figure as at December 31, 2021 was 210.7 percent. The year-on-year decreases in available internal capital and aggregate risk were virtually the same amount. This led to a small rise in economic capital adequacy. 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 2022 were unchanged compared with those for 2021.

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

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

	Dec. 31, 2022	Dec. 31, 2021
Available internal capital (€ million) ¹	30,481	31,873
Limit (€ million)	22,215	23,588
Aggregate risk (€ million) ¹	13,807	15,131
Economic capital adequacy (percent)¹	220.8	210.7

¹ Value as at December 31, 2021 after recalculation of R+V's overall solvency requirement. Different values were stated in the 2021 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

€ million	Bank sector				DZ BANK			
	Limit		Risk capital requirement		Limit		Risk capital requirement	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Credit risk	6,387	7,188	3,766	5,037	2,854	2,750	2,254	2,134
Equity investment risk	1,230	1,220	997	996	767	700	632	636
Market risk	6,680	5,725	3,730	3,713	3,175	2,400	1,481	1,517
Technical risk of a home savings and loan company ¹	785	706	698	639				
Business risk ²	280	640	43	407	235	445	43	295
Operational risk	1,112	1,102	966	941	625	596	554	515
Total (after diversification)³	15,380	15,403	9,485	10,871				

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

€ million	Limit		Overall solvency requirement	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021 ¹
Life actuarial risk ²	1,200	600	1,045	343
Health actuarial risk	300	350	163	231
Non-life actuarial risk	3,000	4,600	1,807	1,939
Market risk	3,880	4,400	3,188	3,169
Counterparty default risk	350	350	227	235
Operational risk	1,000	1,000	599	718
Risks from entities in other financial sectors	180	180	130	130
Total (after diversification)	6,155	7,460	3,852	3,685

¹ Values after recalculation of the overall solvency requirement. Different values were stated in the 2021 risk report.

² Reputational risk is implicitly included in the overall solvency requirement for life actuarial risk (lapse risk).

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 €470 million as at December 31, 2022 (December 31, 2021: €575 million). The corresponding **limit** was €680 million (December 31, 2021: €725 million). This decrease in the centralized capital buffer requirement was predominantly due to the updating of components of credit risk.

8.2.4 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 risk capital requirement would exceed the available internal capital and the DZ BANK Group would thus **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. 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.

8.3 Normative perspective

8.3.1 Regulatory framework

The normative perspective is based on the capital ratios laid down by the supervisory authorities. 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 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, 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 perspective is an integral part of the ICAAP. The key risk indicators in the normative 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 transitional guidance.

8.3.2 DZ BANK financial conglomerate

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

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 100.0 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 CONGLOMERATE¹

	Dec. 31, 2022 ²	Dec. 31, 2021 ³
Own funds (€ million)	36,021	36,896
Solvency requirements (€ million)	23,679	24,470
Coverage ratio (percent)	152.1	150.8

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.

The rise in the coverage ratio calculated for the DZ BANK financial conglomerate from 150.8 percent as at December 31, 2021 to 152.1 percent as at December 31, 2022 was due, in particular, to the more pronounced decrease in the solvency requirements. The effects that led to this change in the coverage ratio were attributable to the DZ BANK banking group and the R+V Versicherung AG insurance group (see chapters VII.8.3.3 and VII.8.3.4 of this risk report).

The preliminary coverage ratio calculated for the financial conglomerate as at December 31, 2022 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 2023.

8.3.3 DZ BANK banking group

The banking group for regulatory purposes pursuant to section 10a KWG in conjunction with articles 11 and 18 CRR consists of DZ BANK as the superordinated entity plus other institutions, financial institutions, and ancillary services undertakings that qualify as subsidiaries according to article 4 (1) no. 16 CRR. Insurance companies and companies not in the financial sector are not required to be consolidated in the banking group for regulatory purposes. In this context, R+V is fully consolidated for commercial-law purposes but is not included in the banking group for regulatory purposes.

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, the IRB approach for the retail business and, in some cases, the Standardized Approach to credit risk
- **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, 2022 determined in accordance with the CRR transitional guidance amounted to a total of €24,719 million (December 31, 2021: €27,729 million). This equated to a decline in own funds of €3,010 million compared with the end of 2021, mainly comprising a decrease in common equity Tier 1 capital of €4,259 million and a rise in Tier 2 capital of €1,261 million.

The decrease in **common equity Tier 1 capital** from €23,021 million as at December 31, 2021 to €18,762 million was mostly due to temporary accounting effects at R+V. As a member of the DZ BANK Group, R+V already had to measure its assets at fair value in accordance with IFRS 9. Equity and liabilities, and therefore liabilities to policyholders, will only be treated in the same way after the transition to IFRS 17 in the coming year. This led to a temporary technical interest-rate risk caused by the strong increase in interest rates during the reporting period. The result was a negative contribution to earnings and a significantly lower contribution to common equity Tier 1 capital as at December 31, 2022. A countervailing effect is anticipated in 2023.

Tier 2 capital advanced from €2,546 million as at December 31, 2021 to €3,807 million as at December 31, 2022, a year-on-year increase of €1,261 million that was essentially attributable to the issuance of new Tier 2 capital amounting to €1,663 million in the reporting year.

Risk-weighted assets in the DZ BANK banking group went down from €150,137 million as at December 31, 2021 to €137,379 million as at December 31, 2022. This decrease of €12,758 million was mainly due to a reduction in the carrying amount of DZ BANK's long-term equity investment in R+V, which is accounted for using the equity method. The same period saw highly volatile movements in the capital markets, which led to a rise in market risk.

As at December 31, 2022, the DZ BANK banking group's **common equity Tier 1 capital ratio** was 13.7 percent, a decrease of 1.6 percentage points compared with December 31, 2021 (15.3 percent). The **Tier 1 capital ratio** of 15.2 percent calculated as at the reporting date was 1.6 percentage points lower than the figure as at December 31, 2021 too (16.8 percent). The **total capital ratio** also went down, from 18.5 percent as at December 31, 2021 to 18.0 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 RATIOS¹

	DZ BANK banking group		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Capital				
Common equity Tier 1 capital (€ million)	18,762	23,021	15,259	14,197
Additional Tier 1 capital (€ million)	2,150	2,161	1,900	2,150
Tier 1 capital (€ million)	20,912	25,183	17,159	16,347
Total Tier 2 capital (€ million)	3,807	2,546	3,794	2,414
Own funds (€ million)	24,719	27,729	20,953	18,761
Risk-weighted assets				
Credit risk including long-term equity investments (€ million)	119,283	132,296	92,608	85,150
Market risk (€ million)	7,369	7,355	6,944	6,504
Operational risk (€ million)	10,727	10,487	3,630	3,379
Total (€ million)	137,379	150,137	103,182	95,033
Capital ratios				
Common equity Tier 1 capital ratio (percent)	13.7	15.3	14.8	14.9
Tier 1 capital ratio (percent)	15.2	16.8	16.6	17.2
Total capital ratio (percent)	18.0	18.5	20.3	19.7

¹ In accordance with the CRR transitional guidance.

Regulatory minimum capital requirements specified by the SREP

The minimum capital requirements that the DZ BANK banking group had to comply with in 2022 under the Supervisory Review and Evaluation Process for Basel Pillar 2 (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 2021, also had to be satisfied. In this process, the banking supervisor specified a mandatory add-on (**Pillar 2 requirement**) that is factored into the external minimum targets for the capital ratios and 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.

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 2022.

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 and DZ BANK under the SREP, and their components, are shown in Fig. 18.

FIG. 18 – REGULATORY MINIMUM CAPITAL REQUIREMENTS ACCORDING TO THE SREP

Percent	DZ BANK banking group		DZ BANK	
	2022	2021	2022	2021
Minimum requirement for common equity Tier 1 capital	4.50	4.50	4.50	4.50
Additional Pillar 2 capital requirement	0.96	0.98		
Capital conservation buffer	2.50	2.50	2.50	2.50
Countercyclical capital buffer ¹	0.05	0.02	0.03	0.01
O-SII capital buffer	1.00	1.00		
Mandatory minimum requirement for common equity Tier 1 capital	9.00	9.01	7.03	7.01
Minimum requirement for additional Tier 1 capital	1.50	1.50	1.50	1.50
Additional Pillar 2 capital requirement	0.32	0.33		
Mandatory minimum requirement for Tier 1 capital	10.82	10.84	8.53	8.51
Minimum requirement for Tier 2 capital ²	2.00	2.00	2.00	2.00
Additional Pillar 2 capital requirement	0.43	0.44		
Mandatory minimum requirement for total capital	13.25	13.27	10.53	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 2022 and 2021 relate solely to the reporting dates.

² The minimum requirement can also be satisfied with common equity Tier 1 capital.

The minimum capital requirements will rise sharply, by 0.84 percentage points, for 2023. This is due to an increase in the additional capital requirements in Pillar 2 from January 1, 2023 and an increase in the countercyclical capital buffer and the introduction of the systemic risk buffer from February 1, 2023.

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 that expired at the end of 2022. They included relief measures in relation to the **binding minimum capital requirements**. DZ BANK did not use these relief measures and consequently 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 0.0 percent. In a general administrative act, BaFin raised Germany's countercyclical capital buffer rate from 0.0 percent to 0.75 percent with effect from February 1, 2022. The scope of application of the general administrative act includes institutions

as defined in section 1 (1b) KWG and is thus mandatory for DZ BANK. The new rate must be used to calculate the institution-specific countercyclical capital buffer from February 1, 2023 onward.

Also in connection with the COVID-19 pandemic, the supervisory authority did not require banks to comply with the **Pillar 2 capital recommendation** in the period up to December 31, 2022. DZ BANK did not use this relief measure either.

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, 2022. The internal threshold values are shown in Fig. 5 in chapter VII.2.3.

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 down by 2.6 percentage points from 7.3 percent as at December 31, 2021 to 4.7 percent as at December 31, 2022. The first reason for this decline was the ending of the temporary exemption from including balances with central banks. These exposures have had to be included in the total exposure again since April 1, 2022. This increased the total exposure at DZ BANK by €95.4 billion. Secondly, the significant fall in Tier 1 capital of €4,276 million contributed substantially to the decrease in the leverage ratio.

DZ BANK's leverage ratio as at December 31, 2022 was calculated at 6.3 percent (December 31, 2021: 9.2 percent). This decline was also mainly due to the aforementioned ending of the temporary exemption from including balances with central banks. This increased the total exposure at DZ BANK by €96.2 billion. Tier 1 capital as at December 31, 2022 was up by €812 million compared with the end of 2021.

Because both the DZ BANK banking group and DZ BANK had used the aforementioned temporary exemption for balances with central banks, the **external minimum target** stood at 3.26 percent in 2021 and in 2022 until this exemption expired on March 31, 2022. Since April 1, 2022, the external minimum target has again been 3.0 percent.

Both the **internal threshold value** of 4.0 percent for the leverage ratio of the DZ BANK banking group and the **external minimum target** of 3.0 percent specified by the banking regulator were exceeded as at December 31, 2022.

Minimum requirement for own funds and eligible liabilities

The Bank Recovery and Resolution Directive (BRRD), Implementing Regulation (EU) No. 806/2014 establishing a Single Resolution Mechanism, and the transposition of the BRRD into German law in the form of SAG created the legal basis at European and national level for a single resolution mechanism for banks and the regulatory MREL ratio as a percentage of risk-weighted assets.

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 as a percentage of risk-weighted assets is the ratio of the total of the regulatory own funds of the DZ BANK banking group and the eligible external MREL liabilities of DZ BANK to the total risk exposure amount (risk-weighted assets) of the DZ BANK banking group. The subordinated MREL ratio of the DZ BANK banking group is the ratio of the total of the regulatory own funds of the DZ BANK banking group and the eligible external, subordinated MREL liabilities of DZ BANK to the total risk exposure amount (risk-weighted assets) of the DZ BANK banking group.

The MREL ratio as a percentage of the leverage ratio exposure and the subordinated MREL ratio as a percentage of the leverage ratio exposure have been used to manage the DZ BANK banking group in addition to the MREL ratio as a percentage of risk-weighted assets and the subordinated MREL ratio as a percentage of risk-weighted assets since January 1, 2023. Internal threshold values and external minimum targets have had to be applied in respect of these additional ratios since January 1, 2023.

MREL ratio

The MREL ratio as a percentage of risk-weighted assets measured for the **DZ BANK banking group** was 38.3 percent as at December 31, 2022 (December 31, 2021: 37.3 percent). The year-on-year rise in this key figure was attributable to the fall of €12,758 million in the risk-weighted assets of the DZ BANK banking group. The €3,340 million contraction of the MREL volume offset this rise only insignificantly.

DZ BANK's Board of Managing Directors set the **internal threshold value** for the **DZ BANK banking group's** MREL ratio as a percentage of risk-weighted assets for 2022 at 26.8 percent. The **external minimum target** for 2022 was 25.1 percent. In 2021, neither an internal threshold value nor an external minimum target had applied to the MREL ratio. The MREL ratio measured as at December 31, 2022 was above the internal threshold value and the external minimum target.

Subordinated MREL ratio

The DZ BANK banking group's subordinated MREL ratio as a percentage of risk-weighted assets was 28.5 percent as at December 31, 2022 (December 31, 2021: 26.5 percent). The reasons for this increase were the same as those given above for the MREL ratio as a percentage of risk-weighted assets. The reduction in equity meant that the subordinated MREL volume declined by €524 million year on year.

The **internal threshold value** applicable to the DZ BANK banking group's subordinated MREL ratio as a percentage of risk-weighted assets was 24.8 percent for the first six months of the year. For the second half of 2022, this value was 25.5 percent. The supervisory authorities specified an **external minimum target** of 23.8 percent for 2022 as a whole. In 2021, neither an internal threshold value nor an external minimum target had applied to the subordinated MREL ratio as a percentage of risk-weighted assets. The subordinated MREL ratio as a percentage of risk-weighted assets measured as at December 31, 2022 was above the internal threshold value and the external minimum target.

8.3.4 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.

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 regulatory and economic capital adequacy. Further disclosures on these measures can be found in chapter VII.8.2.1 'Economic capital adequacy'.

The preliminary figure for the **regulatory risk-bearing capacity** of the R+V Versicherung AG insurance group as at December 31, 2022 was calculated at 219.8 percent. The coverage ratio was thus above the external minimum target of 100.0 percent, which was the same target as had applied in 2021. The final figure as at December 31, 2021 was 221.8 percent (preliminary figure given in the 2021 risk report: 232.1 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

	Dec. 31, 2022 ¹	Dec. 31, 2021 ²
Own funds (€ million)	15,482	17,656
Solvency requirements (€ million)	7,044	7,960
Coverage ratio (percent)	219.8	221.8

¹ Preliminary figures.

² Final figures. The preliminary figures were stated in the 2021 risk report.

The decrease in own funds and in the solvency requirement was primarily due to the sharp rise in interest rates in 2022.

The **recalculation of the overall solvency requirement** described in chapter VII.8.2.3 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 2021. The prior-year figures as at December 31, 2021 given in this risk report have been restated accordingly and are not directly comparable with the figures in the 2021 risk report.

8.4 Stress tests for types of risk covered by capital

8.4.1 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 (see also chapter VII.5.2). 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**.

8.4.2 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 DZ BANK Group 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.

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**.

8.4.3 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 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

9 Credit risk

9.1 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** refer to securities business in the banking book and trading book, money market business, transactions involving tradable loans and advances (such as promissory notes), currency transactions, transactions involving derivatives, and transactions involving commodities (such as precious metals).

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 investment fund units.

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. It is 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. It arises when the counterparty in a trading transaction cannot perform its contractual obligation.

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.

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 and uncertainty regarding the recovery rate for unsecured receivables (or partial receivables).

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.

9.2 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 a **broad 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, and DZ HYP. 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 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.

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.

9.3 Risk factors

9.3.1 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.

9.3.2 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 policy 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 chapter VII.4.2.5. Disclosures on the exposures in Italy, Spain, and Portugal can be found in chapter VII.9.7.1.

DZ BANK finances the building, purchase, and operation of **cruise ships**. The COVID-19 pandemic had a direct impact on this business in 2022. The economic background to this risk factor is described in chapters V.1.1 to V.1.4 of 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 chapters VII.9.9.1 onward and chapter VII.9.10.2.

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

The war in Ukraine, higher energy prices, the COVID-19 pandemic and the resulting supply chain disruptions, international trade disputes, and geopolitical tensions represent the biggest threats to **economic growth**.

The **real estate markets underwent a correction** in 2022. The potential negative impact on real estate finance at BSH and DZ HYP was analyzed. No increase in systematic risk has been identified so far.

The background to these risk factors is explained in chapter VII.4.2. If the developments described there persist for a while longer yet, or escalate, there is a danger that credit risk in the Bank sector will rise significantly.

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.

9.4 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.

9.5 Risk management

9.5.1 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 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 new rating system for major corporations was completed in 2022. The rating system is likely to be implemented in 2023.

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 and matches the internal credit ratings 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 chart 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.

9.5.2 Lending business pricing

The management units in the Bank sector use risk-adjusted pricing as a key decision-making criterion for the management of the lending business. Adequate standard risk costs and risk-adjusted capital costs are taken into account. The methods used by the management units to manage the lending business reflect the particular features of their products and business.

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.

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			Rating category	
		Moody's	Standard & Poor's	Fitch		
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					

9.5.3 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. 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.

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.

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.

9.5.4 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, 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. The specific limit can also be broken down into seniority bands; in the case of asset-backed securities, the specific limit can be broken down into rating bands. Issuer risk relating to cover assets is subject to separate limits, as are settlement risk and replacement risk attaching to cover assets. Since mid-2022, issuer risk in connection with the trading book and issuer risk in connection with the banking book have been subject to separate limits. The main subsidiaries have their own comparable limit systems.

The standardized methodology for measuring and monitoring trading exposure at DZ BANK (**post-transaction control**) is included in an IT-supported limit monitoring system, to which all relevant trading systems are directly or indirectly connected. A second IT system is used solely for most of the **pre-transaction control**. This functionality is currently being migrated to the system used for post-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.

9.5.5 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.

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.

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 protection provider, garnishee, or issuer forms a group of connected clients or a similar economic entity with the borrower or counterparty.

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 explained in chapter VII.9.5.6 under 'Collateral management'.

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.

9.5.6 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 chapter VII.9.5.8 'Credit-portfolio management').

Collateral in line with the level of risk is generally sought where the rating category is 3B or below on the credit rating master scale and in medium-term or long-term financing arrangements. In addition, recoverable collateral equivalent to 50.0 percent of the finance volume is required in the joint credit business with the local cooperative banks for new business entered into 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, 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 monitored 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 economic aspects of collateral agreements and the responsibilities and authorization levels. This policy specifies contractual parameters, such as the type and quality of collateral, minimum transfer amounts, and delivery deadlines as permitted by regulatory requirements. As a rule, the collateral policy permits only collateral in the form of cash (in euros) to 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). General exceptions to this rule exist for older contracts entered into before the collateral agreement obligation came into force and, in particular, for contracts with local cooperative banks that permit thresholds and securities collateral. Securities collateral must be eligible as collateral with the ECB and have a minimum credit rating of A3 (Moody's) or A- (Standard & Poor's, Fitch Ratings). Exceptions to the standard conditions are approved on the basis of the authorization levels specified in the collateral policy.

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 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.

9.5.7 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 is designed to detect emerging risks at the earliest opportunity and return the affected lending exposures to acceptable levels of risk quality. Another objective is to minimize losses from loan defaults.

In order to identify risk at an early stage, criteria are defined as early-warning indicators that should show when exposures must become subject to special, closer monitoring (intensified loan management) and when lending exposures must be transferred to the specialist units responsible for loan restructuring and workout.

The following lists are maintained to closely monitor lending exposures that are subject to intensified management and lending exposures that are in default:

- The **yellow list** for exposures with latent risk
- The **watch list** for exposures with heightened risk
- The **default list** for exposures with acute risk (exposures that are classified as in default and thus non-performing)

Borrowers are classified as in default and thus **non-performing** either if a material portion of their overall obligation under the loan agreement is past due by more than 90 consecutive calendar days or if it is unlikely that they will meet their payment obligations under the loan agreement in full without the management unit in the Bank sector that granted the loan having recourse to actions such as the recovery of any available collateral. This corresponds to the definition of default specified by the CRR. Borrowers in default are assigned a rating of between 5A and 5E on the VR credit rating master scale.

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.

Concessions qualify as forbearance measures if a borrower is found to meet one of the following **criteria** during the monitoring of credit risk:

- The borrower is included in the default list, watchlist, or yellow list with a rating of 4A.
- The borrower is classified with a rating of 4B or worse, regardless of whether it is on one of the lists or not.
- The borrower is classified with a rating of 4A and payments are past due by more than 30 days.

The borrower must satisfy all of the following criteria before it can exit **forbearance status**:

- The borrower is classified as performing.
- The 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.
- The borrower has made regular interest payments or repayments of principal during at least half of the probation period.
- No payments are past due by more than 30 days.

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.

9.5.8 Credit-portfolio management

Internal credit-portfolio models operated on a decentralized basis 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 chapter VII.8.2.1. A **traffic light system** is used to monitor Bank sector management units' compliance with the limits specified for credit risk.

9.6 Lending volume

9.6.1 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.

9.6.2 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.

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.

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.

9.6.3 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.

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 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.

FIG. 21 – BANK SECTOR: RECONCILIATION OF THE LENDING VOLUME

Lending volume for internal management accounts	€ billion		Reconciliation							
	Dec. 31, 2022	Dec. 31, 2021	Scope of consolidation		Carrying amount and measurement		Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
			Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021				
Traditional lending business	358.9	337.2	14.2	4.6	18.3	26.6	391.4	103.4	96.5	
								103.5	96.5	
								-0.1	-	
								198.8	368.4	189.3
								200.8	191.2	
								-2.0	-1.9	
Securities business	66.3	75.4	-	-	-17.9	-14.6	48.4	48.4	60.8	
								7.5	10.8	
								1.3	1.3	
								39.7	48.6	
Derivatives business	15.4	11.0	-0.3	-0.1	-19.1	-11.4	-4.0	-4.0	-0.5	
								1.6	0.4	
								21.5	-0.5	16.2
								-0.4	-1.7	
Money market business	7.1	7.1	0.8	-	33.3	26.3	41.2	41.2	33.3	
								20.0	11.2	
								2.9	33.3	4.4
								0.2	0.1	
								17.1	17.1	
1.1	0.5									
Total	447.7	430.7	14.7	4.5	14.6	26.9	477.0	462.0		

Not relevant

The total lending volume of the **Bank sector** increased by 4 percent in the year under review, from €430.7 billion as at December 31, 2021 to €447.7 billion as at December 31, 2022. The rise in the lending volume was mainly due to an increase in volume in the 'entities within the cooperative financial network' and 'corporates' asset classes, with both asset classes recording a rise of approximately €9 billion compared with the end of 2021. DZ BANK accounted for most of the increase, which was driven by its lending business (primarily loans and money market lending) with entities in the cooperative financial network and its business performance in the Corporate Banking and Structured Finance divisions.

As at December 31, 2022, a significant proportion (39 percent) of the Bank sector's lending volume was concentrated in the financial sector (December 31, 2021: 38 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.

As at December 31, 2022, a significant proportion (62 percent) of **DZ BANK's** lending volume was also concentrated in the **financials** asset class (December 31, 2021: 63 percent). The composition of this asset class is the same both at DZ BANK and in the Bank sector.

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

9.6.4 Geographical structure of the credit portfolio

Fig. 23 shows the geographical distribution of the credit portfolio by country group. The relevant country for the assignment to a country group is the one in which the economic risk arises. This table has been changed to reflect an adjustment in the internal reporting and now shows the lending volume outside Germany.

As at December 31, 2022, 66 percent of the total lending in the Bank sector outside Germany (December 31, 2021: 68 percent) and 60 percent of the total lending by DZ BANK outside Germany (December 31, 2021: 61 percent) was concentrated in Europe.

9.6.5 Residual maturity structure of the credit portfolio

The breakdown of the credit portfolio by residual maturity as at December 31, 2022 presented in Fig. 24 shows that the lending volume had increased by €10.2 billion in the **short-term maturity band** compared with December 31, 2021. This was attributable to DZ BANK.

By contrast, there was a decrease of €2.2 billion in the **medium-term maturity band** that was primarily attributable to BSH. DZ BANK offset some of the decrease.

The lending volume in the **long-term maturity band** increased by €9.0 billion, which was mainly accounted for by BSH and DZ BANK. However, DZ HYP saw a decline in this maturity band.

FIG. 22 – BANK SECTOR: LENDING VOLUME, BY ASSET CLASS

€ billion	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Entities within the cooperative financial network	132.9	123.6	132.5	123.2
Financials	42.7	40.6	31.6	30.2
Corporates	76.1	67.1	70.7	61.8
Asset-based lending/project finance	11.9	11.9	11.9	10.4
Public sector	36.0	43.5	10.6	10.4
Real estate (commercial and retail customers)	119.0	117.9	–	–
Retail business (excluding real estate customers)	18.0	16.7	0.1	–
ABSs and ABCPs ¹	8.5	7.4	8.2	7.1
Other	2.7	1.9	1.0	0.8
Total	447.7	430.7	266.6	244.0

¹ ABSs = asset-backed securities, ABCPs = asset-backed commercial paper.

FIG. 23 – BANK SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Europe	50.3	48.2	36.6	32.0
of which: eurozone	31.5	31.8	21.2	18.6
North America	14.0	12.2	12.7	10.7
Central America	0.2	0.3	0.2	0.2
South America	1.0	0.9	1.0	0.9
Asia	7.3	6.7	7.1	6.3
Africa	1.3	1.0	1.3	1.0
Other	2.2	2.0	1.8	1.6
Total	76.4	71.3	60.6	52.8

FIG. 24 – BANK SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
≤ 1 year	113.2	103.0	93.2	82.6
> 1 year to ≤ 5 years	112.4	114.6	71.1	65.6
> 5 years	222.1	213.1	102.3	95.9
Total	447.7	430.7	266.6	244.0

9.6.6 Rating structure of the credit portfolio

In the **Bank sector**, the proportion of the total lending volume accounted for by rating classes 1A to 3A (investment grade) was 87 percent as at December 31, 2022 (December 31, 2021: 85 percent). Rating classes 3B to 4E (non-investment grade) represented 11 percent as at the reporting date (December 31, 2021: 14 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, 2022, as had also been the case at the end of 2021.

Rating classes 1A to 3A (investment grade) also dominated lending at **DZ BANK**, where they accounted for 90 percent of the total lending volume (December 31, 2021: 88 percent). Rating classes 3B to 4E (non-investment grade) represented 9 percent as at the reporting date (December 31, 2021: 11 percent). Defaults (rating classes 5A to 5E) accounted for less than 1 percent of the total lending volume as at December 31, 2022, as had also been the case at the end of 2021.

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, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Investment grade	1A	29.5	32.7	11.9	11.5
	1B	8.5	7.6	5.0	4.1
	1C	146.6	135.8	139.2	127.3
	1D	13.2	13.4	5.8	6.7
	1E	18.1	14.4	6.4	3.4
	2A	19.4	16.7	7.3	7.0
	2B	26.6	25.7	11.1	9.5
	2C	28.5	23.3	13.8	10.0
	2D	32.9	30.8	12.9	10.9
	2E	41.2	39.7	15.7	14.4
	3A	26.8	25.8	10.0	9.8
Non-investment grade	3B	14.7	17.4	7.5	7.5
	3C	11.9	14.7	4.6	5.8
	3D	8.6	9.6	4.2	5.3
	3E	4.2	6.2	2.0	2.5
	4A	2.3	2.9	0.7	1.0
	4B	3.7	3.5	2.3	2.1
	4C	1.2	1.2	0.6	0.5
	4D	0.9	1.7	0.5	1.4
	4E	3.3	1.6	2.4	0.6
Default		3.1	3.4	2.0	1.8
Not rated		2.6	2.6	0.6	1.0
Total		447.7	430.7	266.6	244.0

9.6.7 Collateralized lending volume

Fig. 26 shows the breakdown of the collateralized lending volume at overall portfolio level by type of collateral.

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 €132.6 billion as at December 31, 2021 to €133.0 billion as at December 31, 2022. The collateralization rate was 34.9 percent as at the reporting date (December 31, 2021: 37.3 percent).

At €12.2 billion, **DZ BANK's** total collateral value as at December 31, 2022 was up year on year (December 31, 2021: €11.5 billion). The collateralization rate had declined to 5.4 percent as at the reporting date (December 31, 2021: 5.7 percent).

FIG. 26 – BANK SECTOR: COLLATERAL VALUE, BY TYPE OF COLLATERAL

€ billion	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Guarantees, indemnities, risk subparticipation	7.4	7.3	1.8	1.9
Credit insurance	5.6	4.9	5.6	4.9
Land charges, mortgages, registered ship and aircraft mortgages	116.2	116.0	2.4	2.1
Pledged loans and advances, assignments, other pledged assets	2.0	2.3	1.2	1.4
Financial collateral	1.4	1.8	0.9	1.1
Other collateral	0.4	0.2	0.3	0.2
Total collateral	133.0	132.6	12.2	11.5
Lending volume	381.4	355.3	225.8	201.7
Uncollateralized lending volume	248.3	222.7	213.5	190.2
Collateralization rate (percent)	34.9	37.3	5.4	5.7

9.6.8 Volume of closely monitored and non-performing loans

Closely monitored loans and forbore exposure

Fig. 27 shows the volume of loans on the three monitoring lists – **yellow list**, **watchlist**, and **default list** – and the forbore exposure also included in these lists. A further item in the table shows the exposure managed as forbore 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

€ million	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Yellow list lending volume	3,458	3,348	2,608	2,558
of which: forbore exposure	151	120	149	78
Watchlist lending volume	6,221	4,397	4,458	3,032
of which: forbore exposure	919	753	763	662
Default list lending volume	3,124	3,363	2,021	1,827
of which: forbore exposure	1,536	1,878	1,063	972
Total lending volume on monitoring lists	12,804	11,109	9,086	7,416
of which: forbore exposure	2,606	2,751	1,975	1,712
Off-monitoring-list forbore exposure	394	461	–	–
Total forbore exposure¹	2,999	3,213	1,975	1,712

¹ Both on and off the monitoring lists.

The **closely monitored lending volume** in the **Bank sector** rose by 15 percent from December 31, 2021 to December 31, 2022. This increase was primarily attributable to customers of DZ BANK and was mainly due to the fallout from the war in Ukraine. The economic conditions and the credit ratings of borrowers in the countries affected by the war, Russia, Ukraine, and Belarus, deteriorated in 2022.

By contrast, the lending volume of the **Bank sector** classed as **forbore** fell by 7 percent to €2,999 million (December 31, 2021: €3,213 million). This decrease was primarily attributable to cases at the former DVB.

At **DZ BANK**, the closely monitored lending volume went up by 23 percent and the closely monitored forbore exposure by 15 percent.

Non-performing loans

As at December 31, 2022, the volume of non-performing loans in the **Bank sector** had fallen to €3.1 billion from €3.4 billion as at December 31, 2021. As a result of this decrease, the NPL ratio went down from 0.8 percent to 0.7 percent.

Non-performing loans at **DZ BANK** amounted to €2.0 billion as at December 31, 2022 (December 31, 2021: €1.8 billion), causing the NPL ratio to rise to 0.8 percent (December 31, 2021: 0.7 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, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Total lending volume (€ billion)	447.7	430.7	266.6	244.0
Volume of non-performing loans (€ billion) ¹	3.1	3.4	2.0	1.8
Balance of loss allowances (€ billion) ²	1.3	1.5	0.9	0.8
Coverage ratio (percent) ³	75.7	75.7	75.5	67.6
NPL ratio (percent) ⁴	0.7	0.8	0.8	0.7

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.

9.7 Credit portfolios particularly affected by negative macroeconomic conditions

The following sections describe credit portfolios in which the effects of negative macroeconomic conditions were more noticeable than in the rest of the credit portfolios. The figures presented below are included in the disclosures for the lending volume as a whole (see chapter VII.9.6).

9.7.1 Loans and advances to borrowers in eurozone periphery countries

The volume of loans and advances to borrowers in eurozone periphery countries decreased in the second half of 2022, resulting in an improvement in the key risk indicators. This means that, unlike in the 2021 risk report, the affected exposures are no longer considered to be a credit portfolio with increased risk content. Nevertheless, Portugal, Spain and, in particular, Italy continue to be monitored closely as their debt levels remain high. If there is a further rise in interest rates in the future, the credit risk in these countries may potentially increase again.

As at December 31, 2022, loans and advances to borrowers in the countries directly affected by the economic policy divergence in the eurozone attributable to the **Bank sector** and to **DZ BANK** amounted to €3,660 million (December 31, 2021: €6,465 million) and €1,751 million (December 31, 2021: €2,057 million) respectively. They mainly consisted of securities transactions. The decrease was predominantly due to disposals, maturities, and reductions in fair value at DZ HYP.

Fig. 29 shows the country breakdown of the exposures.

9.7.2 Automotive finance

The **automotive sector** has been in a state of upheaval for a number of years and is faced with a number of issues, notably low margins and huge capital requirements. The European Parliament's decision to end the sale of vehicles with internal combustion engines by 2035 will further accelerate the switch to electric vehicles and so keep the pressure on borrowers to transform. COVID-19 lockdowns in China, shortages of base products (especially semiconductors), and the war in Ukraine led to supply chain disruptions that impacted on production in the reporting year.

FIG. 29 – BANK SECTOR: LOANS AND ADVANCES TO BORROWERS IN EUROZONE PERIPHERY COUNTRIES¹

€ million	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Portugal	192	917	106	153
Italy	1,374	3,002	782	856
Spain	2,093	2,547	863	1,049
Total	3,660	6,465	1,751	2,057

¹ Unlike the other presentations of lending volume, traditional lending business in this case includes long-term equity investments.

Increased costs for commodities, energy, and transportation also weighed heavily. In addition, demand was increasingly depressed by the uncertainty created by price rises, the war in Ukraine, and the energy supply.

While automotive manufacturers are delivering a very healthy financial performance, component suppliers are clearly feeling the effects of cost increases and disruptions to production.

Nonetheless, the credit quality of the DZ BANK's automotive finance portfolio, which is assigned to the corporates segment, is still in line with the average for all sectors in the corporates portfolio. The volume of lending in DZ BANK's automotive finance portfolio came to €5.0 billion as at December 31, 2022 (December 31, 2021: €4.5 billion).

9.7.3 Commercial real estate finance

DZ HYP's lending business with corporates includes financing for **hotels, office real estate, department stores, shopping malls, and inner-city commercial properties** that are mainly used for retail/wholesale businesses not offering day-to-day essentials (retail/wholesale segment). Since 2020, an increasingly high degree of uncertainty has been identified for these asset classes in view of the COVID-19 pandemic and related government-imposed safeguards, potentially long-term structural changes, and the negative macroeconomic conditions described in chapter VII.4.2. So far, those credit portfolios have shown themselves to be crisis-resistant overall due to their conservative finance structures, the quality of the real estate, and borrower credit ratings. The effects of the pandemic to date have impacted on cash flows and the valuation of the real estate in recent years.

High inflation rates and negative economic forecasts are currently creating uncertainty for these asset classes. For example, the rise in prices resulted in higher operating costs for commercial real estate finance. The hotel industry is likely to see a fall in demand owing to customers' efforts to reduce travel costs. For office real estate, there is uncertainty because the majority of actors in an economic system create and/or manage their value added in offices; a reduction in revenue can therefore lead to lower demand for office space in the long term. In the retail/wholesale segment, high inflation and muted economic growth are taking their toll. As a result, purchases of items that are not day-to-day essentials are being postponed. Early positive indicators have recently emerged, such as lower producer prices, weakening inflation, and much better economic prospects, but it remains to be seen whether these will bring lasting relief. Moreover, any reintroduction of government restrictions in order to contain the COVID-19 pandemic would weigh heavily on all of the aforementioned asset classes.

Increased levels of uncertainty surround loans to **project developers and property developers**, primarily due to the increases in the cost of materials and energy and to shortages of materials and staff. These developments, which had been triggered by disruptions to supply chains, were further exacerbated by the war in Ukraine. Project developers and property developers responded to this by delaying the start of new projects. Although there have recently been signs that the situation is easing, thanks to improved availability of materials and a fall in price levels, it is not yet clear whether this can be sustained.

As at December 31, 2022, the **volume** of corporate loans extended by DZ HYP amounted to a total of €46.8 billion (December 31, 2021: €47.6 billion). Of this total, the following amounts were attributable to the aforementioned asset classes as at the reporting date (figures as at December 31, 2021 shown in parentheses):

- Hotel financing: €2.4 billion (€2.7 billion)
- Office real estate finance: €14.6 billion (€13.5 billion)
- Department store financing: €0.6 billion (€0.7 billion)
- Shopping mall financing: €2.7 billion (€2.9 billion)
- Inner-city commercial properties mainly used for retail/wholesale businesses not offering day-to-day essentials: €0.8 billion
- Property developer and project developer finance: €5.1 billion (€4.5 billion)

9.8 Credit portfolios particularly affected by acute global crises

The following sections describe credit portfolios in which the effects of acute global crises were more noticeable than in the rest of the credit portfolios. The figures presented below are included in the disclosures for the lending volume as a whole (see chapter VII.9.6).

9.8.1 Credit portfolios particularly affected by the war in Ukraine

In 2022, the **war in Ukraine** had a significant negative impact on the credit ratings of borrowers in the countries affected directly (Russia, Ukraine, and Belarus). The exposure of Bank sector entities in these countries totaled €702 million as at December 31, 2022 (December 31, 2021: €959 million). The proportion of the Bank sector's total lending volume as at the reporting date was less than 1 percent, as was also the case at the end of 2021. The exposure was notable for export and trade finance as well as project finance and securities.

FIG. 30 shows the breakdown of the net lending volume by country affected.

FIG. 30 – BANK SECTOR: NET LENDING VOLUME IN COUNTRIES AFFECTED DIRECTLY BY THE WAR IN UKRAINE

€ million	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Russia	130	222	128	221
Belarus	6	13	6	13
Ukraine	2	15	2	15
Total	139	250	136	249

Taking account of recoverable collateral, the net lending volume was €139 million as at December 31, 2022 (December 31, 2021: €250 million). The collateral predominantly consists of cover provided by export credit agencies.

Over and above the countries directly involved in the war in Ukraine, the conflict has a negative impact globally on the credit ratings of borrowers. This was reflected in the figures for the Bank sector's total lending volume (see chapter VII.9.6). The closely monitored lending volume had increased as at the reporting date as a result of the war in Ukraine (see chapter VII.9.6.8).

9.8.2 Credit portfolios particularly affected by the general rise in energy prices

Despite supplies of gas from Russia being cut off, no acute shortage of gas had materialized by the reporting date. So far, only a few subportfolios have been particularly affected by the rise in general energy prices. Overall, the impact in 2022 was moderate. Nonetheless, the increase in prices may lead to higher credit risk in the Bank sector going forward.

9.9 Credit portfolios with increased risk content

The credit portfolios with increased risk content are analyzed separately because of their significance for the risk position. The figures presented below are included in the above analyses of the total lending volume (see chapter VII.9.6).

9.9.1 Finance for cruise ships

The Omicron variant of COVID-19 held back the recovery of cruise ship companies. Nevertheless, they all have a comfortable liquidity buffer and their entire fleets are in operation. The latest capacity utilization and booking figures are encouraging and are either on a par with, or even above, the levels seen in 2019 before the pandemic. Most of the companies have been in profit again since the second half of 2022. These companies do need to regain their former strength quickly so that they can meet their increased repayment obligations that have arisen as a result of repayments being deferred in the past two years. High inflation, the threat of recession, rising fuel prices, interest rates (with regard to refinancing), and the risk of new variants of the virus pose a threat to the recovery of the cruise ship companies' operations and could result in the risk of trips not going ahead. Companies would then have to refund customers' advance payments.

Cruise ship finance in the Bank sector is mainly brought together under **DZ BANK**. As at December 31, 2022, the volume of cruise ship finance amounted to €1,052 million (December 31, 2021: €1,099 million). Of this total, €652 million was covered by export credit insurance as at December 31, 2022 (December 31, 2021: €678 million).

9.9.2 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 continuing to consolidate. 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. The shipyards currently find themselves in the middle of this transformation process, which – together with rising energy and procurement costs – is also likely to affect customer credit quality in the year ahead. This subportfolio is therefore classified as a portfolio with increased risk content.

The lending volume related to the financing of cruise ship building stood at €332 million as at December 31, 2022 (December 31, 2021: €341 million).

9.10 Risk position

9.10.1 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, 2022, the **risk capital requirement** in the Bank sector was €3,766 million (December 31, 2021: €5,037 million) with a **limit** of €6,387 million (December 31, 2021: €7,188 million). The decrease was mainly attributable to the reduced portfolios of DZ HYP in eurozone periphery countries.

DZ BANK's credit value-at-risk as at December 31, 2022 amounted to €2,254 million (December 31, 2021: €2,134 million). The corresponding **limit** was €2,854 million (December 31, 2021: €2,750 million).

Fig. 31 shows the credit value-at-risk together with the average probability of default and expected loss.

FIG. 31 – BANK SECTOR: FACTORS DETERMINING THE CREDIT VALUE-AT-RISK

	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Average probability of default (percent)	0.3	0.4	0.2	0.2
Expected loss (€ million)	460	489	217	206
Credit value-at-risk (€ million)	3,766	5,037	2,254	2,134

In the analysis of **individual concentrations** in the **Bank sector**, the 20 counterparties associated with the largest credit value-at-risk accounted for 28 percent of the total credit value-at-risk as at December 31, 2022 (December 31, 2021: 38 percent). These counterparties largely comprised borrowers from the financial sector (including the cooperative banks) with investment-grade ratings, eurozone periphery countries, and individual borrowers with non-investment-grade ratings. The decrease in 2022 was mainly attributable to the reduced portfolios of DZ HYP in eurozone periphery countries.

The proportion for **DZ BANK** was 40 percent (December 31, 2021: 35 percent). These counterparties largely comprised borrowers from the financial sector (including the cooperative banks) with an investment-grade rating.

9.10.2 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. 32.

FIG. 32 – BANK SECTOR: CREDIT VALUE-AT-RISK¹ FOR CREDIT PORTFOLIOS WITH INCREASED RISK CONTENT

€ million	Bank sector		DZ BANK	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Cruise ship finance	14	13	14	13
Finance for cruise ship building	3	4	3	4

¹ Excluding decentralized capital buffer requirement.

As at December 31, 2022, the credit value-at-risk in respect of **cruise ship** finance and the financing of **cruise ship building** amounted to €14 million (December 31, 2021: €13 million) and €3 million (December 31, 2021: €4 million) respectively. These amounts were attributable in full to DZ BANK.

10 Equity investment risk

10.1 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 TeamBank.

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.

10.2 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 TeamBank, the investments are mainly the responsibility of the Corporate Development division.

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.

10.3 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.

10.4 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 (portfolio risk measurement). 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. For a minority of the long-term equity investments, a look-through approach is taken in which the individual risk types that exist in each long-term equity investment are measured (differentiated risk measurement).

10.5 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 €2,858 million as at December 31, 2022 (December 31, 2021: €2,953 million). As at December 31, 2022, the carrying amounts of the long-term equity investments of **DZ BANK** came to €1,880 million (December 31, 2021: €1,815 million). These two figures differ from the total of the carrying amounts of long-term equity investments shown in the notes to the consolidated financial statements due to the method for measuring equity investment risk.

The **risk capital requirement** for equity investment risk in the **Bank sector** was calculated to be €997 million as at the reporting date (December 31, 2021: €996 million). The **limit** was €1,230 million (December 31, 2021: €1,220 million). The **risk capital requirement** for **DZ BANK** as at December 31, 2022 came to €632 million (December 31, 2021: €636 million) with a **limit** of €767 million (December 31, 2021: €700 million).

11 Market risk

11.1 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.

11.2 Business background and risk strategy

11.2.1 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.

11.2.2 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.

11.3 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**.

Spread risk, including migration risk, is the most significant type of market risk for 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. The widening of credit spreads can be triggered by the macroeconomic risk factors described in chapter VII.4.2.

In the context of the **asset management activities** brought together under UMH, **rising interest rates** are causing the fair values of fixed-income funds to fall. Particularly in the case of pension schemes with an unfavorable duration asymmetry and a high volume of fixed-income funds, this may mean that the guarantee commitments given to customers cannot be met from the investment instruments in the products. 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. If UMH has to provide additional capital to be able to meet its guarantee commitments, this could have a 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 VII.4.2.2.

11.4 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.

11.5 Management of market risk

11.5.1 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. 33.

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 one 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 and key risk indicators used, the frequency of risk measurement, and the main risk measurement parameters. To supplement this risk measurement 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 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.

11.5.2 Decentralized market risk measurement

Decentralized measurement of general market risk and spread risk

In addition to the models specified in chapter VII.11.5.1, 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.

11.5.3 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.

11.5.4 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.

11.5.5 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.

11.5.6 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 also used for risk management purposes but are currently 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.

11.6 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.

11.7 Risk position

11.7.1 Value-at-risk

Fig. 33 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. 34 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**.

As at December 31, 2022, 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:** €54 million (€10 million)
- **DZ BANK:** €11 million (€10 million)

The significant increase in the key value-at-risk figures for interest-rate risk, spread risk, and aggregate risk was primarily attributable to the sharp rise in market volatility in 2022.

The value-at-risk for interest-rate risk in all of the portfolios (comprising the trading and non-trading books presented in Fig. 33) 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.

FIG. 33 – BANK SECTOR: CHANGE IN MARKET RISK BY RISK SUBTYPE^{1,2}

€ million	Interest-rate risk		Spread risk		Equity risk ³		Currency risk		Commodity risk		Diversification effect ^{4,5}		Aggregate risk	
	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, 2022	53	12	70	31	11	2	3	3	3	2	-34	-17	107	34
Average	41	11	66	29	12	2	3	3	3	2	-30	-18	97	29
Maximum	69	20	79	33	14	4	6	6	4	2	-44	-26	128	39
Minimum	9	7	41	13	10	1	1	1	2	1	-16	-9	48	15
Dec. 31, 2021	10	10	43	14	14	4	2	2	2	1	-22	-13	48	18

1 The disclosures relate to general market risk and spread risk. Asset-management risk is not included.

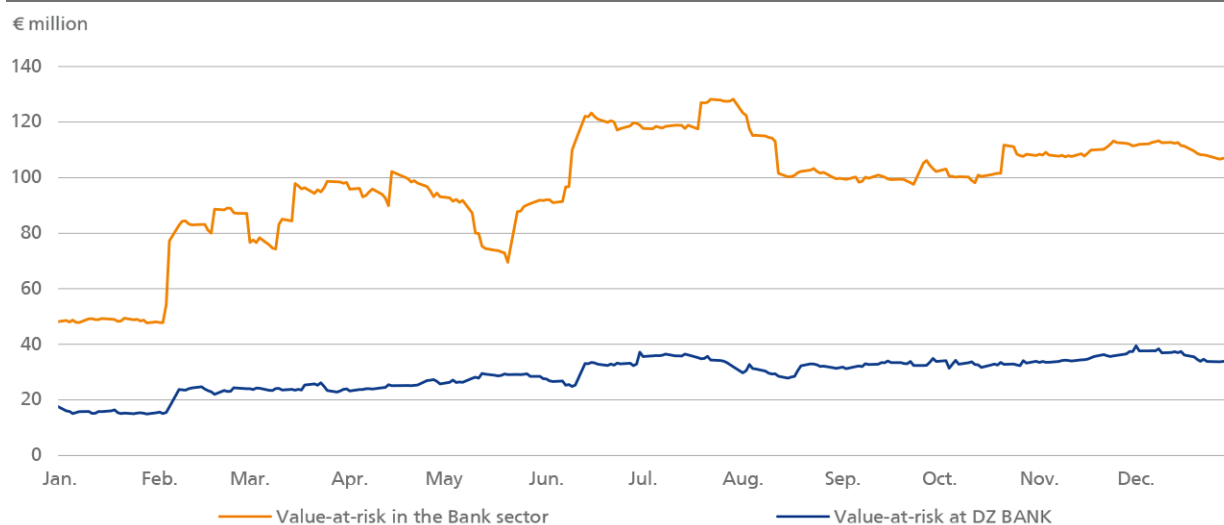
2 Value-at-risk with 99.0% confidence level, 1-day holding period, 1-year observation period, based on a central market risk model for the Bank sector. Concentrations and effects of diversification were taken fully into account when calculating the risks.

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. 34 – BANK SECTOR: CHANGE IN MARKET RISK BY TRADING DAY¹



¹ Value-at-risk with 99.0% 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.

11.7.2 Risk capital requirement

As at December 31, 2022, the **risk capital requirement** for market risk in the **Bank sector** and at **DZ BANK** amounted to €3,730 million (December 31, 2021: €3,713 million) and €1,481 million (December 31, 2021: €1,517 million) respectively, with **limits** of €6,680 million (December 31, 2021: €5,725 million) and €3,175 million (December 31, 2021: €2,400 million) respectively.

The Bank sector's risk capital requirement encompasses the **asset-management risk of UMH**. Asset-management risk as at December 31, 2022 amounted to €342 million (December 31, 2021: €347 million). Heightened volatility in the interest-rate and equity markets led to fluctuations in the risk capital requirement during the year. At the end of 2022, the level of risk was roughly the same as at the end of the previous year.

12 Technical risk of a home savings and loan company

12.1 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.

12.2 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.

12.3 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 operations 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.

12.4 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.

12.5 Risk position

As at December 31, 2022, the **risk capital requirement** for the technical risk of a home savings and loan company amounted to €698 million (December 31, 2021: €639 million) with a **limit** of €785 million (December 31, 2021: €706 million). In the prevailing market conditions, stronger effects – that therefore lead to increased risk – result from the changes in the parameters 'customer behavior' and 'decline in new business' that are simulated in the risk calculation.

13 Business risk

13.1 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. 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.

13.2 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

13.3 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.

13.4 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'.

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 risk situation and capital situation and about the income situation from an HGB perspective.

13.5 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'.

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 dialogue 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.

13.6 Risk position

As at December 31, 2022, the **risk capital requirement** for business risk (including reputational risk) both in the **Bank sector** and at **DZ BANK** amounted to €43 million (December 31, 2021: €407 million and €295 million respectively). The **limit** in the **Bank sector** was €280 million as at the reporting date (December 31, 2021: €640 million). At **DZ BANK**, the **limit** was €235 million (December 31, 2021: €445 million). Reputational risk is included in the figures shown.

The decrease in risk was attributable to an improvement in the budgeted figures taken from the IFRS income statement that are used to calculate risk. The limit was also lowered to tie in with this decline in risk.

14 Reputational risk

14.1 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.

14.2 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.

14.3 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 transition risks, social risks, and corporate governance risks assessed in connection with **ESG risks** were to materialize, this could give rise to heightened reputational risk.

14.4 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 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.

15 Operational risk

15.1 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.

15.2 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 PRIVATBANK and UMH are particularly subject to operational risk.

The management units 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

15.3 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 Management & Services 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 are also assigned tasks relating to the management of operational risk. 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.

15.4 Central risk management

15.4.1 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 are also designed to enable risk concentrations to be identified.

Risk indicators

In addition to the loss database and risk self-assessment, risk indicators are intended to enable risk trends and concentrations to be identified at an early stage and to detect weaknesses in business processes. A system of warning lights is used to indicate risk situations based on specified threshold values. Risk indicators within the Bank sector are collected systematically and regularly.

15.4.2 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.

15.4.3 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.

15.4.4 Mitigating and avoiding operational risk

Continual improvement of business processes and control 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.

15.5 Operational risk subtypes

15.5.1 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, and support – or inadequate preventive measures – 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 chapter VII.3.5.5. The data protection measures in place and the code of conduct are also explained in the same chapter. Measures such as the strict separation of functions, the requirement for verification by a second person, restrictions on IT and building access authorizations, and a sustainability-oriented remuneration system are designed to contain risk, in particular the risk of internal fraud.

15.5.2 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'.

15.5.3 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 (e.g. due to hacker attacks), 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. 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 and losses from operational risk.

Risk management

The basic principles for managing information security applicable to the entities in the DZ BANK Group are described in chapter VII.3.5.6. 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 divisions 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.

The IT divisions apply comprehensive physical and logical precautionary measures to guarantee the security of data and IT systems 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 chapter VII.3.5.6.

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.

15.5.4 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 chapter VII.3.5.6.

15.5.5 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:

- Failure of the relevant service provider 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 chapter VII.3.5.7.

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 reviewing and control units, including compliance, 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.

15.5.6 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 management and 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.

15.6 Impact of the war in Ukraine

The monitoring of sanctions necessitates manual transaction checks that entail an increased workload. This may result, for example, in delays to the execution of transactions or, if applicable, penalty interest payments for trading that involves securities subject to sanctions. As at December 31, 2022, the relevant risk indicators revealed latent increased risk. Risk indicators are intended to enable risk trends and concentrations to be identified at an early stage and to detect weaknesses in business processes.

15.7 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.

The past four quarters – that is, the period from January 1 to December 31, 2022 – represent the relevant reporting period for an analysis of net losses. Fig. 35 shows the internal net losses from loss events reported in this period, classified by operational risk subtype, and a comparison with their long-term mean.

FIG. 35 – BANK SECTOR: NET LOSSES¹ BY OPERATIONAL RISK SUBTYPE

	Bank sector		DZ BANK	
	Jan. 1, 2022– Dec. 31, 2022	Long-term mean ²	Jan. 1, 2022– Dec. 31, 2022	Long-term mean ²
Proportion of total net losses (percent)				
Compliance risk	40.9	44.1	44.7	45.3
Legal risk	40.4	36.4	46.3	39.3
Information risk including ICT risk	1.5	5.5	0.4	4.0
Security risk	1.3	2.0	0.6	1.3
Outsourcing risk	0.3	0.6	0.2	0.5
Project risk	0.6	0.8	–	0.5
Other operational risk	15.0	10.5	8.0	9.1

¹ Internal losses.

² The long-term mean is derived from loss data recorded since 2006.

In the past four quarters, internal losses both in the **Bank sector** and at **DZ BANK** were dominated by **compliance risk** and **legal risk**. The absolute losses for these two risk subtypes were lower than in the prior period.

Losses did not reach a critical level relative to the expected loss from operational risk at any point during 2022, either in the Bank sector or at DZ BANK.

15.8 Risk position

As at December 31, 2022, the capital requirement for operational risk at **Bank sector** level was calculated at €966 million (December 31, 2021: €941 million) with a **limit** of €1,112 million (December 31, 2021: €1,102 million).

As at December 31, 2022, the corresponding requirement at **DZ BANK** was €554 million (December 31, 2021: €515 million). The **limit** as at December 31, 2022 was €625 million (December 31, 2021: €596 million).

Fig. 36 shows the structure of the risk profile for operational risk in the Bank sector and at DZ BANK based on **risk subtypes**.

FIG. 36 – BANK SECTOR: DISTRIBUTION OF RISK CAPITAL REQUIREMENT FOR OPERATIONAL RISK, BY RISK SUBTYPE

Percent	Bank sector ¹		DZ BANK ²	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Compliance risk	31.7	32.5	15.0	15.1
Legal risk	19.2	20.6	9.3	9.5
Information risk including ICT risk	15.5	14.3	5.3	4.8
Security risk	5.5	5.5	1.9	1.6
Outsourcing risk	5.6	6.5	2.1	2.1
Project risk	6.6	7.4	2.8	2.8
Other operational risk	15.9	13.3	8.1	6.8

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, 2022 compared with the end of the previous year. **Compliance risk** and **legal risk** accounted for the most significant proportions of the risk capital requirement. A large proportion of the risk capital requirement for these two risk subtypes was determined by the recorded losses and by the hypothetical risk scenarios for changes to case law and for breaches of sanctions and embargoes. The largest increase in the risk capital requirement was seen in **other operational risk**. It largely resulted from adjustments to the hypothetical scenarios for the incorrect communication/interpretation of business information and incorrect execution of transactions and processes. The growth of information risk including ICT risk was mainly attributable to adjustments to the hypothetical hacker-attack scenarios. The small decrease in the share of risk capital for project risk and outsourcing risk was predominantly due to adjustments to the underlying hypothetical scenarios for additional project costs and for outsourcing.

Insurance sector

16 Basic principles of risk management in the Insurance sector

16.1 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: optimizing the economic risk/return profile, ensuring required returns on investments taking into account individual risk-bearing capacities, achieving defined minimum investment returns in stress scenarios, and conserving hidden assets 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.

16.2 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.

17 Actuarial risk

17.1 Definition and business background

17.1.1 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.

17.1.2 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.

17.2 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, disproportionately sharp cost increases, and a rise in contract lapses. If the actual trends in life expectancy, disability-morbidity, costs, or contract lapses 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.

Inflation, which rose sharply in 2022, represents a cost driver for claims incurred because higher prices for procuring commodities and other items result in higher claims settlement expenses. This may lead to adjustments to premiums, primarily in residential building insurance and motor vehicle insurance.

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).

17.3 Management of life actuarial risk

17.3.1 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 and an increase of 1 percentage point in the cost inflation rate.

17.3.2 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.

17.4 Management of health actuarial risk

17.4.1 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 chapters on life actuarial risk (chapter VII.17.3) and non-life actuarial risk (chapter VII.17.5) 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.

17.4.2 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, 2022, R+V used the new PKV mortality table valid for 2022 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.

17.5 Management of non-life actuarial risk

17.5.1 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 most 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.

17.5.2 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.

The effects of inflation are factored into the costing of insurance rate scales for new business and into premium and index adjustments for in-force business.

17.5.3 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. 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, the

United States, and other regions of the world to which it is exposed, R+V has entered into a number of retrocession agreements as part of its inward reinsurance business.

R+V monitors the claims rate trend promptly and continuously, allowing it to initiate preventive measures so that it always has a sufficient level of reserves. The reserves position is monitored in a number of ways, including by means of an expert report, which is prepared once a year.

17.6 Impact of the war in Ukraine

In view of the developments in connection with the war in Ukraine, no risks are underwritten in respect of Russia and Belarus in new **direct non-life insurance business** as a rule. In in-force business, no policies are extended. Exceptions apply in respect of corporate customer business. Furthermore, the effects of a possible gas embargo are considered using impact analyses and stress tests.

In relation to credit insurance policies assigned to inward reinsurance business, R+V imposed extensive underwriting restrictions in respect of Russian, Ukrainian, and Belarusian counterparties in 2022. A small volume of claims were recorded for these counterparties during the reporting period. The war in Ukraine did not lead to any significant increase in non-life actuarial risk, within which risk from credit insurance policies is included.

17.7 Claims rate trend in non-life insurance

In **direct non-life insurance business**, costs for natural disaster claims and major claims declined year on year. The natural disasters of particular note were a series of winter storms (Ylenia, Zeynep, and Antonia) and another series of storms (Emmelinde and Finja), which together resulted in a total claims volume for R+V of €161 million. A major claim of €71 million arose in the property insurance business. In both 2022 and 2021, R+V had reinsurance arrangements in place for natural disasters in the direct non-life insurance business, which is concentrated in Germany. The costs for basic claims in the non-life insurance business increased year on year. 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 74.0 percent in 2021 to 74.2 percent in 2022.

Costs for major claims and natural disaster claims went up year on year in the **inward reinsurance business**. Major claim events occurred in the United States, Caribbean, and Canada (derecho storms, hail and tornadoes, Hurricane Ian), South Africa (flooding), and Europe (series of winter storms, June storms). The resulting total claims incurred at R+V came to €327 million. To reduce the risk from the global reinsurance portfolio, a retrocession program was put in place that was more extensive than in previous years. 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 73.5 percent in 2021 to 73.3 percent in 2022.

Changes in claims rates and settlements (net of reinsurance) in direct non-life insurance and inward non-life reinsurance business are shown in Fig. 37.

FIG. 37 – INSURANCE SECTOR: CLAIMS RATE AND SETTLEMENTS (NET OF REINSURANCE)¹

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Claims rate (net) as percentage of premiums earned										
Including major/natural disaster claims	73.9	73.8	76.5	76.3	76.2	76.6	76.1	76.2	75.5	78.2
Excluding major/natural disaster claims	66.1	68.0	70.4	72.7	71.1	72.8	72.3	74.0	73.8	69.1
Settlements (net) as percentage of provision for incoming claims										
Non-life	2.9	2.9	1.9	0.6	1.1	3.1	3.6	1.6	2.1	0.5

¹ Direct non-life insurance business and inward non-life reinsurance.

17.8 Risk position

As at December 31, 2022, the **overall solvency requirement** for **life actuarial risk** amounted to €1,045 million (December 31, 2021: €343 million) with a **limit** of €1,200 million (December 31, 2021: €600 million). The increase in risk was due to higher lapse risk resulting from the rise in interest rates during the reporting year.

As at the reporting date, the **overall solvency requirement** for **health actuarial risk** was €163 million (December 31, 2021: €231 million) with a **limit** of €300 million (December 31, 2021: €350 million). The decrease in risk was due to the decline in insurance liabilities as a consequence of the rise in interest rates.

The **overall solvency requirement** for **non-life actuarial risk** amounted to €1,807 million as at December 31, 2022 (December 31, 2021: €1,939 million) with a **limit** of €3,000 million (December 31, 2021: €4,600 million). Again, the reduction in risk was largely due to decreased insurance liabilities as a consequence of the rise in interest rates.

18 Market risk

18.1 Definition and business background

18.1.1 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).

18.1.2 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.

18.2 Risk factors

A **further rise in interest rates** and a widening of bond spreads could lead to a further reduction in the fair values of investments. Information on a further unexpected rise in interest rates can be found in chapter VII.4.2.2. 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, Russia's war of aggression in Ukraine, and geopolitical tensions (see chapter VII.4.2). 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.

The **real estate markets underwent a correction** in 2022. The potential negative impact on real estate finance at R+V was analyzed. No increase in risk has been identified so far.

18.3 Risk management

18.3.1 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.

18.3.2 Principles of market risk management

The risk attaching to investments is managed in accordance with the guidelines specified by EIOPA, the stipulations in VAG, the information provided in regulatory circulars, and internal investment guidelines (for details, see 'Market risk strategy' in chapter VII.16.1). 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 further increase in interest rates and volatile capital markets. R+V uses derivatives to manage market risk.

18.3.3 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. 43 in chapter VII.18.4.2). 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 scores obtained from third-party data providers. These are drawn from assessments of climate risk, controversies, and breaches of standards, such as the UN Global Compact. A target has been set of achieving climate neutrality for investments by 2050. This target includes existing CO₂ targets for the corporate bonds and equities asset classes as well as the definition of specific targets for other asset classes as soon as this is possible. R+V can initiate processes to engage with individual issuers in order to mitigate ESG risks.

18.3.4 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.

18.3.5 Distinctive features of managing market risk in personal insurance business

For life insurance contracts and for casualty insurance contracts with premium refund clauses that guarantee minimum returns, there is a risk that the guaranteed minimum return agreed for certain products when contracts are signed cannot be generated in the capital markets over the long term. 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.

Market risk can be countered by writing new business that takes into account the current capital market situation and by taking 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 2022, R+V reduced these supplementary reserves in the life insurance business by a total of €175 million to €5,233 million due to the rise in interest rates. These reserves for casualty insurance with premium refund were lowered by €7 million to €36 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. 38.

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 2022 for observation units with a premium adjustment effective January 1, 2022.

FIG. 38 – INSURANCE SECTOR: BENEFIT RESERVES BY DISCOUNT RATE FOR THE MAIN INSURANCE PORTFOLIOS¹

Discount rate	Proportion of total benefit reserve in 2022 ²		Proportion of total benefit reserve in 2021 ²	
	€ million	Percent	€ million	Percent
0.00%	7,074	9.4	6,897	9.3
0.01%	73	0.1	98	0.1
0.08%	5	–	5	–
0.10%	38	0.1	21	–
0.15%	65	0.1	–	–
0.25%	2,438	3.2	1,453	2.0
0.30%	160	0.2	159	0.2
0.35%	1,026	1.4	956	1.3
0.40%	60	0.1	44	0.1
0.50%	215	0.3	213	0.3
0.75%	1	–	–	–
0.90%	8,675	11.5	8,545	11.5
1.00%	93	0.1	121	0.2
1.10%	372	0.5	225	0.3
1.25%	2,780	3.7	2,721	3.7
1.50%	47	0.1	12	–
1.55%	8	–	14	–
1.75%	6,643	8.8	6,403	8.6
1.80%	285	0.4	1,054	1.4
2.00%	858	1.1	610	0.8
2.25%	11,922	15.8	11,640	15.7
2.50%	95	0.1	96	0.1
2.75%	9,194	12.2	8,962	12.1
3.00%	1,468	2.0	1,974	2.7
3.25%	7,209	9.6	7,159	9.6
3.50%	2,704	3.6	3,108	4.2
3.75%	120	0.2	3	–
4.00%	6,865	9.1	7,102	9.6

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.

18.3.6 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.

18.4 Lending volume

18.4.1 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. 39 shows a reconciliation of the lending volume on which the risk management is based to individual balance sheet items in order to provide a transparent illustration of the link between the consolidated financial statements and risk management. There are discrepancies between the internal management and external consolidated financial reporting measurements for some portfolios owing to the focus on the risk content of the items. Other main reasons for the discrepancies between the two sets of figures are differences in the scope of consolidation, differences in the definition of lending volume, and various differences in recognition and measurement methods.

FIG. 39 – INSURANCE SECTOR: RECONCILIATION OF THE LENDING VOLUME

€ billion Lending volume for internal management accounts		Reconciliation						Lending volume for the consolidated financial statements		
		Scope of consolidation		Definition of the lending volume		Carrying amount and measurement		Dec. 31, 2022	Dec. 31, 2021	Investments held by insurance companies (note 57 to the consolidated financial statements)
Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021			
								11.0	13.0	of which: mortgage loans
								5.9	7.2	of which: promissory notes and loans
								5.4	8.5	of which: registered bonds
								0.8	1.0	of which: other loans
								13.0	13.7	of which: variable-yield securities
								47.7	61.4	of which: fixed-income securities
								0.3	0.2	of which: derivatives (positive fair values)
								0.4	0.5	of which: deposits with ceding insurers
84.4	104.5	-1.5	-1.4	-	-0.3	1.6	2.8	84.5	105.6	Total
								0.1	0.1%	Balance as at Dec. 31, 2022
								1.1	1.1%	Balance as at Dec. 31, 2021

Not relevant

18.4.2 Change in lending volume

In accordance with the breakdown specified in Solvency II, the bulk of credit risk within market risk is assigned to spread risk. The capital requirements for spread risk are calculated using a factor approach based on the relevant lending volume.

As at December 31, 2022, the **total lending volume** of R+V had decreased by 19 percent to €84.4 billion (December 31, 2021: €104.5 billion). This decrease was primarily the result of a fall in the fair values of fixed-income securities as a consequence of the rise in interest rates.

The volume of lending in the **home finance** business totaled €13.7 billion as at December 31, 2022 (December 31, 2021: €13.1 billion). Of this amount, 87 percent was accounted for by loans for less than 60 percent of the value of the property, a situation that was unchanged compared with December 31, 2021.

The volume of home finance was broken down by finance type as at the reporting date as follows (figures as at December 31, 2021 shown in parentheses):

- Consumer home finance: €12.3 billion (€11.9 billion)
- Commercial home finance: €0.1 billion (€0.1 billion)
- Commercial finance: €1.3 billion (€1.1 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 64 percent of the total lending volume as at December 31, 2022 (December 31, 2021: 67 percent).

The explanation of the asset class concept in the Bank sector (see chapter VII.9.6.3) applies analogously to the Insurance sector. Fig. 40 shows the breakdown of the lending volume by asset class.

FIG. 40 – INSURANCE SECTOR: LENDING VOLUME, BY ASSET CLASS

€ billion	Dec. 31, 2022	Dec. 31, 2021
Financials	36.4	46.7
Corporates	12.2	16.3
Public sector	17.5	22.9
Real estate (commercial and retail customers)	16.8	16.3
ABSs and ABCPs ¹	1.6	1.5
Other	–	0.8
Total	84.4	104.5

¹ ABSs = asset-backed securities, ABCPs = asset-backed commercial paper.

The **geographical breakdown** used for the lending volume has been changed in the same way as for the Bank sector (see chapter VII.9.6.4). Fig. 41 reveals that Europe accounted for the lion's share – 74 percent – of the lending volume outside Germany as at December 31, 2022 (December 31, 2021: 75 percent).

FIG. 41 – INSURANCE SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Dec. 31, 2022	Dec. 31, 2021
Europe	40.2	50.7
of which: eurozone	31.6	38.1
North America	7.5	9.0
Central America	0.5	0.6
South America	0.8	1.0
Asia	3.0	3.6
Africa	0.3	0.3
Other	1.6	2.2
Total	54.0	67.5

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. 42. As at December 31, 2022, 85 percent (December 31, 2021: 86 percent) of the total lending volume had a residual maturity of more than five years. The proportion of the total lending volume due to mature within one year was 3 percent as at the reporting date (December 31, 2021: 3 percent).

FIG. 42 – INSURANCE SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Dec. 31, 2022	Dec. 31, 2021
≤ 1 year	2.1	2.6
> 1 year to ≤ 5 years	10.9	12.3
> 5 years	71.4	89.5
Total	84.4	104.5

The **rating structure** of the lending volume in the Insurance sector is shown in Fig. 43. Of the total lending volume as at December 31, 2022, 75 percent was attributable to investment-grade borrowers (December 31, 2021: 79 percent). The lending volume that is not rated, which made up 24 percent of the total lending volume (December 31, 2021: 19 percent), 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. 43 – INSURANCE SECTOR: LENDING VOLUME, BY RATING CLASS

€ billion		Dec. 31, 2022	Dec. 31, 2021
Investment grade	1A	21.2	27.0
	1B	9.0	11.7
	1C	–	–
	1D	9.9	12.6
	1E	–	–
	2A	7.9	11.1
	2B	4.8	6.2
	2C	5.1	7.3
	2D	2.6	3.2
	2E	–	–
	3A	2.6	3.5
Non-investment grade	3B	0.3	0.3
	3C	0.3	0.5
	3D	–	–
	3E	0.2	0.2
	4A	0.1	0.1
	4B	0.3	0.5
	4C	0.1	0.1
	4D	–	–
4E	–	–	
Default	–	–	
Not rated	20.1	20.2	
Total	84.4	104.5	

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 (chapter VII.9.5.1).

In the analysis of **individual concentrations**, the ten counterparties associated with the largest lending volumes accounted for 17 percent of R+V's total lending volume as at December 31, 2022 (December 31, 2021: 18 percent).

18.4.3 Credit portfolios particularly affected by negative macroeconomic conditions

The lending volume in **eurozone periphery countries** decreased in the second half of 2022. This means that, unlike in the 2021 risk report, R+V's affected exposures are no longer considered to be credit portfolios with increased risk content. Nevertheless, Portugal, Spain and, in particular, Italy continue to be monitored closely as their debt levels remain high and because there is continuing fallout from the COVID-19 pandemic. If there is a further rise in interest rates in the future, the credit risk in these countries may potentially increase again. The figures presented below are included in the above analyses of the total lending volume (see chapter VII.18.4.2).

Investments in eurozone periphery countries totaled €4,404 million as at December 31, 2022 (December 31, 2021: €5,822 million). This constituted a reduction of 24 percent, which was largely attributable to a fall in fair values and maturities.

Fig. 44 shows the country breakdown of the investments.

FIG. 44 – INSURANCE SECTOR: EXPOSURE IN EUROZONE PERIPHERY COUNTRIES

€ million	Dec. 31, 2022	Dec. 31, 2021
Portugal	37	49
Italy	2,082	2,844
Spain	2,285	2,929
Total	4,404	5,822

18.4.4 Credit portfolios particularly affected by acute global crises

Credit portfolios particularly affected by the war in Ukraine

As at December 31, 2021, R+V's net lending volume in Russia, Ukraine, and Belarus had stood at €191 million. It related to a securities portfolio that has since been disposed of entirely. As a result, there was no longer any risk in this regard as at December 31, 2022.

Over and above the countries involved in the war in Ukraine, the conflict has a negative impact globally on the credit ratings of securities issuers. This was also reflected in R+V's other securities exposures, which showed minor rating downgrades in 2022.

Credit portfolios particularly affected by the general rise in energy prices

Despite supplies of gas from Russia being cut off, no acute shortage of gas had materialized by the reporting date. So far, only a few subportfolios have been particularly affected by the rise in general energy prices. Overall, the impact in 2022 was moderate. Nonetheless, the increase in prices may lead to higher credit risk in the Insurance sector going forward.

18.5 Risk position

As at December 31, 2022, the **overall solvency requirement** for market risk amounted to €3,188 million (December 31, 2021: €3,169 million) with a **limit** of €3,880 million (December 31, 2021: €4,400 million). The change was largely driven by the increased risk capital buffer for interest-rate risk. This outweighed the countervailing effects from the decrease in the fair values of investments on the back of the rise in interest rates and from falls in share prices.

Fig. 45 shows the overall solvency requirement for the various types of market risk.

FIG. 45 – INSURANCE SECTOR: OVERALL SOLVENCY REQUIREMENT FOR MARKET RISK, BY RISK SUBTYPE

€ million	Dec. 31, 2022	Dec. 31, 2021
Interest-rate risk	2,063	1,250
Spread risk	889	1,305
Equity risk	1,227	1,332
Currency risk	269	319
Real-estate risk	445	441
Total (after diversification)	3,188	3,169

19 Counterparty default risk

19.1 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 twelve 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.

19.2 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, policyholders, or insurance brokers.

19.3 Risk management

19.3.1 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.

19.3.2 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, 2021.

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.

19.4 Risk position

Receivables arising from ceded reinsurance amounted to €145 million as at December 31, 2022 (December 31, 2021: €121 million). At the end of both 2022 and 2021, almost all of this amount was accounted for by entities with an external rating of A or better. Receivables from entities with an external rating of BBB or worse made up less than 1 percent of the total volume, as had also been the case at the end of 2021. 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 €158 million as at December 31, 2022 (December 31, 2021: €149 million).

As at December 31, 2022, the **overall solvency requirement** for counterparty default risk amounted to €227 million (December 31, 2021: €235 million) with a **limit** of €350 million that was unchanged compared with the end of 2021.

20 Reputational risk

20.1 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).

20.2 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 transition risks, social risks, and corporate governance risks assessed in connection with ESG risks were to materialize, this could give rise to heightened reputational risk.

20.3 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).

21 Operational risk

21.1 Definition and business background

Operational risk is defined as the risk of losses 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 ICT 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.

21.2 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 of R+V's business processes are structured in accordance with the requirements of the **framework guidelines** for the authorizations and powers of attorney of employees in R+V entities. 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.

21.3 Operational risk components

21.3.1 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 chapter VII.3.5.5. The data protection measures in place and the code of conduct are also explained in the same chapter.

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.

21.3.2 Information risk including ICT 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 ICT 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, have a negative impact on reputation, or result in economic losses.

Risk management

The basic principles for managing information security applicable to the entities in the DZ BANK Group are described in chapter VII.3.5.6.

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 risk-based IT provider approach, 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.

21.3.3 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 chapter VII.3.5.6.

21.3.4 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 chapter VII.3.5.7.

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

21.3.5 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.

21.4 Risk position

As at December 31, 2022, the **overall solvency requirement** determined for operational risk amounted to €599 million (December 31, 2021: €718 million). At €1,000 million, the **limit** as at the reporting date was unchanged compared with the end of the previous year. The reduction in risk was due to a decrease in insurance liabilities on the back of the rise in interest rates.

22 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 chapter VII.17.3.2), market risk (see chapter VII.18.3), counterparty default risk (see chapter VII.19.3), and operational risk (see chapter VII.21.2). 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. 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.

In purely defined-contribution plans, the amount of the lifelong payments depends on the value of the pension capital upon retirement and, subsequently, on the performance of the collateral assets for covering the current annuities. This means that there is a risk for pension beneficiaries that the payments may fluctuate – and, specifically, may fall – depending on the value of the investment. Appropriate market risk management activities are carried out to counter this risk.

As at December 31, 2022, the **overall solvency requirement** for risks in connection with non-controlling interests in insurance companies and with entities in other financial sectors stood at €130 million with a **limit** of €180 million. Both figures were unchanged year on year.

Consolidated financial statements

Income statement for the period January 1 to December 31, 2022	198	» 26 Provisions	237
Statement of comprehensive income for the period January 1 to December 31, 2022	199	» 27 Subordinated capital	240
Balance sheet as at December 31, 2022	200	» 28 Contingent liabilities	240
Statement of changes in equity	201		
Statement of cash flows	202		
Notes			
A General disclosures		B Disclosure of interests in other entities	
» 01 Basis of preparation	204	» 29 Investments in subsidiaries	241
» 02 Accounting policies and estimates	204	» 30 Interests in joint arrangements and associates	245
» 03 Scope of consolidation	213	» 31 Interests in unconsolidated structured entities	248
» 04 Procedures of consolidation	213	» 32 Sponsoring arrangements for unconsolidated structured entities	253
» 05 Financial instruments	215		
» 06 Hedge accounting	222	C Disclosures relating to the income statement and the statement of comprehensive income	
» 07 Currency translation	223	» 33 Segment information	254
» 08 Offsetting of financial assets and financial liabilities	224	» 34 Net interest income	260
» 09 Sale and repurchase agreements, securities lending	224	» 35 Net fee and commission income	261
» 10 Collateral	224	» 36 Gains and losses on trading activities	261
» 11 Insurance business	225	» 37 Gains and losses on investments	261
» 12 Leases	230	» 38 Other gains and losses on valuation of financial instruments	262
» 13 Income	230	» 39 Gains and losses from the derecognition of financial assets measured at amortized cost	262
» 14 Cash and cash equivalents	232	» 40 Premiums earned	262
» 15 Loans and advances to banks and customers	232	» 41 Gains and losses on investments held by insurance companies and other insurance company gains and losses	263
» 16 Hedging instruments (positive and negative fair values)	233	» 42 Insurance benefit payments	263
» 17 Financial assets and financial liabilities held for trading	233	» 43 Insurance business operating expenses	266
» 18 Investments	234	» 44 Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	266
» 19 Property, plant and equipment, investment property, and right-of-use assets	234	» 45 Loss allowances	267
» 20 Income tax assets and liabilities	235	» 46 Administrative expenses	267
» 21 Other assets and other liabilities	235	» 47 Other net operating income	268
» 22 Loss allowances	236	» 48 Income taxes	268
» 23 Non-current assets and disposal groups classified as held for sale	236	» 49 Items reclassified to the income statement	269
» 24 Deposits from banks and customers	237	» 50 Income taxes relating to components of other comprehensive income	270
» 25 Debt certificates issued including bonds	237		

D Balance sheet disclosures

» 51	Cash and cash equivalents	271
» 52	Loans and advances to banks	271
» 53	Loans and advances to customers	271
» 54	Hedging instruments (positive fair values)	272
» 55	Financial assets held for trading	272
» 56	Investments	273
» 57	Investments held by insurance companies	273
» 58	Property, plant and equipment, investment property, and right-of-use assets	274
» 59	Income tax assets and liabilities	274
» 60	Other assets	276
» 61	Loss allowances	278
» 62	Changes in non-current assets	280
» 63	Non-current assets and disposal groups classified as held for sale	283
» 64	Deposits from banks	283
» 65	Deposits from customers	284
» 66	Debt certificates issued including bonds	284
» 67	Hedging instruments (negative fair values)	284
» 68	Financial liabilities held for trading	285
» 69	Provisions	285
» 70	Insurance liabilities	287
» 71	Other liabilities	289
» 72	Subordinated capital	289
» 73	Equity	290

E Financial instruments and fair value disclosures

» 74	Classes, categories, and fair values of financial instruments	295
» 75	Differences not recognized at the time of initial recognition	297
» 76	Equity instruments designated as at fair value through other comprehensive income	297
» 77	Assets and liabilities measured at fair value on the balance sheet	298
» 78	Assets and liabilities not measured at fair value on the balance sheet	307

» 79	Financial liabilities designated as at fair value through profit or loss	309
» 80	Reclassification	310
» 81	Offsetting of financial assets and financial liabilities	310
» 82	Sale and repurchase agreements, securities lending	312
» 83	Collateral	315
» 84	Items of income, expense, gains, and losses	316
» 85	Derivatives	318
» 86	Hedge accounting	319
» 87	Reform of interest-rate benchmarks	322
» 88	Nature and extent of risks arising from financial instruments and insurance contracts	324
» 89	Maturity analysis	343
» 90	Issuance activity	345

F Other disclosures

» 91	Contingent liabilities	346
» 92	Financial guarantee contracts and loan commitments	346
» 93	Trust activities	346
» 94	Business combinations	347
» 95	Leases	348
» 96	Disclosures on revenue from contracts with customers	352
» 97	Government grants	356
» 98	Letters of comfort	357
» 99	Employees	357
» 100	Provisions for defined benefit plans	358
» 101	Auditor fees	365
» 102	Remuneration for the Board of Managing Directors and Supervisory Board of DZ BANK	365
» 103	Share-based payment transactions	366
» 104	Related party disclosures	371
» 105	Board of Managing Directors	373
» 106	Supervisory Board	374
» 107	Supervisory mandates held by members of the Board of Managing Directors and employees	377
» 108	List of shareholdings	385

Income statement for the period January 1 to December 31, 2022

€ million	(Note)	2022	2021
Net interest income	(34)	3,322	2,785
Interest income		5,919	4,174
Interest income calculated using the effective interest method		5,819	4,362
Interest income not calculated using the effective interest method		101	-189
Current income and expense		55	62
Interest expense		-2,652	-1,451
Net fee and commission income	(35)	2,749	2,935
Fee and commission income		5,262	5,521
Fee and commission expenses		-2,513	-2,586
Gains and losses on trading activities	(36)	823	152
Gains and losses on investments	(37)	-119	245
Other gains and losses on valuation of financial instruments	(38)	-286	242
Gains and losses from the derecognition of financial assets measured at amortized cost	(39)	35	-
Premiums earned	(40)	18,397	18,994
Gains and losses on investments held by insurance companies and other insurance company gains and losses	(41)	-3,389	5,251
of which interest income calculated using the effective interest method		1,478	1,515
Insurance benefit payments	(42)	-12,127	-20,356
Insurance business operating expenses	(43)	-3,068	-3,047
Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	(44)	8	-
Loss allowances	(45)	-304	120
Administrative expenses	(46)	-4,447	-4,265
Other net operating income	(47)	204	41
Profit before taxes		1,797	3,096
Income taxes	(48)	-724	-920
Net profit		1,073	2,176
Attributable to:			
Shareholders of DZ BANK		1,031	1,996
Non-controlling interests		42	180

Statement of comprehensive income for the period January 1 to December 31, 2022

€ million	(Note)	2022	2021
Net profit		1,073	2,176
Other comprehensive income/loss		-6,171	-400
Items that may be reclassified to the income statement		-6,277	-941
Gains and losses on debt instruments measured at fair value through other comprehensive income	(49)	-8,978	-1,389
Exchange differences on currency translation of foreign operations	(49)	-	-16
Gains and losses on hedges of net investments in foreign operations	(49)	-	5
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	(49)	1	15
Income taxes	(50)	2,700	445
Items that will not be reclassified to the income statement		106	541
Gains and losses on equity instruments for which the fair value OCI option has been exercised		-327	473
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk		170	39
Gains and losses arising from remeasurement of defined benefit plans		407	90
Income taxes	(50)	-145	-62
Total comprehensive income/loss		-5,098	1,776
Attributable to:			
Shareholders of DZ BANK		-4,470	1,629
Non-controlling interests		-627	148

Balance sheet as at December 31, 2022

ASSETS

€ million	(Note)	Dec. 31, 2022	Dec. 31, 2021
Cash and cash equivalents	(14, 51)	93,717	86,029
Loans and advances to banks	(15, 52)	123,444	107,659
Loans and advances to customers	(15, 53)	203,646	195,665
Hedging instruments (positive fair values)	(16, 54)	1,568	389
Financial assets held for trading	(17, 55)	48,909	47,321
Investments	(18, 56)	43,393	52,440
Investments held by insurance companies	(57, 62)	105,955	129,119
Property, plant and equipment, investment property, and right-of-use assets	(19, 58, 62)	1,960	1,881
Income tax assets	(20, 59)	3,428	1,141
Other assets	(21, 60, 62)	7,204	6,501
Loss allowances	(22, 61)	-2,029	-1,956
Non-current assets and disposal groups classified as held for sale	(23, 63)	19	164
Fair value changes of the hedged items in portfolio hedges of interest-rate risk		-4,173	920
Total assets		627,041	627,273

EQUITY AND LIABILITIES

€ million	(Note)	Dec. 31, 2022	Dec. 31, 2021
Deposits from banks	(24, 64)	186,787	196,562
Deposits from customers	(24, 65)	159,429	138,975
Debt certificates issued including bonds	(25, 66)	82,349	79,652
Hedging instruments (negative fair values)	(16, 67)	442	1,678
Financial liabilities held for trading	(17, 68)	52,478	43,411
Provisions	(26, 69)	3,248	3,992
Insurance liabilities	(11, 70)	103,795	118,863
Income tax liabilities	(20, 59)	1,063	1,456
Other liabilities	(21, 71)	10,999	10,797
Subordinated capital	(27, 72)	4,521	3,074
Liabilities included in disposal groups classified as held for sale	(23, 63)	-	2
Fair value changes of the hedged items in portfolio hedges of interest-rate risk		-1,147	150
Equity	(73)	23,076	28,661
Shareholders' equity		21,967	26,860
Subscribed capital		4,926	4,926
Capital reserve		5,551	5,551
Retained earnings		13,482	12,581
Reserve from other comprehensive income		-4,142	1,651
Additional equity components		2,150	2,150
Non-controlling interests		1,109	1,801
Total equity and liabilities		627,041	627,273

Statement of changes in equity

	Sub- scribed capital	Capital reserve	Retained earnings	Reserve from other compre- hensive income	Addi- tional equity compo- nents	Share- holders' equity	Non- control- ling interests	Total equity
€ million								
Equity as at Jan. 1, 2021	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
Net profit	-	-	1,031	-	-	1,031	42	1,073
Other comprehensive income/loss	-	-	271	-5,773	-	-5,502	-669	-6,171
Total comprehensive income/loss	-	-	1,302	-5,773	-	-4,470	-627	-5,098
Capital increase/capital repaid	-	-	-	-	-	-	19	19
Changes in scope of consolidation	-	-	-2	5	-	4	1	4
Acquisition/disposal of non-controlling interests	-	-	1	3	-	4	1	5
Reclassifications within equity	-	-	29	-29	-	-	-	-
Dividends paid	-	-	-358	-	-	-358	-86	-444
Distribution of dividend on additional equity components	-	-	-71	-	-	-71	-	-71
Equity as at Dec. 31, 2022	4,926	5,551	13,482	-4,142	2,150	21,967	1,109	23,076

Further information on equity is presented in note 73.

Statement of cash flows

€ million	2022	2021
Net profit	1,073	2,176
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	5,065	-3,738
Non-cash changes in provisions	126	640
Non-cash changes in insurance liabilities	-13,992	8,681
Other non-cash income and expenses	-2,007	287
Gains and losses on the disposal of assets and liabilities	607	-116
Other adjustments (net)	-9,627	-3,510
Subtotal	-18,755	4,420
Cash changes in assets and liabilities arising from operating activities		
Loans and advances to banks	-15,661	-4,649
Loans and advances to customers	-8,743	-6,202
Other assets from operating activities	-7,098	-2,399
Hedging instruments (positive and negative fair values)	7,983	995
Financial assets and financial liabilities held for trading	8,168	-11,208
Deposits from banks	-9,760	18,904
Deposits from customers	21,323	5,469
Debt certificates issued including bonds	2,977	9,431
Other liabilities from operating activities	-1,520	-1,000
Interest, dividends, and operating lease payments received	6,779	5,336
Interest paid	-2,838	-2,082
Income taxes paid	-691	-373
Cash flows from operating activities	-17,836	16,642
Proceeds from the sale of investments	23,403	17,784
Proceeds from the sale of investments held by insurance companies	52,747	23,571
Proceeds from the sale of property, plant and equipment, and investment property (excluding assets subject to operating leases)	13	1
Proceeds from the sale of intangible non-current assets	8	-
Payments for the acquisition of investments	-15,721	-10,151
Payments for the acquisition of investments held by insurance companies	-35,331	-27,809
Payments for the acquisition of property, plant and equipment, and investment property (excluding assets subject to operating leases)	-72	-78
Payments for the acquisition of intangible non-current assets	-123	-131
Changes in scope of consolidation	-248	70
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	-248	-
Cash flows from investing activities	24,676	3,257
Proceeds from capital increases by non-controlling interests	19	-
Dividends paid to shareholders of DZ BANK	-358	-573
Dividends paid to non-controlling interests	-86	-47
Distribution of dividend on additional equity components	-71	-81
Other payments to shareholders of DZ BANK	-	-124
Other payments to non-controlling interests	-	-1,363
Net change in cash and cash equivalents from other financing activities (including subordinated capital)	1,344	-36
Cash flows from financing activities	848	-2,224
€ million	2022	2021
Cash and cash equivalents as at January 1	86,029	68,354
Cash flows from operating activities	-17,836	16,642
Cash flows from investing activities	24,676	3,257
Cash flows from financing activities	848	-2,224
Cash and cash equivalents as at December 31	93,717	86,029

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 €110 million (2021: €109 million).

The first-time consolidation of subsidiaries generated a cash inflow of €3 million (2021: no such cash inflows).

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, Germany, (DZ BANK) for the 2022 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 23, 2023.

» 02 Accounting policies and estimates

Changes in accounting policies

First-time application in 2022 of changes in IFRS

The following amendments to IFRS are applied for the first time in DZ BANK's consolidated financial statements for the 2022 financial year:

- Amendments to IFRS 3 *Business Combinations*
- Amendments to IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*
- Amendments to IAS 16 *Property, Plant and Equipment*
- *Annual Improvements to IFRSs 2018–2020 Cycle*

The amendments to IFRS 3 *Business Combinations* include updated references to the revised 2018 Conceptual Framework and the addition of an exception to the recognition principles in IFRS 3. For liabilities and

contingent liabilities that are recognized separately within the scope of IAS 37 or IFRIC 21, an acquirer applies IAS 37 or IFRIC 21 to identify the liabilities it has assumed in a business combination. The amendments also add an explicit statement that an acquirer does not recognize contingent assets acquired in a business combination.

The amendments to IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* clarify which costs are included in the assessment of whether a contract is onerous. When determining the cost of fulfilling a contract, the entity must include all costs that relate directly to the contract.

The amendments to IAS 16 *Property, Plant and Equipment* prohibit the deduction from the cost of an item of property, plant, and equipment of any proceeds from selling articles produced while bringing that item to the location and condition necessary for it to operate in the manner intended by management. Instead, those sales proceeds and the cost of producing those articles are recognized in operating profit/loss.

The amendment to IFRS 9 *Financial Instruments* as part of the *Annual Improvements to IFRSs 2018–2020 Cycle* clarifies which fees paid or received between the entity and the lender an entity includes in the 10 percent test (IFRS 9.B3.3.6) in deciding whether to derecognize a financial liability. If the derecognition test for modified or exchanged financial liabilities results in their extinguishment, any costs or fees incurred are recognized in profit or loss as part of the gain or loss on the extinguishment. If the modification or exchange does not result in their extinguishment, any costs or fees incurred adjust the carrying amount of the liability and the effective interest rate and are amortized over the remaining term of the modified liability, provided they do not constitute compensation for the modification of cash flows from the liability. In the case of the latter, a modification gain or loss must be recognized in profit or loss.

As part of the *Annual Improvements to IFRSs 2018–2020 Cycle*, a passage was deleted in the illustrative examples in IFRS 16 *Leases* concerning the accounting treatment of reimbursement by the lessor of leasehold improvements by the lessee.

All the above amendments and improvements to IFRS must be applied to financial years beginning on or after January 1, 2022.

The amendments and improvements to IFRS listed above did not have a material impact on DZ BANK's consolidated financial statements.

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 IFRS financial reporting standard and the listed amendments to IFRS:

- IFRS 17 *Insurance Contracts*
- Amendments to IFRS 17 *Insurance Contracts*
- Amendments to IAS 1 *Presentation of Financial Statements* and 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 *Income Taxes*)

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 measurement model (GMM) or using a simplified method, the premium allocation approach (PAA). The general measurement 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 CSM is the unearned profit that the entity will recognize in the future during the coverage period. It is recognized in profit or loss in accordance with an amortization pattern. The FCF is the probability-weighted estimate of expected future cash flows, adjusted for the time value of money and for financial and non-financial risk. All relevant uncertainties arising from financial risk are factored into the estimate of the cash flows. An adjustment for non-financial risk is also made. The confidence level technique is used consistently throughout the Group with a confidence level of 75 percent.

The time value of money is calculated using an entity-specific yield curve determined using the bottom-up approach in a two-step process. Firstly, the liquid risk-free yield curve is determined on the basis of the swap rates (likely to be 6-month Euribor) for observable valid market prices and an extrapolation using a last liquid point and an ultimate forward rate at the longer end of the maturities (Nelson Siegel method). In the second step, the liquid risk-free yield curve is adjusted for an illiquidity premium. The foreign currency curves are determined in the same way as the euro curve for the liquid part of the curve. Extrapolation and the illiquidity premium are derived from the euro curve. For the insurance business of the Assimoco Group, which operates in Italy, additional entity-specific euro yield curves are determined using the bottom-up approach, taking local market conditions into account but otherwise following the concepts used in the context of Solvency II (calculation of regulatory capital). The yield curve of the European Insurance and Occupational Pensions Authority (EIOPA) is predominantly used under Solvency II.

In the GMM, measurement is based on groups of contracts instead of individual contracts. In order to recognize groups of contracts, an entity must identify portfolios of insurance contracts that comprise contracts that are subject to similar risks and managed together. These portfolios are divided into groups of contracts based on profitability and annual cohorts. The annual cohort requirement under IFRS 17.22 as endorsed by the EU is optional; the European Commission permits users in the EU to choose whether to apply the requirement under IFRS 17.22 for certain contracts or not. R+V will make use of this exemption, which primarily means that annual cohorts will not be formed in respect of contracts with direct participation features in life and health insurance business and in respect of the savings component in casualty insurance with premium refund.

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 PAA 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.

Contracts with direct participation features should be accounted for under the variable fee approach (VFA). Initial measurement is the same as under the general measurement model, whereas subsequent measurement takes policyholder participation features into account.

R+V will make use of all measurement models. The main measurement model in non-life insurance will be the PAA. In personal insurance, the VFA will mainly be used, whereas the GMM will be used for credit insurance policies and the PAA for international travel healthcare insurance. Both the GMM and the PAA will be used in inward reinsurance, although the GMM will be the main measurement model used. For casualty insurance with premium refund, R+V will measure the savings component using the VFA, whereas the risk component will be measured using the GMM.

Depending on the available data, R+V is using all transition approaches for the transition to the new standard (fully retrospective approach (FRA), modified retrospective approach (MRA), and the fair value approach (FVA)).

A project was initiated at the level of R+V to implement the requirements of IFRS 17 with effect from January 1, 2023. Based on the opening balance sheet as at January 1, 2022, the change in accounting has had the following effects on R+V's financial position and financial performance:

The insurance items recognized on the balance sheet and in the income statement under IFRS 4, which were largely influenced by HGB and the Regulation on the Accounting of Insurance Undertakings (RechVersV) at R+V, will no longer be reported from January 1, 2023.

The introduction of IFRS 17 will result in new line items in the external reporting for the insurance business, primarily the benefit reserve (liability for remaining coverage, LRC) and the provision for claims outstanding (liability for incurred claims, LIC). New items will also be recognized under equity and liabilities (liabilities arising from insurance contracts) and under assets, e.g. receivables from reinsurers. The new structure will be accompanied by extensive disclosures in the notes, which will provide further information on these line items for the reporting period.

As a result of initial application of IFRS 17, R+V's equity as at January 1, 2022 will be approximately €2.0 billion to €2.5 billion higher before taxes as at January 1, 2022 than under IFRS 4. This can be explained primarily by the measurement of provisions for claims outstanding in the non-life insurance business at fair value, whereas provisions for claims outstanding were previously measured in accordance with the prudence principle pursuant to HGB. The future gains from unrealized valuation reserves for investments in the personal insurance business, which were previously recognized in equity, will, under IFRS 17, be reflected in the CSM as part of the calculation of insurance liabilities.

As a result of the revaluations on the balance sheet, the deferred tax assets and liabilities – which represent the difference between the German tax accounts and the IFRS balance sheet in accordance with IAS 12 – will each see a significant increase of roughly €5 billion to €6 billion. Overall, there is expected to be an excess of deferred tax liabilities.

After taxes, R+V anticipates that the impact on equity as a result of the transition will be in the range of €1.3 billion to €1.5 billion. Of this amount, €250 million to €300 million is likely to be attributable to companies in which R+V does not hold 100 percent of the shares or voting rights (non-controlling interests).

Given the increase in equity, the introduction of IFRS 17 at R+V will also have a positive impact on the Tier 1 capital ratio (CET1) of the DZ BANK Group.

Based on indicative calibration calculations produced in the project, R+V's profitability is likely to be at a comparable level to under IFRS 4. This profitability can also be seen from the CSM of approximately €5 billion to €6 billion resulting from the opening balance sheet.

Under IFRS 17, line items in the income statement and on the equity and liabilities side of the balance sheet must generally be subject to measurement that is consistent with observable market prices and sensitive to interest rates, based on an entity-specific yield curve.

In 2023, the IFRS 17 project will continue as planned at R+V and the operating line units, focusing on subsequent measurement and the implementation of standard processes.

Compared with IFRS 4, it can be assumed that, under IFRS 17, volatility will be higher in the group's profit and loss and there will be fewer accounting mismatches between assets and liabilities. Exercising the OCI option will minimize volatility in the income statement.

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 and IFRS 9 are also applied. The DZ BANK Group has decided against early adoption.

The amendments to IAS 1 *Presentation of Financial Statements* require entities to report their material accounting policies instead of, as previously, their significant accounting policies. The objective of the amendments to IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* is to provide clarification in order to help entities to distinguish between changes to accounting policies and changes to accounting estimates.

The amendment to IAS 12 *Income Taxes* provides an exemption in certain circumstances that means that no deferred tax assets or liabilities are recognized at the time of acquisition of an asset or liability. This exemption cannot be applied to the recognition of deferred taxes in conjunction with leases or asset retirement/decommissioning obligations.

The amendments to IAS 1, IAS 8, and IAS 12 must be applied for the first time to financial years beginning on or after January 1, 2023. These amendments are not expected to have a material impact on the DZ BANK Group's future 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)
- *Lease Liability in a Sale and Leaseback* (Amendments to IFRS 16 Leases)

The impact of the 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

In accordance with the provisions of IAS 8.41 et seq., consolidation items previously assigned to other assets on the balance sheet are recognized under investments held by insurance companies from the 2022 financial year onward. This retrospective change resulted in the following adjustments to the balance sheet and statement of cash flows:

Balance sheet as at January 1, 2021

ASSETS

€ million	Jan. 1, 2021 before restatement	Amount of restatement	Jan. 1, 2021 after restatement
(...)			
Investments held by insurance companies	121,668	-6	121,662
(...)			
Other assets	5,516	6	5,522
(...)			
Total assets	594,535	-	594,535

Balance sheet as at December 31, 2021

ASSETS

€ million	Dec. 31, 2021 before restatement	Amount of restatement	Dec. 31, 2021 after restatement
(...)			
Investments held by insurance companies	129,131	-11	129,119
(...)			
Other assets	6,490	11	6,501
(...)			
Total assets	627,273	-	627,273

Statement of cash flows for the period January 1 to December 31, 2021

€ million	2021 before restatement	Amount of restatement	2021 after restatement
Net profit	2,176		2,176
Non-cash items included in net profit	2,244		2,244
Subtotal	4,420		4,420
Cash changes in assets and liabilities arising from operating activities			
(...)			
Other assets from operating activities	-2,393	-6	-2,399
(...)			
Cash flows from operating activities	16,648	-6	16,642
(...)			
Payments for the acquisition of investments held by insurance companies	-27,815	6	-27,809
(...)			
Cash flows from investing activities	3,251	6	3,257
Cash flows from financing activities	-2,224		-2,224

€ million	2021 before restatement	Amount of restatement	2021 after restatement
Cash and cash equivalents as at January 1	68,354		68,354
Cash flows from operating activities	16,648	-6	16,642
Cash flows from investing activities	3,251	6	3,257
Cash flows from financing activities	-2,224		-2,224
Cash and cash equivalents as at December 31	86,029		86,029

Furthermore, the aforementioned presentation changes result in related adjustments to the associated disclosures in note 57 (Investments held by insurance companies), note 60 (Other assets), note 74 (Classes, categories, and fair values of financial instruments), note 77 (Assets and liabilities measured at fair value on the balance sheet – specifically the fair value hierarchy disclosures), note 78 (Assets and liabilities not measured at fair value on the balance sheet – specifically the fair value hierarchy disclosures), note 88 (Nature and extent of risks arising from financial instruments and insurance contracts – specifically the disclosures on loss allowances, gross carrying amounts, the maximum exposure to credit risk, and credit risk concentrations), and note 89 (Maturity analysis).

From the 2022 financial year onward, the disclosure – required by IFRS 7.25 – of the fair values of the financial assets and liabilities of the building society is published in note 74 (Classes, categories, and fair values of financial instruments) instead of their carrying amounts. The aim of this change is to provide reliable and more relevant information. There continues to be no suitable process for calculating the fair value of home savings loans, home savings deposits, and similar assets and liabilities in accordance with IFRS 13. As a result, the present value of the collective building society operations, determined using a building society simulation, is disclosed instead. Furthermore, the aforementioned presentation change results in related adjustments to the associated disclosures in note 78 (Assets and liabilities not measured at fair value on the balance sheet).

In order to reflect industry practice, the appropriation of profits is no longer disclosed below the income statement from the 2022 financial year onward. On the balance sheet, unappropriated earnings have been reclassified to retained earnings. In the statement of changes in equity, the line item 'equity earned by the group' has been renamed 'retained earnings'. The presentation changes have been made retrospectively.

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 disclosures on the nature and extent of significant restrictions, the amounts of loans and advances to customers has been restated.

In note 31 (Interests in unconsolidated structured entities), specifically the disclosures on interests in investment funds issued by the DZ BANK Group, interests in investment funds not issued by the DZ BANK Group, and interests in securitization vehicles, the amounts have been restated in the relevant tables showing the calculation of the maximum exposure and in the relevant tables showing the revenue generated from unconsolidated structured entities.

In note 51 (Cash and cash equivalents), the amount of the average target minimum reserve has been restated.

In note 100 (Provisions for defined benefit plans), specifically the information on the present value of defined benefit obligations, the actuarial disclosures have been restated.

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. Building society simulations are used to determine the present value of the collective building society operations. 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.

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 reporting period. 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.

The war in Ukraine

The war in Ukraine 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 consequences of the war in Ukraine particularly affect the familiar assumptions and estimates used to calculate loss allowances, provisions, and insurance liabilities. The lending volume impacted by the war in Ukraine, and the related collateralization, is presented in section 9.8.1 of the risk report.

» 03 Scope of consolidation

In addition to DZ BANK as the parent, the consolidated financial statements for the year ended December 31, 2022 include 17 subsidiaries (2021: 17) and 5 subgroups (2021: 6) comprising a total of 90 subsidiaries (2021: 128).

The main changes to the scope of consolidation in 2022 were the merger of DVB Bank SE into DZ BANK AG, the sale of subsidiaries, and the deconsolidation of subsidiaries of the DVB subgroup that were no longer material. The scope of consolidation also changed due to the addition of 3 subsidiaries in the R+V subgroup.

The consolidated financial statements include 5 joint arrangements in the form of joint ventures with at least one other entity outside the group (2021: 5) and 25 associates (2021: 24) 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 108.

» 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, 2022. With 18 (2021: 18) 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.

Where an entity is controlled without there being an investment in the equity of the controlled entity, the subsidiary's entire equity is recognized as non-controlling interests under equity. If the subsidiary's equity does not qualify as equity pursuant to IAS 32, it is recognized under liabilities.

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 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.

In the subcategory 'financial assets mandatorily measured at fair value through profit or loss', all changes in fair value are recognized in profit or loss.

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.

In the subcategory 'contingent considerations in a business combination', all changes in fair value are recognized in profit or loss.

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.

In the subcategory 'financial assets designated as at fair value through profit or loss', all changes in fair value are recognized in profit or loss.

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. Any differences between the amortized cost and the fair value that do not result from impairment losses or currency translation 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 (using the effective interest method), loss allowances, and currency translation effects are 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.

In the subcategory 'financial liabilities mandatorily measured at fair value through profit or loss', all changes in fair value are recognized in profit or loss.

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.

In the subcategory 'contingent considerations in a business combination', all changes in fair value are recognized in profit or loss.

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'. Interest income (using the effective interest method) and currency

translation effects are recognized in profit or loss. The following are not included in this category: 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 considerations 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 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 categorization of the financial assets and financial liabilities.

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. Derivatives and 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’
- 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
- 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, which would require their assignment to stage 3. 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 – for example, 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, 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)
- ‘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 basis in accordance with IFRS 9 or on a portfolio basis in accordance with IAS 39.

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 material insurance 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 until IFRS 17 comes into effect. 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.

Calculation of the benefit reserve for policies is generally based on the Zillmer method. In new business in the period 2015 to 2020, zillmerizing was mostly not applied to individual insurances policies.

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 further reduced for observation units with a premium adjustment effective January 1, 2022. 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 Verkehrsoferhilfe 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 in the insurance business 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 (banks and customers) 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 categories 'financial assets measured at fair value through profit or loss' and 'financial liabilities 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 financial assets and financial liabilities that are held for trading purposes.

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 non-material subsidiaries and investments in 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 other assets held by insurance companies, 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 (banks and customers) 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 expected changes in the inflation rate. The 2018 G mortality tables published by Professor Dr. Klaus Heubeck are used to estimate average life expectancy in Germany; outside Germany, the relevant country-specific mortality tables are used. 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.

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. Where payment transactions are linked to targets relating to a multi-year, retrospective performance period, the provision is recognized on the basis of the underlying performance period. 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 103 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, such as 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, or 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, management estimates, 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 that cover the possible resulting losses are recognized for risks arising from ongoing legal disputes and for pre-litigation risks. 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, 2022	Dec. 31, 2021
Bausparkasse Schwäbisch Hall subgroup	169	204
DZ PRIVATBANK	71	66
R+V Versicherung subgroup	615	1,304
Union Asset Management Holding subgroup	97	90
Other	157	137
Total	1,109	1,801

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, 2021: 97.6 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, 2021: 2.4 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 €9 million (2021: €10 million). This included the net income for the year attributable to non-controlling interests in the BSH subgroup of €6 million (2021: €7 million). The carrying amount of the non-controlling interests in the DZ BANK Group was €169 million (December 31, 2021: €204 million). Of this amount, €82 million was attributable to non-controlling interests within the BSH subgroup (December 31, 2021: €81 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. Guaranteed dividends of €1 million were paid to outside shareholders of BSH in 2022 (2021: €1 million).

Aggregated financial information for the BSH subgroup:

€ million	Dec. 31, 2022	Dec. 31, 2021
Assets	85,599	85,371
Liabilities	81,384	79,653

€ million	2022	2021
Interest income and fee and commission income	1,440	1,530
Net profit	75	78
Other comprehensive income/loss	-1,583	-425
Total comprehensive income/loss	-1,507	-347
Cash flow	-918	455

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, (DZ PRIVATBANK Schweiz), 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, 2021: 91.8 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 €5 million (2021: €2 million). The carrying amount of the non-controlling interests was €71 million (December 31, 2021: €66 million). The dividend distributed to the non-controlling interests came to €1 million in 2022 (2021: €1 million).

Aggregated financial information for DZ PRIVATBANK:

€ million	Dec. 31, 2022	Dec. 31, 2021
Assets	25,447	21,611
Liabilities	24,273	20,718

€ million	2022	2021
Interest income and fee and commission income	718	609
Net profit	31	32
Other comprehensive income	11	17
Total comprehensive income	42	49
Cash flow	2,392	4,038

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 92.3 percent of the shares in R+V (December 31, 2021: 92.2 percent). The share of voting rights is equal to the shareholding. Non-controlling interests account for 7.7 percent of the voting rights and shares (December 31, 2021: 7.8 percent). Within this figure, local cooperative banks hold 6.0 percent (December 31, 2021: 6.0 percent). The other 1.7 percent (December 31, 2021: 1.8 percent) is held by other entities in the cooperative sector.

The net loss for the year attributable to the non-controlling interests was €15 million (2021: net income of €106 million). This included the net income for the year attributable to non-controlling interests in the R+V

subgroup of €0 million (2021: €66 million). The carrying amount of the non-controlling interests in the DZ BANK Group was €615 million (December 31, 2021: €1,304 million). Of this amount, €355 million was attributable to non-controlling interests within the R+V subgroup (December 31, 2021: €673 million). DZ BANK entered into a profit-transfer agreement with R+V in 2022. This guarantees an annual cash settlement of €7.32 per non-par-value share (after corporation tax and ancillary taxes) for the outside shareholders of R+V until the end of the 2026 financial year. After the end of the agreement, it can be extended by one year at a time until 2031. Until the end of the 2021 financial year, there was a profit transfer agreement that guaranteed 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. Guaranteed dividends of €8 million were paid to outside shareholders of R+V in 2022 (2021: €7 million). In the R+V subgroup, dividends of €28 million were paid to non-controlling interests (2021: €8 million).

Aggregated financial information for the R+V subgroup:

€ million	Dec. 31, 2022	Dec. 31, 2021
Assets	116,900	137,390
Liabilities	112,884	128,571

€ million	2022	2021
Premiums earned	18,397	18,994
Net profit/loss	-300	497
Other comprehensive income/loss	-4,726	-143
Total comprehensive income/loss	-5,026	354

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, 2021: 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, 2021: 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, 2021: 95.8 percent).

The carrying amount of the non-controlling interests within the DZ BANK Group was €97 million (December 31, 2021: €90 million) and related to the multiplicative share of the capital of UMH. Of this amount, €33 million was attributable to non-controlling interests within the UMH subgroup (December 31, 2021: €34 million). The net income for the year attributable to the non-controlling interests was €23 million (2021: €41 million). This included the net income for the year attributable to non-controlling interests in the UMH subgroup of €8 million (2021: €10 million). The dividend distributed to the non-controlling interests totaled €18 million in 2022 (2021: €13 million). €9 million of this amount was paid as dividends to non-controlling interests in the UMH subgroup (2021: €7 million).

Aggregated financial information for the UMH subgroup:

€ million	Dec. 31, 2022	Dec. 31, 2021
Assets	4,818	4,665
Liabilities	2,171	2,181

€ million	2022	2021
Interest income and fee and commission income	3,506	3,809
Net profit	492	859
Other comprehensive income	33	26
Total comprehensive income	525	884

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 of the German Banking Act (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 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, and the bonds issued by DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey, were called on January 12, 2021 and repaid in full in 2021.

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	2022	2021
DZ BANK Capital Funding Trust I	-	3
DZ BANK Capital Funding Trust II	-	1
DZ BANK Capital Funding Trust III	-	1

Aggregated financial information for the DZ BANK Capital Funding Trust companies and the DZ BANK Perpetual Funding Issuer company:

€ million	2022	2021
Interest income and fee and commission income	-	6
Net profit	-	6
Total comprehensive income	-	6

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, 2022	Dec. 31, 2021
Assets	107,222	105,960
Loans and advances to banks	523	1,870
Loans and advances to customers	3,297	2,668
Investments	1,614	1,882
Investments held by insurance companies	101,324	99,074
Other assets	464	467
Liabilities	165,000	162,897
Deposits from banks	1,962	1,755
Deposits from customers	66,318	66,222
Provisions	1,053	1,398
Insurance liabilities	95,667	93,522

Nature of the risks associated with interests in consolidated structured entities

In 2021, risks arising from interests in consolidated structured entities largely resulted from loans to fully consolidated funds, some of which were 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, 2021. 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 2022 (2021: no dividend).

Aggregated financial information for PSS:

€ million	Dec. 31, 2022	Dec. 31, 2021
Current assets	609	549
of which cash and cash equivalents	5	22
Non-current assets	2,378	2,399
Current liabilities	761	652
of which financial liabilities	746	637
Non-current liabilities	1,935	2,011
of which financial liabilities	1,909	1,985

€ million	2022	2021
Interest income	87	92
Interest expense	-24	-28
Fee and commission income	12	12
Fee and commission expenses	-1	-1
Administrative expenses	-42	-40
Income taxes	-5	-5
Profit from continuing operations, net of tax	7	17
Other comprehensive income	1	-
Total comprehensive income	7	17

Reconciliation from the aggregated financial information to the carrying amount of the interests in PSS:

€ million	Dec. 31, 2022	Dec. 31, 2021
Total net assets	291	284
Share of net assets	95	92
Cumulative impairment losses on the carrying amount of the investment	-35	-20
Carrying amount under the equity method	60	72

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, 2021. In the DZ BANK Group, the interests in SGB are accounted for using the equity method. SGB did not pay a dividend in 2022, as had also been the case in the previous year.

Aggregated financial information for SGB:

€ million	Dec. 31, 2022	Dec. 31, 2021
Current assets	1,562	1,596
of which cash and cash equivalents	412	574
Non-current assets	3,107	2,747
Current liabilities	3,025	2,986
of which financial liabilities	2,815	2,775
Non-current liabilities	1,239	954
of which financial liabilities	1,239	954

€ million	2022	2021
Interest income	153	137
Interest expense	-83	-67
Fee and commission income	7	8
Fee and commission expenses	-13	-17
Administrative expenses	-43	-43
Income taxes	-2	-4
Profit from continuing operations, net of tax	10	13
Other comprehensive income/loss	-10	42
Total comprehensive income	-	55

Reconciliation from the aggregated financial information to the carrying amount of the interests in SGB:

€ million	Dec. 31, 2022	Dec. 31, 2021
Total net assets	404	404
Share of net assets	101	101
Cumulative impairment losses on the carrying amount of the investment	-75	-59
Carrying amount under the equity method	25	42

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, 2021. 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. In 2022, dwpbank paid a dividend of €6 million to DZ BANK (2021: no dividend).

Aggregated financial information for dwpbank:

€ million	Dec. 31, 2022	Dec. 31, 2021
Assets	830	682
Liabilities	545	392
of which financial liabilities	338	186

dwpbank only has a small amount of cash and cash equivalents.

€ million	2022	2021
Interest income	4	3
Interest expense	-4	-3
Fee and commission income	421	416
Fee and commission expenses	-101	-101
Administrative expenses	-265	-252
Income taxes	-	-28
Profit from continuing operations, net of tax	8	20
Total comprehensive income	8	20

Reconciliation from the aggregated financial information to the carrying amount of the interests in dwpbank:

€ million	Dec. 31, 2022	Dec. 31, 2021
Total net assets	285	290
Share of net assets	143	145
Capitalization of goodwill	29	29
Carrying amount under the equity method	172	174

Other joint ventures

The carrying amount of the equity-accounted joint ventures that, individually, are not material totaled €60 million on the balance sheet date (December 31, 2021: €61 million).

Aggregated financial information for equity-accounted joint ventures that, individually, are not material:

€ million	2022	2021
Share of profit from continuing operations, net of tax	2	4
Share of total comprehensive income	2	4

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 €131 million on the balance sheet date (December 31, 2021: €72 million).

Aggregated financial information for equity-accounted associates that, individually, are not material:

€ million	2022	2021
Share of profit/loss from continuing operations, net of tax	6	-3
Share of total comprehensive income/loss	6	-3

» 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:

€ million	Dec. 31, 2022		Dec. 31, 2021	
	Volume	Number	Volume	Number
Mutual funds	213,006	332	238,934	339
of which guarantee funds	307	8	361	9
Special funds	140,438	524	144,554	494
Total	353,444	856	383,488	833

Furthermore, DVB Bank SE, Frankfurt am Main, (DVB) made junior loans available to fully consolidated funds for the purpose of transport finance. In turn, these funds made junior loans or direct equity investments available to unconsolidated entities. The remaining volume of junior loans at the end of 2022 was immaterial owing to the scaling back and sale of business ahead of DVB's merger into DZ BANK AG, the resulting deconsolidation of DVB's subsidiaries, and the sharp contraction of business in the remaining structured 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, 2022

€ million	Mutual funds	of which guarantee funds	Special funds	Total
Assets	1,780	-	645	2,426
Loans and advances to customers	4	-	15	19
Investments	1,423	-	14	1,437
Investments held by insurance companies	27	-	601	629
Property, plant and equipment, investment property, and right-of-use assets	121	-	-	121
Other assets	186	-	15	201
Non-current assets and disposal groups classified as held for sale	19	-	-	19
Liabilities	139	13	-	139
Financial liabilities held for trading	13	13	-	13
Other liabilities	126	-	-	126
Net exposure recognized on the balance sheet	1,641	-13	645	2,286
Financial guarantee contracts, loan commitments and other obligations	318	318	-	318
Other obligations	318	318	-	318
Actual maximum exposure	1,960	305	645	2,605

AS AT DECEMBER 31, 2021

€ million	Mutual funds	of which guarantee funds	Special funds	Total
Assets	2,320	-	854	3,174
Loans and advances to customers	4	-	11	14
Investments	2,019	-	7	2,026
Investments held by insurance companies	33	-	801	835
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	2,247	-11	854	3,100
Financial guarantee contracts, loan commitments and other obligations	352	352	-	352
Other obligations	352	352	-	352
Actual maximum exposure	2,598	340	854	3,452

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 €331 million (December 31, 2021: €363 million), less negative fair values of €13 million (December 31, 2021: €11 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 €307 million on the balance sheet date (December 31, 2021: €361 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.

In addition, there were investment funds issued by the group in connection with unit-linked life insurance amounting to €4,149 million (December 31, 2021: €5,053 million) that, however, do not result in a maximum exposure.

The interests in investment funds issued and managed by the DZ BANK Group resulted in losses of €98 million in 2022 (2021: losses of €24 million). Distributions in 2022 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:

2022

€ million	Mutual funds	of which guarantee funds	Special funds	Total
Interest income and current income and expense	5	-	1	5
Fee and commission income	2,929	1	259	3,189
Gains and losses on investments	-62	-	-	-62
Other gains and losses on valuation of financial instruments	-31	-3	1	-30
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-6	-	-160	-166
Total	2,835	-1	102	2,936

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	5	-	-27	-22
Other operating income	-	-	14	14
Total	3,247	2	237	3,485

No income was generated in 2022 that impacted on other comprehensive income (2021: €5 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 €38,500 million (December 31, 2021: €44,013 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 €12,043 million (December 31, 2021: €12,778 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, 2022	Dec. 31, 2021
Assets	9,413	10,057
Loans and advances to customers	7,383	7,358
Investments held by insurance companies	2,030	2,699
Net exposure recognized on the balance sheet	9,413	10,057
Financial guarantee contracts, loan commitments and other obligations	259	488
Financial guarantee contracts	37	37
Loan commitments	223	451
Maximum exposure	9,672	10,545

The interests in investment funds not issued by the DZ BANK Group resulted in losses of €8 million in 2022 (2021: €0 million).

The revenue generated from interests in investment funds not issued by the DZ BANK Group was as follows:

€ million	2022	2021
Interest income and current income	118	110
Fee and commission income	76	85
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-395	356
Total	-202	551

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, 2022	Dec. 31, 2021
Assets	4,195	2,849
Loans and advances to customers	2,299	1,208
Financial assets held for trading	158	23
Investments	111	85
Investments held by insurance companies	1,626	1,533
Liabilities	50	16
Deposits from customers	-	5
Financial liabilities held for trading	48	8
Provisions	2	4
Net exposure recognized on the balance sheet	4,145	2,833
Financial guarantee contracts, loan commitments and other obligations	3,468	3,609
Financial guarantee contracts	-	20
Loan commitments	3,468	3,590
Maximum exposure	7,613	6,442

In 2022, interests in securitization vehicles resulted in losses of €68 million that were recognized in other comprehensive income (2021: losses of €2 million).

The revenue generated from interests in securitization vehicles was as follows:

€ million	2022	2021
Interest income	20	5
Fee and commission income	72	62
Gains and losses on trading activities	-47	-7
Gains and losses on investments	1	-
Gains and losses on investments held by insurance companies and other insurance company gains and losses	16	16
Total	62	76

The material interests in securitization vehicles comprise the two multi-seller asset-backed commercial paper (ABCP) programs CORAL and AUTOBAHN as well as the asset-backed security (ABS) paper of R+V.

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 2022, 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.

The current carrying amount of the ABS paper held by R+V represents the maximum downside 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. There were no sponsoring arrangements for unconsolidated structured entities in either 2022 or 2021.

C Disclosures relating to the income statement and the statement of comprehensive income

» 33 Segment information

Information on operating segments

2022

	BSH	R+V	TeamBank	UMH
€ million				
Net interest income	744	-	511	12
Net fee and commission income	11	-	-13	2,036
Gains and losses on trading activities	-	-	-	-
Gains and losses on investments	-90	-	-	-58
Other gains and losses on valuation of financial instruments	4	-	6	-155
Gains and losses from the derecognition of financial assets measured at amortized cost	3	-	-	-
Premiums earned	-	18,397	-	-
Gains and losses on investments held by insurance companies and other insurance company gains and losses	-	-3,368	-	-
Insurance benefit payments	-	-12,127	-	-
Insurance business operating expenses	-	-3,173	-	-
Gains and losses from the derecognition of financial assets measured at amortized cost in the insurance business	-	8	-	-
Loss allowances	-16	-	-100	-
Administrative expenses	-528	-	-286	-1,194
Other net operating income	16	-5	15	54
Profit/loss before taxes	143	-268	134	695
Cost/income ratio (%)	76.7	-	55.1	63.2
Regulatory RORAC (%)	11.2	-2.9	22.8	>100.0
Average own funds/solvency requirement	1,274	9,184	585	565
Total assets/total equity and liabilities as at Dec. 31, 2022	85,599	116,900	10,611	4,818

	DZ BANK – CICB	DZ HYP	DZ PRIVAT- BANK	VR Smart Finanz	DZ BANK – holding function	Other/ Consolidation	Total
	1,113	732	83	116	-51	62	3,322
	489	18	220	-29	-	17	2,749
	871	-1	21	-	-	-68	823
	-13	31	-	-	-	11	-119
	-91	-14	4	1	-	-41	-286
	32	-	-1	-	-	1	35
	-	-	-	-	-	-	18,397
	-	-	-	-	-	-21	-3,389
	-	-	-	-	-	-	-12,127
	-	-	-	-	-	105	-3,068
	-	-	-	-	-	-	8
	-172	-78	-2	-9	-	73	-304
	-1,350	-256	-277	-76	-228	-252	-4,447
	26	24	4	-	-	70	204
	904	455	52	3	-279	-42	1,797
	55.6	32.4	83.7	86.4	-	-	67.9
	15.2	33.6	14.1	1.8	-	-	9.3
	5,935	1,357	367	163	-	-	19,431
	367,462	89,181	25,447	3,367	21,557	-97,901	627,041

2021

	BSH	R+V	TeamBank	UMH
€ million				
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	DZ BANK – holding function	Other/ Consolidation	Total
	1,026	721	59	125	-32	-204	2,785
	471	18	212	-30	-	-40	2,935
	67	-6	21	-	-	70	152
	75	42	-	-	-	104	245
	58	63	-3	-	-	83	242
	29	-	-	-	-	-31	-
	-	-	-	-	-	-	18,994
	-	-	-	-	-	-29	5,251
	-	-	-	-	-	-	-20,356
	-	-	-	-	-	136	-3,047
	-	-	-	-	-	-	-
	89	-24	-	-14	-	140	120
	-1,292	-247	-251	-80	-208	-265	-4,265
	-58	21	4	-9	-	-1	41
	465	588	41	-9	-240	-35	3,096
	77.5	28.8	85.7	93.0	-	-	58.9
	8.6	41.6	12.1	-5.2	-	-	15.7
	5,379	1,412	341	181	-	-	19,716
	335,254	91,362	21,611	3,352	19,675	-81,429	627,273

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, 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. As part of the merger of DVB Bank into DZ BANK, changes were made to the internal reporting in 2022. DVB no longer constitutes a separate management unit and is therefore included under 'Other/Consolidation'. The prior-year figures have been restated accordingly.

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	2022	2021
Germany	5,665	6,394
Rest of Europe	893	837
Rest of World	178	192
Consolidation/reconciliation	-188	-182
Total	6,548	7,241

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	2022	2021
INTEREST INCOME AND CURRENT INCOME AND EXPENSE	5,974	4,236
Interest income from	5,919	4,174
Lending and money market business	5,726	4,523
of which relating to mortgage loans	972	950
of which relating to money market business	628	7
of which relating to home savings loans advanced by building society	1,007	1,064
of which relating to pass-through loans	518	565
of which relating to registered securities	283	254
of which relating to finance leases	23	33
Bonds and other fixed-income securities	485	341
Portfolio hedges of interest-rate risk	-77	-381
Financial assets with a negative effective interest rate	-215	-308
Other assets	1	-1
Current income and expense from	55	62
Shares and other variable-yield securities	24	26
of which income from other shareholdings	18	16
Investments in subsidiaries	8	8
Investments in associates	-	1
Entities accounted for using the equity method	17	19
of which relating to investments in joint ventures	10	28
of which relating to investments in associates	6	-9
Income from profit-pooling, profit-transfer and partial profit-transfer agreements	6	7
INTEREST EXPENSE ON	-2,652	-1,451
Deposits from banks and customers	-2,528	-1,934
of which relating to home savings deposits	-511	-846
Debt certificates issued including bonds	-494	-209
Subordinated capital	-93	-71
Portfolio hedges of interest-rate risk	-19	50
Financial liabilities with a positive effective interest rate	483	717
Provisions and other liabilities	-2	-5
Total	3,322	2,785

The interest income from other assets included gains from non-credit-risk-related modifications of €1 million (2021: €3 million) and losses from non-credit-risk-related modifications of €0 million (2021: €4 million), such gains and losses resulting from financial assets. The interest expense on provisions and other liabilities included interest expense on lease liabilities of €5 million (2021: €3 million).

» 35 Net fee and commission income

€ million	2022	2021
Fee and commission income	5,262	5,521
Securities business	4,089	4,410
Asset management	344	394
Payments processing including card processing	332	295
Lending business and trust activities	162	128
Financial guarantee contracts and loan commitments	72	67
International business	13	12
Building society operations	45	43
Other	206	171
Fee and commission expenses	-2,513	-2,586
Securities business	-1,764	-1,798
Asset management	-216	-280
Payments processing including card processing	-183	-144
Lending business	-77	-74
Financial guarantee contracts and loan commitments	-12	-10
Building society operations	-68	-66
Other	-193	-212
Total	2,749	2,935

Fee and commission income included revenue from contracts with customers pursuant to IFRS 15 in an amount of €5,247 million (2021: €5,512 million); see note 96.

» 36 Gains and losses on trading activities

€ million	2022	2021
Gains and losses on non-derivative financial instruments and embedded derivatives	4,473	-298
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	3,064	326
Gains and losses on derivatives	-3,794	310
Gains and losses on exchange differences	144	141
Total	823	152

Gains and losses on exchange differences included currency translation losses of €40 million on financial instruments not measured at fair value through profit or loss (2021: gains of €44 million).

» 37 Gains and losses on investments

€ million	2022	2021
Gains and losses on the disposal of bonds and other fixed-income securities	-41	139
Gains and losses on the disposal of shares and other variable-yield securities	-62	2
Gains and losses on investments in joint ventures	-31	-5
Impairment losses	-31	-9
Reversals of impairment losses	-	4
Gains and losses on investments in associates	15	109
Disposals	11	128
Impairment losses	-4	-20
Reversals of impairment losses	8	-
Total	-119	245

» 38 Other gains and losses on valuation of financial instruments

€ million	2022	2021
Gains and losses from fair value hedge accounting	-45	20
Gains and losses on derivatives used for purposes other than trading	-6	58
Gains and losses on financial instruments designated as at fair value through profit or loss	-160	111
Gains and losses on non-derivative financial instruments and embedded derivatives that are not related to derivatives held for trading purposes	349	136
Gains and losses on derivatives	-509	-25
Gains and losses on financial assets mandatorily measured at fair value through profit or loss	-75	52
Total	-286	242

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 financial assets measured at amortized cost

€ million	2022	2021
Gains from the derecognition of financial assets measured at amortized cost	56	16
Loans and advances to banks and customers	10	4
Investments	2	11
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	44	1
Losses on derecognition of financial assets measured at amortized cost	-22	-16
Loans and advances to banks and customers	-8	-2
Investments	-13	-2
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	-1	-12
Total	35	-

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	2022	2021
Net premiums written	18,415	18,982
Gross premiums written	18,667	19,184
Reinsurance premiums ceded	-253	-202
Change in provision for unearned premiums	-18	11
Gross premiums	-19	21
Reinsurers' share	2	-10
Total	18,397	18,994

» 41 Gains and losses on investments held by insurance companies and other insurance company gains and losses

€ million	2022	2021
Income from investments held by insurance companies	6,692	8,471
Interest income and current income	2,407	2,266
Income from reversals of impairment losses and reversals of loss allowances, and unrealized gains	1,402	1,133
Gains on valuation through profit or loss of investments held by insurance companies	1,864	4,389
Gains on disposals	1,019	683
Expenses in connection with investments held by insurance companies	-10,336	-3,035
Administrative expenses	-220	-203
Depreciation/amortization expense, additions to loss allowances, and impairment losses and unrealized losses	-1,104	-448
Losses on valuation through profit or loss of investments held by insurance companies	-7,139	-1,768
Losses on disposals	-1,873	-617
Other gains and losses of insurance companies	256	-184
Other insurance gains and losses	251	355
Other non-insurance gains and losses	5	-539
Total	-3,389	5,251

Other non-insurance gains and losses included interest expenses on lease liabilities amounting to €1 million (2021: €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 gains of €8 million on financial instruments not measured at fair value through profit or loss (2021: losses of €206 million).

Income from and expenses in connection with investments held by insurance companies included additions to loss allowances of €67 million (2021: €69 million) and reversals of loss allowances of €57 million (2021: €77 million).

» 42 Insurance benefit payments

€ million	2022	2021
EXPENSES FOR CLAIMS	-12,866	-12,412
Payments for claims	-12,085	-11,481
Gross payments for claims	-12,479	-11,679
Reinsurers' share	394	198
Change in the provision for claims outstanding	-781	-931
Gross change in the provision for claims outstanding	-469	-1,576
Reinsurers' share	-312	645
CHANGE IN THE BENEFIT RESERVE AND IN OTHER INSURANCE LIABILITIES	-531	-7,291
Change in the benefit reserve	-514	-7,282
Gross change in the benefit reserve	-527	-7,290
Reinsurers' share	13	8
Change in other insurance liabilities	-17	-9
INCOME FROM/EXPENSES FOR PREMIUM REFUNDS	1,269	-653
Gross expenses for premium refunds	-1,003	-588
Expenses for deferred premium refunds	2,272	-64
Total	-12,127	-20,356

The net reinsurance expense amounted to €128 million (2021: net income of €670 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	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
At the end of the year	5,424	5,782	4,845	4,716	4,551	4,276	4,173	3,856	3,634	3,901	3,345
1 year later		5,665	4,507	4,606	4,471	4,142	4,103	3,767	3,523	3,847	3,336
2 years later			4,351	4,519	4,405	4,067	4,046	3,682	3,457	3,769	3,247
3 years later				4,495	4,409	4,021	4,020	3,647	3,389	3,731	3,220
4 years later					4,373	4,017	3,980	3,625	3,382	3,696	3,189
5 years later						4,013	3,980	3,624	3,389	3,691	3,198
6 years later							3,880	3,549	3,329	3,626	3,126
7 years later								3,509	3,310	3,616	3,118
8 years later									3,283	3,603	3,108
9 years later										3,578	3,098
10 years later											3,086
Settlements	-	117	494	221	178	263	293	347	351	323	259

Net claims provisions in direct business and payments made against the original provisions:

€ million	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
At the end of the year	5,401	5,750	4,787	4,702	4,518	4,255	4,110	3,827	3,574	3,669	3,313
1 year later		5,635	4,455	4,589	4,438	4,118	4,050	3,736	3,460	3,613	3,300
2 years later			4,297	4,502	4,373	4,044	3,994	3,655	3,393	3,533	3,211
3 years later				4,477	4,376	3,999	3,965	3,624	3,331	3,490	3,180
4 years later					4,340	3,995	3,928	3,601	3,361	3,465	3,139
5 years later						3,992	3,929	3,602	3,369	3,670	3,166
6 years later							3,828	3,526	3,309	3,605	3,095
7 years later								3,487	3,290	3,594	3,087
8 years later									3,263	3,581	3,076
9 years later										3,556	3,066
10 years later											3,055
Settlements	-	115	490	225	178	263	282	340	311	113	258

Claims rate trend for inward reinsurance business

Gross claims provisions in inward reinsurance business and payments made against the original provisions:

€ million	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Gross provisions for claims outstanding	5,784	5,704	5,009	4,411	3,642	3,197	2,718	2,433	1,976	1,710	1,506
Cumulative payments for the year concerned and prior years											
1 year later		1,394	1,240	1,082	955	852	569	622	464	481	385
2 years later			1,890	1,627	1,396	1,237	852	867	783	685	630
3 years later				1,993	1,674	1,482	1,062	1,022	919	897	764
4 years later					1,927	1,660	1,189	1,154	1,026	987	930
5 years later						1,838	1,294	1,249	1,117	1,051	996
6 years later							1,405	1,315	1,171	1,114	1,035
7 years later								1,378	1,214	1,155	1,085
8 years later									1,257	1,185	1,117
9 years later										1,214	1,139
10 years later											1,163
Gross provisions for claims outstanding and payments made against the original provision											
At the end of the year	5,784	5,704	5,009	4,411	3,642	3,197	2,718	2,433	1,976	1,710	1,506
1 year later		5,818	5,373	4,313	3,951	3,392	2,654	2,434	2,157	1,840	1,593
2 years later			5,148	4,373	3,651	3,315	2,561	2,271	2,004	1,859	1,569
3 years later				4,337	3,733	3,131	2,486	2,224	1,915	1,779	1,628
4 years later					3,714	3,166	2,361	2,179	1,887	1,720	1,580
5 years later						3,159	2,363	2,088	1,848	1,699	1,550
6 years later							2,355	2,096	1,779	1,677	1,536
7 years later								2,087	1,794	1,627	1,526
8 years later									1,800	1,636	1,490
9 years later										1,639	1,499
10 years later											1,500
Settlements	-	-114	-139	74	-72	38	363	346	176	71	6

Net claims provisions in inward reinsurance business and payments made against the original provisions:

€ million	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Net provisions for claims outstanding	5,663	5,587	5,001	4,408	3,639	3,193	2,710	2,428	1,970	1,695	1,491
Cumulative payments for the year concerned and prior years											
1 year later		1,389	1,235	1,082	955	851	567	622	464	473	383
2 years later			1,884	1,626	1,396	1,236	849	866	782	677	620
3 years later				1,992	1,674	1,480	1,058	1,020	918	888	754
4 years later					1,926	1,658	1,186	1,153	1,025	978	919
5 years later						1,836	1,290	1,247	1,115	1,042	985
6 years later							1,401	1,313	1,170	1,105	1,024
7 years later								1,376	1,212	1,146	1,074
8 years later									1,255	1,175	1,105
9 years later										1,204	1,128
10 years later											1,151
Net provisions for claims outstanding and payments made against the original provision											
At the end of the year	5,663	5,587	5,001	4,408	3,639	3,193	2,710	2,428	1,970	1,695	1,491
1 year later		5,698	5,365	4,310	3,950	3,388	2,648	2,429	2,152	1,827	1,576
2 years later			5,141	4,370	3,649	3,312	2,555	2,267	1,999	1,845	1,554
3 years later				4,335	3,732	3,129	2,482	2,219	1,911	1,766	1,612
4 years later					3,713	3,163	2,356	2,176	1,883	1,708	1,566
5 years later						3,157	2,358	2,086	1,845	1,687	1,536
6 years later							2,351	2,093	1,777	1,666	1,522
7 years later								2,084	1,791	1,616	1,513
8 years later									1,797	1,625	1,477
9 years later										1,628	1,486
10 years later											1,487
Settlements	-	-111	-140	73	-74	36	359	344	173	67	4

» 43 Insurance business operating expenses

€ million	2022	2021
Gross expenses	-3,096	-3,079
Reinsurers' share	28	32
Total	-3,068	-3,047

» 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 €11 million (2021: €2 million) and losses of €3 million (2021: €2 million).

» 45 Loss allowances

€ million	2022	2021
Loss allowances for loans and advances to banks	-30	22
Additions	-93	-32
Reversals	61	31
Recoveries on loans and advances to banks previously impaired	1	23
Loss allowances for loans and advances to customers	-236	71
Additions	-2,223	-2,110
Reversals	1,905	2,087
Directly recognized impairment losses	-29	-38
Recoveries on loans and advances to customers previously impaired	78	83
Other	34	49
Loss allowances for investments	4	25
Additions	-13	-26
Reversals	17	50
Loss allowances for other assets	-1	1
Directly recognized impairment losses	-1	-
Recoveries on other assets previously impaired	-	1
Other loss allowances for loans and advances	-42	1
Additions to and reversals of provisions for loan commitments	-20	-18
Additions to and reversals of provisions for financial guarantee contracts	-9	19
Additions to and reversals of other provisions for loans and advances	-13	-
Total	-304	120

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.

» 46 Administrative expenses

€ million	2022	2021
Staff expenses	-2,072	-2,021
Wages and salaries	-1,726	-1,692
Social security contributions	-228	-217
Pension and other post-employment benefit expenses	-107	-101
Expenses for share-based payment transactions	-11	-10
General and administrative expenses	-2,082	-1,941
Expenses for temporary staff	-26	-24
Contributions and fees	-315	-288
of which contributions to the resolution fund for CRR credit institutions	-151	-134
Consultancy	-494	-439
Office expenses	-156	-163
IT expenses	-577	-552
Property and occupancy costs	-116	-103
Information procurement	-100	-88
Public relations and marketing	-173	-165
Other general and administrative expenses	-121	-115
Expenses for administrative bodies	-4	-5
Depreciation and amortization	-292	-303
Property, plant and equipment, and investment property	-84	-86
Right-of-use assets	-86	-84
Other assets	-122	-134
Total	-4,447	-4,265

» 47 Other net operating income

€ million	2022	2021
Income from the reversal of provisions and accruals	157	86
Gains and losses on non-current assets and disposal groups classified as held for sale	49	70
Gains on the disposal of other assets	43	37
Expenses for other taxes	-23	-20
Restructuring expenses	-5	-78
Impairment losses on goodwill	-	-2
Residual other net operating income	-16	-51
Total	204	42

Gains and losses on non-current assets and disposal groups classified as held for sale included realized gains of €51 million on disposals (2021: €83 million) and impairment losses of €2 million (2021: €14 million).

Restructuring expenses included additions of €3 million to provisions for termination benefits linked with restructuring (2021: €36 million).

Residual other net operating income included rental income from investment property of €13 million (2021: €10 million) and directly assignable expenses of €4 million for the management of investment property (2021: €3 million).

» 48 Income taxes

€ million	2022	2021
Current tax expense	-908	-894
Deferred tax income/expense	184	-26
Total	-724	-920

The total for current taxes includes expenses of €49 million (2021: income of €2 million) attributable to previous years. Deferred taxes include income of €110 million (2021: expenses of €29 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 2022 was unchanged from the rate used in 2021. 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	2022	2021
Profit before taxes	1,797	3,096
Group income tax rate	31.260%	31.260%
Expected income taxes	-562	-968
Income tax effects	-162	48
Impact of tax-exempt income and non-deductible expenses	-120	4
Adjustments resulting from other types of income tax, other trade tax multipliers, and changes in tax rates	24	11
Tax rate differences on income subject to taxation in other countries	25	13
Current and deferred taxes relating to prior years	-21	-6
Change in impairment losses on deferred tax assets	21	42
Other effects	-91	-17
Recognized income taxes	-724	-920

» 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	2022	2021
Gains and losses on debt instruments measured at fair value through other comprehensive income	-8,978	-1,389
Gains (+)/losses (-) arising during the reporting period	-9,203	-1,175
Gains (-)/losses (+) reclassified to the income statement during the reporting period	225	-213
Exchange differences on currency translation of foreign operations	-	-16
Gains (+)/losses (-) arising during the reporting period	-2	15
Gains (-)/losses (+) reclassified to the income statement during the reporting period	1	-30
Gains and losses on hedges of net investments in foreign operations	-	5
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	1	15
Gains (+)/losses (-) arising during the reporting period	1	15

» 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:

€ million	2022			2021		
	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	-8,977	2,700	-6,277	-1,385	445	-941
Gains and losses on debt instruments measured at fair value through other comprehensive income	-8,978	2,701	-6,277	-1,389	448	-941
Exchange differences on currency translation of foreign operations	-	-1	-1	-16	-3	-19
Gains and losses on hedges of net investments in foreign operations	-	-	-	5	-	5
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	1	-	1	15	-	15
Items that will not be reclassified to the income statement	251	-145	106	603	-62	541
Gains and losses on equity instruments for which the fair value OCI option has been exercised	-327	30	-297	473	-33	440
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	170	-51	119	39	-12	27
Gains and losses arising from remeasurement of defined benefit plans	407	-124	283	90	-17	73
Total	-8,726	2,555	-6,171	-782	382	-400

The changes were predominantly due to changes in various parameters in the financial, capital, and currency markets between the reporting dates of December 31, 2021 and December 31, 2022.

D Balance sheet disclosures

» 51 Cash and cash equivalents

€ million	Dec. 31, 2022	Dec. 31, 2021
Cash on hand	312	266
Balances with central banks	93,405	85,763
Total	93,717	86,029

The average target minimum reserve for 2022 was €4,159 million (2021: €4,026 million).

» 52 Loans and advances to banks

€ million	Repayable on demand		Other loans and advances		Total	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Domestic banks	6,666	3,310	107,350	96,627	114,015	99,937
Affiliated banks	4,033	1,506	103,471	92,528	107,505	94,034
Other banks	2,632	1,804	3,878	4,099	6,510	5,903
Foreign banks	2,636	3,973	6,793	3,750	9,429	7,723
Total	9,301	7,284	114,142	100,375	123,444	107,659

The following table shows the breakdown of loans and advances to banks by type of business:

€ million	Dec. 31, 2022	Dec. 31, 2021
Mortgage loans	96	126
Finance leases	-	1
Registered securities	11,593	9,649
Pass-through loans	68,213	65,690
Other bank loans	20,267	17,450
Money market placements	19,978	11,156
Current account debit balances	2,524	2,905
Other loans and advances	773	684
Total	123,444	107,659

» 53 Loans and advances to customers

€ million	Dec. 31, 2022	Dec. 31, 2021
Loans and advances to domestic customers	176,145	169,717
Loans and advances to foreign customers	27,501	25,948
Total	203,646	195,665

The following table shows the breakdown of loans and advances to customers by type of business:

€ million	Dec. 31, 2022	Dec. 31, 2021
Mortgage loans	56,962	56,192
Ship mortgage loans	-	54
Home savings loans advanced by building society	63,660	60,439
Finance leases	565	751
Registered securities	7,994	8,319
Pass-through loans	7,742	7,532
Other bank loans	48,903	43,032
Money market placements	2,879	4,431
Current account debit balances	6,042	5,259
Other loans and advances	8,900	9,655
Total	203,646	195,665

» 54 Hedging instruments (positive fair values)

Hedging instruments (positive fair values) amounted to €1,568 million (December 31, 2021: €389 million) and resulted solely from derivatives used as fair value hedges.

» 55 Financial assets held for trading

€ million	Dec. 31, 2022	Dec. 31, 2021
DERIVATIVES (POSITIVE FAIR VALUES)	21,474	16,188
Interest-linked contracts	17,779	13,478
Currency-linked contracts	2,956	1,481
Share-/index-linked contracts	547	847
Other contracts	6	2
Credit derivatives	187	380
BONDS AND OTHER FIXED-INCOME SECURITIES	7,729	10,964
Money market instruments	212	140
Bonds	7,517	10,824
SHARES AND OTHER VARIABLE-YIELD SECURITIES	1,388	1,752
Shares	1,381	1,750
Investment fund units	7	2
RECEIVABLES	18,318	18,417
of which from affiliated banks	76	24
of which from other banks	16,915	17,325
Money market placements	17,058	17,127
with banks	16,322	16,575
with customers	737	553
Promissory notes and registered bonds	1,259	1,290
from banks	669	774
from customers	590	516
Total	48,909	47,321

» 56 Investments

€ million	Dec. 31, 2022	Dec. 31, 2021
Bonds and other fixed-income securities	40,731	49,125
Money market instruments	1,070	488
Bonds	39,661	48,637
Shares and other variable-yield securities	1,962	2,587
Shares and other shareholdings	470	494
Investment fund units	1,491	2,080
Other variable-yield securities	1	13
Investments in subsidiaries	236	305
Investments in joint ventures	320	349
Investments in associates	144	75
Total	43,393	52,440

The carrying amount of investments in joint ventures accounted for using the equity method totaled €317 million (December 31, 2021: €349 million). €131 million of the investments in associates has been accounted for using the equity method (December 31, 2021: €72 million).

» 57 Investments held by insurance companies

€ million	Dec. 31, 2022	Dec. 31, 2021
Investment property	4,028	3,813
Investments in subsidiaries	840	901
Investments in joint ventures	69	21
Investments in associates	1	1
Mortgage loans	10,960	13,005
Promissory notes and loans	5,946	7,202
Registered bonds	5,430	8,510
Other loans	834	968
Variable-yield securities	13,023	13,742
Fixed-income securities	47,652	61,445
Derivatives (positive fair values)	278	199
Deposits with ceding insurers and other investments	464	594
Assets related to unit-linked contracts	16,429	18,719
Total	105,955	129,119

The fair value of investment property was €5,904 million as at the balance sheet date (December 31, 2021: €5,342 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 €1,182 million (December 31, 2021: €1,397 million). The group also has capital expenditure commitments amounting to €20 million (December 31, 2021: €87 million). A total of €41 million was spent on the repair and maintenance of investment property in 2022 (2021: €35 million). Vacant property resulted in repair and maintenance expenses of €4 million (2021: €3 million).

The table below shows the changes in loss allowances for investments held by insurance companies in 2021.

€ million	Investments held by insurance companies			Total
	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2021	19	3	1	23
Reversals	-20	-3	-	-23
Balance as at Dec. 31, 2021	-	-	-	-

There were no changes in loss allowances for investments held by insurance companies in 2022.

» 58 Property, plant and equipment, investment property, and right-of-use assets

€ million	Dec. 31, 2022	Dec. 31, 2021
Land and buildings	867	888
Office furniture and equipment	179	178
Investment property	293	279
Right-of-use assets	622	537
Total	1,960	1,881

The fair value of investment property was €361 million as at the balance sheet date (December 31, 2021: €346 million). Payments in advance are allocated to the relevant item of property, plant and equipment.

» 59 Income tax assets and liabilities

€ million	Dec. 31, 2022	Dec. 31, 2021
Income tax assets	3,428	1,141
Current income tax assets	284	361
Deferred tax assets	3,144	780
Income tax liabilities	1,063	1,456
Current income tax liabilities	635	645
Deferred tax liabilities	428	811

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:

€ million	Deferred tax assets		Deferred tax liabilities	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Tax loss carryforwards	91	17		
Loans and advances to banks and customers	37	74	446	816
Financial assets and liabilities held for trading, hedging instruments (positive and negative fair values)	1,145	719	63	4
Investments	1,100	12	9	666
Loss allowances	257	205	-	-
Investments held by insurance companies	1,463	140	221	1,086
Property, plant and equipment, investment property, and right-of-use assets	11	14	233	213
Deposits from banks and customers	219	669	470	136
Debt certificates issued including bonds	2	80	827	23
Provisions for employee benefits and for share-based payment transactions	543	722	60	61
Other provisions	149	220	26	31
Insurance liabilities	-	83	109	52
Other balance sheet items	298	271	134	167
Total (gross)	5,316	3,224	2,600	3,255
Netting of deferred tax assets and deferred tax liabilities	-2,171	-2,444	-2,171	-2,444
Total (net)	3,144	780	428	811

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 €181 million (December 31, 2021: €261 million), which can be carried forward indefinitely, or for trade tax loss carryforwards amounting to €127 million (December 31, 2021: €211 million). There remained foreign loss carryforwards of €324 million (December 31, 2021: €672 million) for which no deferred tax assets are recognized. Of this total, €226 million will expire by 2031 and €98 million can be used indefinitely.

As regards companies (or permanent establishments of companies) in the DZ BANK Group that suffered tax losses in 2022 or 2021 in their tax jurisdiction, it will be possible to utilize deferred tax assets amounting to €1,028 million (December 31, 2021: €0 million) in the future if a corresponding level of taxable income is available. It is assumed that this will in fact be the case based on information available from planning of taxable income.

Overall, there was a net deferred tax asset recognized through other comprehensive income of €2,218 million (December 31, 2021: net deferred tax liability of €337 million).

Deferred tax assets of €2,244 million (December 31, 2021: €243 million) and deferred tax liabilities of €121 million (December 31, 2021: €254 million) are expected to be realized only after a period of 12 months.

As at December 31, 2022, no deferred tax liabilities were recognized for temporary differences of minus €9 million (December 31, 2021: €243 million) relating to investments in subsidiaries.

» 60 Other assets

€ million	Dec. 31, 2022	Dec. 31, 2021
Other assets held by insurance companies	4,384	4,492
Goodwill	155	155
Other intangible assets	508	522
of which software	415	419
of which acquired customer relationships	60	63
Other loans and advances	464	459
Residual other assets	1,693	874
Total	7,204	6,501

Other intangible assets include internally generated intangible assets amounting to €23 million (December 31, 2021: €23 million).

The breakdown of other assets held by insurance companies is as follows:

€ million	Dec. 31, 2022	Dec. 31, 2021
Intangible assets	145	151
Reinsurers' share of insurance liabilities	475	782
Provision for unearned premiums	4	2
Benefit reserve	41	37
Provision for claims outstanding	431	743
Receivables	1,697	1,703
Receivables arising out of direct insurance operations	427	467
Receivables arising out of reinsurance operations	421	384
Other receivables	848	851
Credit balances with banks, checks and cash on hand	703	713
Property, plant and equipment	410	408
Land and buildings	281	277
Office furniture and equipment	65	62
Right-of-use assets held by insurance companies	64	69
Residual other assets	956	736
Prepaid expenses	47	64
Remaining assets held by insurance companies	909	673
Loss allowances	-1	-2
Total	4,384	4,492

The intangible assets in the other assets held by insurance companies include internally generated intangible assets amounting to €22 million (December 31, 2021: €16 million).

Trustee's blocking notes have been entered in the land register for land and buildings held by companies offering personal insurance of €159 million (December 31, 2021: €153 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	2022	2021
Balance as at Jan. 1	2	12
Additions	12	9
Utilizations/reversals	-11	-19
Balance as at Dec. 31	4	2

REINSURERS' SHARE OF THE CHANGES IN THE BENEFIT RESERVE

€ million	2022	2021
Balance as at Jan. 1	37	39
Additions	5	2
Utilizations/reversals	-1	-4
Balance as at Dec. 31	41	37

REINSURERS' SHARE OF THE CHANGES IN THE PROVISION FOR CLAIMS OUTSTANDING

€ million	2022	2021
Balance as at Jan. 1	743	98
Claims expenses	75	833
less payments	-387	-188
Balance as at Dec. 31	431	743

The breakdown of maturities for the reinsurers' share of insurance liabilities is shown in the following tables:

AS AT DECEMBER 31, 2022

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	2	-	1	-
Benefit reserve	-	2	19	20
Provision for claims outstanding	147	239	45	-
Total	149	241	65	20

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

» 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:

€ million	Loans and advances to banks			Loans and advances to customers			
	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	POCI assets
Balance as at Jan. 1, 2021	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
Additions	34	12	46	280	906	1,009	28
Utilizations	-	-	-	-	-1	-318	-4
Reversals	-29	-7	-24	-482	-429	-974	-19
Other changes	-1	-2	2	182	-305	172	1
Balance as at Dec. 31, 2022	17	5	32	244	535	1,157	18

€ million	Investments			Other assets	Total
	Stage 1	Stage 2	Stage 3	Stage 1	
Balance as at Jan. 1, 2021	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
Additions	3	2	1	-	2,322
Utilizations	-	-	-	-	-323
Reversals	-2	-4	-3	-	-1,975
Other changes	-	-	-	-	49
Balance as at Dec. 31, 2022	4	11	4	2	2,029

» 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, 2021	3,835
Cost as at Jan. 1, 2021	4,506
Additions	63
Additions in respect of borrowing costs eligible for capitalization	1
Reclassifications	4
Disposals	-3
Changes in scope of consolidation	-
Cost as at Dec. 31, 2021	4,571
Reversals of impairment losses as at Jan. 1, 2021	27
Additions	-
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
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
Cost as at Jan. 1, 2022	4,571
Additions	58
Reclassifications	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-7
Disposals	-10
Changes attributable to currency translation	-
Changes in scope of consolidation	257
Cost as at Dec. 31, 2022	4,869
Reversals of impairment losses as at Jan. 1, 2022	27
Additions	-
Disposals	-
Reversals of impairment losses as at Dec. 31, 2022	28
Depreciation/amortization and impairment losses as at Jan. 1, 2022	-785
Depreciation/amortization expense for the year	-89
Impairment losses for the year	-2
Reclassifications	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	3
Disposals	5
Changes in scope of consolidation	-
Depreciation/amortization and impairment losses as at Dec. 31, 2022	-869
Carrying amounts as at Dec. 31, 2022	4,028

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
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
1,305	571	16	319	385	2,078
13	58	-	5	-	121
-15	-1	-	16	-	-
-	-	-	-	-	-
-1	-44	-13	-	-28	-65
-	-	-	-	-	-2
-	10	-	-	-	-1
1,303	594	3	339	356	2,133
13	-	81	5	-	4
5	-	-	1	-	-
-	-	-81	-	-	-
18	-	-	6	-	4
-430	-393	-97	-45	-230	-1,560
-24	-54	-	-6	-	-126
-	-1	-	-	-	-
2	-	-	-2	-	-
-	-	-	-	-	-
-1	39	94	-	28	60
-	-7	-	-	-	-
-454	-416	-3	-52	-202	-1,628
867	179	-	293	155	508

€ 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, 2021	297	64	157
Cost as at Jan. 1, 2021	523	196	717
Additions	3	19	38
Reclassifications	-4	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	-22	-	-
Disposals	-	-6	-21
Cost as at Dec. 31, 2021	500	209	734
Reversals of impairment losses as at Jan. 1, 2021	10	-	-
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
Reclassifications	3	-	-
Reclassifications to/from non-current assets and disposal groups classified as held for sale	12	-	-
Disposals	-	5	21
Depreciation/amortization and impairment losses as at Dec. 31, 2021	-233	-148	-583
Carrying amounts as at Dec. 31, 2021	277	62	151
Cost as at Jan. 1, 2022	500	209	734
Additions	14	25	45
Reclassifications	-	2	-
Disposals	-	-8	-8
Cost as at Dec. 31, 2022	514	228	771
Reversals of impairment losses as at Jan. 1, 2022	10	-	-
Reversals of impairment losses as at Dec. 31, 2022	10	-	-
Depreciation/amortization and impairment losses as at Jan. 1, 2022	-233	-148	-583
Depreciation/amortization expense for the year	-11	-22	-46
Reclassifications	-	-2	-
Disposals	-	8	4
Depreciation/amortization and impairment losses as at Dec. 31, 2022	-243	-163	-626
Carrying amounts as at Dec. 31, 2022	281	65	145

In 2022, the useful life of the assets ranged from 2 to 58 years for buildings (2021: 4 to 59 years) and from 1 to 33 years for office furniture and equipment (2021: 1 to 25 years). The useful life for investment property was 1 to 80 years (2021: 2 to 80 years). Software included in other intangible assets was amortized over a useful life of 1 to 12 years, as had also been the case in 2021, while acquired customer relationships were amortized over 10 to 20 years (2021: 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 2022, borrowing costs relating to investment property held by insurance companies were capitalized in an amount of €0 million (2021: €1 million). The capitalization rate used for borrowing costs was 1.37 percent for investment property held by insurance companies (2021: 1.06 percent).

Disclosures regarding the changes in goodwill are included in note 94.

Other intangible assets include acquired customer relationships amounting to €60 million (December 31, 2021: €63 million). The associated amortization expense came to €4 million (2021: €4 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 individual non-current assets together with 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 DVB, the parts of the credit portfolio of the aviation finance business that had previously constituted a disposal group not qualifying as a discontinued operation were disposed of in 2022. The disposal gave rise to a net gain of €1 million, which was recognized under other net operating income. The impairment loss requirement of €2 million identified for this disposal group was also recognized under other net operating income.

The plan to sell the fully consolidated subsidiary of the DVB subgroup that had constituted a disposal group not qualifying as a discontinued operation in 2021 was abandoned in 2022. The impairment loss requirement of €9 million identified for this disposal group in 2021 was recognized as income under other net operating income in 2022.

Other disposal groups not qualifying as discontinued operations include units in various investment funds. The sale of these disposal groups is expected to take place in 2023.

The disposal group not qualifying as a discontinued operation that had been classified as such as at December 31, 2021 and consisted of receivables and an associate was sold in 2022, as was a further disposal group not qualifying as a discontinued operation that had been classified as such in the interim and consisted of receivables and a non-fully consolidated subsidiary. The resulting gain of €36 million was reported under other net operating income.

Assets that were individually classified as held for sale during the reporting year gave rise to income of €4 million, which was also recognized under other net operating income.

» 64 Deposits from banks

€ million	Repayable on demand		With agreed maturity or notice period		Total	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Domestic banks	46,067	56,372	124,645	131,426	170,712	187,798
Affiliated banks	41,487	52,196	33,705	22,254	75,192	74,450
Other banks	4,580	4,176	90,940	109,172	95,520	113,348
Foreign banks	7,093	3,290	8,983	5,474	16,075	8,764
Total	53,160	59,662	133,628	136,900	186,787	196,562

The following table shows the breakdown of deposits from banks by type of business:

€ million	Dec. 31, 2022	Dec. 31, 2021
Home savings deposits	1,275	1,567
Money market deposits	53,584	49,072
Other deposits	131,928	145,923
Total	186,787	196,562

» 65 Deposits from customers

	Repayable on demand		With agreed maturity or notice period		Total	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
€ million						
Domestic customers	30,418	24,628	99,261	91,030	129,679	115,658
Foreign customers	17,265	13,262	12,485	10,055	29,750	23,317
Total	47,682	37,889	111,747	101,086	159,429	138,975

The following table shows the breakdown of deposits from customers by type of business:

	Dec. 31, 2022	Dec. 31, 2021
€ million		
Home savings deposits	66,310	66,194
Money market deposits	37,246	14,886
Other deposits	55,873	57,895
Total	159,429	138,975

» 66 Debt certificates issued including bonds

	Dec. 31, 2022	Dec. 31, 2021
€ million		
Bonds issued	68,271	67,086
Mortgage Pfandbriefe	28,968	27,472
Public-sector Pfandbriefe	1,232	1,657
Other bonds	38,071	37,957
Other debt certificates issued	14,077	12,566
Total	82,349	79,652

As was also the case as at December 31, 2021, all other debt certificates issued are commercial paper.

» 67 Hedging instruments (negative fair values)

Hedging instruments (negative fair values) amounted to €442 million (December 31, 2021: €1,678 million) and resulted solely from derivatives used as fair value hedges.

» 68 Financial liabilities held for trading

€ million	Dec. 31, 2022	Dec. 31, 2021
DERIVATIVES (NEGATIVE FAIR VALUES)	26,641	15,402
Interest-linked contracts	21,217	11,911
Currency-linked contracts	3,148	1,682
Share-/index-linked contracts	1,899	1,577
Other contracts	270	150
Credit derivatives	107	82
SHORT POSITIONS	1,017	1,548
BONDS ISSUED	20,014	22,245
DEPOSITS	4,806	4,216
of which from affiliated banks	3,705	3,412
of which from other banks	954	613
Money market deposits	4,652	4,031
from banks	4,592	3,934
from customers	60	97
Promissory notes and registered bonds issued	155	185
to banks	68	91
to customers	87	94
Total	52,478	43,411

As was also the case as at December 31, 2021, bonds issued mainly comprise share certificates and index-linked certificates.

» 69 Provisions

€ million	Dec. 31, 2022	Dec. 31, 2021
Provisions for employee benefits	1,356	1,772
Provisions for defined benefit plans	922	1,251
Provisions for other long-term employee benefits	200	206
of which for semi-retirement schemes	72	59
Provisions for termination benefits	206	276
of which for early retirement schemes	26	27
of which for restructuring	135	201
Provisions for short-term employee benefits	28	38
Provisions for share-based payment transactions	51	42
Other provisions	1,841	2,178
Provisions for onerous contracts	30	25
Provisions for restructuring	16	41
Provisions for loan commitments	147	125
Provisions for financial guarantee contracts	89	88
Other provisions for loans and advances	51	38
Provisions relating to building society operations	1,053	1,398
Residual provisions	455	462
Total	3,248	3,992

The provisions for restructuring assigned to the provisions for employee benefits relate to various undertakings, 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 Bank into DZ BANK, which was completed in August 2022.

Other provisions

The following table shows the changes in other provisions in 2022:

€ million	Provisions for onerous contracts	Provisions for restructuring	Provisions for loan commitments	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, 2022	25	41	125	88	38	1,398	462	2,178
Additions	18	13	284	101	29	115	339	899
Utilizations	-	-23	-	-	-1	-269	-261	-554
Reversals	-12	-11	-264	-92	-16	-192	-72	-658
Interest expense/changes in discount rate	-1	-	1	1	1	-	-5	-4
Other changes	-	-4	1	-8	-	-	-9	-19
Balance as at Dec. 31, 2022	30	16	147	89	51	1,053	455	1,841

The residual provisions include provisions totaling €72 million for litigation risk (December 31, 2021: €71 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 €300 million). The plaintiffs maintain 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 residual provisions also include provisions of €113 million for pre-litigation risks in connection with the lending business and building society operations (December 31, 2021: €66 million). The other disclosures 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, 2022

€ million	≤ 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provisions for onerous contracts	-	-	-	30	-
Provisions for restructuring	2	14	1	-	-
Provisions for loan commitments	19	10	74	38	5
Provisions for financial guarantee contracts	17	12	37	23	-
Other provisions for loans and advances	-	44	5	1	-
Provisions relating to building society operations	5	280	482	286	-
Residual provisions	103	154	124	67	8
Total	146	514	722	446	13

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

The changes in loss allowances recognized under provisions for loan commitments and provisions for financial guarantee contracts were as follows:

€ million	Loss allowances for loan commitments				Loss allowances for financial guarantee contracts			Total
	Stage 1	Stage 2	Stage 3	POCI assets	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2021	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
Additions	97	115	65	7	9	25	67	385
Reversals	-108	-71	-77	-8	-9	-11	-72	-356
Other changes	2	-1	1	-	-1	-1	-5	-5
Balance as at Dec. 31, 2022	46	74	27	-	6	21	62	236

» 70 Insurance liabilities

€ million	Dec. 31, 2022	Dec. 31, 2021
Provision for unearned premiums	1,201	1,179
Benefit reserve	75,200	74,167
Provision for claims outstanding	16,845	16,429
Provision for premium refunds	-4,436	11,237
Other insurance liabilities	70	53
Reserve for unit-linked insurance contracts	14,915	15,799
Total	103,795	118,863

Due to the changes in interest rates in the reporting period and the related reduction in the fair values of fixed-income securities, a comparison of the carrying amounts and fair values of investments held by insurance companies gave rise to considerable unrealized losses that were recognized in other comprehensive income. Where these investments held by insurance companies relate to life insurance contracts with policyholder participation, expenses for deferred premium refunds were calculated on the basis of these unrealized losses in line with IFRS 4.30. Overall, the 'Expenses for deferred premium refunds' item was negative and thus constituted accrued income in the reporting period. At present, the DZ BANK Group is reasonably certain that the unrealized losses are a temporary effect that will reverse.

CHANGES IN THE PROVISION FOR UNEARNED PREMIUMS

€ million	2022	2021
Balance as at Jan. 1	1,179	1,194
Additions	1,259	1,238
Utilizations/reversals	-1,240	-1,259
Changes attributable to currency translation	3	6
Balance as at Dec. 31	1,201	1,179

CHANGES IN THE BENEFIT RESERVE

€ million	2022	2021
Balance as at Jan. 1	74,167	70,470
Additions	5,244	7,268
Interest component	944	918
Utilizations/reversals	-5,156	-4,516
Other changes in measurement	-	6
Changes attributable to currency translation	-	1
Changes in scope of consolidation	-	20
Balance as at Dec. 31	75,200	74,167

Supplementary change-in-discount-rate reserves totaling €5,233 million have been recognized for policies with a discount rate in excess of the reference rate specified in the DeckRV (December 31, 2021: €5,451 million).

CHANGES IN THE PROVISION FOR CLAIMS OUTSTANDING

€ million	2022	2021
Balance as at Jan. 1	16,429	14,627
Claims expenses	7,662	8,424
less payments	-7,194	-6,847
Changes attributable to currency translation	-52	225
Balance as at Dec. 31	16,845	16,429

CHANGES IN THE PROVISION FOR PREMIUM REFUNDS

€ million	2022	2021
Balance as at Jan. 1	11,237	12,569
Additions	1,010	599
Utilizations/reversals	-713	-820
Other changes in measurement	-13,712	1,767
Changes resulting from unrealized gains and losses on investments (through other comprehensive income)	-2,273	-2,947
Changes resulting from other remeasurements (through profit or loss)	15	49
Changes attributable to currency translation	-	20
Balance as at Dec. 31	-4,436	11,237

The breakdown of maturities for insurance liabilities is shown in the following tables:

AS AT DECEMBER 31, 2022

€ million	≤ 1 year	> 1 year – 5 years	> 5 years	Indefinite
Provision for unearned premiums	996	158	47	-
Benefit reserve	1,436	5,105	13,371	55,288
Provision for claims outstanding	6,452	6,457	3,936	-
Provision for premium refunds	1,003	709	736	-6,884
Other insurance liabilities	22	30	15	3
Total	9,909	12,459	18,105	48,407

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

» 71 Other liabilities

€ million	Dec. 31, 2022	Dec. 31, 2021
Other liabilities of insurance companies	7,573	7,796
Accruals	1,485	1,526
Other payables	221	170
Lease liabilities	637	547
Residual other liabilities	1,083	758
Total	10,999	10,797

Residual other liabilities principally relate to initial margins from client clearing.

The table below gives a breakdown of insurance companies' other liabilities.

€ million	Dec. 31, 2022	Dec. 31, 2021
Other provisions	354	426
Provisions for employee benefits	311	391
of which provisions for defined benefit plans	119	203
Provisions for share-based payment transactions	3	3
Other provisions	39	31
Payables and residual other liabilities	7,219	7,371
Subordinated capital	90	80
Deposits received from reinsurers	38	36
Payables arising out of direct insurance operations	1,327	1,398
Payables arising out of reinsurance operations	568	597
Debt certificates issued including bonds	36	31
Deposits from banks	413	563
Derivatives (negative fair values)	223	103
Liabilities from capitalization transactions	3,400	3,592
Insurance lease liabilities	80	86
Other payables	338	318
Residual other liabilities	706	567
Total	7,573	7,796

» 72 Subordinated capital

€ million	Dec. 31, 2022	Dec. 31, 2021
Subordinated liabilities	4,510	3,062
Share capital repayable on demand	12	12
Total	4,521	3,074

» 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 2021 financial year, DZ BANK paid a dividend of €0.20 per share in 2022 on the basis of a resolution of the Annual General Meeting on May 25, 2022. In 2021, DZ BANK had paid a dividend of €0.16 per share on the basis of a resolution of the Annual General Meeting on May 19, 2021 and an additional dividend – also of €0.16 per share – on the basis of a resolution adopted by the Extraordinary General Meeting held on November 4, 2021. No dividend for 2022 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 2022.

Disclosures on shareholders

At the end of 2022, 99.5 percent of shares were held by cooperative enterprises (December 31, 2021: 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 €436 million (December 31, 2021: loss of €707 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.

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. The equity component of €95 million reported in this context 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 had been 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

2022

€ million	Equity earned by the group	Reserve from other comprehensive income	Non-controlling interests
Gains and losses on debt instruments measured at fair value through other comprehensive income	-	-5,636	-641
Exchange differences on currency translation of foreign operations	-	4	-5
Gains and losses on hedges of net investments in foreign operations	-	-	-
Gains and losses on equity instruments for which the fair value OCI option has been exercised	-	-260	-37
Gains and losses in relation to financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	-	119	-
Gains and losses arising from remeasurement of defined benefit plans	271	-	13
Share of other comprehensive income/loss of joint ventures and associates accounted for using the equity method	-	1	-
Other comprehensive income/loss	271	-5,773	-669

2021

€ million	Equity earned by the group	Reserve from other comprehensive 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

The table below shows a breakdown of the reserve from other comprehensive income:

	Items not reclassified to the income statement		Items reclassified to the income statement	
	Reserve from equity instruments for which the fair value option has been exercised	Reserve from gains and losses on financial liabilities for which the fair value option has been exercised, attributable to changes in own credit risk	Reserve from debt instruments measured at fair value through other comprehensive income	Currency translation reserve
€ million				
Equity as at Jan. 1, 2021	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
Other comprehensive income/loss	-260	119	-5,636	5
Total comprehensive income/loss	-260	119	-5,636	5
Changes in scope of consolidation	4	-	-	1
Acquisition/disposal of non-controlling interests	-	-	3	-
Reclassifications within equity	-23	-6	-	-
Equity as at Dec. 31, 2022	342	59	-4,608	64

The changes in loss allowances included in the reserve from other comprehensive income, broken down by individual balance sheet item, were as follows:

€ million	Loans and advances to customers		Investments			Investments held by insurance companies			Total
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3	
Balance as at Jan. 1, 2021	2	-	8	-	24	10	2	-	46
Additions	-	-	5	-	-	57	7	2	71
Utilizations	-	-	-	-	-	-	-	-1	-1
Reversals	-1	-1	-6	-	-	-50	-2	-	-60
Other changes	-	-	-	-	-	1	-5	-	-4
Balance as at Dec. 31, 2021	-	-	7	-	24	19	2	1	53
Additions	-	-	6	1	-	11	14	4	36
Utilizations	-	-	-	-	-	-	-	-3	-3
Reversals	-	-	-7	-	-	-14	-8	-	-31
Other changes	-	-	-	-	-	1	-1	-	-
Balance as at Dec. 31, 2022	-	-	7	-	24	16	7	1	56

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 chapter VII.8 'Capital adequacy' of the risk report in the group management report.

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, 2022		Dec. 31, 2021	
	Carrying amount	Fair value	Carrying amount	Fair value
FINANCIAL ASSETS MEASURED AT FAIR VALUE	187,855	187,870	218,606	218,663
Financial assets measured at fair value through profit or loss	85,556	85,571	89,638	89,695
Financial assets mandatorily measured at fair value through profit or loss	80,128	80,142	80,923	80,980
Loans and advances to customers	192	192	168	168
Hedging instruments (positive fair values)	1,568	1,568	389	389
Financial assets held for trading	48,909	48,923	47,321	47,378
Investments	2,489	2,489	3,129	3,129
Investments held by insurance companies	26,970	26,970	29,917	29,917
Financial assets designated as at fair value through profit or loss	5,428	5,428	8,715	8,715
Loans and advances to banks	1,340	1,340	1,854	1,854
Loans and advances to customers	753	753	1,033	1,033
Investments	3,336	3,336	5,829	5,829
Financial assets measured at fair value through other comprehensive income	102,280	102,280	128,805	128,805
Financial assets mandatorily measured at fair value through other comprehensive income	95,861	95,861	122,068	122,068
Loans and advances to banks	55	55	68	68
Loans and advances to customers	2,070	2,070	2,781	2,781
Investments	25,244	25,244	30,779	30,779
Investments held by insurance companies	68,492	68,492	88,439	88,439
Financial assets designated as at fair value through other comprehensive income	6,419	6,419	6,737	6,737
Investments	504	504	528	528
Investments held by insurance companies	5,916	5,916	6,209	6,209
Non-current assets and disposal groups classified as held for sale	19	19	163	163
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	422,802	401,048	395,340	402,993
Cash and cash equivalents	93,405	93,400	85,763	85,763
Loans and advances to banks	121,994	111,969	105,713	107,528
Loans and advances to customers	198,125	182,465	189,044	195,169
Investments	11,354	11,129	11,733	12,378
Investments held by insurance companies	85	73	147	135
Other assets	2,011	2,011	2,021	2,021
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	-4,173		920	
FINANCE LEASES	552	555	731	736
Loans and advances to banks	-	-	1	1
Loans and advances to customers	552	555	730	735

€ million	Dec. 31, 2022		Dec. 31, 2021	
	Carrying amount	Fair value	Carrying amount	Fair value
FINANCIAL LIABILITIES MEASURED AT FAIR VALUE	78,755	78,668	74,519	74,505
Financial liabilities mandatorily measured at fair value through profit or loss	53,142	53,068	45,192	45,178
Hedging instruments (negative fair values)	442	442	1,678	1,678
Financial liabilities held for trading	52,478	52,404	43,411	43,397
Other liabilities	223	223	103	103
Financial liabilities designated as at fair value through profit or loss	25,612	25,600	29,327	29,327
Deposits from banks	3,888	3,887	3,953	3,953
Deposits from customers	6,089	6,081	8,259	8,259
Debt certificates issued including bonds	15,565	15,562	16,975	16,975
Subordinated capital	69	69	140	140
FINANCIAL LIABILITIES MEASURED AT AMORTIZED COST	408,314	392,662	391,013	394,251
Deposits from banks	182,899	173,934	192,609	194,281
Deposits from customers	153,339	151,400	130,716	132,063
Debt certificates issued including bonds	66,783	61,413	62,677	62,974
Other liabilities	1,987	1,987	1,926	1,927
Subordinated capital	4,452	3,928	2,934	3,006
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	-1,147		150	
LEASES	717	717	632	632
Other liabilities	717	717	632	632
FINANCIAL GUARANTEE CONTRACTS AND LOAN COMMITMENTS	236	780	213	213
Financial guarantee contracts	89	89	88	88
Provisions	89	89	88	88
Loan commitments	147	691	125	125
Provisions	147	691	125	125

There is no active market with quoted prices pursuant to IFRS 13.76 for home savings loans, home savings deposits, or similar assets and liabilities. The specific features of a home savings product also mean that there is currently no suitable method for calculating fair value in accordance with IFRS 13. The home savings contracts cannot be measured individually because the allocation of home savings loans depends on the overall performance of the collective building society operations (allocation assets) and thus, in particular, on the performance of the home savings deposits (link to the collective). Consequently, the financial assets and financial liabilities resulting from collective building society operations are shown only at their carrying amounts in the table above.

Building society simulation models are used to calculate risk-bearing capacity and for regulatory purposes. These models have been updated in line with the increased requirements imposed by the banking supervisor in recent years. Statistical parameters, empirical values, and current market assessments are used in the models. The present value of the expected future cash flows from the collective contracts in force, less cost components and risk margins, compares with the balance of the carrying amounts from building society operations as follows: The balance of the carrying amounts from building society operations amounted to minus €64,430 million (excess of liabilities), whereas the collective present value came to minus €54,469 million.

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 €211 million (December 31, 2021: €105 million).

The differences between the carrying amount and the fair value of financial assets held for trading, financial liabilities held for trading, deposits from banks, deposits from customers, and debt certificates issued including bonds in the 'financial assets measured at fair value' and 'financial liabilities measured at fair value' classes are due to the deferral of day-one profit or loss, which is based on unobservable measurement parameters.

The underlying valuation curves used to calculate the fair values of loans and advances to banks, loans and advances to customers, and deposits from banks in the covered lending business for commercial real estate

finance measured at amortized cost were adjusted as at December 31, 2022. This caused the fair values to increase by €635 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, whereby the day-one profit or loss is shown together with the financial instrument. The difference is amortized to profit or loss over the term of the transaction. The following table shows the deferred, previously unrecognized differences, broken down by class pursuant to IFRS 7.

€ million	Measured at fair value	
	Financial assets	Financial liabilities
Balance as at Jan. 1, 2021	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
Additions as a result of transactions	8	41
Differences amortized to profit or loss	-6	-12
Reclassifications	-44	44
Balance as at Dec. 31, 2022	14	87

» 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, 2022	Dec. 31, 2021
Investments	504	528
Shares and other variable-yield securities	408	409
Investments in subsidiaries	89	116
Investments in joint ventures	2	-
Investments in associates	5	3
Investments held by insurance companies	5,916	6,209
Shares and other variable-yield securities	5,477	5,779
Investments in subsidiaries	419	408
Investments in joint ventures	19	21
Investments in associates	1	1
Total	6,419	6,737

Dividends of €69 million (2021: €83 million) were recognized in 2022 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 €2,077 million, for which the option of recognition at fair value through other comprehensive income had been exercised, were derecognized in 2022 (2021: €1,538 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 €53 million (2021: €248 million), which were reclassified to retained earnings or the provision for premium refunds in the reporting year. In 2022, dividends of €149 million (2021: €109 million) were recognized in respect of investments and investments held by insurance companies that have been sold.

In 2021, non-current assets and disposal groups classified as held for sale that had a carrying amount of €60 million and were designated as at fair value through other comprehensive income had been sold and cumulative gains and losses amounting to a net gain of €23 million had been 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:

€ million	Level 1		Level 2		Level 3	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Assets	69,475	92,029	94,824	101,882	23,570	24,753
Loans and advances to banks	-	-	1,395	1,922	-	-
Loans and advances to customers	-	-	2,419	3,303	596	679
Hedging instruments (positive fair values)	-	-	1,568	389	-	-
Financial assets held for trading	1,394	2,477	46,906	44,256	623	645
Investments	13,020	19,466	16,567	18,898	1,985	1,900
Investments held by insurance companies	55,061	70,086	25,951	33,114	20,366	21,365
Non-current assets and disposal groups classified as held for sale	-	-	19	-	-	163
of which non-recurring measurement	-	-	-	-	-	7
Liabilities	3,059	4,510	92,462	88,027	572	595
Deposits from banks	-	-	3,887	3,953	-	-
Deposits from customers	-	-	6,081	8,259	-	-
Debt certificates issued including bonds	2,987	3,331	12,170	13,218	404	427
Hedging instruments (negative fair values)	-	-	442	1,678	-	-
Financial liabilities held for trading	51	1,178	52,255	42,071	98	148
Financial liabilities arising from unit-linked insurance products	-	-	17,425	18,627	-	-
Other liabilities	21	2	201	101	-	-
Subordinated capital	-	-	-	120	69	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:

€ million	Transfers from Level 1 to Level 2		Transfers from Level 2 to Level 1	
	2022	2021	2022	2021
Financial assets measured at fair value	2,220	1,000	760	922
Financial assets held for trading	516	-	-	-
Investments	22	-	35	-
Investments held by insurance companies	1,682	1,000	725	922
Financial liabilities measured at fair value	1,027	-	-	-
Financial liabilities held for trading	1,027	-	-	-

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 other shareholdings 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 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, 2022.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs	Spread of unobservable inputs (%)
Loans and advances to customers	Loans	404	DCF method	BVAL price adjustment	-4.0 to 5.3
	Profit-participation certificates	25	DCF method	Credit spread	7.4 to 8.2
	Shareholders' loans	91	DCF method	Credit spread	3.6 to 12.1
	Initial fund loans	16	DCF method	Probability of default	0.4
	Receivables arising from silent partnerships	54	DCF method	Credit spread	6.1 to 12.2
	Loans and advances to issuers in default	6	DCF method	Recovery rate	-
Financial assets held for trading	ABSs	2	DCF method	Credit spread	7.9
	Loans and advances to issuers in default	17	DCF method	Recovery rate	-
	Collateralized loan obligations	133	Gaussian copula model	Liquidity spread	2.0 to 6.5
	Bearer securities	127	DCF method	BVAL price adjustment	-0.3 to 1.5
	Registered securities	343	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	-
	ABSs	61	DCF method	Credit spread	0.6 to 13.1
	Investments in associates	4	Income capitalization approach	Future income	-
	Investments in joint ventures	2	Income capitalization approach	Future income	-
		57	DCF method	Credit spread	0 to 11.5
Investments		172	Income capitalization approach, net asset value method	Future income	-
	Investments in subsidiaries	7	Net asset value	-	-
	Collateralized loan obligations	1	Gaussian copula model	Liquidity spread	1.8 to 2.6
	Loans and advances to issuers in default	6	DCF method	Recovery rate	-
	Bearer securities	567	DCF method	BVAL price adjustment	-0.3 to 107.5
	Investment fund units	23	Net asset value	-	-
		195	DCF method	Duration	-
	Mortgage-backed securities	15	DCF method	Recovery rate	0.0 to 71.4
		245	DCF method	Capitalization rate, growth factor	1.0 to 11.0
		22	DCF method	Credit spread	0.0
Other shareholdings		203	Income capitalization approach, net asset value method	Future income	-
	VR Circle	405	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	1,547	Third-party pricing information	-	-
	Investments in subsidiaries, associates, and joint ventures, real estate funds, profit- participation certificates, and other long-term equity investments	5,038	Net asset value	-	-
	Investments in subsidiaries, associates, and joint ventures, other long-term equity investments, and shares in cooperatives	287	Income capitalization approach	Future income	7.0 to 9.0
	Fixed-income securities, convertible bonds, shares, investment fund units, and shares in cooperatives	754	Third-party pricing information	-	-
	Profit-participation certificates, mortgage loans, and promissory notes	12,674	DCF method	Credit spread	0.6 to 10.0
	Initial fund loans	56	DCF method	Probability of default	0.4
	Other shareholdings	10	Approximation	-	-
	Debt certificates issued including bonds	404	DCF method	Multiple-year default probabilities	0.0 to 100.0
	Equity/commodity basket products	95	Local volatility model	Correlation of the risk factors considered	10.1 to 80.7
	Financial liabilities held for trading	3	Local volatility model	Volatility	12.2 to 86.8
Subordinated capital	69	DCF method	Credit spread	0.5	

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		455	DCF method	BVAL price adjustment	-4.0 to 5.3
	Loans	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
	ABSs	3	DCF method	Credit spread	6.7
Financial assets held for trading	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	-
	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	-
		83	DCF method	Assumptions for measurement of risk parameters	10.0 to 12.5
Investments	Investments in subsidiaries	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	-	-
		251	DCF method	Duration	-
	Mortgage-backed securities	16	DCF method	Recovery rate	0.0 to 73.0
		249	DCF method	Capitalization rate, growth factor	1.5 to 12.5
	Other shareholdings	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	

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, 2021	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
Additions (purchases)	97	587	161	4,465	-
Transfers	-	436	663	280	-
from Level 3 to Levels 1 and 2	-	-416	-591	-51	-
from Levels 1 and 2 to Level 3	-	852	1,254	331	-
Disposals (sales)	-113	-1,026	-603	-1,974	-161
Changes resulting from measurement at fair value	-67	-22	-100	-3,799	-
through profit or loss	-38	-22	-41	67	-
through other comprehensive income	-29	-	-59	-3,866	-
Other changes	1	2	-36	30	-2
Balance as at Dec. 31, 2022	596	623	1,985	20,366	-

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	Subordinated capital
Balance as at Jan. 1, 2021	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
Additions (issues)	-	42	-
Transfers	-	-39	50
from Level 3 to Level 2	-	-251	-
from Level 2 to Level 3	-	212	50
Disposals (settlements)	-25	-40	-
Changes resulting from measurement at fair value through profit or loss	2	-14	-1
Other changes	-	1	-
Balance as at Dec. 31, 2022	404	98	69

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 €82 million during the year under review (2021: net gain of €555 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, 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 €22 million loss in the income statement (2021: loss of €34 million) and a loss of €1,089 million under other comprehensive income/loss (2021: loss of €1,409 million). For the fair values of investments held by insurance companies, a worsening in the credit rating of 1 percent would lead to the recognition of a €29 million loss in the income statement (2021: loss of €40 million) and a loss of €1,083 million under other comprehensive income/loss (2021: loss of €1,438 million).

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 €9 million loss in the income statement (2021: loss of €6 million). For the fair values of investments, there would be a €47 million loss under other comprehensive income/loss (2021: loss of €56 million) and a €16 million loss in the income statement (2021: loss of €31 million). For the fair values of non-current assets and disposal groups classified as held for sale, a loss of €1 million would have been recognized in the income statement in 2021.

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 €14 million loss in the income statement (2021: loss of €13 million) and a loss of €3 million under other comprehensive income/loss (2021: loss of €12 million).

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 (2021: loss of €1 million).

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 (2021: 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	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
€ million						
Assets	168	270	248,661	241,376	158,484	167,034
Cash and cash equivalents	-	-	93,400	85,763	-	-
Loans and advances to banks	-	-	108,805	104,019	3,164	3,510
Loans and advances to customers	-	-	35,210	39,145	147,255	156,023
Investments	167	270	10,615	11,781	346	327
Investments held by insurance companies	-	-	-	60	5,977	5,416
Property, plant and equipment, investment property, and right-of-use assets	-	-	168	152	192	194
Other assets	-	-	462	458	1,549	1,563
Liabilities	22,256	22,129	297,355	299,374	73,831	72,961
Deposits from banks	-	-	172,525	192,685	1,410	1,596
Deposits from customers	-	-	84,877	65,536	66,523	66,527
Debt certificates issued including bonds	22,256	22,129	39,157	40,845	-	-
Provisions	-	-	513	37	268	177
Other liabilities	-	-	277	226	1,710	1,702
Subordinated capital	-	-	7	46	3,920	2,960

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, 2022.

Class according to IFRS 13	Assets/liabilities	Fair value (€ million)	Valuation technique	Unobservable inputs
Loans and advances to banks	Loans	3,164	DCF method	Credit spread, recovery rate
	Home savings loans	3,013	Amortized cost	-
Loans and advances to customers	Building loans	53,722	DCF method	Credit spread
	Loans	90,520	DCF method	Credit spread, recovery rate
Investments	ABSs	34	DCF method	Credit spread
	Bonds with adjustment spread	310	DCF method	BVAL price adjustment
	Loans and advances to issuers in default	2	DCF method	Recovery rate
Investments held by insurance companies		88	Cost	Nominal amounts
	Investment property	5,816	DCF method	Future rent, reference prices in the market
	Loans and bank accounts	73	Cost	Nominal amounts
Property, plant and equipment	Investment property	192	Valuation reports	-
Other assets	Credit balances with banks	702	Cost	Nominal amounts
	Other receivables	847	Cost	Nominal amounts
Deposits from banks	Home savings deposits	1,275	Cost	-
	Loans	135	DCF method	Credit spread
Deposits from customers	Home savings deposits	66,087	Cost	-
	Loans	409	DCF method	Credit spread
	Overpayments on consumer finance loans	27	Cost	-
Provisions	Provisions for loan commitments	268	Settlement amount	-
	Loans	576	Cost	Nominal amounts
Other liabilities	Non-controlling interests in special funds	164	Cost	Nominal amounts
	Subordinated liabilities	16	Cost	Nominal amounts
	Subordinated liabilities	18	Net asset value	-
	Registered securities	36	Cost	Nominal amounts
	Other payables	10	Cost	Nominal amounts
	Liabilities arising from rented software	1	Carrying amount	Assumptions regarding the exercise of extension or termination options
Subordinated capital	Liabilities from capitalization transactions	889	Cost	Nominal amounts
	Bonds with adjustment spread	3,920	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, 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
	Building loans	64,148	Amortized cost	-
Loans and advances to customers	Loans	91,875	DCF method	Credit spread, recovery rate, internal spread
	ABSs	45	DCF method	Credit spread
Investments	Bonds with adjustment spread	282	DCF method	BVAL price adjustment
		73	Cost	Nominal amounts
Investments held by insurance companies	Investment property	5,269	DCF method	Future rent, reference prices in the market
	Loans and bank accounts	6	DCF method	Yield curves, credit spread
Property, plant and equipment	Loans	68	Cost	Nominal amounts
	Investment property	194	Valuation reports	-
Other assets	Credit balances with banks	713	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
Provisions	Overpayments on consumer finance loans	22	Cost	-
	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
Subordinated capital	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
	Bonds with adjustment spread	2,960	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 gain of €87 million in 2022 (2021: loss of €73 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 carrying amounts 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	Carrying amount		Repayment amount	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Deposits from banks	3,888	3,953	4,366	3,891
Deposits from customers	6,089	8,259	7,249	7,892
Debt certificates issued including bonds	15,565	16,975	17,956	16,912
Subordinated capital	69	140	68	134
Total	25,612	29,327	29,639	28,829

In the course of the year under review, a gain of €6 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 (2021: gain of €5 million). This amount was reclassified to retained earnings within equity once the financial liabilities had been derecognized.

» 80 Reclassification

On January 1, 2021, financial assets had been reclassified prospectively due to a change to the business model that was attributable to the R+V-wide strategic program known as 'Wachstum durch Wandel' (growth through change).

Financial assets of €15,606 million categorized as 'financial assets measured at amortized cost' had been reclassified as 'financial assets measured at fair value through other comprehensive income'.

Financial assets of €3,139 million categorized as 'financial assets measured at fair value through profit or loss' had been reclassified as 'financial assets measured at fair value through other comprehensive income' in 2021. At the time of reclassification, the reclassified assets had an average effective interest rate of 2.25 percent. During the reporting period, these assets generated interest income of €69 million (2021: €91 million).

» 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, 2022

€ 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	79,486	58,113	21,373	12,289	8,269	815
Reverse repos/securities borrowing	18,911	-	18,911	18,565	-	345
Total	98,396	58,113	40,283	30,854	8,269	1,160

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

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, 2022

€ 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	79,447	53,573	25,874	12,860	6,799	6,216
Repos/securities lending	1,034	-	1,034	920	-	114
Other financial instruments	219	219	-	-	-	-
Total	80,700	53,792	26,908	13,780	6,799	6,330

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

» 82 Sale and repurchase agreements, securities lending

Transfers of financial assets

In 2022, 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, 2022	Dec. 31, 2021
FINANCIAL ASSETS MEASURED AT FAIR VALUE	100	100
Financial assets measured at fair value through profit or loss	100	100
<i>Financial assets mandatorily measured at fair value through profit or loss</i>	<i>100</i>	<i>100</i>
Financial assets held for trading	100	100
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	608	772
Investments	608	772
Total	708	872

As at the balance sheet date, additional collateral with a carrying amount of €146 million had been furnished in connection with repos (December 31, 2021: €262 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, 2022	Dec. 31, 2021
LIABILITIES ASSOCIATED WITH FINANCIAL ASSETS MEASURED AT FAIR VALUE	100	100
Liabilities associated with financial assets measured at fair value through profit or loss	100	100
<i>Liabilities associated with financial assets mandatorily measured at fair value through profit or loss</i>	<i>100</i>	<i>100</i>
Liabilities associated with financial assets held for trading	100	100
LIABILITIES ASSOCIATED WITH FINANCIAL ASSETS MEASURED AT AMORTIZED COST	623	791
Liabilities associated with investments	623	791
Total	723	891

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, 2022, the fair value of securities involved in such transactions was €18,634 million (December 31, 2021: €18,165 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 €18,674 million as at the balance sheet date (December 31, 2021: €18,028 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 and financial assets measured at amortized cost 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, 2022	Dec. 31, 2021
FINANCIAL ASSETS MEASURED AT FAIR VALUE	4,055	3,812
Financial assets measured at fair value through profit or loss	1,228	1,178
<i>Financial assets mandatorily measured at fair value through profit or loss</i>	<i>1,228</i>	<i>1,178</i>
Financial assets held for trading	1,228	1,178
Financial assets measured at fair value through other comprehensive income	2,827	2,634
<i>Financial assets mandatorily measured at fair value through other comprehensive income</i>	<i>2,827</i>	<i>2,634</i>
Investments held by insurance companies	2,827	2,634
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	33	-
Investments held by insurance companies	33	-
Total	4,089	3,812

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 €19 million had been furnished in connection with securities lending (December 31, 2021: €24 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, 2022	Dec. 31, 2021
Bonds and other fixed-income securities	1,078	2,305
Shares and other variable-yield securities	23	26
Total	1,101	2,331

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, 2022, the fair value of the additional collateral received was €56 million (December 31, 2021: €65 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, 2022	Dec. 31, 2021
Financial assets held for trading	1,328	1,278
Investments	608	772
Investments held by insurance companies	2,861	2,634
Total	4,797	4,684

» 83 Collateral

The breakdown of the carrying amount of financial assets pledged as collateral for liabilities is as follows:

€ million	Dec. 31, 2022	Dec. 31, 2021
Loans and advances to banks	75,686	73,156
Loans and advances to customers	313	189
Financial assets held for trading	13,427	9,543
Investments	10,887	29,175
Investments held by insurance companies	1,640	1,290
Total	101,954	113,354

Of the total financial assets pledged as collateral for liabilities, financial assets held for trading and investments with a carrying amount of €6,673 million (December 31, 2021: €4,999 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 comprise collateral in the form of cash as part of collateral management. This is arranged under standard industry collateral agreements. The pledged loans and advances to customers also 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	2022	2021
Financial instruments measured at fair value through profit or loss	-1,876	492
Financial instruments mandatorily measured at fair value through profit or loss	-5,114	195
Financial instruments designated as at fair value through profit or loss	3,238	298
Financial assets measured at fair value through other comprehensive income	-8,336	1,862
Financial assets mandatorily measured at fair value through other comprehensive income	-8,240	1,194
of which gains and losses recognized in profit or loss	1,188	2,156
of which gains and losses recognized in other comprehensive income	-9,203	-1,175
of which gains and losses reclassified on derecognition from cumulative other comprehensive income to profit or loss	-225	213
Financial assets designated as at fair value through other comprehensive income	-96	668
Financial assets measured at amortized cost	4,891	4,287
Financial liabilities measured at amortized cost	-2,316	-1,331

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 €170 million (2021: gain of €39 million) was recognized in other comprehensive income/loss and a gain of €4,409 million (2021: gain of €514 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	2022	2021
Interest income	6,913	5,925
From financial assets measured at amortized cost including finance leases	5,183	4,199
From financial assets measured at fair value through other comprehensive income	1,729	1,726
Interest expense	-2,322	-1,335

Fee and commission income and expenses

The table below shows the changes in fee and commission income and expenses:

€ million	2022	2021
Fee and commission income		
From financial assets and financial liabilities not at fair value through profit or loss	194	172
From trust and other fiduciary activities	4,478	4,834
Fee and commission expenses		
For financial assets and financial liabilities not at fair value through profit or loss	-198	-219
For trust and other fiduciary activities	-1,960	-2,076

» 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:

€ million	Nominal amount					Fair value			
	Time to maturity			Total amount		Positive		Negative	
	≤ 1 year	> 1 year – 5 years	> 5 years	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
INTEREST-LINKED CONTRACTS	211,706	510,991	690,443	1,413,140	1,297,491	19,362	13,998	21,815	13,615
OTC products									
Forward rate agreements	20,211	30	25	20,266	31,006	7	-	1	-
Interest-rate swaps	160,139	465,942	663,742	1,289,824	1,173,877	18,027	12,777	18,921	11,710
Interest-rate options – bought	12,097	19,309	10,302	41,708	35,546	1,074	844	118	86
Interest-rate options – written	14,315	24,641	16,373	55,330	46,339	248	251	2,624	1,794
Other interest-rate contracts	117	96	-	213	917	-	126	150	24
Exchange-traded products									
Interest-rate futures	4,827	972	-	5,799	9,800	7	-	2	-
Interest-rate options	-	-	-	-	6	-	-	-	-
CURRENCY-LINKED CONTRACTS	148,047	29,990	8,626	186,663	142,093	3,168	1,495	3,193	1,757
OTC products									
Cross-currency swaps (excl. portfolio hedging)	6,540	18,290	8,405	33,235	33,090	1,064	391	867	743
Forward forex transactions	117,149	9,222	204	126,574	94,105	1,909	1,011	2,156	944
Forex options – bought	11,115	618	-	11,733	5,973	52	27	65	19
Forex options – written	12,979	1,861	3	14,843	8,681	142	65	104	50
Exchange-traded products									
Forex futures	204	-	-	204	163	-	1	-	-
Forex options	60	-	14	74	81	-	-	1	1
SHARE-/INDEX-LINKED CONTRACTS	18,720	12,677	1,902	33,299	33,603	599	900	1,920	1,578
OTC products									
Share/index options – bought	2,359	19	19	2,396	3,009	8	44	-	-
Share/index options – written	340	313	-	653	538	-	-	52	22
Other share/index contracts	461	4,096	1,635	6,192	5,805	21	53	703	246
Exchange-traded products									
Share/index futures	1,638	72	-	1,711	1,257	1	-	10	-
Share/index options	13,923	8,177	248	22,348	22,994	570	802	1,154	1,311
OTHER CONTRACTS	3,372	3,344	12,003	18,719	17,740	6	2	270	150
OTC products									
Precious metal contracts (excl. gold derivatives)	1	-	-	1	1	-	-	-	-
Commodities contracts	-	10	23	33	-	2	-	-	-
Other contracts	3,122	3,334	11,944	18,400	17,521	1	1	262	141
Exchange-traded products									
Futures	101	-	-	101	81	1	1	-	1
Options	149	-	36	185	138	1	-	8	8
CREDIT DERIVATIVES	3,135	9,645	3,741	16,521	17,614	187	380	107	82
Protection buyer									
Credit default swaps	740	2,092	611	3,442	2,870	12	4	42	58
Protection seller									
Credit default swaps	2,391	7,532	3,123	13,046	14,702	174	377	64	23
Total return swaps	5	21	7	32	42	-	-	1	-
Total	384,981	566,647	716,714	1,668,343	1,508,541	23,321	16,775	27,305	17,182

The derivatives held at the balance sheet date involved the following counterparties:

€ million	Fair value			
	Positive		Negative	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
OECD central governments	11	45	29	106
OECD banks	15,887	13,753	22,650	14,480
OECD financial services institutions	196	228	345	237
Other companies, private individuals	7,007	2,715	4,248	2,256
Non-OECD banks	219	33	33	103
Total	23,321	16,775	27,305	17,182

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 €18,067 million (December 31, 2021: €17,157 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 €332 million (December 31, 2021: €363 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 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. Unexpected causes of hedge ineffectiveness may arise, primarily in the event of early (partial) termination of derivatives used for hedging or the unexpected sale or repayment of hedged items.

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, 2022

	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 ineffectiveness for the period
			Existing hedges	Terminated hedges	
€ million					
Assets	59,004	57,799	-5,196	-1,151	-1,416
Loans and advances to banks	1		-	-	-
Loans and advances to customers	1,086		-279	66	-347
Investments	2,710		-215	11	-225
Portfolio hedges of interest-rate risk	53,637		-4,703	-1,228	-7,691
Hedging instruments (positive fair values)	1,568	57,799			6,848
Liabilities	16,847	16,382	-587	-588	1,371
Deposits from banks	83		-20	8	40
Deposits from customers	77		-20	11	147
Debt certificates issued including bonds	31		-10	4	18
Portfolio hedges of interest-rate risk	16,215		-537	-610	1,425
Hedging instruments (negative fair values)	442	16,382			-260

AS AT DECEMBER 31, 2021

	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 ineffectiveness for the period
			Existing hedges	Terminated hedges	
€ million					
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

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, 2022

	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years
Nominal amount (€ million)	318	1,427	4,940	38,254	29,242
Average hedged interest rate (%)	0.55	0.26	1.58	0.91	1.22

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

Reconciliation of hedge accounting effects to equity components by type of risk

Investments in foreign operations that had previously been designated as hedges of net investments in foreign operations were sold in 2021. Consequently, the negative reserve of €4 million from hedges of net investments in foreign operations that was still remaining after the hedging relationship ended was reclassified to the income statement.

» 87 Reform of interest-rate benchmarks

The German and European banking industry have carried out work to replace the existing interest-rate benchmarks with (nearly) 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. During a subsequent transition period, a synthetic (non-representative) USD Libor is to be published, giving more time for the amendment of contracts that have not yet been changed over. Until then, it can be used for existing business.

As it did in 2021, 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 hedging instruments that have not yet been switched over were pegged exclusively to USD Libor as at the balance sheet date. 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 will switch over these financial instruments over the course of 2023. 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:

	USD Libor 3M		CHF Libor 3M	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Nominal amount (€ million)	3,117	1,985	-	97
Weighted average maturity (years)	8.6	6.5	-	0.5

Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4, and IFRS 16) is applied alongside the exceptions for phase 1. In the DZ BANK Group, the outstanding switch of USD Libor to SOFR is particularly significant. The transition phase before the replacement of the interest-rate benchmarks 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 discontinuation of the interest-rate benchmarks being replaced, 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 (nearly) risk-free interest-rate benchmarks in existing contracts. This may potentially lead to legal disputes.

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 had been 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. The DZ BANK Group has a specialist team that manages the scope and complexity of the changeover from USD Libor to SOFR. This team is putting the technical and process-related requirements in place and implementing the specific business changes. All relevant stakeholders are kept up to date on progress.

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 protocol for fallbacks for replacement of the ICE USD Libor swap rate, 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 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, 2022

€ million	Non-derivative financial assets	Non-derivative financial liabilities	Derivatives
USD Libor	3,420	438	93,523
Other	76	-	1,648

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	-	-

» 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 following chapters of the risk report in the group management report: VII.7 'Liquidity adequacy' and VII.9 'Credit risk', as well as VII.11 'Market risk' specifically for the Bank sector, and VII.17 'Actuarial risk' and VII.18 'Market risk' specifically 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 taken into account in the form of shift factors. The model-driven default probability profiles used in economic and regulatory risk management are adjusted on the basis of these shift factors (see the section 'Impact of macroeconomic conditions'). 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 as the ratio of the latest changes in the lifetime probability of default (lifetime PD) to the portfolio's past lifetime PD. Internal risk measurement systems, external credit ratings, and risk forecasts are also used to assess the credit risk of financial assets. The maximum value for these transfer thresholds is 200 percent.

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. These also have significantly increased credit risk and are assigned to stage 2, unless they need to be assigned to stage 3. 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, the low credit risk exemption means that these assets are transferred to stage 2 only if a qualitative transfer criterion applies or if a non-investment-grade credit rating is awarded. The low credit risk exemption applies to securities, loans and advances, loan commitments, and financial guarantee contracts.

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 ceases to apply and specified cure periods are taken into account.

Expected losses are calculated as the probability-weighted present value of the expected outstanding payments. In the case of transactions assigned to stage 1 of the impairment model, the analysis period is the next 12 months. For stage 2 transactions, the residual life is used. The expected losses are discounted with the original effective interest rate for the transaction and variable-rate assets with the current interest rate. The 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 parameters incorporate 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.

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 fully representative of future developments. In the retail consumer finance business, post-model adjustments were therefore carried out that had a total effect of €105 million as at December 31, 2021. The post-model adjustments were adapted to the changed circumstances as at the end of the first half of 2022. As the unique circumstances created by the COVID-19 pandemic have largely returned to normal and thus the associated uncertainty for the consumer finance business has dissipated, the related post-model adjustments were fully reversed in 2022. At the end of 2022, a new post-model adjustment was recognized owing to a procedural change to the replacement process in Germany. As a result of this change, loans are increasingly being issued in parallel (instead of internal replacement of existing loans and expansion of new loan volumes). This procedural change is distorting the lifetime risk measurement. The post-model adjustments in existence as at December 31, 2022 amounted to a total of €67 million.

Impact of macroeconomic conditions

The established models and processes for calculating expected losses on specific exposures or at portfolio level in line with IFRS 9 have generally been retained. The impact of the war in Ukraine is also examined at specific exposure level. Primary effects due to customer or supplier relationships and secondary effects such as rising energy prices are considered as part of impact analyses. These effects are factored into the calculation of specific loan loss allowances and, in a more nuanced manner, in the credit assessment and in decisions concerning inclusion in watchlists for the early identification of risk. At portfolio level, the forecast macroeconomic conditions are taken into account by adjusting the model-driven default probability profiles used in economic and regulatory risk management on the basis of shift factors.

The macroeconomic 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 and are based on economic forecasts provided by the Economic Roundtable, which is made up of representatives from the entities in the DZ BANK Group. The Economic Roundtable considers various scenarios when deciding on its macroeconomic forecasts. At a minimum, these scenarios must include a baseline scenario and a risk scenario that have a significant probability of occurrence in a relevant macroeconomic environment. The Economic Roundtable participants determine the probability of occurrence of the scenarios relative to each other.

The shift factors used as at December 31, 2022 are based on 2 macroeconomic scenarios developed by the Economic Roundtable of the DZ BANK Group in November 2022 (baseline scenario 80 percent and risk scenario 20 percent). The shift factors are then derived from macroeconomic inputs for various levels of default probability using stress test models that already existed or that were developed for IFRS 9. As is also the case when determining the measures of stress, the model shifts for some segments do not factor in the delayed impact of exogenous variables. The lag structure of the PD stress test models is removed in order to ensure that the macroeconomic developments set out in the scenario have a full and immediate effect in the first year of the scenario.

The risk parameters adjusted on the basis of the macroeconomic scenarios are then factored into the calculation of loss allowances.

The methods and assumptions, including the forecasts, are validated regularly.

The main macroeconomic forecasts for 2023 to 2026 used to calculate the expected loss as at December 31, 2022 were as follows:

		2023		2024		2025		2026	
		Baseline	Risk	Baseline	Risk	Baseline	Risk	Baseline	Risk
DAX 30, Germany	Index	14,120	11,120	15,110	12,790	15,710	13,300	16,340	13,830
EURO STOXX 50, European Monetary Union (EMU)	Index	3,850	3,010	4,120	3,460	4,290	3,600	4,460	3,750
Unemployment rate, Germany	%	3.40	3.60	3.30	3.40	3.20	3.20	3.00	3.00
Harmonized unemployment rates, EU	%	6.60	7.10	6.30	6.50	6.20	6.20	5.90	5.90
Real GDP growth, Germany (seasonally and calendar-adjusted)	Compared with prior year (%)	-2.00	-3.50	1.80	2.00	1.30	1.30	1.00	1.00
Real GDP growth, EU (seasonally and calendar-adjusted)	Compared with prior year (%)	-1.00	-2.50	2.00	2.00	1.50	1.50	1.30	1.30
Consumer price index, Germany	Compared with prior year (%)	6.50	10.00	3.00	7.00	2.00	5.00	2.00	3.50
Oil price (Brent), US\$/bbl	At year-end	95	100	85	100	80	90	80	80
Natural gas price, US\$/MMBtu	At year-end	7.50	8.50	6.00	7.00	6.00	6.00	5.50	6.00
Commercial real estate price index, Germany	Compared with prior year (%)	-8.00	-15.00	-2.00	-4.00	0.00	-1.00	0.00	0.00
3m Euribor, EMU	%	3.05	4.05	2.40	4.00	2.15	3.55	2.15	3.05
10-year government bonds, Germany	%	2.50	3.50	2.25	3.75	2.25	3.50	2.25	3.25

On the basis of consultation with relevant experts, the shift factors determined using statistical methods were overridden again in the fourth quarter of 2022 in order to better represent the currently critical market situation. 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 methodology for the process of overriding the model shift factors at group level was virtually unchanged compared with December 31, 2021. A crisis factor was added at sub-sector level, taking account of the degree to which the relevant sector is affected. This aspect includes all identifiable material increases in risk resulting from current developments and factors influencing the economy that have yet to be included in the credit rating. These factors specifically include the war in Ukraine, commodity shortages (particularly gas), supply chain difficulties, high inflation coupled with soaring energy prices, and the consideration of climate-related and environmental risks. Overall, additional loss allowances of €188 million were recognized as at December 31, 2022 due to the expert-led override of the shift factors determined using statistical methods.

The shifted lifetime PDs are then factored into the decision on stage assignment. An increase in the lifetime PDs resulting from the shift factors being overridden does not necessarily lead to a transfer to stage 2. Consequently, a second override was carried out for portfolios that were particularly affected. In contrast to the first override component, this second override component has resulted in a general stage 2 classification for all unimpaired exposures in the following sectors: automotive suppliers, hotels, department stores, shopping malls, inner-city commercial properties, building contractors, project developers, and office real estate. This decision reflects current macroeconomic developments, such as supply chain disruptions, high inflation, unavailability of materials, the shortage of skilled workers, the rise in interest rates, the gloomy economic outlook, persistently high energy prices, a changed competitor structure, and uncertainty about the spread of COVID-19, particularly during the winter months.

Since 2022, climate and environmental parameters have been included in the Economic Roundtable's scenario analysis. In the first instance, the focus is on carbon pricing, which is a factor in assessing macroeconomic variables. The scenarios devised by the Network for Greening the Financial System (NGFS), which show how climate change and action can affect key economic variables, are used in this context. In terms of the impact on macroeconomic variables, the Economic Roundtable's forecast table is based on the legal situation in Germany and the technical assumptions of the European Central Bank (ECB). The impact on macroeconomic

variables has been minimal to date. The introduction of a carbon price should only have a minor to moderate increasing effect on the annual average rate of inflation in Germany and the eurozone. This price effect is already reflected in inflation rates. As the carbon price is not expected to rise significantly in either Germany or the eurozone in the next few years, the pressure on prices from climate parameters is expected to remain insignificant over the forecast period.

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		Stage 2		Stage 3	
	Loss allowances	Fair value	Loss allowances	Fair value	Loss allowances	Fair value
Balance as at Jan. 1, 2021	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
Addition/increase in loan drawdowns	7	22,807	-	166	-	-
Change to financial assets due to transfer between stages	1	-381	-1	372	-	9
Transfer from stage 1	-3	-1,877	3	1,873	-	5
Transfer from stage 2	4	1,496	-4	-1,500	-	5
Use of loss allowances/directly recognized impairment losses	-	-	-	-	-4	-4
Derecognitions and repayments	-10	-23,454	-6	-250	-	-8
Changes to models/risk parameters	-2	-	12	-	4	-
Additions	10	-	15	-	4	-
Reversals	-12	-	-3	-	-	-
Modifications	-	2	-	-	-	-
Modification gains	-	2	-	-	-	-
Amortization, fair value changes, and other changes in measurement	-	-25,381	-	-172	-	-
Exchange differences and other changes	-	81	-	4	-	1
Balance as at Dec. 31, 2022	24	95,034	8	795	25	32

Financial assets measured at amortized cost

	Stage 1		Stage 2		Stage 3		POCI assets	
	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
€ million								
Balance as at Jan. 1, 2021	286	367,677	359	14,217	1,672	3,747	7	69
Restatements according to IAS 8	-	-	-	6	-	-	-	-
Balance restated as at Jan. 1, 2021	286	367,677	359	14,222	1,672	3,747	7	69
Addition/increase in loan drawdowns	170	15,652,720	81	29,837	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 non-current assets and 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	17,187	1,267	2,870	13	90
Addition/increase in loan drawdowns	205	22,742,157	113	31,746	650	1,798	1	134
Change to financial assets due to transfer between stages	182	-23,064	-307	22,335	128	729	-	-
Transfer from stage 1	-69	-31,696	68	31,640	1	56	-	-
Transfer from stage 2	243	8,573	-397	-9,520	154	948	-	-
Transfer from stage 3	7	60	21	215	-27	-274	-	-
Use of loss allowances/directly recognized impairment losses	-	-1	-3	-	-318	-24	-4	-5
Derecognitions and repayments	-143	-22,707,324	-140	-33,280	-653	-2,694	-9	-111
Changes to models/risk parameters	-259	-	510	-	63	-	17	-
Additions	110	-	804	-	393	-	27	-
Reversals	-369	-	-294	-	-330	-	-10	-
Modifications	-	1	-	3	1	1	-	-
Modification gains	-	1	-	3	1	1	-	-
Amortization, fair value changes, and other changes in measurement	-	-639	-	-24	-	-34	-	-
Positive change in fair value of POCI assets	-	-	-	-	-	-	-	30
Exchange differences and other changes	-1	686	2	-16	46	70	1	5
Changes in the scope of consolidation	-	15	-	143	-	-	-	-
Addition of subsidiaries	-	15	-	143	-	-	-	-
Balance as at Dec. 31, 2022	266	388,040	548	38,094	1,185	2,716	18	142

The undiscounted expected credit losses on purchased or originated credit-impaired assets that were recognized for the first time during the reporting period totaled €181 million (2021: €120 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	
	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
€ million						
Balance as at Jan. 1, 2021	-	4	-	-	-	-
Derecognitions and repayments	-	-4	-	-	-	-
Balance as at Dec. 31, 2021	-	-	-	-	-	-

Finance leases

	Stage 1		Stage 2		Stage 3	
	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount	Loss allowances	Gross carrying amount
€ million						
Balance as at Jan. 1, 2021	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
Addition/increase in loan drawdowns	3	151	5	7	14	2
Change to finance leases due to transfer between stages	-	-6	-1	6	-1	-
Transfer from stage 1	-1	-101	1	100	-	1
Transfer from stage 2	1	95	-2	-102	2	7
Transfer from stage 3	-	1	1	7	-3	-8
Derecognitions and repayments	-3	-258	-7	-77	-18	-11
Balance as at Dec. 31, 2022	1	435	3	111	9	19

Financial guarantee contracts and loan commitments

€ million	Stage 1		Stage 2		Stage 3		POCI assets	
	Loss allowances	Nominal amount	Loss allowances	Nominal amount	Loss allowances	Nominal amount	Loss allowances	Nominal amount
Balance as at Jan. 1, 2021	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
Addition/increase in loan drawdowns	83	105,380	69	7,101	68	342	5	8
Change to financial guarantee contracts and loan commitments due to transfer between stages	1	-3,947	-2	3,866	1	81	-	-
Transfer from stage 1	-9	-4,764	8	4,736	-	28	-	-
Transfer from stage 2	9	811	-11	-874	1	64	-	-
Transfer from stage 3	-	6	-	4	-1	-10	-	-
Derecognitions and repayments	-80	-100,024	-49	-6,466	-106	-450	-5	-9
Changes to models/risk parameters	-14	-	37	-	22	-	-1	-
Additions	23	-	70	-	64	-	2	-
Reversals	-37	-	-34	-	-42	-	-3	-
Amortization, fair value changes, and other changes in measurement	-	101	-	8	-	-3	-	-
Exchange differences and other changes	-	-214	-	240	-5	1	-	-
Balance as at Dec. 31, 2022	53	80,472	95	7,903	89	242	-	2

Contractual modifications and derecognitions

The negotiation or modification of contractually agreed cash flows relating to a financial asset leads to a modified asset.

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 in profit or loss as a modification gain or loss in the amount of the difference between the original gross carrying amount (taking account of any amortization or impairment) and the modified present value, calculated on the basis of the modified cash flows discounted with the original effective interest rate. If contractual modifications are credit-risk-related non-substantial contractual modifications, previously recognized loss allowances are used in the first instance. Any remaining difference is recognized under gains/losses from loss allowances. Gains/losses from market-related non-substantial contractual modifications are recognized as a modification gain or loss within net interest income.

If substantial modifications are made to the contract for a financial asset, the existing financial asset is derecognized and a new financial asset is recognized. These modifications are recognized in gains/losses from loss allowances. When the financial asset is derecognized, the previously recognized loss allowance is then used. The derecognition may potentially result in gains or losses on derecognition.

In 2022, contractually agreed cash flows from financial assets allocated to stage 2 or stage 3 of the impairment model were modified. The amortized costs of these financial assets amounted to €341 million

(2021: €636 million). The modifications resulted in a modification gain of €2 million (2021: modification loss of €2 million).

The gross carrying amount of financial assets whose contractually agreed cash flows were modified and that had been allocated to stage 2 or stage 3 in the impairment model since initial recognition but were transferred to stage 1 during the reporting period amounted to €124 million (2021: €36 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, 2022

	Maximum exposure to credit risk
€ million	
FINANCIAL ASSETS MEASURED AT FAIR VALUE	162,547
Financial assets measured at fair value through profit or loss	66,686
Financial assets mandatorily measured at fair value through profit or loss	61,258
Financial assets designated as at fair value through profit or loss	5,428
Financial assets measured at fair value through other comprehensive income	95,861
Financial assets mandatorily measured at fair value through other comprehensive income	95,861
of which credit-impaired	
FINANCIAL ASSETS MEASURED AT AMORTIZED COST	422,802
of which credit-impaired	
FINANCE LEASES	552
of which credit-impaired	
FINANCIAL GUARANTEE CONTRACTS AND LOAN COMMITMENTS	89,246
of which credit-impaired	

AS AT DECEMBER 31, 2022

	Maximum exposure to credit risk
€ million	
Non-current assets and disposal groups classified as held for sale from financial assets measured at fair value	19

 AS AT DECEMBER 31, 2021

	Maximum exposure to credit risk
€ million	
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	395,340
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

	Maximum exposure to credit risk
€ million	
Non-current assets and disposal groups classified as held for sale from financial assets measured at fair value	132

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, 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 €40 million at the end of 2022 (December 31, 2021: €137 million). The cumulative gains/losses resulting from the change in fair values attributable to changes in credit risk amounted to a net loss of €24 million (December 31, 2021: net gain of €54 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 €101 million (December 31, 2021: €139 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, 2022

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Investment grade							
Fair value	Stage 1	43,547	23,122	12,770	10,045	2,013	115
	Stage 2	210	-	177	-	-	-
Gross carrying amount	Stage 1	221,793	14,823	48,128	59,847	6,019	-
	Stage 2	1,407	-	19,660	1,315	5,163	-
	POCI assets	-	-	5	-	-	-
Nominal amount	Stage 1	31,919	171	24,761	5,984	3,646	51
	Stage 2	30	-	4,082	6	60	-
Non-investment grade							
Fair value	Stage 1	-	789	557	874	-	-
	Stage 2	42	144	196	26	-	-
Gross carrying amount	Stage 1	1,705	134	9,504	13,270	20	-
	Stage 2	389	230	4,635	2,771	26	-
	Stage 3	-	-	-	9	-	-
Nominal amount	Stage 1	539	159	5,574	1,466	-	-
	Stage 2	161	336	2,770	72	57	-

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, 2022

€ million		Financial sector	Public sector	Corporates	Retail	Industry conglomerates	Other
Default							
Fair value	Stage 3	15	-	8	9	-	-
Gross carrying amount	Stage 3	344	7	1,345	595	97	-
	POCI assets	-	-	77	-	-	-
Nominal amount	Stage 3	23	-	202	13	-	-
	POCI assets	-	-	2	-	-	-
Not rated							
Fair value	Stage 1	929	70	50	-	152	-
Gross carrying amount	Stage 1	2,047	181	2,625	8,274	106	-
	Stage 2	989	43	308	1,021	220	27
	Stage 3	-	-	6	333	-	-
	POCI assets	-	-	-	61	-	-
Nominal amount	Stage 1	1,301	-	1,871	3,011	20	-
	Stage 2	34	-	196	98	-	-
	Stage 3	-	-	3	1	-	-

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	840	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, 2022

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Investment grade						
Fair value	Stage 1	34,327	48,375	1,535	2,991	4,382
	Stage 2	229	158	-	-	-
Gross carrying amount	Stage 1	311,896	35,625	1,119	1,304	665
	Stage 2	25,774	1,701	70	-	-
	POCI assets	5	-	-	-	-
Nominal amount	Stage 1	57,751	8,101	177	501	-
	Stage 2	4,006	172	-	-	-
Non-investment grade						
Fair value	Stage 1	540	791	13	877	-
	Stage 2	145	164	-	100	-
Gross carrying amount	Stage 1	19,925	1,484	82	3,142	-
	Stage 2	6,349	701	95	906	-
	Stage 3	-	10	-	-	-
Nominal amount	Stage 1	5,899	576	179	1,084	-
	Stage 2	1,824	873	22	677	-

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, 2022

€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational institutions
Default						
Fair value	Stage 3	9	23	-	-	-
Gross carrying amount	Stage 3	1,723	274	66	324	-
	POCI assets	52	14	7	4	-
Nominal amount	Stage 3	201	-	2	35	-
	POCI assets	2	-	-	-	-
Not rated						
Fair value	Stage 1	76	1,125	-	-	-
Gross carrying amount	Stage 1	10,539	2,209	3	447	35
	Stage 2	1,754	772	7	77	-
	Stage 3	285	53	-	-	-
	POCI assets	56	5	-	-	-
Nominal amount	Stage 1	5,168	814	-	221	-
	Stage 2	317	11	-	-	-
	Stage 3	4	-	-	-	-

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	1,609	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	-	-	-	-

» 89 Maturity analysis

AS AT DECEMBER 31, 2022

€ million	≤ 1 month	> 1 month – 3 months	> 3 months – 1 year	> 1 year – 5 years	> 5 years	Indefinite
Financial assets	151,134	17,417	44,675	173,742	257,423	23,967
Cash and cash equivalents	93,405	-	-	-	-	-
Loans and advances to banks	17,129	5,566	14,031	43,786	48,092	-
Loans and advances to customers	22,276	7,210	19,375	80,322	97,506	20
Derivatives used for hedging (positive fair values)	-	6	150	880	666	-
Financial assets held for trading	13,550	2,840	4,685	9,631	17,602	1,179
of which non-derivative financial assets held for trading	13,195	1,815	2,854	3,049	5,343	1,179
of which derivatives (positive fair values)	355	1,025	1,831	6,582	12,260	-
Investments	1,466	987	3,663	20,504	19,673	2,670
Investments held by insurance companies	710	783	2,647	18,552	73,883	20,039
of which non-derivative investments held by insurance companies	680	705	2,453	18,390	73,721	20,037
of which derivatives (positive fair values)	31	78	193	162	161	2
Other assets	2,597	26	124	67	1	60
Financial liabilities	-131,789	-24,744	-40,004	-121,503	-114,322	-71,163
Deposits from banks	-64,436	-7,980	-16,613	-58,412	-40,475	-1,275
Deposits from customers	-59,912	-6,884	-6,778	-7,379	-15,525	-66,751
Debt certificates issued including bonds	-4,570	-7,773	-10,057	-31,879	-30,400	-
Derivatives used for hedging (negative fair values)	-5	-7	-81	-242	-134	-
Financial liabilities held for trading	-1,635	-1,615	-5,452	-21,437	-22,685	-425
of which non-derivative financial liabilities held for trading	-584	-754	-3,219	-13,912	-6,943	-425
of which derivatives (negative fair values)	-1,052	-861	-2,233	-7,525	-15,741	-
Other liabilities	-1,230	-447	-400	-913	-1,452	-2,686
of which non-derivative other liabilities	-946	-437	-380	-887	-1,361	-2,685
of which derivatives (negative fair values)	-284	-10	-20	-26	-91	-1
Subordinated capital	-1	-37	-622	-1,241	-3,651	-25
Financial guarantee contracts and loan commitments	-81,837	-504	-432	-2,012	-12	-3,821
Financial guarantee contracts	-10,402	-60	-3	-108	-4	-28
Loan commitments	-71,435	-444	-429	-1,904	-8	-3,793

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	124,589	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	2,652	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

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 chapter VII.7.2.5 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	2022			2021		
	New issues	Repur- chases	Repayments	New issues	Repur- chases	Repayments
DEBT CERTIFICATES ISSUED INCLUDING BONDS	43,753	-2,250	-36,388	37,340	-3,973	-24,570
Bonds issued	12,243	-2,235	-6,409	12,958	-3,331	-5,714
Mortgage Pfandbriefe	3,808	-67	-2,119	4,741	-1	-2,474
Public-sector Pfandbriefe	-	-	-461	-	-10	-197
Other bonds	8,435	-2,169	-3,830	8,217	-3,320	-3,043
Other debt certificates issued	31,510	-14	-29,978	24,382	-642	-18,856
FINANCIAL LIABILITIES HELD FOR TRADING	6,679	-1,961	-6,238	9,690	-8,569	-1,178
SUBORDINATED CAPITAL	1,320	-3	-143	215	-353	-118
Total	51,752	-4,214	-42,768	47,245	-12,895	-25,866

The transactions shown under other debt certificates issued all relate to commercial paper. The transactions presented under financial liabilities held for trading are carried out using bonds issued, including share certificates, index-linked certificates, and other debt certificates. The transactions under subordinated capital are mainly carried out using subordinated bearer bonds.

F Other disclosures

» 91 Contingent liabilities

€ million	Dec. 31, 2022	Dec. 31, 2021
Contingent liabilities arising from contributions to the resolution fund for CRR credit institutions	137	111
Contingent liabilities in respect of litigation risk	4	22
Total	141	134

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.

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.

» 92 Financial guarantee contracts and loan commitments

€ million	Dec. 31, 2022	Dec. 31, 2021
Financial guarantee contracts	10,606	9,750
Loan guarantees	5,076	4,776
Letters of credit	781	965
Other guarantees and warranties	4,749	4,010
Loan commitments	78,012	72,854
Credit facilities to banks	27,579	24,900
Credit facilities to customers	38,481	37,326
Guarantee credits	1,144	1,059
Letters of credit	288	147
Global limits	10,520	9,422
Total	88,618	82,604

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, 2022	Dec. 31, 2021
Trust assets	2,171	2,312
Loans and advances to banks	2,095	2,049
Loans and advances to customers	9	10
Investments	67	252
Trust liabilities	2,171	2,312
Deposits from banks	1,957	2,031
Deposits from customers	214	281

Trust assets and trust liabilities each include trust loans amounting to €1,957 million (December 31, 2021: €2,031 million).

» 94 Business combinations

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, 2021: €155 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 cash-generating unit is, by definition, compared with the relevant recoverable amount. The carrying amount is equivalent to the equity attributable to the goodwill-bearing cash-generating unit. 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 the war in Ukraine and its fallout lead to a recession in the eurozone triggered by energy prices. The growth forecast has also been lowered for the United States. The eurozone is expected to slip into recession in the next 12 months, which will see very weak consumer spending owing to high inflation rates. This year and next year, the ECB is likely to take a tighter monetary policy line than previously anticipated. Higher interest rates and higher inflation rates are expected for the period 2024 to 2026 in Germany and the wider eurozone. A technical recession is predicted for the United States in the first half of 2023 in view of the Federal Reserve's aggressive monetary policy aimed at bringing down inflation from its elevated levels. However, a deeper recession is not expected. 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 (2021: 0.5 percent) for the UMH subgroup operating segment. 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 2022, which was determined on the basis of the capital asset pricing model, was 16.00 percent (2021: 13.38 percent).

There were no impairment losses in the reporting year. In 2021, there had been indications that the goodwill allocated to the TeamBank operating segment might be impaired. The subsequent impairment test had resulted in the recognition of an impairment loss of €2 million in respect of the goodwill.

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 arose 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 also active as a lessor. The companies in the VR Smart Finanz subgroup enter into leases with customers, for example 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, 2022	Dec. 31, 2021
Gross investment	595	789
Up to 1 year	225	314
More than 1 year and up to 2 years	149	207
More than 2 years and up to 3 years	93	125
More than 3 years and up to 4 years	65	68
More than 4 years and up to 5 years	32	40
More than 5 years	31	34
less unearned finance income	-29	-37
Net investment	565	752
less present value of unguaranteed residual values	-17	-17
Present value of minimum lease payment receivables	548	735

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 €2 million were recognized in 2022 (2021: €3 million). Losses on disposals amounted to €2 million (2021: €2 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, 2022	Dec. 31, 2021
Land and buildings	4,336	3,808
Office furniture and equipment	13	9
Total	4,349	3,817

Income from operating leases amounted to €290 million in the reporting year (2021: €268 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, 2022	Dec. 31, 2021
Total future minimum lease payments under non-cancelable leases	1,366	1,107
Up to 1 year	290	237
More than 1 year and up to 2 years	177	147
More than 2 years and up to 3 years	148	123
More than 3 years and up to 4 years	127	111
More than 4 years and up to 5 years	112	98
More than 5 years	510	391

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, bicycles, and workplace equipment. The lease terms are up to 7 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, 2021	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
Additions	83	14
Revaluation	96	4
Depreciation	-89	-19
Disposals	-10	-1
Changes attributable to currency translation	3	-
Carrying amounts as at Dec. 31, 2022	655	31

Lease liabilities of €717 million were recognized under other liabilities and insurance companies' other liabilities (December 31, 2021: €632 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, 2022	Dec. 31, 2021
Up to 1 year	94	93
More than 1 year and up to 3 years	181	160
More than 3 years and up to 5 years	162	140
More than 5 years	319	257

The total cash outflows for lease liabilities in 2022 amounted to €157 million (2021: €140 million).

The following income and expenses have been recognized in the income statement for rights to use underlying assets in leases:

€ million	2022	2021
Expenses relating to short-term leases	-1	-2
Expenses relating to leases for low-value assets	-22	-20
Expenses relating to variable lease payments not included in the lease liability	-11	-8
Income from subleasing right-of-use assets	13	11
Gains and losses on sale and leaseback transactions	-	22

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 €540 million (2021: €446 million).

As at the reporting date, there were also future commitments amounting to €0 million (December 31, 2021: €1 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, 2021, most of these leases had been real estate leases for offices and ATM sites, for example.

In 2021, 2 sale-and-leaseback transactions had been entered into for business premises. The term of the sale-and-leaseback transactions is 8 years and the contracts include 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

2022

€ 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	45	-	-
Other fee and commission income	88	-	98
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	-	77	-
Other operating income	49	-	9
Total	181	149	111
Main geographical markets			
Germany	172	136	111
Rest of Europe	9	13	-
Rest of World	-	-	-
Total	181	149	111
Type of revenue recognition			
At a point in time	159	12	111
Over a period of time	23	137	-
Total	181	149	111

	UMH	DZ BANK – CICB	DZ HYP	DZ PRIVAT- BANK	VR Smart Finanz	Other/ Consolidation	Total
	3,470	498	-	219	-	-98	4,089
	23	-	-	325	-	-5	344
	-	269	-	2	-	61	332
	-	109	7	-	-	42	162
	-	69	5	-	-	-3	72
	-	13	-	-	-	-	13
	-	-	-	-	-	-	45
	-	62	11	3	4	-76	190
	-	-	-	-	-	-	73
	-	-	-	-	-	-	77
	12	-	-	-	-	31	102
	3,506	1,020	23	550	4	-47	5,498
	2,634	1,020	23	202	4	-64	4,240
	872	-	-	346	-	16	1,256
	-	-	-	2	-	-	2
	3,506	1,020	23	550	4	-47	5,498
	509	367	20	66	4	-54	1,195
	2,996	653	4	484	-	6	4,303
	3,506	1,020	23	550	4	-47	5,498

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	Other/ Consolidation	Total
	3,774	490	-	239	-	-93	4,410
	16	-	-	384	-	-6	394
	-	244	-	2	-	50	295
	-	82	7	-	-	35	128
	-	62	8	-	-	-3	67
	-	12	-	-	-	-	12
	-	-	-	-	-	-	43
	-	64	18	2	4	-143	162
	-	-	-	-	-	-	73
	-	-	-	-	-	-	71
	8	-	-	-	-	36	53
	3,799	954	33	627	4	-125	5,708
	2,906	954	33	258	4	-154	4,408
	893	-	-	365	-	29	1,297
	-	-	-	3	-	-	3
	3,799	954	33	627	4	-125	5,708
	559	343	29	165	4	-218	1,162
	3,239	611	4	462	-	93	4,546
	3,799	954	33	627	4	-125	5,708

In 2022, the DZ BANK Group recognized no revenue from contracts with customers that had been included in contract liabilities at the beginning of the year (2021: revenue of €3 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.

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, 2021	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	-
Additions	147	595	3,084	-
Derecognitions	-138	-602	-3,109	-
Other	-	-	3	-
Balance as at Dec. 31, 2022	22	132	209	-

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 participates in the program as part of a bidder group comprising DZ BANK, TeamBank, and DZ HYP. The bidder group's total volume of €11,000 million (December 31, 2021: €32,416 million) is recognized under deposits from banks on the balance sheet. The DZ BANK Group made a repayment amounting to €21,405 million ahead of schedule on November 23, 2022.

The basic interest rate in the period January 1, 2022 to June 23, 2022 was minus 0.5 percent. For the period from after June 23, 2022 to November 22, 2022, the interest rate to be applied was the average deposit facility rate for the period from the start of the relevant TLTRO III tranche to November 22, 2022. From November 23, 2022 until maturity or early repayment of the relevant outstanding TLTRO III tranche, the basic interest rate is pegged to the average deposit facility rate for this period. In this period, the calculation of the basic interest rate assumes that the tranches will be held to maturity. The basic interest rate was recognized in net interest income in an amount of €99 million (2021: €149 million).

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 net lending volume of the bidder group was higher than the required reference volume in the period October 1, 2020 to December 31, 2021, so a 0.5 percentage point lower interest rate applied in the period June 24, 2021 to June 23, 2022. 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 €78 million was recognized in net interest income in 2022 (2021: €183 million).

In addition to the TLTRO III program, government grants of €25 million were deducted from the carrying amount of investment property held by insurance companies (December 31, 2021: €23 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 (2021: €1 million).

» 98 Letters of comfort

DZ BANK has issued letters of comfort for its subsidiaries DZ PRIVATBANK S.A., DZ HYP, and Reisebank AG, Frankfurt am Main. Except in the event of political risk, DZ BANK has thus undertaken to ensure, in proportion to its shareholding, that these companies are able to meet their contractual obligations.

DZ BANK has also issued letters of comfort for Lodestone Parts (Malta) Ltd., Floriana, Malta, and Chiefs Aircraft Holding (Malta) Ltd., Floriana, Malta. Liability under the letter of comfort for Lodestone Parts (Malta) Ltd. exists only in connection with this company's annual financial statements for 2021 and then only if its equity is negative; liability under the letter of comfort is limited to US\$ 29,965. Liability under the letter of comfort for Chiefs Aircraft Holding (Malta) Ltd. exists only in connection with this company's annual financial statements for 2014 to 2021 and then only if its equity is negative; liability under the letter of comfort is limited to US\$ 4,061,125.

These entities are identified in the list of DZ BANK's shareholdings (note 108) as being covered by a letter of comfort.

» 99 Employees

Average number of employees by employee group:

	2022	2021
Female employees	15,160	14,705
Full-time employees	9,292	9,152
Part-time employees	5,868	5,552
Male employees	17,825	17,566
Full-time employees	16,571	16,405
Part-time employees	1,254	1,160
Total	32,985	32,271

» 100 Provisions for defined benefit plans

The provisions for defined benefit plans, which are recognized under provisions and other liabilities (provisions for defined benefit plans of insurance companies), 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. The majority of new employees in Germany are offered defined contribution pension plans, for which it is not generally necessary to recognize a provision. The expense for defined contribution pension plans attributable to provisions and to other liabilities came to €19 million (2021: €21 million) and €18 million (2021: €25 million) respectively in 2022. 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, as can be seen from the table below.

Present value of defined benefit obligations

The present value of the defined benefit obligations is broken down by risk category as follows:

€ million	Provisions		Other liabilities	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Final-salary-dependent plans	2,165	2,812	-	-
Germany	2,071	2,676	-	-
Other countries	95	136	-	-
Defined benefit contributory plans	952	1,228	1,497	2,091
Germany	733	966	1,495	2,089
Other countries	219	262	2	2
Accessorial plans	82	77	-	-
Germany	82	77	-	-
Total	3,199	4,117	1,497	2,091

The level of market interest rates for investment-grade fixed-income corporate bonds is a significant risk factor for all plans because the discount rate determined from these rates significantly 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 lifelong 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. With the exception of the obligations managed through R+V Pensionsversicherung a.G., the contributions for most obligations are linked to remuneration. The majority of these plans are closed.

A considerable share of the volume is attributable to obligations managed through R+V Pensionsversicherung a.G., which have been treated as defined benefit pension plans since December 31, 2021. The phase of low interest rates, which prevailed until part way through 2022, and the related granting of initial fund loans by companies in the DZ BANK Group to R+V Pensionsversicherung a.G. in 2021 had necessitated a reassessment of the probability of drawdown by the pension providers on the basis of their subsidiary liability. Furthermore,

a change to the accounting treatment had been required due to the rules of IDW AcP HFA 50 – IAS 19 – M1. If the value of the plan assets exceeds the present value of the defined benefit obligations, the notional surplus is not recognized as an asset and instead reduces the plan assets to the present value of the defined benefit obligations via the asset ceiling mechanism. This is because the plan assets cannot flow back to the extended initial fund's sponsor entities.

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.

Actuarial assumptions

The 2018 G mortality tables published by Professor Dr. Klaus Heubeck are used to estimate average life expectancy in the context of measuring defined benefit obligations in Germany. Outside Germany, the measurement of defined benefit obligations is based on the Pri-2012 Private Retirement Plans Mortality Table in the United States, the S3PMA LT for males and S3PFA for females in the United Kingdom, the mortality tables pursuant to BVG 2020 GT in Switzerland, and the Dutch Prognosis Table AG2022 in the Netherlands. The following actuarial assumptions are also used:

Percent	Provisions		Other liabilities	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Weighted salary increases	2.16	1.85	2.50	2.25
Weighted pension increases	2.09	1.66	2.30	1.80

The uniform discount rate used was 3.70 percent (December 31, 2021: 1.10 percent).

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.

€ million	Provisions		Other liabilities	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Change in the present value of defined benefit obligations as at balance sheet date if				
the discount rate were 50 basis points higher	-184	-278	-88	-161
the discount rate were 50 basis points lower	207	319	102	184
the future salary increase were 50 basis points higher	30	35	1	2
the future salary increase were 50 basis points lower	-30	-33	-1	-2
the future pension increase were 25 basis points higher	58	88	6	10
the future pension increase were 25 basis points lower	-55	-84	-6	-10
the life expectancy of a 65-year-old man were 1 year higher	114	152	39	63
the life expectancy of a 65-year-old man were 1 year lower	-104	-147	-41	-72

The duration of the defined benefit obligations as at December 31, 2022 was 12.45 years under provisions (December 31, 2021: 15.11 years) and 13.34 years under other liabilities (December 31, 2021: 13.89 years).

Plan assets

Defined benefit obligations are offset by plan assets. The changes in the funded status of the defined benefit obligations were as follows:

€ million	Provisions		Other liabilities	
	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2022	Dec. 31, 2021
Present value of defined benefit obligations funded by plan assets	2,664	3,469	1,439	1,888
Present value of defined benefit obligations not funded by plan assets	535	647	58	203
Present value of defined benefit obligations	3,199	4,117	1,497	2,091
less fair value of plan assets	-2,352	-2,891	-1,653	-2,006
Asset ceiling	55	23	275	118
Defined benefit obligations (net)	903	1,248	119	203
Recognized surplus	19	3	-	-
Provisions for defined benefit obligations	922	1,251	119	203
Reimbursement rights recognized as assets	4	4	3	3

Of the plan assets under provisions, assets of €1,450 million (December 31, 2021: €1,886 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 plan assets under other liabilities consist of assets at pension providers and in reinsured pension schemes.

The asset ceiling equates almost entirely to the amount of the notional surplus, i.e. the amount by which the fair value of the plan assets exceeds the present value of the defined benefit obligations resulting from the pension obligations managed through R+V Pensionsversicherung a.G.

The fair value of the plan assets is broken down by asset class as follows:

As at December 31, 2022

€ million	Provisions		Other liabilities	
	With quoted market price in an active market	Without quoted market price in an active market	With quoted market price in an active market	Without quoted market price in an active market
Cash and money market investments	-	55	-	-
Bonds and other fixed-income securities	1,109	-	-	-
Shares	150	-	-	-
Investment fund units	185	248	-	-
Other shareholdings	-	27	-	-
Derivatives	2	1	-	-
Land and buildings	-	5	-	-
Entitlements arising from insurance policies	-	152	-	223
Investments of R+V Pensionsversicherung a.G.	-	280	-	1,431
Other assets	-	138	-	-
Total	1,446	906	-	1,653

As at December 31, 2021

€ million	Provisions		Other liabilities	
	With quoted market price in an active market	Without quoted market price in an active market	With quoted market price in an active market	Without quoted market price in an active market
Cash and money market investments	-	46	-	-
Bonds and other fixed-income securities	1,466	-	-	-
Shares	183	-	-	-
Investment fund units	237	291	-	-
Other shareholdings	-	28	-	-
Derivatives	-1	-	-	-
Land and buildings	-	5	-	-
Entitlements arising from insurance policies	-	162	-	218
Investments of R+V Pensionsversicherung a.G.	-	348	-	1,788
Other assets	-	126	-	-
Total	1,885	1,006	-	2,006

The plan assets included under bonds and other fixed-income securities and under investments of R+V Pensionsversicherung a.G. – the latter had been included in other assets in 2021 – continue to be predominantly invested in bonds and other fixed-income securities. If market interest rates rise (as occurred in the year under review), the prices of the fixed-income assets fall; if the interest rates fall, the prices of the fixed-income assets rise. 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, 2022, the plan assets included €142 million of the group's own, transferable financial instruments (December 31, 2021: €227 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, entitlements arising from insurance contracts, short-term investments, other shareholdings, and real estate assets.

Contributions to plan assets of €36 million under provisions (2022: €72 million) and €27 million under other liabilities (2022: €6 million) are expected for 2023.

Defined benefit obligations (net)

The following table shows the changes in the defined benefit obligations (net), comprising the present value of the defined benefit obligations, the fair value of the plan assets, and the change in the asset ceiling:

Provisions	Present value of defined benefit obligations	Fair value of plan assets	Asset ceiling	Defined benefit obligations (net)
€ million				
Balance as at Jan. 1, 2021	3,856	-2,535	-	1,321
Current service cost	65	-	-	65
Interest income/expense	29	-19	-	10
Return on plan assets/reimbursement rights (excluding interest income)	-	-369	-	-369
Actuarial gains and losses due to changes in demographic assumptions	-3	-	-	-3
Actuarial gains (-)/losses (+) due to changes in financial assumptions	205	-	-	205
relating to the discount rate	-190	-	-	-190
relating to the annuity trend	69	-	-	69
other	326	-	-	326
Actuarial gains and losses arising from experience adjustments	66	-	-	66
Changes in the effect of the asset ceiling (excluding interest income/expense)	-	-	23	23
Past service cost	-1	-	-	-1
Contributions from employers	-	-24	-	-24
Contributions from beneficiaries (employees)	6	-6	-	-
Pension benefits paid including plan settlements	-123	75	-	-48
ongoing	-119	72	-	-47
as part of plan settlements	-4	3	-	-1
Plan takeovers	4	-3	-	1
Reclassifications	-	-1	-	-1
Changes attributable to currency translation	12	-10	-	2
Balance as at Dec. 31, 2021	4,117	-2,891	23	1,248
Current service cost	66	-	-	66
Interest income/expense	45	-32	-	14
Return on plan assets/reimbursement rights (excluding interest income)	-	599	-	599
Actuarial gains and losses due to changes in demographic assumptions	-1	-	-	-1
Actuarial gains (-)/losses (+) due to changes in financial assumptions	-982	-	-	-982
relating to the salary trend	54	-	-	54
relating to the discount rate	-1,295	-	-	-1,295
relating to the annuity trend	176	-	-	176
other	83	-	-	83
Actuarial gains and losses arising from experience adjustments	21	-	-	21
Changes in the effect of the asset ceiling (excluding interest income/expense)	-	-	32	32
Past service cost	3	-	-	3
Contributions from employers	-	-96	-	-96
Contributions from beneficiaries (employees)	8	-8	-	-
Pension benefits paid including plan settlements	-137	84	-	-53
ongoing	-136	82	-	-54
as part of plan settlements	-1	2	-	1
Plan takeovers	5	-6	-	-
Reclassifications	2	-	-	2
Changes attributable to currency translation	1	-2	-	-1
Acquisition/addition of subsidiaries	52	-	-	52
Balance as at Dec. 31, 2022	3,199	-2,352	55	903

Other liabilities

€ million	Present value of defined benefit obligations	Fair value of plan assets	Asset ceiling	Defined benefit obligations (net)
Balance as at Jan. 1, 2021	443	-217	-	226
Current service cost	6	-	-	6
Interest income/expense	3	-1	-	2
Return on plan assets/reimbursement rights (excluding interest income)	-	-1,790	-	-1,790
Actuarial gains (-)/losses (+) due to changes in financial assumptions	1,659	-	-	1,659
relating to the discount rate	-18	-	-	-18
relating to the annuity trend	8	-	-	8
other	1,669	-	-	1,669
Changes in the effect of the asset ceiling (excluding interest income/expense)	-	-	118	118
Contributions from beneficiaries (employees)	1	-10	-	-9
Pension benefits paid including plan settlements	-21	12	-	-9
Balance as at Dec. 31, 2021	2,091	-2,006	118	203
Current service cost	44	-	-	44
Interest income/expense	23	-22	1	2
Return on plan assets/reimbursement rights (excluding interest income)	-	352	-	352
Actuarial gains (-)/losses (+) due to changes in financial assumptions	-652	-	-	-652
relating to the salary trend	1	-	-	1
relating to the discount rate	-673	-	-	-673
relating to the annuity trend	20	-	-	20
Actuarial gains and losses arising from experience adjustments	56	-	-	56
Changes in the effect of the asset ceiling (excluding interest income/expense)	-	-	156	156
Contributions from beneficiaries (employees)	1	-34	-	-33
Pension benefits paid including plan settlements	-66	57	-	-9
Balance as at Dec. 31, 2022	1,497	-1,653	275	119

The transactions to be recognized in profit or loss are included in staff expenses.

The actuarial gains of €982 million to be recognized in other comprehensive income that were due to changes in the financial assumptions used to calculate the present value of the defined benefit obligations under provisions (2021: losses of €205 million) primarily resulted from the increase in the underlying discount rate to 3.70 percent as at December 31, 2022 (December 31, 2021: 1.10 percent). The majority of the financial assumptions relating to the annuity trend for the period since December 31, 2021 were changed to 2.30 percent as at December 31, 2022. The other changes in financial assumptions included losses of €80 million resulting from the one-off inflation-related and virtual increase in current pension entitlements of employees carried out by a number of group entities. The increases range from 5.5 percent to 9.9 percent. Their impact on the actual payment run will not materialize until the regular adjustment date. Furthermore, the majority of the financial assumptions relating to the salary trend for the period since December 31, 2021 were changed to 2.30 percent as at December 31, 2022.

The actuarial gains of €652 million to be recognized in other comprehensive income that were due to changes in the financial assumptions used to calculate the present value of the defined benefit obligations under other liabilities (2021: losses of €1,659 million) primarily resulted from the increase in the underlying discount rate to 3.70 percent as at December 31, 2022 (December 31, 2021: 1.10 percent). The financial assumption relating to the annuity trend for the period since December 31, 2021 was changed to 2.30 percent as at December 31, 2022. A one-off inflation-related and virtual increase in current pension entitlements of employees was not carried out because the effects were immaterial. The financial assumption relating to the salary trend for the period since December 31, 2021 was changed to 2.50 percent as at December 31, 2022.

Schwäbisch Hall Facility Management GmbH (SHF), Schwäbisch Hall Wohnen GmbH (SHW), and BAUFINEX GmbH, which are all companies based in the German town of Schwäbisch Hall, were included in the BSH sub-group's financial statements for the first time in 2022. The present value of defined benefit obligations recognized under acquisition/addition of subsidiaries in an amount of €52 million is the result of the first-time consolidation of these 3 companies.

The change in the carrying amounts since December 2021 is largely attributable to the accounting treatment of the pension obligations managed through R+V Pensionsversicherung a.G. In 2021, actuarial losses due to changes in the financial assumptions amounting to €325 million under provisions and €1,670 million under other liabilities had arisen as a result of corresponding additions to the present value of the defined benefit obligations. The remeasurement effects recognized in other comprehensive income that are attributable to plan assets are shown under return on plan assets (excluding interest income). Of these total amounts in 2021, €348 million under provisions and €1,788 million under other liabilities had related to gains to be recognized in other comprehensive income resulting from the addition of plan assets for the pension obligations managed through R+V Pensionsversicherung a.G. The asset ceiling affected plan assets resulting from the initial recognition of the pension obligations managed through R+V Pensionsversicherung a.G. as defined benefit pension plans. In 2021, the change in the asset ceiling had resulted in losses to be recognized in other comprehensive income of €23 million under provisions and €118 million under other liabilities.

Multi-employer plans

Along with other financial institutions in Germany, entities of the DZ BANK Group 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 current employees and adding the employer contribution. The tariffs of the pension providers cover both fixed annuity payments with policyholder participation and capital payments. The member entities participate in a settlement class containing the actuarial risk of all pension beneficiaries. There are no agreements about the distribution of deficits or surpluses if the plan is wound up or if a member entity withdraws from the plan. As at December 31, 2022, the two BVV pension providers did not disclose any deficit or surplus. Each member entity is liable only for its own employment-law obligations in accordance with the insurance terms and conditions, benefit plans, and articles of association. The pension provider cannot allocate the assets in question and the defined benefit obligations relating to current and former employees to the individual member entities. The multi-employer defined benefit plans are therefore accounted for as if they were defined contribution plans in accordance with IAS 19.34. Of the 784 entities that are members of the BVV, 4 are DZ BANK Group entities. Approximately 0.6 percent of the current and former employees covered by the BVV are current or former employees of the DZ BANK Group.

Obligations with minimum funding requirements outside Germany

Measured using the present value of the defined benefit obligations, a volume of €301 million was attributable to plans outside Germany that are subject to minimum funding requirements (December 31, 2021: €381 million). Occupational pension provision in Luxembourg is governed by the Luxembourg Occupational Pensions Act of June 8, 1999 in its most recent version dated January 1, 2019. DZ PRIVATBANK S.A. and IPConcept (Luxemburg) S.A., Strassen, Luxembourg, have decided to manage occupational pension provision through a pension fund. The legally independent pension fund is subject to the Luxembourg Pension Fund Act of July 13, 2005. The pension plan at DZ BANK's London branch is bound by the funding rules of the United Kingdom's Pensions Regulator. The pension obligations for employees of DZ BANK's New York branch are governed by the minimum funding requirements pursuant to the US Employee Retirement Income Security Act (ERISA). The rules laid down by the Swiss Federal Law on Occupational Retirement, Survivors' and Disability Pension Plans (Swiss BVG) apply to DZ PRIVATBANK Schweiz and IPConcept (Schweiz) AG, Zurich, Switzerland.

» 101 Auditor fees

The total fees charged for 2022 by the independent auditors of the consolidated financial statements, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, and its affiliated companies can be broken down by type of service as follows:

€ million	2022	2021
Auditing services	12.6	12.2
Other attestation services	1.5	0.6
Tax consultancy services	-	0.2
Other services	0.4	1.0
Total	14.5	13.9

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 for other audits for which the auditors' professional seal must or can be applied, mainly in connection with regulatory requirements. The fees for other services predominantly include fees for consultancy services.

» 102 Remuneration for the Board of Managing Directors and Supervisory Board of DZ BANK

In 2022, overall remuneration for DZ BANK's Board of Managing Directors from the group in accordance with IAS 24.17 amounted to €15.4 million (2021: €14.6 million). This total is broken down into short-term employee benefits of €10.2 million (2021: €9.1 million), post-employment benefits of €3.4 million (2021: €3.8 million), and share-based payments of €1.8 million (2021: €1.7 million). The remuneration for the Board of Managing Directors in 2022 and 2021 included the total bonus awarded to the Board of Managing Directors for the year in question. Supervisory Board remuneration amounted to €1.0 million (2021: €1.0 million) and consisted of payments due in the short term.

The remuneration for the Board of Managing Directors included contributions of €0.4 million (2021: €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 €27.8 million (December 31, 2021: €36.0 million).

In 2022, 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 €12.4 million (2021: €11.1 million), while the total remuneration for the Supervisory Board for the performance of these duties amounted to €1.0 million (2021: €1.0 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 €9.2 million in 2022 (2021: €9.9 million). DZ BANK has defined benefit obligations for former members of the Board of Managing Directors or their surviving dependants amounting to €131.0 million (2021: €177.0 million).

» 103 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, 2021	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
Remuneration granted	0.7	0.4
Payment of remuneration granted in 2021	-0.1	-
Payment of remuneration granted in previous years	-0.4	-0.1
Unpaid share-based payments as at Dec. 31, 2022	1.9	0.5

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, 2021	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
Remuneration granted	1.0	0.1
Payment of remuneration granted in previous years	-0.8	-0.1
Unpaid share-based payments as at Dec. 31, 2022	2.9	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, 2021	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
Remuneration granted	0.5	0.1
Payment of remuneration granted in 2021	-0.1	-
Payment of remuneration granted in previous years	-0.2	-
Unpaid share-based payments as at Dec. 31, 2022	1.4	0.2

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. 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, 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, a value per share of €8.80 as at December 31, 2021, and a value per share of €9.05 as at December 31, 2022, 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, 2021	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
Remuneration granted	1.9	4.8
Payment of remuneration granted in 2021	-0.5	-3.2
Payment of remuneration granted in previous years	-1.0	-4.1
Unpaid share-based payments as at Dec. 31, 2022	3.6	12.4

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, 2021	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
Remuneration granted	0.4	0.1
Payment of remuneration granted in 2021	-0.1	-
Payment of remuneration granted in previous years	-0.3	-0.1
Unpaid share-based payments as at Dec. 31, 2022	1.1	0.4

DZ PRIVATBANK has entered into an agreement on variable remuneration components with the members of its Board of Managing Directors and risk takers. 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 7 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	Risk takers
Unpaid share-based payments as at Jan. 1, 2021	1.6	-
Remuneration granted	0.6	0.5
Payment of remuneration granted in 2020	-0.1	-0.1
Payment of remuneration granted in previous years	-0.3	-
Unpaid share-based payments as at Dec. 31, 2021	1.8	0.4
Remuneration granted	0.7	0.1
Payment of remuneration granted in 2021	-0.1	-
Payment of remuneration granted in previous years	-0.2	-0.1
Reduction of share-based payments	-0.2	-
Unpaid share-based payments as at Dec. 31, 2022	2.0	0.4

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, 2021	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
Remuneration granted	0.4
Payment of remuneration granted in 2021	-0.1
Payment of remuneration granted in previous years	-0.3
Reduction of share-based payments	-0.2
Unpaid share-based payments as at Dec. 31, 2022	1.1

If the variable remuneration granted to the Board of Managing Directors and risk takers at DVB exceeded €50,000 for a financial year, it was not paid out immediately and was instead subject to certain deferral periods and additional retention periods. The employee became entitled immediately (in the following year) to 40 percent of the granted variable remuneration. Only 50 percent of this amount was paid immediately; the remaining 50 percent was subject to an additional one-year retention period, during which it was pegged to the change in the DVB Bank Group's enterprise value. The remaining 60 percent of the variable remuneration was 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 was subject to an additional one-year retention period and was 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 had been 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 had been sold that was attributable to share-based payments was shown under disposal of share-based payments in 2021. The disposal of share-based payments in 2022 was due to the merger of DVB Bank SE into DZ BANK AG.

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, 2021	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
Remuneration granted	0.1	1.0
Payment of remuneration granted in 2021	-0.1	-0.2
Payment of remuneration granted in previous years	-	-0.4
Disposal of share-based payments	-0.4	-2.6
Unpaid share-based payments as at Dec. 31, 2022	-	-

In 2022, the agreements described above gave rise to expenses for share-based payment transactions in the DZ BANK Group of €11.6 million (2021: €10.3 million) and income from the reversal of provisions for share-based payments of €0.2 million (2021: €3.0 million). As at December 31, 2022, the provisions recognized for share-based payment transactions in the DZ BANK Group amounted to €54.4 million (December 31, 2021: €44.9 million).

» 104 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, 2022	Dec. 31, 2021
Loans and advances to banks	24	22
to joint ventures	24	22
Loans and advances to customers	140	154
to subsidiaries	44	43
to joint ventures	11	10
to associates	69	50
to pension plans for the benefit of employees	15	13
to other related parties (entities)	-	38
Financial assets held for trading	2	-
of other related parties (entities)	2	-
Investments	11	5
of subsidiaries	6	-
of joint ventures	5	5
Investments held by insurance companies	210	200
of subsidiaries	126	131
of pension plans for the benefit of employees	84	69
Other assets	34	41
of subsidiaries	28	22
of associates	1	1
of pension plans for the benefit of employees	5	18
Non-current assets and disposal groups classified as held for sale	-	25
of associates	-	25
Deposits from banks	305	74
owed to subsidiaries	7	-
owed to joint ventures	298	74
Deposits from customers	184	219
owed to subsidiaries	122	173
owed to associates	4	3
owed to other related parties (entities)	58	43
Financial liabilities held for trading	5	6
of other related parties (entities)	5	6
Other liabilities	27	33
of subsidiaries	20	23
of joint ventures	1	3
of pension plans for the benefit of employees	7	7
Subordinated capital	23	19
of pension plans for the benefit of employees	22	18
of other related parties (entities)	1	1

€ million	Dec. 31, 2022	Dec. 31, 2021
Financial guarantee contracts	1	1
for subsidiaries	-	1
Loan commitments	926	743
to subsidiaries	45	60
to joint ventures	250	10
to associates	1	2
to pension plans for the benefit of employees	630	672

Income of €15 million (2021: income of €6 million) in the total reported net interest income, expenses of €1 million (2021: expenses of €3 million) in the total reported net fee and commission income, and expenses of €56 million (2021: expenses of €14 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, 2022, the DZ BANK Group's loans and loan commitments to related parties (persons) amounted to €0.3 million (December 31, 2021: €0.5 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.

» 105 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

Souâd Benkredda

(Member of the Board of Managing Directors since
September 1, 2022)

Responsibilities: Capital Markets Trading;
Capital Markets Institutional Clients;
Capital Markets Retail Clients; Group Treasury

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

(Member of the Board of Managing Directors until
December 31, 2022)

Michael Speth

Responsibilities: Group Risk Controlling;
Group Risk Management & Services; Credit

Thomas Ullrich

Responsibilities: Group Human Resources;
Operations; Payments & Accounts;
Transaction Management

» 106 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

Uwe Barth

Spokesman of the Board of Managing Directors
Volksbank Freiburg eG

Pia Erning

Employee
DZ BANK AG
Deutsche Zentral-Genossenschaftsbank
(Member of the Supervisory Board since May 25, 2022)

Dr. Peter Hanker

Spokesman of the Board of Managing Directors
Volksbank Mittelhessen eG

Pilar Herrero Lerma

Employee
DZ BANK AG
Deutsche Zentral-Genossenschaftsbank

Josef Hodrus

Spokesman of the Board of Managing Directors
Volksbank Allgäu-Oberschwaben eG

Ingo Stockhausen

(Deputy Chairman of the Supervisory Board)
Chief Executive Officer
Volksbank Oberberg eG

Heiner Beckmann

Senior manager
Sales Director South-West
R+V Allgemeine Versicherung AG

Timm Häberle

Chief Executive Officer
VR-Bank Ludwigsburg eG

Andrea Hartmann

Employee
Bausparkasse Schwäbisch Hall AG

Dr. Dierk Hirschel

Head of the Economic Policy Division
ver.di Bundesverwaltung

Marija Kolak

President
Bundesverband der Deutschen Volksbanken
und Raiffeisenbanken e.V. (BVR)

Renate Mack

Employee
DZ BANK AG
Deutsche Zentral-Genossenschaftsbank
(Member of the Supervisory Board until May 25, 2022)

Sascha Monschauer

Chief Executive Officer
Volksbank RheinAhrEifel eG

Wolfgang Nett

Sales Director
Union Investment Privatfonds GmbH

Rolf Dieter Pogacar

Employee
R+V Allgemeine Versicherung AG

Stephan Schack

Chief Executive Officer
Volksbank Raiffeisenbank eG, Itzehoe

Uwe Spitzbarth

Departmental coordinator
ver.di Bundesverwaltung (until July 31, 2022)
(Member of the Supervisory Board until December 31, 2022)

Sigrid Stenzel

Labor union secretary
Social security group
ver.di Niedersachsen-Bremen

Kevin Voß

Labor union secretary
Banking industry group
ver.di Bundesverwaltung
(Member of the Supervisory Board since January 1, 2023)

Dr. Gerhard Walther

Chief Executive Officer
VR-Bank Mittelfranken Mitte eG

Supervisory Board committees

Nominations Committee

Henning Deneke-Jöhrens, Chairman
 Ulrich Birkenstock, Deputy Chairman*
 Pia Erning, member since May 25, 2022*
 Timm Häberle
 Renate Mack, member until May 25, 2022*
 Wolfgang Nett*
 Ingo Stockhausen

Remuneration Control Committee

Henning Deneke-Jöhrens, Chairman
 Ulrich Birkenstock, Deputy Chairman*
 Pia Erning, member since May 25, 2022*
 Dr. Peter Hanker
 Renate Mack, member until May 25, 2022*
 Wolfgang Nett*
 Ingo Stockhausen

Mediation Committee

Henning Deneke-Jöhrens, Chairman
 Ulrich Birkenstock, Deputy Chairman*
 Dr. Dierk Hirschel, member since January 17, 2023*
 Uwe Spitzbarth, member until December 31, 2022*
 Ingo Stockhausen

Audit Committee

Timm Häberle, Chairman
 Henning Deneke-Jöhrens
 Pia Erning, member since May 25, 2022*
 Dr. Peter Hanker
 Andrea Hartmann*
 Marija Kolak
 Renate Mack, member until May 25, 2022*
 Rolf Dieter Pogacar*
 Stephan Schack
 Ingo Stockhausen

Risk Committee

Dr. Peter Hanker, Chairman
 Heiner Beckmann*
 Henning Deneke-Jöhrens
 Timm Häberle
 Andrea Hartmann, member since May 25, 2022*
 Dr. Dierk Hirschel*
 Renate Mack, member until May 25, 2022*
 Sascha Monschauer
 Ingo Stockhausen
 Dr. Gerhard Walther

*Employee representatives.

» 107 Supervisory mandates held by members of the Board of Managing Directors and employees

Within DZ BANK

As at December 31, 2022, 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
Souâd Benkredda	R+V Lebensversicherung AG, Wiesbaden (*) Member of the Supervisory Board (since January 1, 2023)
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
Chairman 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

(Member until December 31, 2022)

R+V Lebensversicherung AG, Wiesbaden (*)
Member of the Supervisory Board (until December 31, 2022)

Michael Speth

BAG Bankaktiengesellschaft, Hamm
Member 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
Member 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

Rolf Büscher	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, 2022, 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. Dirk Ottenbach Senior manager Bausparkasse Schwäbisch Hall AG	Schwäbisch Hall Facility Management GmbH, Schwäbisch Hall Member 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

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

Dr. Klaus Endres

Member of the Board of Managing Directors

R+V Versicherung AG

R+V Direktversicherung AG, Wiesbaden (*)

Chairman of the Supervisory Board

Securitas Holding GmbH, Berlin (*)

Member of the Supervisory Board

Sprint Sanierung GmbH, Cologne (*)

Chairman 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

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 (*)
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

Sonja Albers

Member of the Board of Managing Directors
Union Asset Management Holding AG

Union Investment Institutional Property GmbH, Hamburg (*)
Deputy Chairwoman of the Supervisory Board

Union Investment Privatfonds GmbH, Frankfurt am Main (*)
Deputy Chairwoman of the Supervisory Board

Union Investment Service Bank AG, Frankfurt am Main (*)
Chairwoman of the Supervisory Board

Dr. Frank Engels

Member of the Board of Managing Directors
Union Asset Management Holding AG

Quoniam Asset Management GmbH, Frankfurt am Main (*)
Member of the Supervisory Board

Union Investment Institutional Property GmbH, Hamburg (*)
Deputy Chairman of the Supervisory Board

André Haagmann

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 Property GmbH, Hamburg (*)
Chairman of the Supervisory Board

Union Investment Real Estate GmbH, Hamburg (*)
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 (*)
Deputy Chairman 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

Harald Rieger

Member of the Board of Managing Directors
Union Investment Institutional GmbH

Quoniam Asset Management GmbH, Frankfurt am Main (*)
Deputy Chairman of the Supervisory Board

Dr. Michael Bütter

Chief Executive Officer
Union Investment Real Estate GmbH

Union Investment Institutional Property GmbH, Hamburg (*)
Member of the Supervisory Board

Jörg Kotzenbauer

Chief Executive Officer
ZBI GmbH

ZBI Fondsmanagement GmbH, Erlangen (*)
Chairman of the Supervisory Board

Marco Knopp

Member of the Board of Managing Directors
ZBI GmbH

ZBI Fondsmanagement GmbH, Erlangen (*)
Member of the Supervisory Board

» 108 List of shareholdings

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Alchemy Parts (Ireland) Limited i.L.	Dublin, Ireland	-		n/a	n/a
Alchemy Parts (Malta) Limited	Floriana, Malta	-		n/a	n/a
APZ Beteiligungs GmbH 1)	Darmstadt	88.50	100.00	6,047	1,104 *
APZ CarMotion GmbH 1)	Fischamend, Austria	100.00		778	33 *
APZ GmbH 1)	Darmstadt	100.00		7,135	- *
APZ Mobility GmbH 1)	Darmstadt	100.00		-	-275 *
APZ Smart Repair GmbH 1)	Munich	100.00		n/a	n/a
Arlanda Leasing Limited i.L.	Floriana, Malta	-		n/a	n/a
Assimoco S.p.A. 1)	Milan, Italy	68.94		279,535	18,767
Assimoco Vita S.p.A. 1)	Milan, Italy	82.14		302,343	17,323
Attrax Financial Services S.A. 1)	Senningerberg, Luxembourg	100.00		90,750	30,724
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		946	-28 *
BAUFINEX GmbH 1)	Schwäbisch Hall	70.00		781	-879
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	Frankfurt am Main	94.90		18,256	771 *
BWG Baugesellschaft Württembergischer Genossenschaften mbH 1)	Stuttgart	94.78		9,965	- *
carexpert Kfz-Sachverständigen GmbH 1)	Mainz	60.00		1,500	331 *
CHEMIE Pensionsfonds AG 1)	Wiesbaden	100.00		31,818	300
Chiefs Aircraft Holding (Malta) Limited 3)	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		3,013	-742 *
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		510	52 *
Condor Lebensversicherungs-Aktiengesellschaft 1)	Hamburg	94.98		51,742	- *
DCAL Aircraft Malta Ltd. i.L.	Floriana, Malta	-		-99	-15,219 *
Delfco Leasing (Malta) Limited	Floriana, Malta	-		n/a	n/a
Deucalion Capital II (MALTA) Limited	Valletta, Malta	-		20	17 *
Deucalion Capital II Limited	George Town, Cayman Islands	-		-609	1,463 *
Deucalion Capital VIII Limited	George Town, Cayman Islands	-		-74	-6,698 *
Deucalion Capital X Ltd.	George Town, Cayman Islands	-		n/a	n/a
Deucalion Ltd.	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
Dilax Beteiligungs Verwaltungsgesellschaft mbH 1)	Berlin	100.00		25	- *
Dilax Beteiligungsgesellschaft mbH & Co. KG 1)	Berlin	92.39		10,499	-161 *
Dilax France SAS 1)	Valence, France	100.00		759	200 *
Dilax Intelcom AG 1)	Ermatingen, Switzerland	100.00		471	156 *
Dilax Intelcom GmbH 1)	Berlin	97.01		3,865	-628 *
Dilax Intelcom Iberica S.L.U. 1)	Madrid, Spain	100.00		384	25 *
Dilax Management Investment Reserve GmbH 1)	Berlin	100.00		229	2 *
Dilax Management Investment Verwaltungsgesellschaft mbH 1)	Berlin	100.00		16	-1 *
Dilax Management Investmentgesellschaft mbH & Co. KG 1)	Berlin	99.50		172	-7 *
Dilax Systems Inc. 1)	Saint Lambert, Canada	100.00		982	194 *
Dilax Systems UK Ltd. 1)	London, UK	100.00		79	-297 *
DILAX Systems US Inc 1)	Wilmington, USA	100.00		19	7 *
DVB Asia Ltd. i.L.	Singapore, Singapore	100.00		23,995	111 *
DVB Bank America N.V. i.L.	Willemstad, Curaçao	100.00		147,140	62,086 *
	Grand Cayman, Cayman Islands				
DVB Fountainburg Aviation Capital Services Ltd (Cayman Islands)	Islands	-		n/a	n/a
DVB Transport Finance Limited	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		51	-
DZ BANK Kunststiftung gGmbH	Frankfurt am Main	100.00		13	-12 *
DZ BANK Sao Paulo Representacao Ltda. 2)	São Paulo, Brazil	100.00		340	4 *
DZ Beteiligungsgesellschaft mbH Nr. 11 4)	Frankfurt am Main	100.00		4,220	-
DZ Beteiligungsgesellschaft mbH Nr. 14 4)	Frankfurt am Main	100.00		51	-
DZ Beteiligungsgesellschaft mbH Nr. 18 4)	Frankfurt am Main	100.00		69,634	-
DZ Beteiligungsgesellschaft mbH Nr. 21 4)	Frankfurt am Main	100.00		25	-
DZ Beteiligungsgesellschaft mbH Nr. 22	Frankfurt am Main	100.00		14	-3 *
DZ Beteiligungsgesellschaft mbH Nr. 23 4)	Frankfurt am Main	100.00		25	-
DZ Beteiligungsgesellschaft mbH Nr. 24	Frankfurt am Main	100.00		13	-4 *
DZ CompliancePartner GmbH 4)	Neu-Isenburg	100.00		2,086	- *
DZ FINANCIAL MARKETS LLC	New York, USA	100.00		10,295	3,754 *
DZ Gesellschaft für Grundstücke und Beteiligungen mbH 4)	Frankfurt am Main	100.00		1,350	-
DZ HYP AG 3) 4)	Hamburg/Münster	96.42		1,762,331	-
DZ PRIVATBANK (Schweiz) AG 1)	Zurich, Switzerland	100.00		192,784	7,549
DZ PRIVATBANK S.A. 3)	Strassen, Luxembourg	91.78		1,168,122	79,441
DZ Versicherungsvermittlung Gesellschaft mbH 4)	Frankfurt am Main	100.00		51	- *
easymize GmbH 1)	Wiesbaden	100.00		960	-2,285 *
Englische Strasse 5 GmbH 1)	Wiesbaden	90.00		16,129	469 *
Evolit Consulting GmbH 1)	Vienna, Austria	100.00		3,010	2,828 *
Fischer Privatkunden Makler GmbH 1)	Herrenberg	90.00		n/a	n/a
FKS-NAVIGIUM GmbH 1)	Eschborn	100.00		-4,718	375
FPAC (Malta) Limited	Floriana, Malta	100.00		5	-3,499 *
Fundamenta Erteklanc Inगतlanközvetítő es Szolgáltató Kft. 1)	Budapest, Hungary	100.00		-1,395	-346
Fundamenta-Lakáskassa Lakás-takarékpénztár Zrt. 1)	Budapest, Hungary	51.25		158,065	13,838
Fundamenta-Lakáskassa Pénzügyi Közvetítő Kft. 1)	Budapest, Hungary	100.00		8,515	554
GAF Active Life 1 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	96.56		50,920	-528 *
GAF Active Life 2 Renditebeteiligungs-GmbH & Co. KG 1)	Nidderau	95.03		69,437	-1,992 *
GENO Broker GmbH 4)	Frankfurt am Main	100.00		10,000	- *
Genoflex GmbH 1)	Nuremberg	70.00		839	-160 *
GMS Development - Gesellschaft für Softwareentwicklung m.b.H 1)	Paderborn	100.00		5,233	944 *
GMS Holding GmbH 1)	Paderborn	88.89	75.00	20,479	1,509 *
GMS Management und Service GmbH 1)	Nidderau	100.00		203	101 *
GWG 1. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		2,000	1,292 *
GWG 2. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		3,000	563 *
GWG 3. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		7,000	1,684 *
GWG 4. Wohn GmbH & Co. KG 1)	Stuttgart	100.00		9,000	1,369 *
GWG Beteiligungsgesellschaft mbH 1)	Stuttgart	100.00		29	1 *
GWG Gesellschaft für Wohnungs- und Gewerbebau Baden-Württemberg AG 1)	Stuttgart	91.57		387,218	14,962
GWG Hausbau GmbH 1)	Stuttgart	94.48		2,750	- *
GWG ImmoInvest GmbH 1)	Stuttgart	94.90		12,263	1,101 *
GWG Wohnpark Sendling GmbH 1)	Stuttgart	94.00		4,028	- *
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		481	201 *
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		53	18 *
IMPETUS Bietergesellschaft mbH 4)	Düsseldorf	100.00		42,708	-
INFINDO Development GmbH 1)	Düsseldorf	100.00		92,076	1,657
IPConcept (Luxemburg) S.A. 1)	Strassen, Luxembourg	100.00		20,487	10,407
IPConcept (Schweiz) AG 1)	Zurich, Switzerland	100.00		7,308	531
KBIH Beteiligungsgesellschaft für Industrie und Handel mbH	Frankfurt am Main	100.00		35,712	387 *
KRAVAG Umweltschutz und Sicherheitstechnik GmbH 1)	Hamburg	100.00		586	192 *
KRAVAG-ALLGEMEINE Versicherungs-Aktiengesellschaft 1)	Hamburg	100.00		74,115	3,209
KRAVAG-LOGISTIC Versicherungs-Aktiengesellschaft 1)	Hamburg	51.00		255,480	6,959
KV MSN 27602 Aircraft Ltd. i.L.	Dublin, Ireland	-		-	- *
Lantana Aircraft Leasing Limited i.L.	Floriana, Malta	-		-176	2,916 *
Lodestone Parts (Ireland) Ltd. i.L.	Dublin, Ireland	-		n/a	n/a
Lodestone Parts (Malta) Ltd. 3)	Floriana, Malta	-		n/a	n/a
Lodestone Parts 2 (Ireland) Limited i.L.	Dublin, Ireland	-		n/a	n/a
MD Aviation Capital Pte. Ltd.	Singapore, Singapore	100.00		-19,705	14 *
MDAC 1 Pte Ltd. i.L.	Singapore, Singapore	100.00		1,378	-119 *
MDAC 3 Pte Ltd. i.L.	Singapore, Singapore	100.00		23	-192 *
MDAC 6 Pte Ltd.	Singapore, Singapore	100.00		-241	-549 *

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
MDAC 9 Pte Ltd. i.L.	Singapore, Singapore	100.00		-114	-54 *
MDAC Malta Ltd. i.L.	Floriana, Malta	-		10,599	-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)	Wiesbaden	100.00		108,925	1,659
MSN1164 Freighter Ltd. i.L.	Dublin, Ireland	-		-	- *
MSU Management-, Service- und Unternehmensberatung GmbH 1)	Landau in der Pfalz	60.00		925	106 *
NTK Immobilien GmbH 1)	Hamburg	100.00		44	- *
NTK Immobilien GmbH & Co. Management KG 1)	Hamburg	100.00		1,008	- *
Okoye Beteiligungsverwaltungs GmbH 1)	Vienna, Austria	80.00		9,520	1,526 *
Pascon GmbH 1)	Wiesbaden	100.00		42	3 *
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		6,069	-
PW 4168 Engine Solutions (Ireland) Ltd i.L.	Dublin, Ireland	-		-21	1 *
PW 4168 Solutions (Malta) Ltd.	Floriana, Malta	-		-21	1 *
Quoniam Asset Management GmbH 1)	Frankfurt am Main	95.31	100.00	21,061	5,215
R+V AIFM S.à.r.l. 1)	Munsbach, Luxembourg	100.00		1,004	183 *
R+V Allgemeine Versicherung Aktiengesellschaft 1) 4)	Wiesbaden	95.00		1,024,175	-
R+V Deutschland Real (RDR) 1)	Hamburg	-		n/a	n/a
R+V Dienstleistungs GmbH 1)	Wiesbaden	100.00		694	35 *
R+V Direktversicherung AG 1) 4)	Wiesbaden	100.00		13,320	- *
R+V INTERNATIONAL BUSINESS SERVICES Ltd., Dublin 1)	Dublin, Ireland	100.00		n/a	n/a
R+V KOMPOSIT Holding GmbH 1) 4)	Wiesbaden	100.00		2,074,733	-
R+V Krankenversicherung AG 1)	Wiesbaden	100.00		168,485	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		38,803	1,630
R+V Pensionskasse AG 1)	Wiesbaden	100.00		107,478	-6,555
R+V Personen Holding GmbH 1)	Wiesbaden	100.00		1,230,426	105,903
R+V Rechtsschutz-Schadenregulierungs-GmbH 1)	Wiesbaden	100.00		329	51 *
R+V Service Center GmbH 1) 4)	Wiesbaden	100.00		2,869	- *
R+V Service Holding GmbH 1) 4)	Wiesbaden	100.00		204,236	-
R+V Treuhand GmbH 1)	Wiesbaden	100.00		58	7 *
R+V Versicherung AG 4)	Wiesbaden	92.28		2,397,253	-
RC II S.a.r.l. 1)	Munsbach, Luxembourg	90.00		8,982	124 *
Reisebank AG 1) 3)	Frankfurt am Main	100.00		19,267	10,148
RUV Agenturberatungs GmbH 1)	Wiesbaden	100.00		353	86 *
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		530,249	7,974 *
RV AIP S.C.S. SICAV-SIF - RV TF 6 Infra Debt II 1)	Luxembourg, Luxembourg	94.40		108,287	124 *
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		187,023	6,268 *
RV AIP S.C.S. SICAV-SIF - TF 3 Primaries 1)	Luxembourg, Luxembourg	99.25		5,682	-318 *
RV AIP S.C.S. SICAV-SIF - TF 4 Secondaries 1)	Luxembourg, Luxembourg	99.25		10,022	-129 *
RV AIP S.C.S. SICAV-SIF - TF 5 Co-Investments 1)	Luxembourg, Luxembourg	99.25		23,667	-166 *
RV Securitisation I S.à.r.l. 1)	Senningerberg, Luxembourg	100.00		12	- *
RV Securitisation I S.à.r.l. - Aviation Opportunities I 1)	Senningerberg, Luxembourg	-		n/a	n/a
RVL Grundstücks GmbH & Co. KG 1)	Frankfurt am Main	100.00		393,010	-
RVL Grundstücksverwaltung GmbH 1)	Wiesbaden	100.00		n/a	n/a
S2 Shipping and Offshore Ptd Ltd. i.L.	Singapore, Singapore	100.00		-	-6,516 *
Schwäbisch Hall Facility Management GmbH 1)	Schwäbisch Hall	100.00		4,329	-919
Schwäbisch Hall Kreditservice GmbH 1) 4)	Schwäbisch Hall	100.00		18,775	-
Schwäbisch Hall Transformation GmbH 1)	Schwäbisch Hall	100.00		3,187	-1,133
Schwäbisch Hall Wohnen GmbH 1)	Schwäbisch Hall	100.00		1,425	-1,878
Shipping and Intermodal Investment Management Fund I LLC	Majuro, Marshall Islands	-		-7,785	-4,266 *

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Sprint Italia S.r.l. 1)	Bolzano, Italy	51.00		261	-56 *
Sprint Sanierung GmbH 1)	Cologne	100.00		26,754	1,372 *
Grand Cayman, Cayman					
Taiping Fontainburg DVB Aviation Capital L.P. i.L.	Islands	-		n/a	n/a
TeamBank AG Nürnberg 2) 4)	Nuremberg	92.60		539,699	-
Twenty Holding Private Limited	Singapore, Singapore	-		-	- *
UI Infrastruktur Management SARL 1)	Senningerberg, Luxembourg	100.00		45	8
UI Management S.a.r.l. 1)	Senningerberg, Luxembourg	100.00		16	1 *
UI Private Debt Management S.à r.l. 1)	Senningerberg, Luxembourg	100.00		12	- *
UI Vario: 2 issued by Union Investment Luxembourg S.A. 1)	Senningerberg, Luxembourg	-		n/a	n/a
UII Anzinger Strasse 29 Verwaltung LP GmbH 1)	Hamburg	100.00		41	15
UII Issy 3 Moulins SARL 1)	Paris, France	100.00		6	-1 *
UII MS Immobilien GP GmbH 1)	Hamburg	100.00		30	4
UII MS Immobilien Verwaltung LP GmbH 1)	Hamburg	100.00		40	13
UII PSD KN ImmoInvest GP GmbH 1)	Hamburg	100.00		135	26
UII SCE Management GP GmbH 1)	Hamburg	100.00		92	14
UII Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		23	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. 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
UIN-Fonds Nr. 1086 1)	Frankfurt am Main	-		n/a	n/a
UIR Verwaltungsgesellschaft mbH 1)	Hamburg	100.00		85	-6
UIW Austria Verwaltungs GmbH 1)	Erlangen	100.00		23	-2 *
UMB Unternehmens-Managementberatungs GmbH 1)	Wiesbaden	100.00		5,112	1,359 *
Union Asset Management Holding AG 2)	Frankfurt am Main	96.59		1,693,990	321,427
Union Investment Austria GmbH 1)	Vienna, Austria	100.00		19,090	2,135
Union Investment Institutional GmbH 1)	Frankfurt am Main	100.00		103,970	-
Union Investment Institutional Property GmbH 1)	Hamburg	90.00		44,882	16,020
Union Investment Luxembourg S.A. 1)	Senningerberg, Luxembourg	100.00		389,343	128,905
Union Investment Privatfonds GmbH 1)	Frankfurt am Main	100.00		980,942	-
Union Investment Real Estate Asia Pacific Pte. Ltd. 1)	Singapore, Singapore	100.00		883	-46 *
Union Investment Real Estate Austria AG 1)	Vienna, Austria	94.50		9,517	1,446
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		3,358	1,301 *
Union Investment Real Estate GmbH 2)	Hamburg	94.50		190,289	55,812
Union Investment Service Bank AG 1)	Frankfurt am Main	100.00		113,115	-
Union IT-Services GmbH 1) 5)	Frankfurt am Main	100.00		5,110	-2,524
Union Service-Gesellschaft mbH 1) 5)	Frankfurt am Main	100.00		11,155	-1,505
Unterstützungskasse der Condor Versicherungsgesellschaften GmbH 1)	Hamburg	66.67		26	- *
URA Verwaltung GmbH 1)	Vienna, Austria	100.00		32	-5
VisualVest GmbH 1)	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		5,182	-15 *
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	-
VR Factoring GmbH 4)	Eschborn	100.00		39,385	-
VR GbR 2)	Frankfurt am Main	100.00		205,107	60,140
VR HYP GmbH 1)	Hamburg	100.00		25	- *
VR Kreditservice GmbH 1) 4)	Hamburg	100.00		25	-
VR Makler GmbH 1)	Hannover	100.00		135	-1,983 *
VR Mittelstandskapital Unternehmensbeteiligungs GmbH 2)	Düsseldorf	100.00		7,855	827 *
VR Payment GmbH	Frankfurt am Main	90.00		57,392	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	-

SUBSIDIARIES

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
VR Smart Guide GmbH 1)	Eschborn	100.00		1,135	-4,647
VR WERT Gesellschaft für Immobilienbewertung mbH 1) 4)	Hamburg	100.00		50	- *
VR-Leasing Beteiligungs GmbH 1)	Eschborn	100.00		98,637	-6
WBS Wohnwirtschaftliche Baubetreuungs- und Servicegesellschaft mbH 1)	Stuttgart	94.90		26,308	2,430
Zaventem Leasing (Ireland) Limited i.L.	Dublin, Ireland	-		n/a	n/a
ZBI Beteiligungs GmbH 1)	Erlangen	100.00		25	-21 *
ZBI Fondsmanagement GmbH 1)	Erlangen	100.00		8,133	-
ZBI Fondsverwaltungs GmbH 1)	Erlangen	100.00		2,554	5,454
ZBI GmbH 1)	Erlangen	94.90		14,662	5,297
ZBI Immobilienmanagement GmbH 1)	Erlangen	100.00		11,913	-
ZBI Professional Fondsverwaltungs GmbH 1)	Erlangen	100.00		208	358 *
ZBI Regiofonds Wohnen GF GmbH 1)	Erlangen	100.00		7	- *
ZBI Regiofonds Wohnen GmbH 1)	Erlangen	100.00		15	2 *
ZBI Vertriebskoordinations GmbH i.L. 1)	Erlangen	100.00		27	-11
ZBI Vorsorge - Plan Wohnen GF GmbH 1)	Erlangen	100.00		22	2 *
ZBI Vorsorge - Plan Wohnen GmbH 1)	Erlangen	100.00		22	1 *
ZBI Wohnen Plus Verwaltungs GmbH 1)	Erlangen	100.00		21	- *
ZBI WohnWert Verwaltungs GmbH 1)	Erlangen	100.00		16	- *
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		8,818	1,159 *
BEA Union Investment Management Limited 1)	Hong Kong, Hong Kong	49.00		61,415	10,990 *
Deutsche WertpapierService Bank AG	Frankfurt am Main	50.00		284,886	1,478
DZ BANK Galerie im Städel Kunstverwaltungsgesellschaft mbH	Frankfurt am Main	50.00		18	-4 *
Norafin Verwaltungs GmbH 1)	Mildenaue	44.72	45.63	25,780	995 *
PolarXpress SCS 1)	Wasserbillig, Luxembourg	58.82		n/a	n/a
Prvá stavebná sporiteľ'na, a.s. 1)	Bratislava, Slovakia	32.50		291,197	6,585
R+V Kureck Immobilien GmbH Grundstücksverwaltung Braunschweig 1)	Wiesbaden	50.00		6,743	-67 *
Trustlog GmbH 1)	Hamburg	50.00		n/a	n/a
Versicherungs-Vermittlungsgesellschaft des Sächsischen Landesbauernverbandes mbH 1)	Dresden	50.00		215	2 *
Versicherungs-Vermittlungsgesellschaft mbH des Bauernverbandes Mecklenburg-Vorpommern e.V. (VVB) 1)	Neubrandenburg	50.00		282	51 *
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Brandenburg (VVB) 1)	Teltow	50.00		26	4 *
Versicherungs-Vermittlungsgesellschaft mbH des Landesbauernverbandes Sachsen-Anhalt e.V. (VVB) 1)	Magdeburg	50.00		74	4 *
Zhong De Zuh Fang Chu Xu Yin Hang (Sino-German-Bausparkasse) Ltd. 1)	Tianjin, China	24.90		404,049	10,290

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		30	1 *
aku.beteiligung GmbH 1)	Aalen	46.04		7,711	389 *
axytos Finance Holding GmbH 1)	Langen	25.12		43	-6 *
Bankenkonsortium der Zenit GmbH, GbR	Düsseldorf	33.30		-	- *
bbv-service Versicherungsmakler GmbH 1)	Munich	25.20		2,398	407 *
Berlin-AI Management S.à r.l. 1)	Luxembourg, Luxembourg	20.00		7	2
Blitz SKB GmbH 1)	Giessen	41.76		n/a	n/a
Bookwire Holding GmbH 1)	Frankfurt am Main	49.00		14,951	1,508 *
Cygnalabs Group GmbH 1)	Heilbronn	26.03		8,355	-303 *
DeSign Verbund GmbH 1)	Hochstadt am Main	49.80		1,520	-735 *
DITTRICH + CO Holding GmbH 1)	Frankfurt am Main	49.85		9,949	-17 *
Dr. Förster Holding GmbH 1)	Neu-Isenburg	20.06		-	-1,973 *
Erwerbergesellschaft 2022 I GmbH 1)	Frankfurt am Main	50.29	49.90	n/a	n/a
European Convenience Food GmbH 1)	Garrel	41.16	41.52	18,199	96 *
GBS Beteiligungsgesellschaft mbH 1)	Bayreuth	42.33		7,812	486 *
GHM MPP Reserve GmbH 1)	Remscheid	50.00		343	-2 *
GHM MPP Verwaltungs GmbH 1)	Remscheid	50.00		22	- *
Glas Strack Holding GmbH 1)	Bochum	51.06	49.90	n/a	n/a
Goldeck Zetti Beteiligungsgesellschaft mbH 1)	Leipzig	39.23		34,151	2,402 *
Groneweg Verwaltungsgesellschaft mbH 1)	Greven	49.00		20,347	602 *
Impleco GmbH 1)	Berlin	50.00		3,914	-2,617
Informatik Consulting Systems Holding GmbH 1)	Stuttgart	49.83	49.43	8,655	-231 *
Kapitalbeteiligungsgesellschaft für die mittelständische Wirtschaft in Nordrhein-Westfalen mbH - KBG -	Neuss	23.60		5,666	336 *
KTP Holding GmbH 1)	Bous	37.36		45,214	3,630 *
Kunststoffpartner Verwaltung GmbH 1)	Frankfurt am Main	49.00		n/a	n/a
Ostertag DeTeWe Group GmbH 1)	Walldorf	58.52	49.90	9	-51 *
payfree GmbH 1)	Düsseldorf	60.00		2,694	-831 *
Pesca Management GmbH 1)	Munich	49.30		13,391	-19 *
Solectrix Holding GmbH 1)	Fürth	49.90		10,425	-46 *
Treuhand- und Finanzierungsgesellschaft für Wohnungs- und Bauwirtschaft mit beschränkter Haftung. Treufinanz	Düsseldorf	33.14		1,434	-193 *
Votronic Elektronik-Systeme GmbH 1)	Lauterbach	49.80		4,713	2,131 *
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
amberra GmbH 2)	Berlin	20.00		n/a	n/a
Ares Infrastructure Debt Fund IV (EUR), L.P. 1)	Luxembourg, Luxembourg	39.84		468,409	31,709 *
Ares Infrastructure Debt Fund V (EUR), L.P. 1)	Luxembourg, Luxembourg	82.14		91,908	3,887 *
Assiconf S.r.l. 1)	Turin, Italy	20.00		88	2 *
ASSICRA Servizi Assicurativi Banche di Credito Cooperativo Abruzzo e Molise S.r.l. 1)	Pescara, Italy	25.00		516	29 *
BREDS IV Aggregator SCSp 1)	Luxembourg, Luxembourg	90.91		119,711	7,682 *
Burghofspiele GmbH 1)	Eltville	20.00		-	-21 *
Bürgschaftsbank Brandenburg GmbH	Potsdam	25.31		34,206	2,105 *
Bürgschaftsbank Mecklenburg-Vorpommern GmbH	Schwerin	30.38		17,352	267 *
Bürgschaftsbank Sachsen-Anhalt GmbH	Magdeburg	29.73		17,000	423 *
Bürgschaftsbank Thüringen GmbH	Erfurt	22.13		27,524	240 *
Cheyne Real Estate Credit (CRECH) Fund IV Loans SCS SICAV-SIF 1)	Luxembourg, Luxembourg	20.83		366,933	-8,807 *
Cheyne Real Estate Credit Holdings VII 1)	Luxembourg, Luxembourg	21.56		401,935	1,296 *
CMMT Partners L.P. 1)	Camden, USA	47.07		815,845	53,796 *
Credit Suisse Global Infrastructure SCA SICAR 1)	Luxembourg, Luxembourg	30.09		8,612	-100 *
DigitalBridge II Foreign Feeder-MV, SCSp 1)	Luxembourg, Luxembourg	68.10		3,372,756	-87,446 *
EIG Global Project Fund V-A, L.P. 1)	Wilmington, USA	51.28		80,017	4,428 *
Evolit Slovakia s.r.o. 1)	Poprad, Slovakia	75.00		n/a	n/a
Finatem II GmbH & Co. KG 1)	Frankfurt am Main	20.20		3,595	-9,241 *
FREUNDE DER EINTRACHT FRANKFURT Aktiengesellschaft 1)	Frankfurt am Main	32.05	19.84	7,644	3,024 *
GENOPACE GmbH 1) 5)	Berlin	27.49		200	- *
Global Energy & Power Infrastructure Fund III E, SCSp 1)	Luxembourg, Luxembourg	35.34		121,901	9,883 *
Global Infrastructure Partners III-C2, L.P. 1)	New York, USA	27.97		524,421	104,476 *
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		233,613	-26,664 *
Hudson Chemical Tankers Ltd	Middlesex, UK	25.00		-	- *
ICG Infrastructure Equity Fund I SCSp 1)	Senningerberg, Luxembourg	24.54		n/a	n/a
KKR Global Impact Fund II EEA Feeder SCSp 1)	Luxembourg, Luxembourg	95.33		n/a	n/a
KKR North America Fund XIII EEA Feeder SCSp 1)	Luxembourg, Luxembourg	95.43		-595	-595 *
Kreditgarantiegemeinschaft in Baden-Württemberg Verwaltungs-GmbH	Stuttgart	20.00		1,023	- *
Macquarie Asia Infrastructure Fund 2 SCSp 1)	Luxembourg, Luxembourg	50.48		300,402	14,284 *
Macquarie Asia Infrastructure Fund EU Feeder L.P. 1)	London, UK	100.00		102	6 *
MB Asia Real Estate Feeder (Scot.) L.P. 1)	Edinburgh, UK	34.80		833	-53 *
Medico 12 GmbH & Co. KG 1)	Frankfurt am Main	99.98		48	-10 *
paydirekt GmbH	Frankfurt am Main	33.33		24,074	993 *
RV-CVIII Holdings, LLC 1)	Camden, USA	100.00		25,412	-14,763 *
Schroder Property Services B.V. S.à.r.l. 1)	Senningerberg, Luxembourg	30.00		32,546	-88 *
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		176,420	13,347 *
Swiss Life Health Care IV SICAV-FIS 1)	Luxembourg, Luxembourg	46.51		91,871	8,367 *
Technology DZ Venture Capital Fund I GmbH & Co. KG i.L. 1)	Munich	34.33		8,483	-59 *
TF H III Technologiefonds Hessen Gesellschaft mit beschränkter Haftung	Wiesbaden	25.00		6,493	-553 *
TF H Technologie-Finanzierungsfonds Hessen Gesellschaft mit beschränkter Haftung (TF H GmbH) i.L.	Wiesbaden	33.33		505	-24 *
Tishman Speyer Brazil Feeder (Scots/D), L.P. 1)	Edinburgh, UK	100.00		4,267	-2,509 *
Tishman Speyer European Real Estate Venture VIII Parallel SCSp 1)	Luxembourg, Luxembourg	55.88		53,087	9,943 *
TRUUCO GmbH 2)	Frankfurt am Main	49.00		n/a	n/a
TXS GmbH 1)	Hamburg	24.50		200	402 *
VAD Beteiligungen GmbH	Berlin	25.16		18,244	-6 *
VBI Beteiligungs GmbH 1)	Vienna, Austria	24.50		3,832	3,797 *
VR-NetWorld GmbH 2)	Bonn	43.48		6,762	777 *

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		637,235	38,068 *
EDEKABANK Aktiengesellschaft	Hamburg	8.35		166,890	7,551 *
Raiffeisendruckerei GmbH 1)	Neuwied	7.88		36,656	2,738 *
SCHUFA Holding AG 2)	Wiesbaden	19.73		146,880	48,427 *

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		1,175	-1,412 *
ABE Clearing S.A.S a Capital Variable	Paris, France	2.08		42,641	6,108 *
AERS Consortio AG 1)	Stuttgart	16.50		114	-18 *
AgroRisk Polska Spółka z ograniczona odpowiedzialnoscia 1)	Poznań, Poland	15.00		n/a	n/a
AKA Ausfuhrkredit-Gesellschaft mit beschränkter Haftung	Frankfurt am Main	0.31		273,601	14,936 *
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	10.49		3,401	-2,019 *
ARDIAN Infrastructure Fund V B S.C.S., SICAV-RAIF 1)	Luxembourg, Luxembourg	13.58		400,052	64,438 *
Assicoop-Assicurazioni Cooperative S.r.l. 1)	Catania, Italy	0.41		n/a	n/a
assistance partner GmbH & Co. KG 1)	Munich	5.01		1,248	248 *
Atruvia AG 2)	Frankfurt am Main	0.35		449,045	9,936 *
Bank Polskiej Spoldzielczosci Spolka Akcyjna	Warsaw, Poland	0.91		199,641	7,099 *
BayBG Bayerische Beteiligungsgesellschaft mbH	Munich	9.38		258,865	14,219 *
Bayerische Raiffeisen-Beteiligungs-Aktiengesellschaft 2)	Beilngries	1.85		879,428	54,032 *
Berliner Volksbank eG 1)	Berlin	-	0.10	1,164,826	19,090 *
Beteiligungs-Aktiengesellschaft der bayerischen Volksbanken 1)	Pöcking	1.14		232,160	159 *
BGG Bayerische Garantiegesellschaft mit beschränkter Haftung für mittelständische Beteiligungen	Munich	13.15		61,659	4,269 *
Blackrock Renewable Income Europe Fund 1)	Dublin, Ireland	7.69		564,384	1,760 *
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		281	126 *
BTG Beteiligungsgesellschaft Hamburg mbH	Hamburg	10.00		5,296	288 *
Bürgschaftsbank Bremen GmbH	Bremen	4.86		8,576	181 *
Bürgschaftsbank Hamburg GmbH	Hamburg	6.36		27,318	379 *
Bürgschaftsbank Hessen GmbH	Wiesbaden	15.87		23,749	943 *
Bürgschaftsbank Nordrhein-Westfalen GmbH					
Kreditgarantiegemeinschaft	Neuss	15.75		40,284	1,040 *
Bürgschaftsbank Rheinland-Pfalz GmbH	Mainz	14.31		17,356	132 *
Bürgschaftsbank Sachsen GmbH	Dresden	14.66	16.59	44,437	177 *
Bürgschaftsbank Schleswig-Holstein Gesellschaft mit beschränkter Haftung	Kiel	11.79		42,089	181 *
Cash Logistik Security AG 1)	Düsseldorf	4.10		5,031	1,300 *
CASSA CENTRALE BANCA - CREDITO COOPERATIVO ITALIANO S.P.A.	Trento, Italy	3.69		1,143,337	46,064 *
CI IV US AIV Non-QFPF K/S 1)	Copenhagen K, Denmark	15.24		115,022	-15,628 *
CLS Group Holdings AG	Lucerne, Switzerland	0.69		373,106	-9,894 *
Copenhagen Infrastructure Energy Transition Fund I K/S 1)	Copenhagen, Denmark	10.08		669,872	269,439 *
Copenhagen Infrastructure Energy Transition Fund I US Non-QFPF K/S 1)	Copenhagen, Denmark	10.08		n/a	n/a
Copenhagen Infrastructure III K/S 1)	Copenhagen K, Denmark	5.94		348,416	34,464 *
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	6.17		669,872	269,439 *
Copenhagen Infrastructure IV K/S 1)	Copenhagen K, Denmark	7.15		459,636	70,012 *
Crown Secondaries Special Opportunities II S.C.S. 1)	Luxembourg, Luxembourg	7.71		976,378	247,420 *
Crown Secondaries Special Opportunities III Feeder SCSp 1)	Luxembourg, Luxembourg	15.82		n/a	n/a
Curzon Capital Partners III LP 1)	London, UK	11.99		57,268	-1,612 *
Curzon Capital Partners IV LP 1)	London, UK	10.73		228,276	51,821 *
Deutsche Bauernsiedlung - Deutsche Gesellschaft für Landentwicklung (DGL) mbH 1)	Frankfurt am Main	16.26		5,864	-3,869 *
Deutsche Börse Commodities GmbH	Frankfurt am Main	16.20	14.48	10,479	7,109 *
DG IMMOBILIEN MANAGEMENT Gesellschaft mbH	Frankfurt am Main	5.01		22,504	5,405 *
DG Nexolution eG 2)	Wiesbaden	1.57	1.56	66,923	445 *
DI Rathaus-Center Pankow Nr.35 KG 1)	Düren	3.86		27,574	2,303 *
Die Familiengenosenschaft eG 1)	Mannheim	4.71		n/a	n/a
Domus Beteiligungsgesellschaft der Privaten Bausparkassen mbH Berlin 1)	Berlin	14.13		28	-2 *
EIG Energy Fund XVI (Scotland) L.P. 1)	Edinburgh, UK	14.02		391,961	54,680 *
EIG Energy Fund XVII (Scotland) L.P. 1)	Edinburgh, UK	15.61		582,147	-22,906 *
EPI Company SE	Brussels, Belgium	7.46		n/a	n/a
Euro Capital S.A.S. 1)	Metz, France	4.44		30,826	269 *
EURO Kartensysteme GmbH	Frankfurt am Main	19.60		12,442	150 *
European Property Investors Special Opportunities, L.P. 1)	London, UK	6.35		24,403	23,893 *
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	3,006 *
GBK Holding GmbH & Co. KG 1)	Kassel	0.02		462,484	19,643 *
GDV Dienstleistungs-GmbH 1)	Hamburg	2.82		n/a	n/a

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
GI Data Infrastructure Fund-A LP 1)	Wilmington, USA	13.60		841,563	70,936 *
GIP Capital Solutions Feeder Fund II (EEA) 1)	Luxembourg, Luxembourg	15.00		77,699	-1,412 *
GLADBACHER BANK Aktiengesellschaft von 1922	Mönchengladbach	17.53		40,078	1,697 *
Global Infrastructure Partners IV-C2, L.P. 1)	Luxembourg, Luxembourg	17.17		617,582	42,308 *
Global Renewable Power Infrastructure Fund III (C), SCSp 1)	Luxembourg, Luxembourg	6.40		412,696	-7,088 *
GMB Systems GmbH & Co. KG 1)	Hamburg	10.75		n/a	n/a
GMS Mitarbeiter Beteiligungsgesellschaft UG & Co.KG 1)	Paderborn	4.00		968	-5 *
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		11,364	-652 *
HANDWERKSBAU NIEDERRHEIN AKTIENGESELLSCHAFT	Düsseldorf	10.15		29,481	1,874 *
heal.capital I GmbH & Co. KG 1)	Berlin	0.99		25,050	-2,492 *
Hines European Value Fund SCSp 1)	Luxembourg, Luxembourg	13.87		638,455	101,102 *
Immigon portfolioabbau ag i.A.	Vienna, Austria	3.79		726,692	8,811 *
Immo Feest en Cultuurpaleis Oostende SA 1)	Brussels, Belgium	-		15,530	-480 *
Interessengemeinschaft Frankfurter Kreditinstitute GmbH	Frankfurt am Main	7.01		24,176	8,494 *
IVS Immobilien GmbH 1)	Schiffweiler	6.00		26	- *
K in Kortrijk S.A. 1)	Brussels, Belgium	-		88,265	-2,615 *
KLAAS MESSTECHNIK GmbH 1)	Seelze-Harenberg	15.00		61	20 *
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		11,637	756 *
MBG Mittelständische Beteiligungsgesellschaft Baden-Württemberg Gesellschaft mit beschränkter Haftung	Stuttgart	9.94	8.33	92,210	8,859 *
MBG Mittelständische Beteiligungsgesellschaft Rheinland-Pfalz mbH	Mainz	9.80	11.11	16,702	349 *
MBG Mittelständische Beteiligungsgesellschaft Schleswig-Holstein mbH	Kiel	14.59	15.22	47,094	2,884 *
MED Platform II S.L.P. 1)	Lyon, France	4.32		n/a	n/a
Mittelständische Beteiligungsgesellschaft Berlin-Brandenburg mbH	Potsdam	8.89		25,346	1,191 *
Mittelständische Beteiligungsgesellschaft Mecklenburg-Vorpommern mbH	Schwerin	16.00		19,341	1,379 *
Mittelständische Beteiligungsgesellschaft Niedersachsen (MBG) mit beschränkter Haftung	Hannover	19.92		16,427	1,330 *
Mittelständische Beteiligungsgesellschaft Sachsen mbH	Dresden	9.38		49,447	1 *
Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt (MBG) mbH	Magdeburg	19.84		24,673	403 *
Mittelständische Beteiligungsgesellschaft Thüringen mbH	Erfurt	10.28		28,607	1,185 *
Münchener Hypothekbank eG 2)	Munich	1.01		1,682,329	59,071 *
Munster S.A. 1)	Senningerberg, Luxembourg	0.08		1,450	-473 *
Niedersächsische Bürgschaftsbank (NBB) Gesellschaft mit beschränkter Haftung	Hannover	17.68		32,694	2,554 *
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	-		10,456	-484 *
PANELLINIA BANK SOCIETE ANONYME (under special liquidation)	Athens, Greece	8.42	5.28	-	- *
Partners Group Direct Equity IV (EUR) S.C.A., SICAV-RAIF 1)	Luxembourg, Luxembourg	6.84		1,268,470	133,732 *
Partners Group Direct Infrastructure 2020 (EUR), L.P.S.C.Sp.,SICAV-RAIF 1)	Luxembourg, Luxembourg	15.80		210,050	2,342 *
Partners Group Global Mezzanine 2007 S.C.A., SICAR 1)	Luxembourg, Luxembourg	2.24		45,799	1,580 *

SHAREHOLDINGS OF LESS THAN 20%

Name	Location	Shareholding	Voting rights, if different	Equity in € '000	Profit/loss in € '000
Prosa Beteiligungs GmbH & Co. KG 1)	Frankfurt am Main	15.63		587	-408 *
Protektor Lebensversicherungs-AG 1)	Berlin	5.27		7,854	2 *
Raiffeisen Waren-Zentrale Rhein-Main eG	Cologne	2.00		151,222	7,599 *
Raiffeisen-Kassel A-Beteiligungs GmbH & Co. KG	Kassel	8.22		212,123	18,734 *
Raiffeisen-Kassel B-Beteiligungs GmbH & Co. KG	Kassel	8.22		212,123	18,734 *
Royale 120 S.A. 1)	Brussels-Zaventem, Belgium	0.01		976	-129 *
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	0.25		601,053	108,755 *
Saarländische Wagnisfinanzierungsgesellschaft mbH	Saarbrücken	2.59		8,609	342 *
SALEG Sachsen-Anhaltinische Landesentwicklungs GmbH 1)	Magdeburg	1.15		13,878	414 *
Sana Kliniken AG 1)	Ismaning	0.69		1,017,094	66,685 *
Schulze-Delitzsch-Haus, eingetragene Genossenschaft 1)	Bonn	0.97		1,702	210 *
SGB-Bank Spółka Akcyjna	Poznań, Poland	0.19		171,616	2,832 *
Société de la Bourse de Luxembourg S.A. 1)	Senningerberg, Luxembourg	0.04		132,577	9,242 *
Splash Investment GmbH 1)	Kerpen	11.68		213,713	-118 *
Strategie Invest SICAV 1)	Zurich, Switzerland	0.07		n/a	n/a
Süddeutsche Zuckerrübenverwertungs-Genossenschaft eG	Ochsenfurt	4.44	4.55	212,806	11,132 *
Target Partners Capital GmbH & Co. KG 1)	Munich	10.00	10.01	273	-8 *
Technologiezentrum Schwäbisch Hall GmbH 1)	Schwäbisch Hall	4.17	5.56	577	- *
Teko - Technisches Kontor für Versicherungen Gesellschaft mit beschränkter Haftung 1)	Düsseldorf	10.00		142	31 *
True Sale International GmbH	Frankfurt am Main	7.69		4,536	-88 *
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 *
UIR Belgique 1 S.A. 1)	Brussels, Belgium	0.13		68,596	2,084 *
UIR Le Président 1 1)	Brussels-Zaventem, Belgium	-	0.06	4,940	-1,599 *
UIR MU III S.A. de C.V. 1)	Mexico City, Mexico	-		6,759	-706 *
Verimi GmbH	Berlin	5.41		33,006	-26,623 *
Visa Inc.	San Francisco, USA	-		33,197,033	11,421,885 *
VNT Automotive GmbH 1)	Langenwang, Austria	10.00		10,110	1,195 *
VR-Bank Heilbronn Schwäbisch Hall eG 1)	Schwäbisch Hall	-	0.01	259,661	11,929 *
VR-IMMOBILIEN-LEASING GmbH 1)	Eschborn	6.00		15,145	675 *
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 Vorsorge-Plan Wohnen 1 GmbH & Co. KG 1)	Erlangen	0.57		1,970	45 *
ZG Raiffeisen eG	Karlsruhe	1.01	0.02	69,084	4,192 *

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, February 27, 2023

DZ BANK AG
Deutsche Zentral-Genossenschaftsbank

The Board of Managing Directors



Fröhlich



Dr. Riese



Benkredde



Berghaus



Dr. Brauckmann



Brouzi



Speth



Ullrich

Independant auditor's report¹

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 2022, 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 2022, 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 2022.

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 2022, and of its financial performance for the financial year from 1 January to 31 December 2022, 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 Annual 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 2022. 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:

- ① Risk provisions for loans and advances to customers measured at amortised cost**
- ② 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**
- ③ Measurement of Bauspar-specific provisions (provisions relating to building society operations)**
- ④ 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)**
- ⑤ 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:

① 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 € 198,125 million (31.6 % of total assets) are reported under the balance sheet item "Loans and advances to customers". As of 31 December 2022, there is an allowance for credit losses for the loan portfolio consisting of specific and general loan loss provisions of € 1,954 million in total. The measurement of risk provisioning in customer credit business is determined in particular by the structure and quality of the credit portfolio, macroeconomic factors and the estimates of the executive directors with regard to future loan defaults, among other things, also considering the further development of macroeconomic factors (in particular effects of Ukraine war, increase in interest rates and inflation rate, aftermath of the COVID-19 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 macroeconomic conditions, the Group updated the macroeconomic forecasts and made expert-based adjustments to the model-based probability of default profiles (shift factors) and classified the credit risk of not individually impaired loans as a whole as significantly increased for particularly affected portfolios. In calculating risk provisions, the Group also incorporated 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 existing uncertainties in customer behaviour due to new legal frameworks 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 are highly significant for the assets, liabilities and financial performance of the Group and also involve considerable scope for judgment of the executive directors with regard to macroeconomic forecasts and the shift factors used, the overall rating of the credit risk of portfolios, 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 impact of macroeconomic factors, have a significant influence on the recognition and amount of any necessary 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 situation and the recoverability of the corresponding collateral. We also understood and assessed the executive directors' assessment of the effects of the macroeconomic factors the Corona pandemic and their consideration in the valuation of the loan 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. Moreover, we have traced and assessed the justifications for the overall classification of credit default risk of individual portfolios as significantly increased. 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 assure 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".

② 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 € 23,570 million (3.8 % of total assets) are reported under the balance sheet items "Loans and advances to customers", "Financial assets held for trading", "Investments" and "Investments held by insurance companies" 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 development of interest rates and other macroeconomic conditions. 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 judgments 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 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 assure 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".

③ 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 €1,053 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 choice 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 behaviour 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 by the executive directors. The forecast quality of the models used for the Bauspar-specific simulation calculation is validated on an annual basis. If the future behaviour of Bauspar customers is influenced by factors that are not taken into account in the simulation calculation, adjustments are made by the executive directors. 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 Group 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 during our audit.

- ② Given the significance of Bauspar-specific provisions for the Group's overall business, we assessed as part of our audit, together with our internal specialists for Bauspar-specific mathematics the methods used by the Group for the Bauspar-specific simulation calculations, and the estimates, assumptions and adjustments to the model results made by the executive directors. Among other things, the assessment was based on our industry expertise and experience. 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, evaluated the consistent application of the underlying model and assessed the rationale for the adjustment of model results.

Based on our audit procedures, we were able to assure that the estimates, the assumptions and the adjustment of model results 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.

④ **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 € 16,845 million (2.7 % 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 increased inflation rates 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 and the valuation parameters 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, we assessed as part of our audit together with our internal actuaries the methods and the valuation parameters used by the Group as well as the assumptions made by the executive directors. 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 detail 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 increased inflation rates on the lines of business concerned.

Based on our audit procedures, we were able to assure 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.

5 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 € 75,200 million (12.0 % 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 low interest rate environment on the capital markets, on 1 March 2011 an amendment to the 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 plans 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, we assessed as part of our audit together with our internal valuation specialists the assumptions made by the executive directors and the methods used by the Group. 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 detail 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 consideration 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 assure 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 to comply with §§ 289b to 289e HGB and with §§ 315b to 315c 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 (i.e., fraudulent financial reporting and misappropriation of assets) 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.

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- 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, actions taken to eliminate threats or safeguards applied.

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 `dzbankkonzern-2022-12-31.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 2022 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 (06.2022)) 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 25 May 2022. We were engaged by the supervisory board on 1 November 2022. 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 filed in the company register – 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, 3 March 2023

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft



sgd. Schmitz
Wirtschaftsprüfer
(German Public Auditor)



sdg. Kleinschmidt
Wirtschaftsprüfer
(German Public Auditor)

Report of the Supervisory Board



Henning Deneke-Jöhrens, Chairman of the Supervisory Board of DZ BANK AG

In 2022, 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.

Despite the war in Ukraine, the DZ BANK Group did not need to significantly adjust its strategic focus in 2022. In the key areas of collaboration identified at group level as offering potential for reinforcing the future viability and profitability of the group, the entities in the DZ BANK Group continued to forge ahead with various strategic programs such as 'Verbund First 4.0' at DZ BANK AG. In the reporting year, strategic activities were strongly focused on the topics of sustainability and digitalization, which continue to be issues of major importance for the entities in the DZ BANK Group, both in their core businesses and in their own operations. Important steps included the transformation of the existing Group Corporate Responsibility Committees (GCRC) into the Group Sustainability Committee. This groupwide body is made up of members of the Boards of Managing Directors

of the DZ BANK group entities and its task is to intensify dialogue and information sharing on sustainability-related matters. Another crucial step is the progressive digitalization of customer interfaces. In 2022, significant positive effects were achieved in these key areas.

Meetings of the Supervisory Board

The Supervisory Board held five ordinary meetings in 2022. 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. The reports focused on topics such as the impact of the war in Ukraine on DZ BANK, the merger of DVB Bank into DZ BANK AG, and the capital situation of the DZ BANK Group. Concerning the latter, the Supervisory Board dedicated particular attention to the (temporary) adverse impact on the capital situation arising from accounting changes at R+V Versicherung AG in connection with IFRS reporting rules.

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 2021 relating to DZ BANK AG and the DZ BANK Group were further matters considered by the Supervisory Board. The Supervisory Board received the report from PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, (PwC) on the audit of the single-entity financial statements for the year ended December 31, 2021 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, 2021, 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, 2021 in accordance with the recommendation of the Audit Committee. In further deliberations, the Supervisory Board acknowledged the 2021 Sustainability Report of the DZ BANK Group, which included the combined 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 the DZ BANK Group and DZ BANK AG for 2021, which the Supervisory Board had engaged the auditor 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 2021 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 25, 2022. 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, 2022 and as auditor for the review of the group's half-year financial report for the period ended June 30, 2022 and any other interim financial statements at the level of the group or DZ BANK AG prepared for periods up to the 2023 Annual General Meeting.

Under items scheduled for regular discussion, the Supervisory Board examined and deliberated on the strategic planning in the DZ BANK Group for the period from 2023 to 2027 in the third and fourth quarters of 2022. This included discussing the recovery planning, which is required by law. Operational planning for DZ BANK AG and the DZ BANK Group for 2023 was also considered and discussed by the Supervisory Board.

Moreover, the Supervisory Board examined the results of the 2022 Supervisory Review and Evaluation Process (SREP) conducted by the ECB in respect of the DZ BANK Group. Material matters raised by the supervisory

authority during this process were addressed by the Supervisory Board and discussed with representatives of the supervisory authority. These matters related to quantitative and qualitative capital and liquidity requirements/recommendations, climate risks, and the most important supervisory activities, in each case at the level of the DZ BANK Group.

The Supervisory Board also addressed all nomination and remuneration issues brought forward by the Nominations Committee, the Remuneration Control Committee, and the Risk Committee, including the appropriateness test in accordance with the German Regulation Governing Remuneration at Institutions (InstitutsVergV). It took note of these matters and passed any necessary resolutions in accordance with the recommendations submitted by the relevant committees.

Meetings of the Supervisory Board committees

Each Supervisory Board committee also met on a number of occasions in 2022. During this period, the Nominations Committee held five meetings, the Remuneration Control Committee four 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. The committee also discussed the suitability and election of two new members of the Supervisory Board and dealt with succession planning for the Board of Managing Directors, including the nomination and appointment of a new member and the renewal of the appointment of existing members of the Board of Managing Directors.

Moreover, the committee considered how changes to the EBA guidelines on the assessment of the suitability of members of the management body and key function holders (EBA/GL/2021/06) should be implemented. It examined the changes 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 Supervisory Board, as well as an updated version of the management principles for the selection and appointment of persons to the most senior management level (F1 level).

Where necessary, the Nominations Committee proposed individual resolutions to the Supervisory Board on the matters it handled.

At its meetings in 2022, the **Remuneration Control Committee** covered a wide range of remuneration issues and contractual matters relating to the Board of Managing Directors and former members of 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 2021, and the planning of targets for the members of the Board of Managing Directors in 2022, 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 InstitutsVergV.

The committee recommended new occupational pension arrangements for future members of the Board of Managing Directors to the Supervisory Board for the adoption of a resolution and carried out a test of the appropriateness of the remuneration granted to the Board of Managing Directors. 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 2022, 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 the matters it handled.

In 2022, 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, 2021 by PwC. It recommended that the Supervisory Board approve the single-entity financial statements of DZ BANK AG and the consolidated financial statements for the year ended December 31, 2021, as submitted.

Furthermore, the committee discussed the appointment of the auditor of the single-entity financial statements and the auditor of the consolidated financial statements for 2022 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 propose to the Annual General Meeting on May 25, 2022 that PwC be appointed as the auditor of the single-entity financial statements and the consolidated financial statements for the year ended December 31, 2022, and as auditor for the review of the group's half-year financial report for the period ended June 30, 2022 and any other interim financial statements at the level of the group or DZ BANK AG prepared for periods up to the 2023 Annual General Meeting.

In addition, the Audit Committee examined the half-year financial report of the DZ BANK Group for the period ended June 30, 2022 and the reports from PwC on the review of the half-year financial report and on the audit of the securities and investment services business in 2021/2022. Furthermore, the Audit Committee studied the planning for the audit of the 2022 single-entity and consolidated financial statements by PwC, discussed the auditor's areas of focus for 2022 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 separate combined non-financial report of DZ BANK AG and the DZ BANK Group for 2021. This also involved studying the findings of the external audit of the separate combined non-financial report for the DZ BANK Group and DZ BANK AG for 2021, for which PwC 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, the profitability and, in particular, the capital of the DZ BANK Group. The reporting placed particular emphasis on the capital situation of the DZ BANK Group and the aforementioned (temporary) adverse impact of accounting changes in connection with IFRS reporting rules at R+V Versicherung AG. 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, 2021 and the quarterly reports prepared by Group Audit, the annual compliance report for 2021, updates from the task force for the prevention of money laundering and fraud, updates on progress with resolution planning, the outcome of the comply-or-explain process for the audit of the group lending policy in 2021, the group IT strategy of the DZ BANK Group, and the IT strategy and outsourcing strategy of DZ BANK AG. 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.

Where necessary, the Audit Committee proposed individual resolutions to the Supervisory Board on the matters it handled.

In 2022, 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, 2021. 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 risk appetite statement, the risk strategies, and the 2023 group governance policy of 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. In each quarter of 2022, the Risk Committee also received an update based on the 'Russia/Ukraine radar', providing them with the latest developments in the war in Ukraine and its impact on DZ BANK.

The Risk Committee also scrutinized the contents of a communication from the chair of the ECB's Single Supervisory Mechanism on the subject of leveraged transactions in the DZ BANK Group and examined the current performance of asset classes that were affected by the impact of the coronavirus pandemic. This included a review of project developers in DZ HYP's business.

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 (including the merger of DVB Bank SE into DZ BANK AG). In further deliberations, the committee examined the terms and conditions in customer business. The committee also reviewed the remuneration systems at DZ BANK pursuant to section 25d (8) sentence 4 KWG and found 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 2022 work program for resolution planning for 2022 and 2023 in accordance with the Single Resolution Board's requirements.

Where necessary, the Risk Committee proposed individual resolutions to the Supervisory Board on the matters it handled.

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 2022. 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 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 are offered customized internal training sessions and information meetings to help them prepare for their tasks on the Supervisory Board of DZ BANK. This offer is meeting with good take-up. In 2022, the Supervisory Board also received internal training on various sustainability-related matters relating to the business of DZ BANK.

There were no indications of fundamental and far-reaching conflicts of interests affecting Supervisory Board members.

Cooperation with the auditor

PwC attended all meetings of the Audit Committee and provided explanations and information as requested. As a priority at these meetings, the Audit Committee discussed with PwC the audit plan and the key audit matters for the 2022 single-entity financial statements and consolidated financial statements. Moreover, the Audit Committee obtained information on the auditor's areas of focus for 2022.

For the purposes of monitoring the quality of the audit of the financial statements for the year ended December 31, 2022, 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 conducted its own evaluation of the quality of the audit using the qualitative indicators defined in the committee's audit quality review guidelines. For the purposes of this evaluation, the Audit Committee took into account any findings and conclusions from external and internal inspections of which it was aware.

Furthermore, the committee dealt with the engagement of and fee for the auditor. To monitor the independence of the auditor, the Audit Committee obtained a declaration from PwC confirming its independence. The committee also obtained information about any services other than the audit of the annual financial statements for which PwC was engaged. It adopted a resolution to update the catalog of predefined non-audit services that can be treated as approved without the Audit Committee needing to adopt a separate resolution in each individual case.

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, 2022 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 dialogue with the auditor. This dialogue 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 the DZ BANK Group and DZ BANK AG for 2022. The Supervisory Board decided to submit the report for a voluntary external audit, 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 the DZ BANK Group and DZ BANK AG for 2022 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 separate combined non-financial report complies with the statutory requirements. At its meeting on March 23, 2023, the Supervisory Board therefore approved the 2022 separate combined 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, 2022. 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, 2022 at its meeting on March 23, 2023 in line with the Audit Committee's resolution recommendation. The financial statements have therefore been adopted. Due to temporary accounting effects at R+V Versicherung AG and their impact on capital, the Board of Managing Directors and the Supervisory Board have decided to propose to the Annual General Meeting on May 24, 2023, in a resolution on the appropriation of the distributable profit reported in the 2022 single-entity financial statements amounting to €386 million, that the distributable profit for 2022 be carried forward to the next accounting period in full.

Personnel changes on the Board of Managing Directors and the Supervisory Board

With effect from September 1, 2022, Ms. Souâd Benkredda was appointed to the Board of Managing Directors of DZ BANK AG and assumed responsibility for the Capital Markets Institutional Clients and Capital Markets Retail Clients divisions. When Mr. Wolfgang Köhler stepped down from the Board of Managing Directors of DZ BANK AG with effect from December 31, 2022, Ms. Benkredda also took over responsibility for the Capital Markets Trading and Group Treasury divisions.

Employee representatives Ms. Renate Mack and Mr. Uwe Spitzbarth stepped down from the Supervisory Board on May 25, 2022 and December 31, 2022 respectively due to retirement. The Supervisory Board would like to thank Ms. Mack and Mr. Spitzbarth for their dedicated work as members of the Supervisory Board and its committees over many years. Upon Ms. Mack's retirement from the Supervisory Board, Ms. Pia Erning, who had been elected as Ms. Mack's replacement at the employee representative election on September 15, 2021, became the new Supervisory Board member with effect from May 25, 2022 (section 101 (3) sentence 2 AktG). The Frankfurt am Main local court appointed Mr. Kevin Voß to replace Mr. Spitzbarth as a works council representative (section 16 MitbestG) on the Supervisory Board of DZ BANK AG with effect from January 1, 2023. There were no personnel changes among the shareholder representatives on the Supervisory Board in 2022.

The Supervisory Board wishes to thank the Board of Managing Directors and all employees of the DZ BANK Group for their valuable contribution in 2022.

Frankfurt am Main, March 23, 2023

DZ BANK AG
Deutsche Zentral-Genossenschaftsbank,
Frankfurt am Main



Henning Deneke-Jöhrens
Chairman of the Supervisory Board

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