VI Risk report

1 Disclosure principles

In its capacity as the parent company in the DZ BANK Group, DZ BANK is publishing this half-year risk report in order to meet the transparency requirements for risks applicable to the DZ BANK Group as specified in **section 115** and **section 117 of the German Securities Trading Act (WpHG)** and **German Accounting Standard (GAS) 16** in conjunction with GAS 20. This report also implements the applicable international risk reporting requirements on the basis of **International Accounting Standard (IAS) 34**, although the legal standards applicable to annual reporting under the International Financial Reporting Standards (IFRS) – IFRS 7.31-42 (nature and extent of risks arising from financial instruments) and IFRS 17.121-132 (nature and extent of risks that arise from contracts within the scope of IFRS 17) – are taken into account. With effect from the start of 2023, the provisions of IFRS 17.121-132 replace the rules that applied until the previous year (IFRS 4.38–39A).

In preparing this risk report, DZ BANK also takes account of the **recommended risk-related disclosures** issued by the Financial Stability Board, the European Banking Authority, and the European Securities and Markets Authority that are designed 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.

This half-year report provides an overview of the **core elements of the risk management system** of the DZ BANK Group. The risk management system is presented in full in the risk report in the 2022 group management report ('2022 risk report'). The disclosures in the 2022 risk report are also applicable to the first half of 2023, unless otherwise indicated in this report.

DZ BANK Group

2 Summary

2.1 Risk management system

2.1.1 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.

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

The tools used for the purposes of risk management are also designed to enable the DZ BANK Group to respond appropriately to **significant market movements**. For example, the market data used for the centralized, model-driven measurement of market risk is updated every trading day and significant market movements therefore lead to an immediate increase in the volatility of risk factors and, consequently, changes in market risk. In addition, changes in credit ratings and correlations affect the modeled level of credit risk. Conservative crisis scenarios for short-term and medium-term liquidity are intended to ensure that liquidity risk management takes adequate account of market crises.

2.1.2 KPIs

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

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

2.1.3 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**).

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

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

Because of these circumstances, two sectors – 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

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

Furthermore, **DZ BANK** and **DZ HYP** have elected to apply the **liquidity waiver** pursuant to article 8 of the Capital Requirements Regulation (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.

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) CRR, under which – provided certain conditions are met – regulatory supervision at individual bank level may be replaced by supervision of the entire banking group.

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

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

Risk is managed groupwide on a consolidated basis.

2.2 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 VI.3. The **specific risk factors** are shown in the risk-type-specific chapters of the 2022 risk report. The disclosures there continue to apply unchanged to the current year.

The main features of the directly managed **risks** and their significance for the operating segments in the Bank and Insurance sectors were shown in Fig. VII.3 and Fig. VII.4 respectively of the 2022 risk report. 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. This presentation also applies to the first six months of the current year.

2.3 Risk profile and risk appetite

The DZ BANK Group's **business model** and the associated business models used by the management units determine the risk profile.

The values for the measurement of **liquidity and capital adequacy** presented in Fig. VI.1 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) minimum 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.

The MREL ratio as a percentage of the leverage ratio exposure and the subordinated MREL ratio as a percentage of the leverage ratio exposure were added to the liquidity and capital adequacy KPI systems at the start of this year.

In addition, an internal observation threshold was introduced for each KPI included in Fig. VI.1 at the start of 2023. These observation thresholds mark the transition point from a comfortable risk situation to a state of heightened alert, whereas the minimum thresholds represent a mandatory internal limit that must be maintained. Both thresholds are elements of the risk appetite statement. They are defined by the Board of Managing Directors of DZ BANK and presented to the Risk Committee of DZ BANK's Supervisory Board for acknowledgement.

With the entry into effect of **IFRS 17** (previous standard: IFRS 4) on January 1, 2023, the accounting treatment of insurance contracts, in particular the treatment of liabilities to policyholders recognized under equity and liabilities, has been changed at R+V. Until this point, a temporary accounting effect had applied, as only R+V's financial instruments that are predominantly recognized on the asset side of the balance sheet were measured at fair value under IFRS 9 as at December 31, 2022. This led to a temporary technical interest-rate risk caused by the strong increase in interest rates in 2022. The result was a negative contribution to earnings and, consequently, a decrease in common equity Tier 1 capital at the level of the DZ BANK banking group as at December 31, 2022.

Fig. VI.2 shows the material regulatory key figures affected by the implementation of IFRS 17, assuming for regulatory purposes that the new standard had already been applied as at December 31, 2022 (column 'Dec. 31, 2022 including effect of IFRS 17'), and, as a comparison, the actual regulatory key figures reported for this balance sheet date. The first regulatory key figures affected by the transition to IFRS 17 were those reported as at June 30, 2023, as these figures are typically based on the most recent adopted annual financial statements or audited interim financial statements. As at the reporting date, DZ BANK had permission from the European Central Bank (ECB) to include its interim profit and, by extension, further dynamic equity components.

The other key figures included in Fig. VI.1 are not affected by the transition to IFRS 17. The coverage ratio for the DZ BANK financial conglomerate and economic capital adequacy are based on the provisions of Solvency II, meaning that both assets and equity and liabilities are already measured at fair value. The LCR and the minimum liquidity surplus are also unaffected by the transition. The LCR involves only a comparison of liquid assets and net outflows, while the minimum liquidity surplus is based on a cash flow analysis that is independent of the accounting treatment.

FIG. VI.1 – LIQUIDITY AND CAPITAL ADEQUACY KPIS

	Measured figure		External minimum target		Internal minimum threshold		Internal observation threshold	
	Jun. 30, 2023	Dec. 31, 2022	2023	2022	2023	2022	2023	2022
LIQUIDITY ADEQUACY								
DZ BANK Group (economic perspective)								
Minimum liquidity surplus (€ billion)[1]	12.8	14.3	0.0	0.0	4.0	4.0	5.0	
DZ BANK banking group (normative perspective)								
Liquidity coverage ratio (LCR, percent)	137.1	145.9	100.0	100.0	110.0	110.0	120.0	
Net stable funding ratio (NSFR, percent)	119.3	122.3	100.0	100.0	106.0	105.0	107.0	
CAPITAL ADEQUACY								
DZ BANK Group (economic perspective)								
Economic capital adequacy (percent)	212.8	222.4	100.0	100.0	120.0	120.0	140.0	
DZ BANK financial conglomerate (normative perspective)								
Coverage ratio (percent)	151.0	151.2	100.0	100.0	113.0	110.0	121.0	
DZ BANK banking group (normative perspective)								
Common equity Tier 1 capital ratio (percent)[2]	15.6	13.7	9.8	9.0	11.3	10.0	12.5	
Tier 1 capital ratio (percent)[2]	17.8	15.2	11.7	10.8	13.3	11.9	14.3	
Total capital ratio (percent)[2]	20.3	18.0	14.1	13.2	15.8	14.3	16.8	
Leverage ratio (percent)[2]	6.0	4.7	3.0	3.0	4.0	4.0	4.3	
MREL ratio as a percentage of risk-weighted assets[3]	41.1	38.3	25.1	25.1	26.8	26.8	27.1	
MREL ratio as a percentage of the leverage ratio exposure	13.8	11.9	7.3	7.3	7.5		7.6	
Subordinated MREL ratio as a percentage of risk-weighted assets[3]	30.5	28.5	23.8	23.8	25.5	25.5	26.0	
Subordinated MREL ratio as a percentage of the leverage ratio exposure	10.2	8.9	7.1	7.1	7.3		7.4	

Not available

1 The measured value relates to the stress scenario with the lowest minimum liquidity surplus.
2 The external minimum targets are the binding regulatory minimum capital requirements. Further details can be found in chapter VI.5.2.2.
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).

FIG. VI.2 – LIQUIDITY AND CAPITAL ADEQUACY KPIS (NORMATIVE PERSPECTIVE) OF THE DZ BANK BANKING GROUP, TAKING ACCOUNT OF THE IFRS 17 EFFECT AS AT DECEMBER 31, 2022

	Jun. 30, 2023	Dec. 31, 2022 including effect of IFRS 17	Dec. 31, 2022
Liquidity adequacy of the DZ BANK banking group			
Net stable funding ratio (NSFR, percent)	119.3	121.9	122.3
Capital adequacy of the DZ BANK banking group			
Common equity Tier 1 capital ratio (percent)	15.6	15.2	13.7
Tier 1 capital ratio (percent)	17.8	16.7	15.2
Total capital ratio (percent)	20.3	19.2	18.0
Leverage ratio (percent)	6.0	5.7	4.7
MREL ratio as a percentage of risk-weighted assets	41.1	37.7	38.3
MREL ratio as a percentage of the leverage ratio exposure	13.8	12.8	11.9
Subordinated MREL ratio as a percentage of risk-weighted assets	30.5	28.8	28.5
Subordinated MREL ratio as a percentage of the leverage ratio exposure	10.2	9.8	8.9

2.4 Solvency and risk-bearing capacity

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 the first half of 2023 and also complied with regulatory requirements for capital adequacy on every reporting date.

3 General risk factors

3.1 General risk factors that have not changed materially

The general risk factors that were material to the DZ BANK Group and remained unchanged compared with 2022 are set out below. Details of these risk factors can be found in the 2022 risk report.

Regulatory risk factors: Regulatory capital buffers not adhered to

Macroeconomic risk factors:
- Further escalation of the war in Ukraine; energy shortages
- A further unexpected rise in interest rates
- Inflation – stagflation
- Correction in real estate markets
- Economic policy divergence in the eurozone

In the first half of 2023, there were **no rating downgrades for DZ BANK**.

3.2 General risk factors that have changed materially

Disclosures on the risk factors listed below were published in the 2022 risk report. Due to material changes in the first six months of the year, these disclosures have been updated below.

3.2.1 Switch in interest-rate benchmarks

The publication of US dollar Libor was discontinued by the administrator with effect from June 30, 2023. For the 1-month, 3-month, and 6-month tenors, a non-representative ‘synthetic US dollar Libor’ will be published until September 30, 2024, which can be used on an interim basis for existing business that is difficult to amend (‘tough legacy’).

Most of the outstanding transactions and contracts referencing US dollar Libor as well as measurement and risk calculation methods have been amended by DZ BANK as planned and in keeping with relevant deadlines so that they use SOFR-based interest rates and yield curves instead. Certain individual contracts will be switched over after June 30, 2023 but before the end of the current interest period in which the interest rate is still based on US dollar Libor, or alternatively with the help of the synthetic US dollar Libor.

Upon implementation of these steps, the replacement of US dollar Libor at DZ BANK will be complete. Risks associated with this process will therefore no longer apply to the DZ BANK Group going forward.

3.2.2 Geopolitical tensions and resulting trade friction

The risk factors ‘Geopolitical tensions’ and ‘International trade disputes and supply chain problems’ described in the 2022 risk report have been combined under the risk factor ‘Geopolitical tensions and resulting trade friction’ as these are closely interlinked matters.

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.

Attention has recently shifted back to the dispute between **China and Taiwan**, in which Taiwan believes it is at constant risk of invasion. The US 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 US. 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.

In addition, the protracted dispute on the **Korean peninsula** is being stoked by 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 US and could potentially widen into a conflict with global consequences.

These geopolitical tensions can **adversely affect global trade**. In addition to the effects of disrupted supply chains described in chapter V.1 of the outlook, there is a risk of a renewed escalation of trade disputes between the US, China, and the European Union (EU). 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 in response to the war in Ukraine create further potential for tension between the EU and the US on the one hand and, on the other, countries that either fail to implement these sanctions or only partially impose them, for example China. 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.

The impacts of these geopolitical tensions on **credit risk** in the Bank sector and on **market risk** in the Insurance sector are described in chapter VI.6.4 and chapter VI.13.2 respectively.

3.3 New general risk factors

In the first half of 2023, the **crisis of confidence in the banking market** emerged as a new macroeconomic risk factor that sparked turmoil in the US banking sector and led to the collapse of a number of US regional banks.

The underlying causes were outflows of customer deposits along with unrealized valuation losses on bonds held by affected banks, which were triggered by the sharp rise in interest rates in 2022. In combination, these two effects caused a liquidity squeeze at some of the affected US regional banks. Moreover, in Europe, Credit Suisse fell into financial distress and was taken over by UBS Group.

The situation in the banking markets in the US and Europe has calmed down again somewhat since the flare-up of this crisis of confidence in March 2023. Especially in the US, the exposure of regional banks to commercial real estate constitutes a risk. Rising credit losses in this segment and higher refinancing costs could cause certain further individual US regional banks to fall into distress in the future.

As at the reporting date, the crisis of confidence in the banking sector did not have a material adverse impact on the liquidity adequacy or liquidity risk of the DZ BANK Group. There was no significant impact on credit risk in the Bank sector or market risk in the Insurance sector either.

4 Liquidity adequacy

4.1 Economic perspective

4.1.1 Quantitative variables in liquidity risk

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. VI.3 shows the liquidity value of the liquid securities that would result from secured funding or if the securities were sold. The total liquidity value as at June 30, 2023 amounted to €26.8 billion (December 31, 2022: €35.4 billion). The decline in liquid securities eligible for GC Pooling resulted from a reduction in reverse repo transactions.

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 highly diversified funding base for operational liquidity. A considerable portion is accounted for by money market activities resulting from the cash-pooling function with the **local cooperative banks**. Under these arrangements, the cooperative banks can invest excess liquidity with DZ BANK at any time. From the perspective of DZ BANK, which does not have any direct retail banking business as it is the central institution, this excess liquidity is treated as indirect retail deposits. Conversely, if the cooperative banks need liquidity, they can obtain it from DZ BANK. This regularly results in a liquidity surplus, which provides one of the main bases for short-term funding in the unsecured money markets.

FIG. VI.3 – LIQUID SECURITIES

€ billion	Jun. 30, 2023	Dec. 31, 2022
Liquid securities eligible for GC Pooling (ECB Basket)[1]	**12.1**	**22.3**
Securities in own portfolio	17.6	16.0
Securities received as collateral	5.5	17.4
Securities provided as collateral	-11.0	-11.1
Liquid securities eligible as collateral for central bank loans	**10.3**	**9.1**
Securities in own portfolio	18.1	16.7
Securities received as collateral	3.7	4.1
Securities provided as collateral	-11.4	-11.7
Other liquid securities	**4.4**	**3.9**
Securities in own portfolio	3.9	3.7
Securities received as collateral	0.5	0.3
Securities provided as collateral	-0.1	-0.1
Total	**26.8**	**35.4**
Securities in own portfolio	39.6	36.4
Securities received as collateral	9.6	21.8
Securities provided as collateral	-22.5	-22.9

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

Corporate customers and **institutional customers** are another important source of funding for covering operational liquidity requirements. 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 am Main, New York, Hong Kong, London, and Luxembourg. DZ BANK also runs a US-dollar-denominated commercial paper program for Frankfurt am Main. Funding on the **interbank market** is not strategically important to the DZ BANK Group.

The range of funding sources in the unsecured money markets is shown in Fig. VI.4. The changes in the composition of the sources of funding compared with December 31, 2022 arose because customers and investors were more focused on diversification than in the previous year due to the interest-rate situation. They mostly related to reallocations from current account deposits to fixed-term deposits. In addition, monetary policy measures implemented by the ECB prompted changes to short-term and medium-term funding arrangements.

FIG. VI.4 – UNSECURED SHORT-TERM AND MEDIUM-TERM FUNDING

€ billion	Jun. 30, 2023	Dec. 31, 2022
Deposits	**83.1**	**98.7**
Deposits of local cooperative banks	48.4	57.3
Current account deposits of other customers	34.7	41.4
Money market borrowing	**79.7**	**57.1**
Central banks, interbank, and customer banks	15.3	9.4
Corporate customers and institutional customers	44.4	33.6
Certificates of deposit/commercial paper	19.9	14.1

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

4.1.2 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. VI.5 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. VI.5 – LIQUIDITY UP TO 1 YEAR IN THE STRESS SCENARIOS WITH DEFINED LIMITS: MINIMUM LIQUIDITY SURPLUSES

	Forward cash exposure		Counterbalancing capacity		Minimum liquidity surplus[1]	
€ billion	Jun. 30, 2023	Dec. 31, 2022	Jun. 30, 2023	Dec. 31, 2022	Jun. 30, 2023	Dec. 31, 2022
Downgrading	-42.9	-39.1	86.3	67.8	43.4	28.7
Corporate crisis	-46.1	-30.2	58.9	44.5	12.8	14.3
Market crisis	-49.1	-32.9	74.8	57.6	25.7	24.7
Combination crisis	-47.8	-31.8	67.4	51.4	19.6	19.6

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 maturing targeted longer-term refinancing operations (TLTRO).

The liquidity risk value measured as at June 30, 2023 for the stress scenario with defined limits with the lowest minimum liquidity surplus (squeeze scenario) was €12.8 billion (December 31, 2022: €14.3 billion). The decrease in the minimum liquidity surplus was largely due to a multitude of individual changes in the underlying exposures on which the calculation of the minimum liquidity surplus is based.

The minimum liquidity surplus exceeded the **external minimum target** laid down by the supervisory authorities, the **internal observation threshold**, and the **internal minimum threshold**. The target/threshold values are shown in Fig. VI.1. The **limit** of €1.0 billion (unchanged compared with 2022) was also adhered to.

The minimum liquidity surplus as at June 30, 2023 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 first half of 2023 led to significant movements in the market for interest-rate derivatives and to funding changes, making the minimum liquidity surplus more volatile.

4.2 Normative perspective

4.2.1 Liquidity coverage ratio

The LCR measures the availability of an adequate buffer in the form of liquid assets that enables an institution to compensate for a possible imbalance between inflows and outflows of cash in a 30-day stress scenario. The LCR is the ratio of liquid assets held ('liquidity buffer') to net cash outflows.

The LCR figure for the DZ BANK banking group can be found in Fig. VI.6.

FIG. VI.6 – LIQUIDITY COVERAGE RATIO AND ITS COMPONENTS

	Jun. 30, 2023	Dec. 31, 2022
Total liquidity buffer (€ billion)	130.1	122.0
Total net liquidity outflows (€ billion)	94.9	83.6
LCR (percent)	**137.1**	**145.9**

The decrease in the LCR from 145.9 percent as at December 31, 2022 to 137.1 percent as at June 30, 2023 was attributable to a decline in excess liquidity cover (calculated by deducting the net liquidity outflows from the liquidity buffer), which was the result of a greater increase in the net liquidity outflows relative to the rise in the liquidity buffer.

The expansion of the liquidity buffer was mainly due to the growth of balances with central banks on the back of higher volumes of unsecured funding from deposits and own issues. Declining operational deposits from the cooperative financial network were replaced by issues of short-dated commercial paper and non-operational deposits, primarily from financial customers. Whereas deposits from financial customers and maturing commercial paper have to be included in cash outflows with a weighting factor of 100 percent, operational deposits from the cooperative financial network are taken into account with a weighting factor of only 25 percent. These shifts within product categories resulted in an increase in the weighted net cash outflows and thus to a negative effect on excess cover. In addition, outflows for committed lines, primarily to banks in the cooperative financial network, increased in the reporting period, which further reduced excess cover.

As at the reporting date, the **external minimum target** laid down by the supervisory authorities, the **internal observation threshold**, and the **internal minimum threshold** were exceeded. The target/threshold values are shown in Fig. VI.1.

4.2.2 Net stable funding ratio

The NSFR is intended to limit mismatches between the maturity structures of assets-side and liabilities-side business. The ratio is the amount of available stable funding (equity and liabilities) relative to the amount of required stable funding (assets-side business). The funding sources are weighted according to their degree of stability and assets are weighted according to their degree of liquidity based on factors defined by the supervisory authority. The NSFR, which has a longer-term focus, complements the LCR, which has a short-term focus.

The NSFR calculated for the DZ BANK banking group is presented in Fig. VI.7.

FIG. VI.7 – NET STABLE FUNDING RATIO AND ITS COMPONENTS

	Jun. 30, 2023	Dec. 31, 2022
Available stable funding (weighted equity and liabilities; € billion)	275.9	269.5
Required stable funding (weighted assets; € billion)	231.3	220.3
Excess cover/shortfall (€ billion)[1]	44.6	49.2
NSFR (percent)	**119.3**	**122.3**

1 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 122.3 percent as at December 31, 2022 to 119.3 percent as at June 30, 2023 was mainly due to a reduction in the excess cover. The decline in excess cover was primarily a result of a sharper rise in the required amount of stable funding due to a rise in loans, especially to banks in the cooperative financial network. On the other hand, there was an increase in sources of stable funding in the form of own issues, which was partially offset by a fall in privileged deposits of the cooperative financial network. The effect of the initial application of IFRS 17 is negligible for the purposes of the NSFR as it is reflected symmetrically on both sides of the balance sheet. Further information on the initial application of IFRS 17 is provided in chapter VI.2.3.

As at the reporting date, the NSFR was above the **internal minimum threshold** and the **internal observation threshold**. The ratio also exceeded the **external minimum target** laid down by the supervisory authorities. The target/threshold values are shown in Fig. VI.1.

5 Capital adequacy

5.1 Economic perspective

The annual recalculation of the overall solvency requirement took place as at December 31, 2022 owing to scheduled changes to the parameters for the risk measurement procedures carried out in the second quarter of 2023 for the Insurance sector on the basis of R+V's 2022 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, key risk indicators, and economic capital adequacy. The figures as at December 31, 2022 given in this risk report have been restated accordingly and are not directly comparable with the figures in the 2022 risk report.

The DZ BANK Group's **available internal capital** as at June 30, 2023 stood at €30,668 million. The comparable figure as at December 31, 2022 was €30,879 million. This decline in available internal capital compared with the end of 2022 resulted primarily from the adjustment of the valuation curves in response to the rise in interest rates in the first half of 2023. In consequence, reserves and liabilities on the balance sheet declined, especially in the Bank sector.

The **limit** derived from the available internal capital and which applied as at June 30, 2023 was €19,698 million (December 31, 2022: €22,215 million).

As at June 30, 2023, **aggregate risk** was calculated at €14,411 million. The comparable figure as at December 31, 2022 was €13,886 million. The increase was primarily driven by higher credit risk and business risk in the Bank sector.

As at June 30, 2023, the **economic capital adequacy ratio** for the DZ BANK Group was calculated at 212.8 percent. The comparable figure as at December 31, 2022 was 222.4 percent. Available internal capital decreased compared with December 31, 2022, whereas aggregate risk increased over the same period. This led to a decline in economic capital adequacy.

As at the reporting date, the economic capital adequacy ratio was above the **external minimum target**, the **internal observation threshold**, and the **internal minimum threshold**. The target/threshold values are shown in Fig. VI.1.

Fig. VI.8 provides an overview of economic capital adequacy and its components.

FIG. VI.8 – ECONOMIC CAPITAL ADEQUACY OF THE DZ BANK GROUP

	Jun. 30, 2023	Dec. 31, 2022
Available internal capital (€ million)[1]	30,668	30,879
Limit (€ million)	19,698	22,215
Aggregate risk (€ million)[1]	14,411	13,886
Economic capital adequacy (percent)[1]	**212.8**	**222.4**

1 Value as at December 31, 2022 after recalculation of R+V's overall solvency requirement. Different values were stated in the 2022 risk report.

The risk capital requirement (Bank sector) and the overall solvency requirement (Insurance sector) also contain any **decentralized capital buffer requirement**. 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. VI.9.

FIG. VI.9 – LIMITS AND RISK CAPITAL REQUIREMENTS IN THE BANK SECTOR

	Limit		Risk capital requirement	
€ million	Jun. 30, 2023	Dec. 31, 2022	Jun. 30, 2023	Dec. 31, 2022
Credit risk	4,988	6,387	3,876	3,766
Equity investment risk	1,281	1,230	1,012	997
Market risk	6,470	6,680	3,781	3,730
Technical risk of a home savings and loan company[1]	820	785	673	698
Business risk[2]	450	280	390	43
Operational risk	1,148	1,112	968	966
Total (after diversification)	**14,218**	**15,380**	**9,986**	**9,485**

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.

Fig. VI.10 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. VI.10 – LIMITS AND OVERALL SOLVENCY REQUIREMENTS IN THE INSURANCE SECTOR

	Limit		Overall solvency requirement	
€ million	Jun. 30, 2023	Dec. 31, 2022	Jun. 30, 2023	Dec. 31, 2022[1]
Life actuarial risk[2]	1,100	1,200	808	1,060
Health actuarial risk	235	300	207	167
Non-life actuarial risk	2,000	3,000	1,754	1,878
Market risk	3,850	3,880	3,499	3,415
Counterparty default risk	270	350	198	224
Operational risk	750	1,000	653	598
Risks from entities in other financial sectors	150	180	135	135
Total (after diversification)	**4,800**	**6,155**	**4,026**	**3,930**

1 Values after recalculation of the overall solvency requirement. Different values were stated in the 2022 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. VI.9 and Fig. VI.10, the aggregate risk includes **a centralized capital buffer requirement across all types of risk**, which was calculated at €399 million as at June 30, 2023 (December 31, 2022: €470 million). The corresponding **limit** remained unchanged compared with the prior-year figure at €680 million. The decrease in the centralized capital buffer requirement during the first half of 2023 was predominantly due to the annual adjustment of the measurement of the longevity risk resulting from provisions for pensions and other post-employment benefits in the Bank sector to the higher discount rate.

5.2 Normative perspective

5.2.1 DZ BANK financial conglomerate

The DZ BANK financial conglomerate comprises the DZ BANK banking group and the R+V Versicherung AG insurance group. The changes in the coverage ratio and in the own funds and solvency requirements of the DZ BANK financial conglomerate are shown in Fig. VI.11.

FIG. VI.11 – REGULATORY CAPITAL ADEQUACY OF THE DZ BANK FINANCIAL CONGLOMERATE[1]

	Jun. 30, 2023	Dec. 31, 2022[2]
Own funds (€ million)	37,889	36,458
Solvency requirements (€ million)	25,093	24,119
Coverage ratio (percent)	**151.0**	**151.2**

1 The values for the DZ BANK banking group included in the calculations were determined in accordance with the CRR transitional guidance.
2 Final figures. Preliminary figures were stated in the 2022 risk report.

The slight decrease in the coverage ratio calculated for the DZ BANK financial conglomerate from 151.2 percent as at December 31, 2022 to 151.0 percent as at June 30, 2023 was attributable, in particular, to the increase in the solvency requirements. The change in the coverage ratio was attributable to effects in the DZ BANK banking group and in the R+V Versicherung AG insurance group (see also chapters VI.5.2.2 and VI.5.2.3).

The final coverage ratio calculated for the financial conglomerate as at June 30, 2023 was higher than the **external minimum target** laid down by the supervisory authorities, the **internal observation threshold**, and the **internal minimum threshold**. The target/threshold and measurement values are shown in Fig. VI.1.

5.2.2 DZ BANK banking group

Regulatory capital ratios

The regulatory **own funds** of the DZ BANK banking group as at June 30, 2023 determined in accordance with the CRR transitional guidance amounted to a total of €30,628 million (December 31, 2022: €24,719 million). This equated to a rise in own funds of €5,909 million compared with the end of 2022, mainly comprising an increase in common equity Tier 1 capital of €4,867 million and an increase in additional Tier 1 capital of €1,143 million.

The biggest factors contributing to the rise in **common equity Tier 1 capital** from €18,762 million as at December 31, 2022 to €23,628 million as at June 30, 2023 were the initial application of IFRS 17 at R+V at €4,290 million, interim profit of €739 million that was approved by the ECB in accordance with article 26 (2) CRR, taking account of all foreseeable levies and dividends, and the fact that the voluntary capital deduction for non-performing exposures (NPEs) of €144 million was not repeated in the reporting period. Since January 1, 2023, the voluntary deduction for NPEs has been replaced with a higher amount of capital maintained under the Basel Pillar 2 requirement. By contrast, adjustments for effects relating to own credit ratings under regulatory adjustment items increased to €319 million. Regulatory adjustments are adjustments relating to individual accounting-related measurement effects in common equity Tier 1 capital.
Additional Tier 1 capital advanced by €1,143 million, from €2,150 million as at December 31, 2022 to €3,293 million as at June 30, 2023. This increase in additional Tier 1 capital is attributable to a placement of AT1 paper by DZ BANK in 2023.

Risk-weighted assets went up by €13,690 million, from €137,379 million as at December 31, 2022 to €151,069 million as at June 30, 2023, mainly due to the initial application of IFRS 17 and the associated positive effect on the equity-accounted long-term equity investment of DZ BANK in R+V. The rise in risk-weighted assets was partially offset by the fall in capital charges for operational risk and market risk.

As at June 30, 2023, the DZ BANK banking group's **common equity Tier 1 capital ratio** was 15.6 percent, an increase of 1.9 percentage points compared with December 31, 2022 (13.7 percent). The **Tier 1 capital ratio** of 17.8 percent calculated as at the reporting date was 2.6 percentage points higher than the figure as at December 31, 2022 (15.2 percent). The **total capital ratio** also went up, from 18.0 percent as at December 31, 2022 to 20.3 percent as at June 30, 2023.

Fig. VI.12 provides an overview of the DZ BANK banking group's regulatory capital ratios.

FIG. VI.12 – REGULATORY CAPITAL RATIOS[1]

	Jun. 30, 2023	Dec. 31, 2022
Capital		
Common equity Tier 1 capital (€ million)	23,628	18,762
Additional Tier 1 capital (€ million)	3,293	2,150
Tier 1 capital (€ million)	**26,921**	**20,912**
Total Tier 2 capital (€ million)	3,707	3,807
Own funds (€ million)	**30,628**	**24,719**
Risk-weighted assets		
Credit risk including long-term equity investments (€ million)	135,630	119,283
Market risk (€ million)	6,222	7,369
Operational risk (€ million)	9,217	10,727
Total (€ million)	**151,069**	**137,379**
Capital ratios		
Common equity Tier 1 capital ratio (percent)	15.6	13.7
Tier 1 capital ratio (percent)	17.8	15.2
Total capital ratio (percent)	20.3	18.0

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 has to comply with in 2023 under the Supervisory Review and Evaluation Process for Basel Pillar 2 (SREP) comprise 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 2022, also have to be satisfied. In this process, the banking supervisor specifies 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.

The mandatory minimum capital requirements relevant to the DZ BANK banking group under the SREP, and their components, are shown in Fig. VI.13.

FIG. VI.13 – REGULATORY MINIMUM CAPITAL REQUIREMENTS OF THE DZ BANK BANKING GROUP

Percent	2023	2022
Minimum requirement for common equity Tier 1 capital	4.50	4.50
Additional Pillar 2 capital requirement	1.02	0.96
Capital conservation buffer	2.50	2.50
Countercyclical capital buffer[1]	0.66	0.05
Systemic risk buffer[1]	0.16	
O-SII capital buffer	1.00	1.00
Mandatory minimum requirement for common equity Tier 1 capital	**9.84**	**9.00**
Minimum requirement for additional Tier 1 capital	1.50	1.50
Additional Pillar 2 capital requirement	0.34	0.32
Mandatory minimum requirement for Tier 1 capital	**11.68**	**10.82**
Minimum requirement for Tier 2 capital[2]	2.00	2.00
Additional Pillar 2 capital requirement	0.46	0.43
Mandatory minimum requirement for total capital	**14.13**	**13.25**

Not relevant

1 The values for the countercyclical capital buffer and the systemic risk buffer are recalculated at each reporting date. Unlike the other reported values, which apply to the entire financial year, the countercyclical capital buffers shown for 2023 and 2022 relate solely to the reporting dates. The systemic risk buffer was not relevant in 2022.
2 The minimum requirement can also be satisfied with common equity Tier 1 capital.

Compared with December 31, 2022, the minimum capital requirements for 2023 were up by 0.88 percentage points as at June 30, 2023. This is primarily 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. In a general administrative act dated January 31, 2022, the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) [German Federal Financial Supervisory Authority] raised Germany's countercyclical capital buffer rate from 0 percent to 0.75 percent. In a general administrative act dated March 30, 2022, BaFin then introduced a systemic risk buffer for the domestic residential real estate sector of 2 percent of the risk-weighted assets attributable to these exposures.

Compliance with the minimum capital requirements

The **external minimum targets**, **internal observation thresholds**, and **internal minimum thresholds** applicable to 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 as at June 30, 2023. The threshold values are shown in Fig. VI.1. The external minimum target values are shown in Fig. VI.13.

Leverage ratio

The **leverage ratio** of the DZ BANK banking group determined in accordance with the CRR transitional guidance went up by 1.3 percentage points from 4.7 percent as at December 31, 2022 to 6.0 percent as at June 30, 2023. This was mainly due to a sharp rise in common equity Tier 1 capital in connection with the implementation of IFRS 17 at R+V. The €9.9 billion increase in the total exposure over the same period had a mitigating effect on the rise in the leverage ratio.

The requirements applicable to the DZ BANK banking group – the **external minimum target**, the **internal observation threshold**, and the **internal minimum threshold** – were all exceeded as at the reporting date. The target/threshold values are shown in Fig. VI.1.

MREL ratios

The **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 MREL ratio as a percentage of risk-weighted assets measured for the DZ BANK banking group was 41.1 percent as at June 30, 2023 (December 31, 2022: 38.3 percent). The rise in this key figure compared with the end of 2022 was attributable to a rise in senior preferred liabilities of €2,182 million and growth in own funds of €5,909 million. As at June 30, 2023, the MREL volume stood at €62,105 million, an increase of €9,465 million compared with December 31, 2022.

Since January 1, 2023, the **MREL ratio as a percentage of the leverage ratio exposure** has been used alongside the MREL ratio as a percentage of risk-weighted assets for the purposes of managing the DZ BANK banking group. This MREL ratio 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 leverage ratio exposure of the DZ BANK banking group. As at June 30, 2023, the MREL ratio as a percentage of the leverage ratio exposure was 13.8 percent (December 31, 2022: 11.9 percent). The rise in this ratio was attributable to a rise in the MREL volume.

The **external minimum targets**, **internal observation thresholds**, and **internal minimum thresholds** applicable to the two MREL ratios were exceeded as at June 30, 2023. The target/threshold values and measured values are shown in Fig. VI.1.

Subordinated MREL ratios

The **subordinated 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, subordinated MREL liabilities of DZ BANK to the total risk exposure amount (risk-weighted assets) of the DZ BANK banking group. As at June 30, 2023, this key figure stood at 30.5 percent (December 31, 2022: 28.5 percent). The rise in the subordinated MREL ratio as a percentage of risk-weighted assets was predominantly driven by the substantial growth of the subordinated volume, which – in turn – was mainly attributable to an increase of €1,909 million in the portfolio of senior non-preferred liabilities and an increase of €5,909 million in own funds.

Since January 1, 2023, the **subordinated MREL ratio as a percentage of the leverage ratio exposure** has been used alongside the subordinated MREL ratio as a percentage of risk-weighted assets for the purposes of to managing the DZ BANK banking group. It 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 leverage ratio exposure of the DZ BANK banking group. As at June 30, 2023, the subordinated MREL ratio as a percentage of the leverage ratio exposure was 10.2 percent (December 31, 2022: 8.9 percent). The rise in this ratio was also attributable to the marked increase in the subordinated volume.

The **external minimum targets**, **internal observation thresholds**, and **internal minimum thresholds** applicable to the two subordinated MREL ratios were exceeded as at June 30, 2023. The target/threshold values and measured values are shown in Fig. VI.1.

5.2.3 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 R+V Versicherung AG insurance group met the solvency requirements under Solvency II as at June 30, 2023.

The projections applied in the internal planning show that the R+V Versicherung AG insurance group’s solvency ratio will continue to exceed the solvency requirement as at December 31, 2023.

Bank sector

6 Credit risk

6.1 Overview of the credit risk situation

Economic conditions remained challenging in the first half of 2023. This was due to a variety of factors, including continuing interest-rate increases, persistent inflation, and adverse macroeconomic effects arising from the war in Ukraine, the China-Taiwan conflict, and disrupted supply chains. In addition, confidence in the banking sector was shaken, especially in the first quarter of 2023, by several smaller US banks defaulting and Credit Suisse falling into financial distress.

The credit risk situation of the entities in the Bank sector was not materially impacted despite these unfavorable macroeconomic conditions. The exposure in the credit portfolios particularly affected by acute global crises (see chapter VI.6.4) was modest as at the reporting date, and the impairment requirement that emerged in the first six months of 2023 was at a moderate level. Changes in the credit portfolio will be monitored closely in the second half of the financial year, especially in view of these conditions.

6.2 Lending volume

6.2.1 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.

The **total lending volume** increased by 3 percent in the first half of the year, from €447.7 billion as at December 31, 2022 to €462.9 billion as at June 30, 2023. 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, which went up by €11.0 billion and €3.3 billion respectively compared with the end of 2022. 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. Volumes in the Corporate Banking and Structured Finance divisions grew as well.

As at June 30, 2023, a significant proportion (40 percent) of the lending volume was concentrated in the financial sector (December 31, 2022: 39 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. VI.14 shows the breakdown of the credit portfolio by asset class.

FIG. VI.14 – BANK SECTOR: LENDING VOLUME, BY ASSET CLASS

€ billion	Jun. 30, 2023	Dec. 31, 2022
Entities within the cooperative financial network	143.9	132.9
Financials	43.3	42.7
Corporates	79.4	76.1
Asset-based lending/project finance	12.1	11.9
Public sector	36.1	36.0
Real estate (commercial and retail customers)	118.5	119.0
Retail business (excluding real estate customers)	18.0	18.0
ABSs and ABCPs[1]	8.9	8.5
Other	2.6	2.7
Total	**462.9**	**447.7**

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

6.2.2 Geographical structure of the credit portfolio (excluding Germany)

Fig. VI.15 shows the geographical distribution of the credit portfolio by country group. Borrowers based in Germany are not included in this breakdown. The relevant country for the assignment to a country group is the one in which the economic risk arises. As at June 30, 2023, 67 percent of the total lending outside Germany was concentrated in Europe (December 31, 2022: 66 percent).

FIG. VI.15 – BANK SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Jun. 30, 2023	Dec. 31, 2022
Europe	53.4	50.3
of which: eurozone	33.5	31.5
North America	14.7	14.0
Central America	0.2	0.2
South America	1.0	1.0
Asia	7.5	7.3
Africa	1.2	1.3
Other	2.1	2.2
Total	**80.1**	**76.4**

6.2.3 Residual maturity structure of the credit portfolio

The breakdown of the credit portfolio by residual maturity as at June 30, 2023 presented in Fig. VI.16 shows that the lending volume had grown by €6.9 billion in the **short-term maturity band**, by €4.2 billion in the **medium-term maturity band**, and by €4.0 billion in the **long-term maturity band** compared with December 31, 2022. These increases are mainly attributable to DZ BANK.

FIG. VI.16 – BANK SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Jun. 30, 2023	Dec. 31, 2022
≤ 1 year	120.1	113.2
> 1 year to ≤ 5 years	116.7	112.4
> 5 years	226.1	222.1
Total	**462.9**	**447.7**

6.2.4 Rating structure of the credit portfolio

The proportion of the total lending volume accounted for by rating classes 1A to 3A (investment grade) remained unchanged at 87 percent between December 31, 2022 and June 30, 2023. Rating classes 3B to 4E (non-investment grade) represented 11 percent as at the reporting date, which was also unchanged compared with the end of 2022. Defaults, represented by rating classes 5A to 5E, accounted for less than 1 percent of the total lending volume as at June 30, 2023, and thus held steady compared with the end of 2022 as well.

Fig. VI.17 shows the lending volume by rating class according to the VR credit rating master scale.

FIG. VI.17 – BANK SECTOR: LENDING VOLUME, BY INTERNAL RATING CLASS

€ billion		Jun. 30, 2023	Dec. 31, 2022
Investment grade	1A	31.5	29.5
	1B	6.9	8.5
	1C	160.3	146.6
	1D	11.1	13.2
	1E	17.7	18.1
	2A	18.1	19.4
	2B	27.8	26.6
	2C	27.6	28.5
	2D	34.1	32.9
	2E	39.6	41.2
	3A	29.7	26.8
Non-investment grade	3B	15.9	14.7
	3C	11.7	11.9
	3D	8.9	8.6
	3E	4.6	4.2
	4A	2.8	2.3
	4B	3.8	3.7
	4C	1.7	1.2
	4D	0.4	0.9
	4E	2.9	3.3
Default		3.2	3.1
Not rated		2.6	2.6
Total		**462.9**	**447.7**

6.2.5 Collateralized lending volume

Fig. VI.18 shows the breakdown of the collateralized lending volume at overall portfolio level by type of collateral.

FIG. VI.18 – BANK SECTOR: COLLATERAL VALUE, BY TYPE OF COLLATERAL

€ billion	Jun. 30, 2023	Dec. 31, 2022
Guarantees, indemnities, risk subparticipation	7.4	7.4
Credit insurance	5.8	5.6
Land charges, mortgages, registered ship and aircraft mortgages	114.8	116.2
Pledged loans and advances, assignments, other pledged assets	2.2	2.0
Financial collateral	2.0	1.4
Other collateral	0.3	0.4
Total collateral	**132.5**	**133.0**
Lending volume	393.7	381.4
Uncollateralized lending volume	**261.2**	**248.3**
Collateralization rate (percent)	**33.7**	**34.9**

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.

The total collateral value fell from €133.0 billion as at December 31, 2022 to €132.5 billion as at June 30, 2023. The collateralization rate was 33.7 percent as at the reporting date (December 31, 2022: 34.9 percent).

6.2.6 Volume of closely monitored and non-performing loans

Closely monitored loans and forborne exposure

Fig. VI.19 shows the volume of loans on the three monitoring lists – **yellow list**, **watchlist**, and **default list** – and the forborne exposure also included in these lists. A further item in the table shows the exposure managed as forborne but not subject to intensified loan management, i.e. not included in the lists.

The **closely monitored lending volume** fell by 2 percent from December 31, 2022 to June 30, 2023. This decline resulted from exposures being removed from the closely monitored category. In addition, certain individual exposures were shifted from the watchlist to the yellow list.

As at June 30, 2023, the total **forborne exposure** was roughly on a par with the figure as at December 31, 2022. The rise in forborne exposures included on the yellow list from €151 million as at December 31, 2022 to €423 million as at June 30, 2023 was mainly due to transfers from the watchlist to the yellow list.

These changes are attributable to improvements in the financial circumstances of affected borrowers and the associated rating upgrades.

FIG. VI.19 – BANK SECTOR: CLOSELY MONITORED LENDING VOLUME AND FORBORNE EXPOSURE

€ million	Jun. 30, 2023	Dec. 31, 2022
Yellow list lending volume	**3,968**	**3,458**
of which: forborne exposure	423	151
Watchlist lending volume	**5,342**	**6,221**
of which: forborne exposure	1,036	919
Default list lending volume	**3,191**	**3,124**
of which: forborne exposure	1,321	1,536
Total lending volume on monitoring lists	**12,501**	**12,804**
of which: forborne exposure	2,780	2,606
Off-monitoring-list forborne exposure	**307**	**394**
Total forborne exposure[1]	**3,087**	**2,999**

1 Both on and off the monitoring lists.

Non-performing loans

As at June 30, 2023, the volume of non-performing loans (NPL) had risen to €3.2 billion from €3.1 billion as at December 31, 2022. Against the backdrop of a slightly higher lending volume, the NPL ratio remained unchanged compared with the end of 2022 at 0.7 percent.

Fig. VI.20 shows key figures relating to the volume of non-performing loans.

FIG. VI.20 – BANK SECTOR: KEY FIGURES FOR NON-PERFORMING LOANS

	Jun. 30, 2023	Dec. 31, 2022
Total lending volume (€ billion)	462.9	447.7
Volume of non-performing loans (€ billion)[1]	3.2	3.1
Balance of loss allowances (€ billion)[2]	1.4	1.3
Coverage ratio (percent)[3]	76.2	75.7
NPL ratio (percent)[4]	0.7	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.

6.3 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 VI6.2.).

6.3.1 Economic policy divergence in the eurozone

As at June 30, 2023, loans and advances to borrowers in the countries directly affected by the economic policy divergence in the eurozone amounted to €3,687 million (December 31, 2022: €3,660 million). They mainly consisted of securities transactions.

Fig. VI.21 shows the country breakdown of the exposures.

FIG. VI.21 – BANK SECTOR: LOANS AND ADVANCES TO BORROWERS IN EUROZONE PERIPHERY COUNTRIES[1]

€ million	Jun. 30, 2023	Dec. 31, 2022
Portugal	197	192
Italy	1,425	1,374
Spain	2,065	2,093
Total	**3,687**	**3,660**

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

6.3.2 Structural change in the automotive sector

The automotive sector has been in a state of upheaval for a number of years and faces certain challenges compared with other industries, such as low profit margins and a need for high levels of capital. The European Parliament's decision to end the sale of passenger cars with internal combustion engines by 2035 is likely to further accelerate the switch to electric vehicles and keep the pressure on the industry to transform. In addition, car manufacturers' production operations were impacted by supply chain disruptions in 2022 that were caused primarily by shortages of base products (especially semiconductors) and the war in Ukraine. Increased costs for commodities, energy, and transportation also weighed heavily on the industry.

Since the end of 2022, supply chains have been stabilizing and upward cost pressures have been easing. As a result, global passenger car sales rose significantly in the first half of 2023. However, there are now mounting indications that this recovery will lose momentum in the second half of the reporting year due to weakening demand in connection with the macroeconomic environment and persistently high inflation.

The volume of lending in DZ BANK's automotive finance portfolio came to €5.3 billion as at June 30, 2023 (December 31, 2022: €5.0 billion). This portfolio includes loans to automotive suppliers, which are analyzed separately in chapter VI.6.5.3.

6.3.3 Commercial real estate finance

Business model and macroeconomic risks

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). In addition, DZ HYP also provides financing to property developers and project developers.

Since 2020, a growing number of general and specific sources of uncertainty have been identified for these asset classes in view of the COVID-19 pandemic and related government-imposed safeguards, structural changes of a potentially long-term nature, and the negative macroeconomic conditions described in chapter VI.3.1. So far, the affected 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. Most of the uncertainties that have so far arisen in connection with the pandemic have not materialized. Moreover, risks that have applied in recent years are now reflected in cash flows and property valuations.

Persistently high inflation rates and challenging macroeconomic conditions, as well as the negative forecasts associated with these, are currently creating uncertainty for the aforementioned asset classes. These external conditions entail the risk that already agreed tenancies as well as new tenancies may not go ahead as expected. Significant interest-rate hikes have also caused yields in the real estate markets to go up, which has led to as yet mostly moderate impairment losses and higher refinancing costs. The sustained stabilization of interest rates and a number of other positive changes, such as improvements along supply chains, a decline in freight costs and commodity prices, and stable conditions in the service sector, are required for a return to a normal level.

Risks specific to individual real estate finance segments

Hotel real estate carries the risk that comparatively lower real incomes paired with generally higher costs can result in a reduction in travel activity, as travel is predominantly non-essential.

For **office real estate**, uncertainties arise because a large proportion of actors in an economic system create their value added in offices. A decline in economic output and changes in the world of work (new concepts and remote working) can therefore potentially lead to lower demand for office space.

Department stores, shopping malls, and inner-city commercial properties that are mainly used for retail/wholesale businesses not offering day-to-day essentials are exposed to specific risks associated with falling levels of real income in an environment of generally higher costs. This discrepancy makes consumers generally less inclined to spend and, above all, curbs their appetite for larger purchases.

Transaction levels in the **property development and project development** market are currently very muted. Yields and prices have not yet settled into a new balance. In light of the uncertain macroeconomic environment, investors and tenants are taking a wait-and-see approach.

Lending volume by finance segment

As at June 30, 2023, the volume of corporate loans extended by DZ HYP amounted to a total of €46.4 billion (December 31, 2022: €46.8 billion). Of this total, the following amounts were attributable to the aforementioned asset classes as at the reporting date (figures as at December 31, 2022 shown in parentheses):
– Hotel financing: €2.3 billion (€2.4 billion)
– Office real estate financing: €14.7 billion (€14.6 billion)
– Department store financing: €0.5 billion (€0.6 billion)
– Shopping mall financing: €2.7 billion (€2.7 billion)
– Financing for inner-city commercial properties mainly used for retail/wholesale businesses not offering day-to-day essentials: €0.8 billion (€0.8 billion)
– Property developer and project developer financing: €5.0 billion (€5.1 billion)

Financing for property developers and project developers also includes certain portions of the financing for the aforementioned asset classes, in particular the financing of office real estate (June 30, 2023: €2.5 billion).

6.4 Credit portfolios particularly affected by acute global crises

The following sections describe credit portfolios in which the effects of geopolitical tensions 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 VI6.2.).

6.4.1 War in Ukraine

The exposure of Bank sector entities in countries directly affected by this war (Russia, Ukraine, and Belarus) totaled €674 million as at June 30, 2023 (December 31, 2022: €702 million). As at the reporting date, this subportfolio accounted for less than 1 percent of the Bank sector's total lending volume, as had been the case at the end of 2022. The exposure mainly comprised export and trade finance as well as one project finance transaction.

Taking account of recoverable collateral, the net lending volume was €115 million as at June 30, 2023 (December 31, 2022: €139 million). The collateral predominantly consists of cover provided by export credit agencies.
Fig. VI.22 shows the breakdown of the net lending volume by country affected.

FIG. VI.22 – BANK SECTOR: NET LENDING VOLUME IN COUNTRIES AFFECTED DIRECTLY BY THE WAR IN UKRAINE

€ million	Jun. 30, 2023	Dec. 31, 2022
Russia	112	130
Belarus	-	6
Ukraine	2	2
Total	**115**	**139**

6.4.2 Dispute between China and Taiwan

In light of the simmering dispute between China and Taiwan, the credit exposure of the entities in the Bank sector to borrowers based in Taiwan is being monitored very closely. As yet, no material deterioration in credit quality resulting from the dispute with China has been identified.

The net lending volume directly relating to the countries involved in this dispute was broken down as follows as at the reporting date (figures as at December 31, 2022 shown in parentheses):
– China: €1,105 million (€923 million)
– Taiwan: €131 million (€80 million)

6.5 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 VI.6.2).

6.5.1 Finance for cruise ships

Following extensive corporate actions, the financed shipping companies all have a comfortable liquidity buffer. Business operations were very strong in the first half of 2023. The latest capacity utilization and booking figures are encouraging and have, in some cases, climbed above pre-pandemic figures from 2019. The outlook for the second half of the year is positive. However, risks to the economic recovery of these shipping companies continue to arise from higher fuel prices and higher interest rates and repayments, especially repayments owed in connection with temporary suspensions of repayments granted between April 2020 and March 2022 due to the pandemic. Some of these temporarily suspended repayments have already been made.

Cruise ship finance in the Bank sector is mainly brought together under **DZ BANK**. As at June 30, 2023, the volume of cruise ship finance amounted to €1,007 million (December 31, 2022: €1,052 million). Collateral worth €658 million was available as at June 30, 2023 (December 31, 2022: €722 million). Of this amount, €588 million was attributable to export credit insurance (December 31, 2022: €652 million).

6.5.2 Finance for cruise ship building

A distinction is made between cruise ship finance and the financing of cruise ship building. This segment, which only affects **DZ BANK** in the Bank sector, is still undergoing a large-scale transformation process. In consultation with the clients commissioning the construction of cruise ships, a base level of capacity utilization has been secured for the period until 2025/2026 by spreading out orders on hand. Substantial reductions in production capacity and headcount are planned in order to counteract low capacity utilization over the medium term. Renegotiations with clients helped to offset the impact of rising energy and procurement costs for the most part. Funding for the cost of the transformation process in this industry is backed by government guarantees. On the back of a number of challenging years, the credit quality of customers in this business segment remains troubled. This will likely still be the case in the second half of 2023, meaning that finance for cruise ship building continues to be classified as a portfolio with increased risk content.

The lending volume related to the financing of cruise ship building stood at €297 million as at June 30, 2023 (December 31, 2022: €332 million). Collateral worth €214 million was available as at June 30, 2023 (December 31, 2022: €181 million). Of this amount, €145 million was attributable to export credit insurance (December 31, 2022: €155 million).

6.5.3 Finance for automotive suppliers

Historical data shows that the automotive supply industry is characterized by high capital requirements but comparatively low margins and a relatively weak competitive position due to oligopoly-style structures in the automotive manufacturing industry.

The past year has highlighted that, compared with their suppliers, car manufacturers are significantly better positioned to be able to adapt to global supply chain disruptions, for example by changing their product mix. Financial performance in the automotive supply industry hinges primarily on the number of manufactured vehicles, which in the first half of 2023 was well below its record level from 2017.

In addition to the factors described in chapter VI.6.3.2 that apply to the automotive sector as a whole, conditions remain particularly challenging for automotive suppliers in Germany. Over the medium term, Asia is expected to be a significant source of growth stimulus in the coming years, even though growth rates in China are slowing. As new technologies and the demand associated with these often evolve in a very dynamic and unpredictable manner, such opportunities for growth also come with significant risks. Geopolitical tensions can have an additional adverse impact on the global division of labor in the automotive sector. An escalation of trade frictions with China, in particular, could have significant negative consequences for car manufacturers as well as for automotive suppliers. Against this backdrop, finance for automotive suppliers is now classified as a portfolio with increased risk content.

As at June 30, 2023, loans to companies in the automotive supply industry, which fall into DZ BANK's 'corporates' asset class, totaled €3,293 million (December 31, 2022: €3,113 million). Collateral of €84 million was available as at June 30, 2023 (December 31, 2022: €128 million).

6.6 Risk position

6.6.1 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 June 30, 2023, the **risk capital requirement** amounted to €3,876 million (December 31, 2022: €3,766 million) with a **limit** of €4,988 million (December 31, 2022: €6,387 million). A scheduled review and adjustment of credit risk limits was carried out at the start of the year. At the level of the DZ BANK Group, the limits were reduced by €1,399 million to €4,988 million overall, in accordance with the risk limit utilization.

Fig. VI.23 shows the credit value-at-risk together with the average probability of default and expected loss.

FIG. VI.23 – BANK SECTOR: FACTORS DETERMINING THE CREDIT VALUE-AT-RISK

	Jun. 30, 2023	Dec. 31, 2022
Average probability of default (percent)	0.3	0.3
Expected loss (€ million)	464	460
Credit value-at-risk (€ million)	3,876	3,766

In the analysis of **individual concentrations** in the **Bank sector**, the 20 counterparties associated with the largest credit value-at-risk accounted for 25 percent of the total credit value-at-risk as at June 30, 2023 (December 31, 2022: 28 percent). These counterparties largely comprised borrowers from the financial sector (including the cooperative banks) with investment-grade ratings, individual borrowers with non-investment-grade ratings, and eurozone periphery countries.

6.6.2 Risks in the credit portfolios with increased risk content

The risk capital requirement for **Bank sector** credit portfolios exposed to increased credit risk is shown in Fig. VI.24.

FIG. VI.24 – BANK SECTOR: CREDIT VALUE-AT-RISK[1] FOR CREDIT PORTFOLIOS WITH INCREASED RISK CONTENT

€ million	Jun. 30, 2023	Dec. 31, 2022
Finance for cruise ships	7	14
Finance for cruise ship building	2	3
Finance for automotive suppliers	33	32

1 Excluding decentralized capital buffer requirement.

The reduction in credit value-at-risk for **finance for cruise ships** was mainly attributable to improved economic conditions in the industry and the resulting rating upgrade of one cruise ship operator.

7 Equity investment risk

The **carrying amounts of long-term equity investments** relevant for the measurement of equity investment risk amounted to €2,902 million as at June 30, 2023 (December 31, 2022: €2,858 million).

The **risk capital requirement** for equity investment risk was calculated to be €1,012 million as at June 30, 2023 (December 31, 2022: €997 million). The corresponding **limit** was €1,281 million (December 31, 2022: €1,230 million).

8 Market risk

8.1 Value-at-risk

Fig. VI.25 shows the average, maximum, and minimum values-at-risk measured over the first half of the year, including a further breakdown by type of market risk. Furthermore, Fig. VI.26 shows the change in market risk by trading day in the reporting period. In both figures, the value-at-risk relates to the **trading and banking books for regulatory purposes**.

The value-at-risk for the **interest-rate risk in the banking book for regulatory purposes** amounted to €51 million as at June 30, 2023 (December 31, 2022: €54 million).
The slight fall in value-at-risk in the banking book for regulatory purposes resulted mainly from minor adjustments to the composition of the portfolio in the course of ordinary business activities.

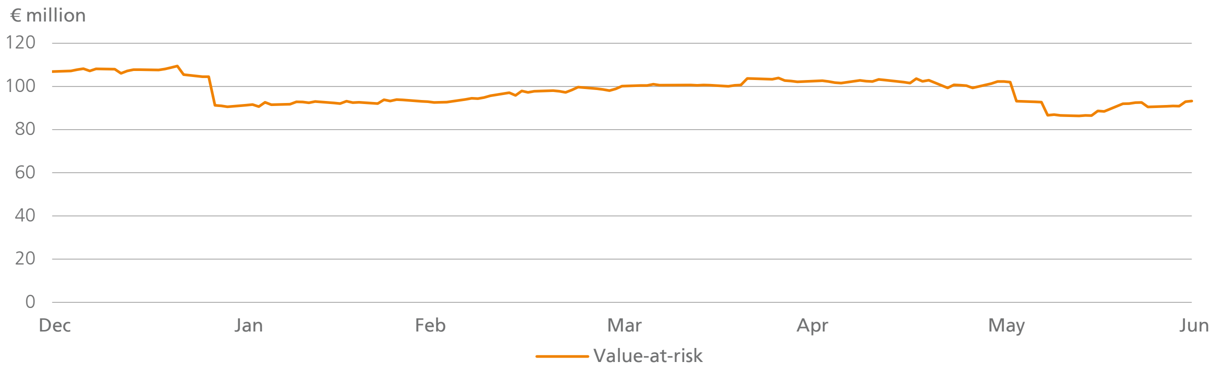
In the Bank sector, the value-at-risk fell to €93 million as at June 30, 2023 (December 31, 2022: €107 million). This was mainly because certain market data scenarios were no longer included in the rolling observation period for the historical simulation.

FIG. VI.25 – BANK SECTOR: CHANGE IN MARKET RISK BY RISK SUBTYPES[1, 2]

€ million	Interest-rate risk	Spread risk	Equity risk[3]	Currency risk	Commodity risk	Diversification effect[4,5]	Aggregate risk
Jun. 30, 2023	**50**	**73**	**10**	**3**	**2**	**-45**	**93**
Average	55	73	13	3	3	-48	98
Maximum	69	75	16	5	3	-59	109
Minimum	42	69	10	1	2	-37	86
Dec. 31, 2022	**53**	**70**	**11**	**3**	**3**	**-34**	**107**

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. VI.26 – BANK SECTOR: CHANGE IN MARKET RISK BY TRADING DAY[1]



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.

8.2 Risk capital requirement

As at June 30, 2023, the risk capital requirement for **market risk** amounted to €3,781 million (December 31, 2022: €3,730 million) with a limit of €6,470 million (December 31, 2022: €6,680 million).

The Bank sector's risk capital requirement encompasses the **asset-management risk of UMH**. Asset-management risk as at June 30, 2023 amounted to €256 million (December 31, 2022: €342 million). This decline was mainly due to a model adjustment.

9 Technical risk of a home savings and loan company

As at June 30, 2023, the **capital requirement** for the technical risk of a home savings and loan company amounted to €673 million (December 31, 2022: €698 million) with a **limit** of €820 million (December 31, 2022: €785 million). In the current market environment, the changes in customer behavior reflected in the risk scenario parameters and the decline in new business are resulting in slightly diminishing – i.e. risk-reducing – effects.

10 Business risk and reputational risk

As at June 30, 2023, the **risk capital requirement** for business risk (including reputational risk) amounted to €390 million (December 31, 2022: €43 million). The **limit** was €450 million as at the reporting date (December 31, 2022: €280 million). Reputational risk is included in the figures shown.

The risk capital requirement for business risk increased significantly compared with the end of 2022 due to more cautious planning concerning parameters with business risk implications. The limit was raised to tie in with this increase in risk.

11 Operational risk

11.1 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. The resulting operational risks are factored in by means of the hypothetical risk scenarios 'breaches of sanctions and embargoes' and 'incorrect execution of transactions and processes'.

11.2 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 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 July 1, 2022 to June 30, 2023 – represent the relevant reporting period for an analysis of net losses. Fig. VI.27 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.

In the past four quarters, internal losses were dominated by individual loss events from the 'Execution, delivery, and process management' event category of other operational risk. The slight rise in losses recorded in outsourcing risk relates to the creation of a provision for potential tax arrears payments. Based on the long-term mean, i.e. taking into account all loss events since loss data documentation was introduced, **compliance risk** and **legal risk** remain the dominant categories of operational risk.

FIG. VI.27 – BANK SECTOR: NET LOSSES[1] BY OPERATIONAL RISK SUBTYPE

Proportion of total net losses (percent)	Jul. 1, 2022–Jun. 30, 2023	Long-term mean[2]
Compliance risk	7.5	43.8
Legal risk	16.6	37.5
Information risk including ICT risk	6.2	5.2
Security risk	5.5	2.0
Outsourcing risk	12.1	0.6
Project risk	3.1	0.8
Other operational risk	49.1	10.1

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

Losses did not reach a critical level relative to the expected loss from operational risk at any point in the reporting year.

11.3 Risk position

The **risk capital requirement** for operational risk was calculated at €968 million as at June 30, 2023 (December 31, 2022: €966 million) with a **limit** of €1,148 million (December 31, 2022: €1,112 million).

Fig. VI.28 shows the structure of the risk profile for operational risk in the Bank sector based on **risk subtypes**.

FIG. VI.28 – BANK SECTOR: DISTRIBUTION OF RISK CAPITAL REQUIREMENT FOR OPERATIONAL RISK, BY RISK SUBTYPE[1]

Percent	Jun. 30, 2023	Dec. 31, 2022
Compliance risk	31.8	31.7
Legal risk	19.4	19.2
Information risk including ICT risk	15.4	15.5
Security risk	5.4	5.5
Outsourcing risk	5.5	5.6
Project risk	6.5	6.6
Other operational risk	16.0	15.9

1 Proportion of the Bank sector's risk capital requirement attributable to each risk subtype.

The distribution of the risk capital requirement among the operational risk subtypes remained largely unchanged as at June 30, 2023 compared with the end of the previous year. In the first half of 2023, **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.

Insurance sector

12 Actuarial risk

12.1 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.

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

12.2 Risk position

As at June 30, 2023, the **overall solvency requirement** for **life actuarial risk** amounted to €808 million (December 31, 2022: €1,060 million) with a **limit** of €1,100 million (December 31, 2022: €1,200 million). The decrease in risk was due to lower lapse risk resulting from the fall in interest rates during the first half of 2023 and to increased risk mitigation from future surpluses.

As at the reporting date, the **overall solvency requirement** for **health actuarial risk** was €207 million (December 31, 2022: €167 million) with a **limit** of €235 million (December 31, 2022: €300 million). This increase in risk was attributable to the transfer of the risk capital requirement from the centralized risk capital buffer to health actuarial risk.

As at June 30, 2023, the **overall solvency requirement** for **non-life actuarial risk** amounted to €1,754 million (December 31, 2022: €1,878 million) with a **limit** of €2,000 million (December 31, 2022: €3,000 million). This reduction in risk resulted primarily from changes to the reinsurance structure.

13 Market risk

13.1 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 other parts of credit risk are measured within counterparty default risk and other risk types.

As at June 30, 2023, the **total lending volume** of R+V had grown by 2 percent from €84.4 billion as at December 31, 2022 to €85.9 billion as at June 30, 2023. This increase was primarily the result of a rise in the fair values of fixed-income securities and equities.

As at June 30, 2023, the volume of lending in the **home finance** business was unchanged compared with December 31, 2022 at €13.7 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 also unchanged compared with December 31, 2022.

The volume of home finance was broken down by finance type as at the reporting date as follows (all figures unchanged compared with December 31, 2022):
- Consumer home finance: €12.3 billion
- Commercial home finance: €0.1 billion
- Commercial finance: €1.3 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 65 percent of the total lending volume as at June 30, 2023 (December 31, 2022: 64 percent).

The explanation of the asset class concept in the Bank sector (see chapter VI.6.2.1) applies analogously to the Insurance sector. Fig. VI.29 shows the breakdown of the lending volume by asset class.

Fig. VI.30 shows the **geographical distribution** of the credit portfolio by country group. Borrowers based in Germany are not included in this breakdown. The relevant country for the assignment to a country group is the one in which the economic risk arises. As at June 30, 2023, 75 percent of the total lending outside Germany was concentrated in Europe (December 31, 2022: 74 percent).

FIG. VI.29 – INSURANCE SECTOR: LENDING VOLUME, BY ASSET CLASS

€ billion	Jun. 30, 2023	Dec. 31, 2022
Financials	37.3	36.4
Corporates	12.0	12.2
Public sector	18.4	17.5
Real estate (commercial and retail customers)	16.7	16.8
ABSs and ABCPs[1]	1.6	1.6
Total	**85.9**	**84.4**

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

FIG. VI.30 – INSURANCE SECTOR: LENDING VOLUME, BY COUNTRY GROUP

€ billion	Jun. 30, 2023	Dec. 31, 2022
Europe	41.7	40.2
of which: eurozone	33.1	31.6
North America	7.6	7.5
Central America	0.5	0.5
South America	0.9	0.8
Asia	3.2	3.0
Africa	0.2	0.3
Other	1.7	1.6
Total	**55.7**	**54.0**

Obligations in connection with the life insurance business require investments with longer maturities. This is also reflected in the breakdown of **residual maturities** shown in Fig. VI.31. As at June 30, 2023, 82 percent (December 31, 2022: 85 percent) of the total lending volume had a residual maturity of more than five years. The percentage of the total lending volume due to mature within one year was 3 percent as at June 30, 2023. This figure was unchanged compared with December 31, 2022.

FIG. VI.31 – INSURANCE SECTOR: LENDING VOLUME, BY RESIDUAL MATURITY

€ billion	Jun. 30, 2023	Dec. 31, 2022
≤ 1 year	2.3	2.1
> 1 year to ≤ 5 years	12.8	10.9
> 5 years	70.8	71.4
Total	**85.9**	**84.4**

For **credit ratings**, R+V generally uses ratings from rating agencies approved by the supervisory authorities. 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. VII.20 of the 2022 risk report.

The **rating structure** of the lending volume in the Insurance sector is shown in Fig. VI.32. Of the total lending volume as at June 30, 2023, 76 percent was attributable to investment-grade borrowers (December 31, 2022: 75 percent). The lending volume that is not rated, which made up 23 percent of the total lending volume (December 31, 2022: 24 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. VI.32 – LENDING VOLUME, BY INTERNAL RATING CLASS

€ billion		Jun. 30, 2023	Dec. 31, 2022
Investment grade	1A	22.1	21.2
	1B	9.9	9.0
	1C	–	–
	1D	10.6	9.9
	1E	–	–
	2A	7.1	7.9
	2B	5.1	4.8
	2C	4.7	5.1
	2D	2.6	2.6
	2E	–	–
	3A	2.8	2.6
Non-investment grade	3B	0.3	0.3
	3C	0.3	0.3
	3D	–	–
	3E	0.2	0.2
	4A	0.1	0.1
	4B	0.2	0.3
	4C	0.1	0.1
	4D	–	–
	4E	–	–
Default		–	–
Not rated		19.7	20.1
Total		**85.9**	**84.4**

In the analysis of **individual concentrations**, the ten counterparties associated with the largest lending volumes accounted for 18 percent of R+V's total lending volume as at June 30, 2023 (December 31, 2022: 17 percent).

13.2 Credit portfolios particularly affected by negative conditions

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 VI13.1.).

Differences in economic policy in the eurozone are affecting investments of R+V in the **eurozone periphery countries** of Portugal, Italy, and Spain. As at June 30, 2023, investments in these countries amounted to €4,632 million (December 31, 2022: €4,404 million). Fig. VI.33 shows the country breakdown of the investments.

FIG. VI.33 – INSURANCE SECTOR: EXPOSURE IN EUROZONE PERIPHERY COUNTRIES

€ million	Jun. 30, 2023	Dec. 31, 2022
Portugal	39	37
Italy	2,216	2,082
Spain	2,377	2,285
Total	**4,632**	**4,404**

In light of the simmering dispute between **China and Taiwan**, lending by R+V to counterparties in Taiwan is being monitored very closely. As at June 30, 2023, there was no exposure to borrowers based in Taiwan, a situation that was unchanged compared with December 31, 2022. R+V's lending volume in China amounted to €165 million as at June 30, 2023 (December 31, 2022: €180 million).

13.3 Risk position

As at June 30, 2023, the **overall solvency requirement** for market risk amounted to €3,499 million (December 31, 2022: €3,415 million) with a **limit** of €3,850 million (December 31, 2022: €3,880 million). The change was largely driven by the increased risk capital buffer for interest-rate risk.

Fig. VI.34 shows the overall solvency requirement for the various types of market risk.

FIG. VI.34 – INSURANCE SECTOR: OVERALL SOLVENCY REQUIREMENT FOR MARKET RISK, BY RISK SUBTYPE

€ million	Jun. 30, 2023	Dec. 31, 2022
Interest-rate risk	2,351	2,179
Spread risk	694	776
Equity risk	1,345	1,328
Currency risk	352	323
Real-estate risk	432	446
Total (after diversification)	**3,499**	**3,415**

14 Counterparty default risk

Receivables arising from ceded reinsurance amounted to €99 million as at June 30, 2023 (December 31, 2022: €145 million). Of this volume, 86 percent (December 31, 2022: 100 percent) was owed by companies with an external rating of A or higher. The remaining 14 percent of receivables were collateralized receivables from reinsurance counterparties without a rating.

The **reinsurers' share of insurance liabilities** is a variable that impacts the default risk of reinsurance counterparties. Claims against reinsurers for insured events that have not yet occurred and for insured events from direct insurance operations and from inward reinsurance, presented by external rating class in accordance with the system of the rating agency Standard & Poor's, are shown in Fig. VI.35. Ratings from other rating agencies are included in 'Other ratings'.

FIG. VI.35 – INSURANCE SECTOR: VOLUME OF REINSURANCE CONTRACTS HELD, BY EXTERNAL RATING CLASS

€ million	Jun. 30, 2023	Dec. 31, 2022
AAA	1	1
AA+ to AA-	26	29
A+ to A-	82	109
B	–	–
Other ratings	17	13
Total	**126**	**152**

Overdue receivables from policyholders and insurance brokers more than 90 days past due as at the reporting date amounted to €38 million as at June 30, 2023 (December 31, 2022: €27 million). The figure as at December 31, 2022 that was published in the 2022 risk report was €158 million. This figure was calculated in accordance with IFRS 4 based on the carrying amounts recognized under the German Commercial Code (HGB), whereas the calculation now uses the carrying amounts recognized under IFRS. In order to ensure comparability with the figure as at June 30, 2023, which was calculated in accordance with the rules of IFRS 17 that came into effect on January 1, 2023, the figure as at December 31, 2022 was recalculated.

As at June 30, 2023, the **overall solvency requirement** for counterparty default risk amounted to €198 million (December 31, 2022: €224 million) with a **limit** of €270 million (December 31, 2022: €350 million). This decline was attributable to lower amounts past due.

15 Operational risk

As at June 30, 2023, the **overall solvency requirement** for operational risk amounted to €653 million (December 31, 2022: €598 million). The **limit** was €750 million as at the reporting date (December 31, 2022: €1,000 million). This increase in risk is due to higher insurance liabilities.

16 Risks from entities in other financial sectors

As at June 30, 2023, the **overall solvency requirement** for risks in connection with non-controlling interests in insurance companies and with entities in other financial sectors stood at €135 million and was thus the same as at December 31, 2022. The **limit** was €150 million (December 31, 2022: €180 million).